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Tourism as a Catalyst for Socio-Economic Transformation: Insights from Sharangkot, Kaski

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Abstract

This research examines tourism's impact on Sharangkot's socio-economic landscape, a key destination in Nepal's thriving tourism sector. Focusing on communities transitioning from agriculture to tourism, the study used a quantitative method, surveying 100 local households. It analyzed the correlation between tourism and socio-economic variables, considering both benefits (like job creation and infrastructural growth) and challenges (such as inflation and environmental issues. Results show tourism significantly improves Sharangkot's living standards, bringing economic advantages and infrastructural enhancements, but also raising costs and environmental concerns. The study underscores the need for sustainable tourism strategies that harmonize economic and environmental interests. It also suggests further research to delve deeper into the complex interplay between tourism and socio-economic factors in Sharangkot.

Keywords: Tourism, Socio-economic transformation, Community living standard, Sustainable development

1. Introduction

Background

The tourism industry in Nepal has seen remarkable expansion since it opened to international tourists in 1949. This sector has evolved into a significant part of both the global tourism industry and Nepal's economy. The nation's stunning natural landscapes, particularly the Himalayan range, along with its rich cultural diversity, offer tourists a variety of experiences including eco-tourism, mountain expeditions, and cultural journeys. This diversity has been successful in attracting an increasing number of tourists, both from within the country and from around the world (Gurung, 1989; Bhusal, 2004).

Pokhara is a well-known tourist attraction that is situated in the center of the Kaski district, 200 kilometers from Kathmandu. Famous for its natural and cultural marvels, it is the starting point for the Annapurna circuit, captivating nearly 40 percent of all tourists visiting Nepal. Over the past seven decades, Pokhara has evolved into a crucial destination for both national and international tourists (Government of Nepal, Ministry of Culture, Tourism & Civil Aviation, 2020).

Sharangkot, located in the scenic city of Pokhara, is a historically rich destination offering a wide range of activities. Visitors can enjoy hiking, zip-lining, and especially paragliding in this picturesque locale. Famed for its sweeping views of the Himalayas and as a premier location for adventure sports, particularly paragliding, Sharangkot stands at an elevation of 5,000 feet, positioning it among the world's top paragliding destinations (Upreti et al., 2013).

The region is not just a hub for thrill-seekers but also caters to those seeking serene experiences like sunrise and sunset tours, zipline adventures, and bird watching. Sharangkot's accommodation spectrum ranges from high-end resorts to cozy lodges, appealing to a wide array of tourist preferences. The site's improved accessibility, with the addition of a road and a new cable car service, further enhances its attractiveness. Despite the impact of the COVID-19 pandemic on tourism, Sharangkot remains a popular destination, consistently drawing a steady stream of visitors. This ongoing attraction highlights the area's enduring importance in the socio-economic context of the region, reflecting the resilience and appeal of Sharangkot as a tourist spot.

Objectives of the study

The overarching goal of this research is to assess the transformative role of tourism development on the socio-economic conditions of the local community in Sharangkot, Kaski. To achieve this, the study sets out the following specific objectives:

1. To identify and establish key indicators that reflect the impact of tourism development, which will be used as independent variables in this analysis.
2. To examine and quantify the relationship between the socio-economic transformation of the local community and the impact of tourism development.

2. Literature Review

Tourism, particularly ecotourism, has gained prominence in Nepal, with studies delving into its environmental, community, and socio-economic implications. This literature review synthesizes key insights from relevant research, providing a comprehensive understanding of the multifaceted impacts of tourism in the Nepalese context.

Heredge's (2005) qualitative analysis investigates the intricate interaction between tourism development and local communities in Nepal, shedding light on the dynamics shaping this relationship. Shakya (2010) adopts a case study approach to examine how tourism influences the risk management strategies of rural communities, contributing to their resilience and livelihood.

KC and Thapa Parajuli's (2014) mixed-methods research focuses on the impact of tourism on livelihoods in the Manaslu conservation area, offering a comprehensive analysis of both economic and social benefits. Ojha's (2020) analytical review delves into sustainable practices within the Nepalese tourism sector, providing insights into the industry's efforts towards environmental and socio-economic sustainability. Baniya, Shrestha, and Karn's (2018) qualitative study investigates the transformative effects of community-based tourism on local well-being in Nepal, contributing to a nuanced understanding of the broader societal impacts.

Shakya (2014) conducts an empirical study, examining the socio-economic transformations in rural Nepalese society attributed to tourism, highlighting the complex dynamics at play. Subymon (2018) utilizes qualitative analysis to scrutinize the socio-cultural impacts of tourism on Nepalese host communities, offering insights into the evolving cultural dynamics shaped by tourism.

Khanal and Khanal (2020) employ an ARDL bounds test with data from World Development Indicators to reveal that a 1 percent increase in tourist arrivals corresponds to a substantial 1.15 percent increase in Nepal's GDP. This quantitative approach offers a precise measurement of the economic impact of tourism in the country.

Vijayanand's (2013) descriptive analysis focuses on the role of public-private partnerships in tourism, revealing that stakeholder involvement in tourism management enhances its economic impact. The study conducted by Dahal and Sapkota (2020) on the "Environmental Impacts of Community-Based Homestay Ecotourism in Nepal" critically evaluates the effects of homestay tourism on the environment and economy of Nepal's Nawalpur District. This research highlights the dual nature of tourism’s impact: it generates socio-economic benefits like increased income and cultural preservation, but also poses challenges to the environment, emphasizing the need for effective waste management and sustainable resource use. The study's key emphasis is on the importance of balancing these benefits and pressures, especially in Nepal where tourism is integral to the economy and conservation efforts. This comprehensive analysis provides valuable insights into the complex dynamics of ecotourism in developing nations.

The role of tourism in sustainable development is explored by the World Travel & Tourism Council (WTTC, 2015) and (WTTC, 2017), utilizing a descriptive and analytical study to emphasize tourism's significant contribution to the service industry and foreign exchange. Collectively, these studies offer a comprehensive understanding of the economic implications of tourism in Nepal, ranging from macroeconomic indicators to local-level development initiatives.

The study aimed to fill critical gaps in the existing research on tourism in Nepal by adopting an integrated approach that balanced environmental sustainability with economic development. It provided a deeper understanding of the long-term socio-cultural impacts of tourism, focusing on the preservation of traditional lifestyles and cultural heritage. Special emphasis was placed on examining the effects of tourism on indigenous communities, ensuring their perspectives and experiences were included in the discourse. Additionally, the study extended beyond the conventional economic analysis of GDP contributions, delving into how tourism revenue was distributed among local communities, its impact on small enterprises, and its role in poverty reduction. By addressing these areas, the study contributed to the development of tourism strategies that were economically beneficial, culturally respectful, and environmentally sustainable in Nepal.

3. Conceptual framework of the study

The study's conceptual framework (Figure 1) is centered on analyzing the impact of tourism development in Sharangkot, with a particular emphasis on its economic and social dimensions. The investigation traces the shift from traditional agricultural livelihoods to tourism-centric jobs and assesses the economic gains stemming from this transition. Key areas of focus include the availability of new job opportunities, variations in income, and the overall improvement in community welfare. Additionally, the framework critically examines the possible downsides of tourism, such as increased traffic, environmental noise, and a rise in living costs. Essentially, this framework aims to provide a balanced view of tourism's influence on Sharangkot, detailing both its positive and negative effects on the community's way of life and its contribution to the enhancement of living standards.

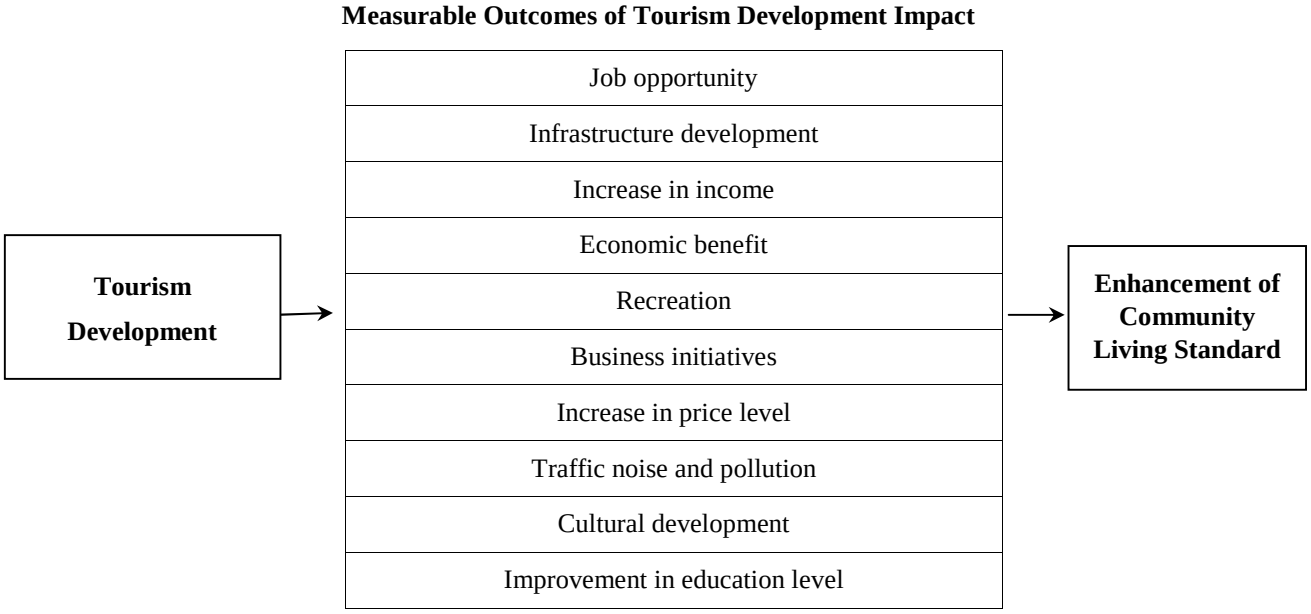

Figure 1: Conceptual Framework of the

4. Proposed model and hypotheses

The research model in this study adopts the view that tourism development brings both positive and negative impacts on the living standards in local communities. According to Kreag (2001), tourism can drive economic growth through job creation, infrastructure enhancement, increased incomes, and cultural exchange, collectively elevating living standards. Nevertheless, it's also important to acknowledge the challenges it might introduce, such as higher costs of living, traffic, noise, and environmental concerns.

Focusing on Sharangkot, Kaski, the study aims to thoroughly evaluate how tourism development affects the community's development. The standard of living in this area, considered the dependent variable (Eraqi, 2007), is impacted by various aspects of tourism development, treated as independent variables in this model. The research examines ten distinct indicators of tourism development, covering economic, social, environmental, and cultural elements. Each of these indicators is posited to influence the standard of living in Sharangkot to different extents.

The study employs a hypothesis-testing methodology to investigate these interrelations. Its objective is to offer a detailed insight into how the diverse elements of tourism development shape the socio-economic environment in Sharangkot, Kaski. This methodology facilitates a comprehensive exploration of the various ways in which tourism impacts the local community.

Table 1: Proposed Model and Hypotheses for the Study

S.N.	Description	Null Hypothesis (Ho)	Alternative Hypothesis (Ha)
1	Job Opportunities Created by Tourism	No positive relation with standard of living	Positive relation with standard of living
2	Infrastructure Development	No positive relation with standard of living	Positive relation with standard of living

S.N.	Description	Null Hypothesis (Ho)	Alternative Hypothesis (Ha)
3	Increase in Income	No positive relation with standard of living	Positive relation with standard of living
4	Economic Benefits	No positive relation with standard of living	Positive relation with standard of living
5	Recreational Opportunities	No positive relation with standard of living	Positive relation with standard of living
6	Business Initiatives	No positive relation with standard of living	Positive relation with standard of living
7	Price Levels	No positive relation with standard of living	Positive relation with standard of living
8	Environmental Costs (Traffic, Noise, Pollution)	No positive relation with standard of living	Positive relation with standard of living
9	Cultural Development	No positive relation with standard of living	Positive relation with standard of living
10	Education Level	No positive relation with standard of living	Positive relation with standard of living

5. Methodology

This study adopts an empirical approach to quantify the socio-economic transformation in Sharangkot, Kaski, attributed to tourism development. Given the predominance of agriculture in Sharangkot, where a majority of households engage in traditional agricultural activities, this research aims to explore the shift towards tourism-related livelihoods and its impact on community standards of living.

The methodology for selecting analysis factors, specifically indicators of tourism development, was rigorously structured. It involved a detailed examination of existing scholarly works, inclusive of contributions by Eraqi (2007), Aref, Redzuan, and Gill (2009), Mohammadi, Khalifah, and Hosseini H. (2010), Ramseook-Munhurrun and Naidoo (2011), and Hasan, Ullah, and Chowdhury (2013). The selection process was enriched through expert consultations and environmental assessments, with additional validation from Focus Group Discussions (FGD) and Key Informant Interviews (KII) with stakeholders. The reliability of the survey tool was evaluated using Cronbach's alpha method (Cronbach, 1951), yielding a coefficient of 0.79. This figure not only meets but also exceeds the generally accepted threshold of 0.70, as recommended by Nunnally (1978). Subsequent data analysis was conducted using the Statistical Package for the Social Sciences (SPSS), employing descriptive statistics and correlation analysis to delve into the dynamics between the chosen variables.

The demographic scope of the study encompasses 2,080 households in Sharangkot, among which only 133 are actively involved in tourism. To determine the sample size for the household survey, the study utilized Yamane's formula (1967), which calculates the sample size (n) as $n = N / (1 + N(e)^2)$, with N representing the population size (133 households involved in tourism) and e denoting the margin of error (set at 5% for a 95% confidence level). This calculation resulted in a sample size of approximately 100 households.

Data collection focused on these 100 households engaged in tourism along the Pokhara to Sharangkot trekking route. The research methodology employed a descriptive design with a quantitative approach. Data were primarily gathered through structured personal interviews. The survey instrument included 14 questions, employing a five-point Likert scale to assess various aspects of tourism's impact on local community life. The questionnaire addressed both demographic variables (such as gender, age, and occupation) and specific factors related to tourism's contribution to local development, including economic benefits, job creation, income sources, investment opportunities, changes in price levels, educational improvements, and overall standard of living.

6. Findings of the study

Table 2 below presents the descriptive statistics of various indicators related to local development, derived from a sample of 100 respondents. The table includes statistical measures such as the minimum and maximum values, mean, standard deviation, and Cronbach's Alpha for each indicator. These indicators encompass a range of aspects including Standard of Living, Job Opportunity, Infrastructure Development, Increased Income, Economic Benefit, Recreation,

Business Initiatives, Increased Price Level, Traffic Noise Pollution, Cultural Development, and the Education System.

Table 2: Descriptive Statistics of Tourism Development Indicators

Indicators	Sample Size (N)	Min Value	Max Value	Mean	Standard Deviation	Cronbach's Alpha
Standard of Living	100	1	5	3.51	1.226	0.79
Job Opportunity	100	1	5	3.70	1.352	
Infrastructure Development	100	1	5	3.51	1.235	
Increased Income	100	1	5	3.28	1.345	
Economic Benefit	100	1	5	3.54	1.326	
Recreation	100	1	5	3.27	1.302	
Business Initiatives	100	1	5	3.42	1.203	
Increased Price Level	100	1	5	3.35	1.281	
Traffic Noise Pollution	100	1	5	3.42	1.336	
Cultural Development	100	1	5	3.48	1.182	
Education System	100	1	5	3.72	1.202	

In this study, a systematic approach was used to analyze responses on a 5-point Likert scale. The scale's range, calculated as 4 (from 5 minus 1), was divided by the maximum value of 5, resulting in increments of 0.80. This calculation led to a structured classification of responses: scores from 1 to 1.80 signifying 'Strongly Disagree', 1.81 to 2.60 indicating 'Disagree', 2.61 to 3.40 as 'Neutral', 3.41 to 4.20 representing 'Agree', and 4.21 to 5.00 as 'Strongly Agree'.

According to Table 2 in the study, which presents descriptive statistics for various tourism impact indicators, the general perception of tourism's effects on the local community is positive. The data highlights several aspects of this impact: the creation of job opportunities due to tourism (mean = 3.70, SD = 1.352), the development of infrastructure (mean = 3.51, SD = 1.235), an increase in income from tourism activities (mean = 3.28, SD = 1.345), economic benefits (mean = 3.54, SD = 1.326), enhanced recreational facilities (mean = 3.27, SD = 1.302), and the provision of business opportunities (mean = 3.42, SD = 1.203).

However, the study also sheds light on some negative aspects, such as an increase in price levels in tourist areas (mean = 3.35, SD = 1.281) and issues like traffic congestion, noise, and pollution (mean = 3.42, SD = 1.336). On a positive note, the cultural and educational impacts are also acknowledged, with tourism contributing to cultural development (mean = 3.48, SD = 1.182) and improvements in the local education system (mean = 3.72, SD = 1.202).

Overall, the respondents demonstrate a favorable attitude towards the impact of tourism, especially regarding the enhancement of the standard of living in the local community (mean = 3.51, SD = 1.226). This comprehensive data offers insights into both the benefits and challenges associated with tourism, presenting a comprehensive view of its effects.

Table 3: Tourism Development and Living Standards: Correlation Study Outcomes

Indicators	Pearson correlation with Standard of Living	$t = r\left[\frac{n-2}{1-r^2}\right]^{\frac{1}{2}}$	Sig.(2-tailed)
Job opportunity	0.701	9.730	.001*
Infrastructure Development	0.652	8.512	.000*
Increased Income	0.475	5.343564	.003*
Economic Benefit	0.465	5.199604	.002*
Recreation	0.721	10.30044	.004*
Business Initiatives	0.702	9.758032	.002*
Increased Price Level	-.536	-6.28526	.000*
Traffic, Noise & Pollution	-.345	-3.63873	.007*
Cultural Development	.061	0.604996	.701
Education System	0.753	11.3284	.000*

*Note: *Indicates significant at α =0.05*

The correlation analysis from this study reveals a refined picture of tourism development's impact on the local community's standard of living. A significant positive correlation between job opportunities and standard of living highlights the crucial role of employment in enhancing economic well-being. Similarly, infrastructure development related to tourism is positively linked to improved living standards, indicating the benefits of enhanced public services and facilities.

Increased income from tourism activities and overall economic benefits show a positive relationship with living standards, suggesting that financial gains from tourism are effectively translating into better living conditions. The strong positive impact of recreational opportunities provided by tourism further emphasizes their contribution to the community's quality of life.

Business initiatives driven by tourism also display a favorable impact on living standards, likely due to job creation and diversified economic activities. However, the study also uncovers a negative correlation between increased price levels and standard of living points to the adverse effects of tourism, such as inflation and a higher cost of living, which may not be adequately compensated by its economic benefits.

Additionally, the lack of a positive relationship between traffic, noise, pollution, and living standards highlights the negative externalities of tourism, potentially detracting from the community's quality of life. Cultural development through tourism shows a minimal correlation with living standards, suggesting that its impact is either limited or overshadowed by other factors.

Notably, the strong positive correlation between the education system and living standards underlines the significance of educational opportunities and awareness in improving community welfare.

In summary, while tourism development brings several socio-economic benefits to the local community, it also presents challenges that need careful management. These findings underscore the necessity for sustainable tourism development strategies that maximize benefits while minimizing negative impacts on local communities.

7. Discussion

The research analysis on tourism development in Sharangkot, Pokhara, delves into the various effects it has had on the local community. The results highlight the significant role played by tourism in promoting both economic and social advantages. More precisely, this development has acted as a driving force behind the creation of employment opportunities and the enhancement of infrastructure, making a substantial contribution to the economic upliftment of the area. These economic gains are also evident in the improved quality of life among the local residents, as indicated by higher income levels and increased support for local businesses.

Moreover, the expansion of tourism in Sharangkot has had a noteworthy impact on the social fabric of the community. It has not only led to economic benefits but also to the enrichment of the community's recreational and educational facilities. These enhancements have collectively contributed to a higher standard of living for the residents.

Interestingly, our study reveals that the anticipated negative impacts commonly associated with tourism, such as heightened price levels and escalated issues of traffic, noise, and pollution, were not observed in Sharangkot. This finding is particularly significant, suggesting that the tourism development in this area has been managed in a way that mitigates these common drawbacks.

Furthermore, through a detailed mean score and correlation analysis, our research establishes a clear, positive correlation between factors such as job opportunities, infrastructural development, and increased income, economic benefits to businesses, recreational advancements, and improvements in the education system, with the overall standard of living in the local community. Contrarily, it is noteworthy that increases in price levels, traffic congestion, noise, pollution, and changes in cultural dynamics do not demonstrate a significant positive relationship with the community's standard of living.

The results of this study closely resemble those of earlier research carried out by Subedi and Bhandari in 2019. Their research delved into the socio-economic consequences of tourism on villages in Kaski, Nepal (Subedi & Bhandari, 2019). Likewise, the findings align with the research conducted by Giri (2010), who explored the impact of village tourism on rural development in the Ghandruk VDC of Kaski District, Nepal. This similarity suggests that the socio-economic effects of tourism on villages in Kaski, Nepal, have persisted over time and may have consistent patterns. Both Subedi and Bhandari (2019) and Giri (2010) in their study emphasize the importance of understanding and addressing these effects to support sustainable development in rural areas.

This refined and carefully detailed grasp of the influences of tourism development in Sharangkot, Pokhara, delivers essential knowledge for those in policy formulation and key stakeholders. It underscores the potential of tourism as a

transformative force for community development while highlighting the importance of strategic planning to avoid common pitfalls associated with tourism growth. The findings from Sharangkot could serve as a model for other regions seeking to harness tourism for community development, emphasizing the need for a balanced approach that prioritizes both economic growth and the preservation of quality of life for local residents.

8. Conclusion

The study about tourism in Sharangkot, Pokhara, shows a comprehensive impact. It's more than just tourists visiting; it's about lasting changes in the community. Jobs have been created in various sectors, enhancing the local economy. Infrastructure improvements have made living and working in the area better. People's incomes have increased, leading to a healthier economy and better living standards. Local businesses thrive with more customers.Educational and recreational facilities have improved, contributing to a more vibrant community life.This tourism growth has not just boosted the economy; it has enriched the cultural and social life of Sharangkot, making it a better place to live and visit. It's a clear example of how thoughtful tourism development can positively transform a community in multiple ways.

To improve the local community's standard of living in Sharangkot and maximize tourism benefits, a strategy focusing on sustainable policies for social, economic, and environmental aspects is essential. This approach should prioritize skill development and job opportunities for locals, alongside encouraging investment in tourism infrastructure to increase income and employment. Emphasizing local participation in tourism and supporting local businesses is crucial. Collaboration between government and private sectors is necessary, along with fostering interactions between tourists and locals to promote cultural development. Overall, the tourism strategy should balance the needs of both the community and tourists.

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CAMELS Analysis and Market Stress Testing of Top Nepalese Banks

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Abstract

This study presents a comprehensive study of the financial stability and resilience of commercial banks in Nepal using the CAMELS approach and market stress testing. The study analyzes the performance of sample banks and examines the relationship between CAMELS variables and bank performance. The results highlight five key factors influencing bank performance in Nepal: capital adequacy (CA), asset quality (AQ), management quality (MQ), liquidity (LQ), and sensitivity to market risks (SQ). These factors have a direct influence on performance i.e. earnings per share (EPS) of the banks. Multiple regression analysis confirms significant relationships between EPS and CA, AQ, MQ, LQ, and SQ, with no significant relationship with earnings quality (return of assets; ROA). Variance inflation factor analysis confirms no multicollinearity among the variables. The study conducts stress tests on market risks such as interest rate changes, exchange rate shocks, and equity shocks to assess and measure the risks associated with market uncertainties. The findings demonstrate that top-performing banks can maintain their Capital Adequacy Ratio (CAR) above 11% under different base rate changes, showcasing their ability to maintain the required level of soundness for operations. Considering all aspects of the CAMELS analysis and market stress testing, NABIL Bank emerges as the top-performing bank, followed by Nepal Investment Bank. This research holds significant importance in assessing the financial stability and resilience of commercial banks in Nepal. The findings provide valuable insights for decision-makers in the banking sector to identify areas for improvement, contributing to a robust financial system. It also contributes to financial performance evaluation literature for researchers, policymakers, and banking industry stakeholders.

Keywords: Financial stability, CAMELS, Stress test, Capital adequacy, Earnings, Liquidity

1. Introduction

The financial sector plays a crucial role in driving economic growth and industrialization by facilitating the allocation of funds, establishing efficient financial systems, ensuring investor confidence, and optimizing resource utilization (Raza, 2011). Among the key players in the financial sector, the banking sector holds particular significance as it channels capital to businesses, promoting general stability and growth in the financial and economic spheres. A strong foundation for a nation's economic structure is provided by a well-developed banking sector, which also absorbs large financial crises (Aburime, 2009). Extensive evidence of cointegrated economic variables and long-term relationships demonstrates that the expansion of the banking sector stimulates the expansion of the economy as a whole (Karki, 2012, 2018b).

One of the primary challenges for commercial banks and other financial institutions is to ensure their survival by effectively managing their assets and liabilities to maximize profits while minimizing the exposure of assets to risk. Achieving a balance between solvency, liquidity, and profitability is essential. The CAMELS framework has been used in previous research, such as the analysis by Roman and Sargu (2013), to assess the financial soundness of

commercial banks and highlight their strengths and weaknesses. These studies emphasize the need for improved decision-making to enhance the soundness of banks. Additionally, Misra and Aspal (2013) stress the importance of assessing the overall conditions, strengths, weaknesses, opportunities, and threats faced by banks, highlighting the necessity of financial and statistical tools such as the CAMELS model.

In the context of Nepal, the banking system has undergone significant transformations since the inception of Nepal Rastra Bank, the country's first central bank, in 1956. The Nepalese banking sector has evolved from a few government banks offering limited services to a diverse range of banks providing a wide array of services. This period has witnessed an expansion in the services offered by commercial banks, contributing to the overall development of the sector. The evaluation of bank performance is crucial for understanding how effectively banks utilize their assets, liabilities, shareholders' equity, income, and expenditures (Lin et al., 2005). Performance evaluation serves as a means of motivating bank employees boosting their professional commitment and supplying performance data to stakeholders (Sun, 2011).

The CAMELS model has gained widespread usage and recognition within the fields of finance and management for assessing the financial stability of commercial banks. Regulators have found the CAMELS model to be effective in assessing the performance of the financial sector. Nepal Rastra Bank has accepted the CAMELS framework as the rating model for banks operating in Nepal. In recent times, the Nepalese banking sector has experienced a significant trend of merger and acquisition activities owing to meeting capital requirements and regulatory obligations. Given this dynamic environment, the purpose of this research is to analyze the financial fortitude of commercial banks in Nepal utilizing the CAMELS approach. The study explores the relationships between various measures like operational efficiency, bank size, asset management, interest income, and return on assets, shedding light on their impact on the overall bank performance. Furthermore, the study aims to address pertinent research questions by incorporating a market stress test to identify banks capable of better absorbing market uncertainties.

2. Literature Review

The evaluation of financial institutions' safety and stability is a critical aspect of regulatory oversight. Dang (2011) describes the CAMELS rating framework as a regulatory measure used by bank supervisors to evaluate financial institutions' safety and stability. The CAMELS ratings (capital adequacy, asset quality, management efficiency, earnings quality, liquidity, & sensitivity to market risks), are useful in predicting bank risk changes according to Cole et al. (1995).

Capital adequacy ratios have a substantial effect on bank health and failure risk. Insufficient minimum capital requirements contribute to bank failures in certain regions, as found by Mpuge (2002). Vong and Chan (2009) highlight the link between capital adequacy and bank profitability, while Scott and Arias (2011) demonstrate the effect of the capital-to-asset ratio on US bank profitability. Asset quality plays a vital role in assessing the risks and financial stability of a bank. The Loans/Assets ratio is commonly used to evaluate asset quality, and high loans-to-assets ratios indicate a structure prone to loan losses. Non-performing loans are a threat to a bank's long-term profitability and viability, as emphasized by Berger and DeYoung (1997). Management quality, although difficult to quantify, is an important aspect that goes beyond financial performance. It includes the skills and expertise of the management team. Efficient management, as recognized by the International Monetary Fund (IMF), is vital to bank performance. Wall (1985) emphasizes the importance of asset, liability, funding, and non-interest cost management, while Zimmerman (1996) highlights the influence of management actions on the performance of the bank. EPS is a key indicator of the profitability of a company, and its computation helps assess profitability before investing, as stated by Kosmidou (2008). Earnings are essential for a financial institution's capital, resources, and competitiveness, thus impacting performance significantly. Balogh (2012) used macro-prudential measures to evaluate bank earnings and profitability while emphasizing the importance of net income and other factors.

Liquidity, representing the ability of a bank to fulfill financial requirements and maintain stability, is crucial for solvency. Bourke (1989) finds a positive correlation between liquid assets and bank profitability across countries, while Kosmidou (2008) demonstrates the impact of liquidity on EPS during financial integration in Greece. Market risk sensitivity, an aspect of the CAMELS model, is evaluated using the long-term assets to total assets ratio, as done by Dincer et al. (2011) in their assessment of the banking sector in Turkey. A higher ratio of long-term debt to assets suggests risk and the possible inability to meet debt obligations, forcing lenders to be cautious and investors to be wary. Investor sentiment was found to have the greatest impact on performance and return expectation decisions (Karki, 2017). Return on assets (ROA) is a key indicator of a bank's profitability. According to Khrawish (2011), the income production capacity of a bank is determined by the utilization of its total assets. Management's ability to generate income from the institution's resources is also measured by ROA.

Stress testing is globally recognized as a risk management tool, helping regulators and banks assess the capital needed to withstand potential shocks, as highlighted by Flannery et al. (2004). Nepal's banking system is expanding and integrating with the global financial system. Stress testing in bank management has grown since the global financial crisis. Authorities agree that increased monitoring and different initiatives are required for financial stability in the context of the increasing adoption of technology and innovation (Besancenot & Vranceanu, 2011). Flannery et al. (2004) found that financial volatility increases bank opacity. Since historical data may have limitations, risk management must include forward-looking methods. Stress testing helps regulators analyze banking system stability and susceptibility (Peura & Jokivuolle, 2004). Stress testing includes scenario analysis and simple sensitivity tests. These methods help regulators and banks assess the capital needed to withstand potential shocks that could affect their capital ratio. Stress tests measure market risk as well as interest rate, exchange rate, and equity price shocks. Stress tests measure market risk, interest rate shocks, exchange rate shocks, and equity price shocks. Huang and Xiong (2015) argue that stress tests help banks choose capital buffers.

Factors such as bank size, asset management, and operational efficiency influence profitability and performance, as found by Tarawneh (2006), Siddiqui and Shoaib (2011), and Sahota and Dhiman (2017). Dhungana (2013) emphasizes the importance of upholding international competitiveness norms and Karki (2018a) claims that earnings per share (EPS) is the best market performance indicator for banks for Nepalese banks, as such CAMEL ratings serve as an oversight mechanism for banks in Nepal. While there have been numerous studies conducted on bank performances, a consensus has yet to be reached regarding the findings. In light of the literature review, this study has proposed the following hypotheses:

H_1*: A significant relationship exists between the capital adequacy ratio and EPS of Nepalese Commercial banks.*

H_2*: A significant relationship exists between asset quality and EPS of Nepalese Commercial banks.*

H_3*: A significantly positive relationship exists between management quality and EPS of Nepalese Commercial banks.*

H_4*: A significantly positive relationship exists between the earnings quality and EPS of Nepalese Commercial banks.*

H_5*: A significantly negative relationship exists between liquidity and EPS of Nepalese Commercial banks*

H_6*: A significantly positive relationship exists between sensitivity to market risks and EPS of Nepalese Commercial banks.*

Conceptual Framework

Regarding the assessment of financial performance, Rahim et al. (2018) examined the CAMEL framework on financial performance. The researchers used secondary data from 63 ASEAN publicly listed banks to assess them based on the average results for five criteria (Capital adequacy, Asset Quality, Management Quality, Earnings, and liquidity). Based on the literature review, this study extends this model to develop the following theoretical framework.

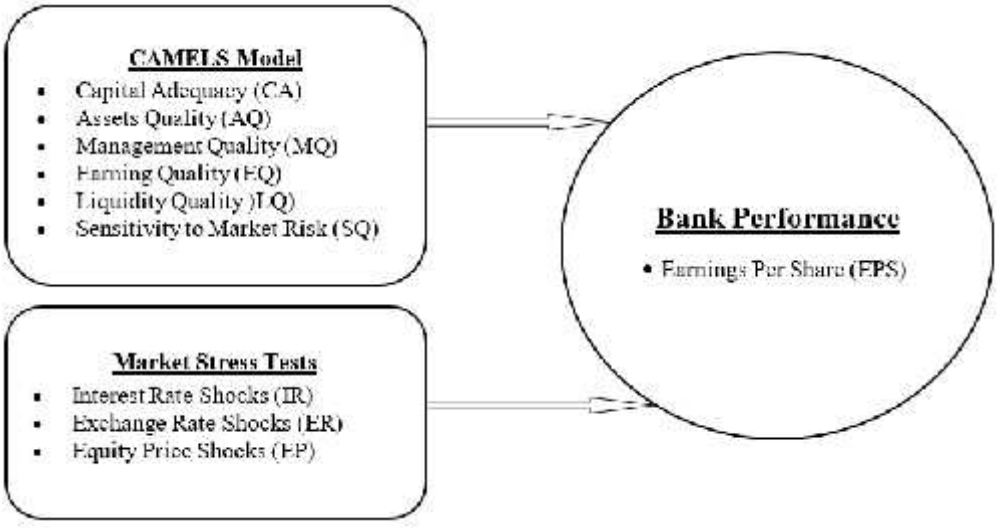

Figure 1: Theoretical Framework of the Study

3. Methodology

The research design employed in this study is a quantitative approach with a descriptive and analytical focus. The primary objective is to gather reliable quantitative data from published financial reports and secondary sources for analysis and conclusion. The target population for this research consists of all commercial banks currently operating in Nepal. Out of the 28 commercial banks till 2020, this study adopts purposive sampling and focuses on the financial performance of three top-performing banks: Nepal Investment Bank Ltd, NIC Asia Bank Ltd, and Nabil Bank Ltd. These three banks have demonstrated high-profit indicators and a strong presence in the market. The data for analysis covers five years from 2013/14 to 2017/18.

Various tools have been utilized for data collection, management, analysis, and reporting in this study. The descriptive analysis includes the calculation of Pearson's coefficient of correlation, which measures the linear correlation between variables. This analysis helps in understanding the relationships between different factors.

Model Specification

The regression analysis has been employed to analyze the impact of one or more independent factors on dependent variables. The regression model developed for this study is as follows:

$$EPS_{it} = \beta_0 + \beta_1 CA_{it} + \beta_2 AQ_{it} + \beta_3 MQ_{it} + \beta_4 EQ_{it} + \beta_5 LQ_{it} + \beta_6 SQ_{it} + \epsilon_{it} \quad \text{---------- ---------- (i)}$$

Where,

EPS_{it} = Dependent Variable; earnings per Share for bank 'i' during the period 't'

CA_{it} = Capital adequacy ratio for bank 'i' during the period 't'. It is estimated by dividing the net income of the company by the number of shares outstanding.

AQ_{it} = Assets Quality for bank 'i' during the period 't'. It is measured by the size of non-performing loans

MQ_{it} = Management Quality for bank 'i' during the period 't'. Total expenses to total income ratios (Cost of fund & staff expenses to total operating income ratios) are used as a measure of management efficiency for converting the bank deposits available to generate greater profits.

EQ_{it} = Earnings Quality for bank 'i' during the period 't'. Net profit is the major yardstick to measure such profits. Net income to total assets ratios are utilized to determine the earning quality.

LQ_{it} = Liquidity for bank 'i' during time-period 't'. Total loan-to-total deposit ratios (CD: credit/deposit ratios) are used to determine the liquidity position of banks.

SQ_{it} = Sensitivity to market risk for bank 'i' during time-period 't'. It is assessed by monitoring the management of credit concentrations. Market risk management addresses risks related to unfavorable changes in interest rates, exchange rates, and equity investments. In our model, total long-term assets and liabilities to Total assets ratios are used to determine SQ.

β_0 = Constant

β_i = Regression coefficients for respective independent variables

ϵ_{it} = Error component

Market Stress Tests

To ensure a full examination, the study conducted market stress tests that included interest rate shocks (IR), exchange rate shocks (ER), and equity price shocks (EP). Interest Rate Shocks (IR) are derived by determining what happens if deposit interest rates increase by 100, 150, or 200 basis points while loan interest rates decrease by the same amount. Exchange rate shocks (ER) are estimated by examining what happens if the currency exchange rate rises by 20%. Similarly, equity price shocks (EP) are calculated by analyzing what happens if equity prices fall by 50%.

Further, the T-test was employed to evaluate the statistical significance between the dependent and independent variables, thereby indicating the actual disparity in the population from which the groups were sampled. The 1 percent and 5 percent levels of significance are employed to assess the likelihood of accepting or rejecting the null hypothesis set for the research. The research conducted diagnostic tests, including multicollinearity analysis, to identify the suitability of the independent variables for incorporation into the model.

4. Results and Discussion

The analysis of data is carried out using the mentioned models, incorporating data collected from three specific commercial banks that were selected from a total population of 28 banks. The analysis is conducted within the

framework of the CAMELS approach and market stress test, aiming to examine the financial performance of top-performing banks in Nepal. The variable description provides a concise overview of the dependent and independent variables, including their mean values and standard deviations.

Table 1: Descriptive Statistics Related to the Factors of the CAMELS Approach (2013/14-2017/18)

	Minimum	Maximum	Mean	Std. Deviation
Capital Adequacy (CA)	11.24	14.92	12.64	1.0594
Assets Quality (AQ)	0.07	2.23	1.05	0.6782
Management Quality (MQ)	21.92	62.04	31.53	11.4475
Earning Quality (EQ)	0.78	2.67	1.89	0.5398
Liquidity Quality (LQ)	64.42	88.46	78.81	6.4480
Sensitivity to Market Risk (SQ)	1.00	1.81	1.56	0.2517
Earnings Per Share (EPS)	16.62	83.68	40.33	18.0955

Table 1 displays descriptive statistics for the CAMELS approach variables of sample banks in Nepal from 2013/14 to 2017/18. The average EPS is 40.33% with a moderate standard deviation of 18.0955%, suggesting moderate earnings volatility. Capital adequacy, asset quality, and management quality were satisfactory to moderate, with means of 12.64%, 1.05%, and 31.53% respectively. Earnings quality and liquidity were at moderate levels with means of 1.89% and 78.81% respectively. Sensitivity to market risk was 1.56%. The data clustered closely around the means (s.d.), indicating consistent performance for the selected banks.

Table 2: Bank-wise Descriptive Statistics Regarding CAMELS Factors (2013/14-2017/18)

Descriptive statistics Bank-wise		***NIBL***	***NABIL***	***NICA***
Capital Adequacy (CA)	Minimum	11.27	11.24	12.37
	Maximum	14.92	13	14.05
	Mean	12.754	11.992	13.188
	Std. Deviation	1.388	0.709	0.764
	Rank	2	3	1
Assets Quality (AQ)	Minimum	0.68	0.55	0.07
	Maximum	1.77	2.23	1.99
	Mean	1.178	1.308	0.667
	Std. Deviation	0.435	0.702	0.8
	Rank	2	3	1
Management Quality (MQ)	Minimum	22.8879	21.925	34.12
	Maximum	29.7337	28.388	62.04
	Mean	25.685	24.069	44.832
	Std. Deviation	2.77	2.564	10.533
	Rank	2	1	3
Earnings Quality (EQ)	Minimum	1.8792	1.8017	0.7809
	Maximum	2.2506	2.6677	1.6147
	Mean	2.057	2.333	1.266
	Std. Deviation	0.144	0.354	0.327
	Rank	2	1	3
Liquidity (LQ)	Minimum	72.4059	64.423	80.5091
	Maximum	88.4614	82.353	85.6249
	Mean	80.089	73.764	82.57
	Std. Deviation	6.754	6.658	2.008
	Rank	2	1	3
Sensitivity to Market Risk (SQ)	Minimum	1.4848	1.0004	1.538
	Maximum	1.7552	1.8055	1.7181
	Mean	1.591	1.477	1.61
	Std. Deviation	0.118	0.435	0.076
	Rank	2	1	3

Table 2 presents a comparative analysis of the CAMELS factors for three commercial banks in Nepal: NIBL, NABIL, and NICA, from 2013/14 to 2017/18. NIC Asia Bank demonstrates the highest capital adequacy ratio (CAR) of 12.37%, securing the top position, while NABIL Bank Ltd has the lowest CAR of 11.24%, ranking third. NIC Asia Bank also exhibits the lowest non-performing assets (NPA) ratio of 0.667%, earning it the first position in asset

quality, while NABIL Bank Ltd has the highest NPA ratio of 1.308%. NABIL Bank Ltd leads in management quality with the lowest total expenses to total income ratio of 24.069%, followed by NIBL (25.685%) and NICA (44.832%). NABIL Bank also demonstrates a higher return on assets (ROA) of 2.333%, securing the first rank in earnings quality, while NIBL (2.057%) ranks second and NICA (1.266%) ranks third. NABIL Bank exhibits the lowest loan-to-deposit ratio of 73.764%, indicating better liquidity management, while NIBL (80.089%) and NICA (82.57%) rank second and third respectively. Lastly, NABIL Bank has the lowest sensitivity to market risk with a ratio of 1.477%, followed by NIBL (1.591%) and NICA (1.61%).

Table 3: Descriptive Statistics for Market Stress Tests to Sample Banks FY 2017/18 ('million).

	NIBL			NABIL			NICA		
Fundamentals									
Capita fund:	22695			18710			15350.01		
CAR:	12.66%			13.00%			12.24%		
Total Risk-Weighted Exposures	179258			143877			125370.8		
Deposits (Excluding Fixed & Current):	50599			69212			62751		
Loan & Advances (Excluding Term Loan):	74320			92514			93912		
Net Open Position:	841			359			754		
Investment in Shares & Debentures:	219			517			571		
Interest Rate Shocks									
Deposit Int. Increase by (bps)	**100**	**150**	**200**	**100**	**150**	**200**	**100**	**150**	**200**
Impact (-) on Profit	(50599 x0.01)/12 =42	63	84	(69212 x 0.01)/12 =58	87	115	(62751 x 0.01)/12 =52	78	105
Revised Capital Fund	22695-42 =22653	22632	22611	18710-58 =18652	18623	18595	15350-52 =15298	15272	15245
Pre Shock CAR	12.66	12.66	12.66	13	13	13	12.44	12.44	12.44
Revised CAR	12.63	12.62	12.61	12.96	12.94	12.92	12.20	12.18	12.16
Loan Int. decrease by (bps)									
Impact (-) on Profit	(74320 x 0.01)/12 =62	93	124	(92514 x0.01)/12 =77	116	154	(93912x 0.01)/12 =78	117	157
Revised Capital Fund	22695-62 =22633	22602	22571	18710-77 =18633	18594	18556	15350-78 =15272	15233	15193
Pre Shock CAR	12.66	12.66	12.66	13	13	13	12.44	12.44	12.44
Revised CAR	12.62	12.60	12.59	12.95	12.92	12.89	12.18	12.15	12.12
Exchange Rate Shocks									
Impact in Profit	841x0.20 = 168			359x0.20 = 72			752x0.20 = 150		
Revised Capital Fund	22695-168 = 22527			18710-72 = 18638			15350-150 = 15200		
Pre Shock CAR	12.66			13			12.44		
Revised CAR	12.57			12.95			12.12		
Equity Price Shocks									
Impact (-) on Profit	219x0.20 = 43			517x0.20 = 103			571x0.20 = 114		
Revised Capital Fund	22695-3 = 22652			18710-103 = 18607			15350-114 = 15238		
Pre Shock CAR	12.66			13			12.44		
Revised CAR	12.64			12.93			12.15		
Overall: Post-Impact CAR Stats.									
Minimum	12.57			12.89			12.12		
Maximum	12.64			12.96			12.20		

	NIBL	NABIL	NICA
Mean	12.61	12.933	12.158
Std. Deviation	0.023	0.023	0.029
Rank	**2**	**1**	**3**

Table 3 presents how different factors affect the Capital Adequacy Ratio (CAR) of sample Banks. For NIBL, an increase of 100 base points in deposit interest results in a marginal CAR decrease from 12.66% to 12.63%. Similarly, a 150 base point increase leads to a CAR of 12.62%, and at 200 base points, the CAR reaches 12.61%. Despite these changes, NIBL maintains its CAR above the 11% minimum threshold. A similar pattern is observed for a 100 base point increase in loan interest, with the CAR changing to 12.62% from 12.66%. At 150 and 200 base points, the CAR reaches 12.60% and 12.59% respectively, still above the minimum requirement. A 20% currency exchange rate appreciation causes a slight CAR decline from 12.66% to 12.57%, while a 50% fall in equity price leads to a minor decrease from 12.66% to 12.64%. CAR remains above the required level in both cases. Moving on to NABIL Bank and NIC Asia Bank, similar patterns could be observed from Table 3, which shows a marginal decrease in CAR with the 100, 150, and 200 basis points increase and decrease for the Deposit and loan portfolios of the respective banks.

Based on the stress test results in Table 3, all three banks, NIBL, NABIL Bank, and NIC Asia Bank, effectively maintain their Capital Adequacy Ratios (CAR) above the minimum requirement of 11%. NABIL Bank demonstrates a greater ability to sustain equilibrium in its CAR compared to the other two banks when facing fluctuations in external factors. These findings validate the performance of the respective banks, with NABIL emerging as the top performer, followed by NIBL and NIC Asia Bank.

Table 4: Correlation of Independent Variables with Bank Performance (EPS)

	CA	AQ	MQ	EQ	LQ	SQ	EPS
CA	1						
AQ	-0.427	1					
	0.112						
MQ	0.166	-0.539*	1				
	0.554	0.038					
EQ	-0.282	0.480	-0.895**	1			
	0.309	0.070	0.000				
LQ	0.613*	-0.473	0.337	-0.257	1		
	0.015	0.075	0.219	0.355			
SQ	-0.120	0.351	0.223	-0.270	-0.114	1	
	0.670	0.199	0.425	0.330	0.687		
EPS	-0.540*	0.624*	-0.633*	0.766**	-0.560*	-0.024	1
	0.038	0.013	0.011	0.001	0.030	0.932	

Note: '' and '**' denote that correlations are statistically significant at the 0.05 and 0.01 levels respectively.*

Table 4 shows the outcomes of a correlation analysis, revealing valuable insights into the relationships between variables. Notably, earnings per share (EPS) shows a negative correlation with the capital adequacy ratio (CAR) (-0.540), indicating that as EPS increases, CAR tends to decrease. There is a positive correlation between EPS and asset quality (0.624), reflecting better loan portfolio management. EPS also shows a negative correlation with management quality (-0.633), indicating more efficient expense-to-income ratios. Furthermore, a strong positive correlation exists between EPS and earnings quality (0.766), while EPS shows a negative correlation with liquidity (-0.560). However, no significant association is found between EPS and sensitivity to market risks (-0.024).

Regression models have been employed to evaluate the results' statistical validity and dependability. The purpose of the regression study was to determine whether the CAMELS variables had any impact on the earnings per share.

Table 5: Multivariate Regression Analysis with VIF on EPS

Particulars	Beta	Sig.	VIF
(Constant)	15.222**	0.008	
Capital Adequacy (CA)	-0.110**	0.009	2.194
Asset Quality (AQ)	6.554**	0.033	2.508
Management Quality (MQ)	0.934**	0.019	7.425

Earning Quality (EQ)	36.383	0.205	6.705
Liquidity Quality (LQ)	-1.009**	0.014	2.088
Sensitivity to Market Risks (SQ)	0.681**	0.009	1.633

Note: '' and '**' represent significance at the 0.05 and 0.01 level respectively.*

Considering the study's findings, a regression model was developed to further examine the relationships between the earnings per share and the influencing variables of the CAMELS approach. The regression equation obtained is as follows:

$EPS_{it} = 15.222 - 0.110\ CA_{it} + 6.554\ AQ_{it} + 0.934\ MQ_{it} + 36.383\ EQ - 1.009\ LQ_{it} + 0.681 SQ_{it}$ --- (ii)

The outcome demonstrates that there is no significant association between earnings quality and EPS, but there is a strong relationship between EPS and capital adequacy, asset quality, management quality, liquidity, and sensitivity-to-market risk. The robust positive association shows that asset quality, management quality, and sensitivity to market risks will affect the dependent variable EPS in such a way that a rise in the value of these factors would raise the value of earnings per share, and vice versa. The unfavorable impacts are indicated by the negative significant association between capital adequacy and liquidity and EPS. This result contradicts the findings of Karki and Aryal (2019), who demonstrated that the capital adequacy ratio positively affects bank performance. Except for the hypothesis relating to earnings quality and EPS, all study hypotheses were accepted. Before data analysis, the study checks for multi-collinearity among the selected variables. To demonstrate the reliability of the regression results, the variance inflation is carried out. Given that the variance inflation factor (VIF) values for the variables are all below 10, it implies that there isn't any multi-collinearity.

According to model (ii), the beta indicates that for every 1% increase in each of the variables, such as AQ, MQ, EQ, SQ, the EPS will increase by 6.554%, 0.934%, 36.383%, and 0.681%, respectively. In contrast, for each 1% increase in the variables, such as CA and LQ, the EPS will decrease by 0.110% and 1.009%.

Table 6: Model Summary for Estimating the Impact of CAMELS Variables on Bank Performance (EPS)

R	R-Square	Adjusted R-Square	Std. Error of the Estimate
0.903	0.815	-0.677	10.290

As shown in Table 4, the regression model yielded compelling results, demonstrating a robust and significant association between the variables used in the study. The R-squared value of 0.815, representing the coefficient of determination, implies that the independent variables in the model explained 81.5% of banking performance. The model is robust and predictive with a high R-squared value. It suggests that CA (capital adequacy), AQ (asset quality), MA (management quality), EQ (earnings quality), LQ (liquidity), and SQ (sensitivity to market risk) explain a large percentage of the earnings of the banks. The model's adjusted R-Square of 0.677 also indicates its validity. Adjusted R-squares account for the model's predictors and provide a more conservative estimate of explanatory power. The model's conclusions are trustworthy since the adjusted R-squared value reaffirms the strong link between the dependent and the independent variables. Moreover, the low Standard Error of the Estimate (10.29) suggests that the predicted values from the regression model are quite close to the actual values of the dependent variable. This indicates a good fit for the model and strengthens the statistical significance and robustness of the findings. Based on these findings and statistical analyses, the study concludes the hypotheses testing as follows:

Table 7: Summary of Hypothesis Testing

Hypothesis	Contents of Hypothesis	Findings
H_1:	'A significant relationship exists between the capital adequacy ratio and EPS of Nepalese Commercial banks'.	Accepted
H_2:	'A significant relationship exists between asset quality and EPS of Nepalese Commercial banks'.	Accepted
H_3:	'A significantly positive relationship exists between management quality and EPS of Nepalese Commercial banks'.	Accepted
H_4:	'A significantly positive relationship exists between the earnings quality and EPS of Nepalese Commercial banks'.	Rejected
H_5:	'A significantly negative relationship exists between liquidity and EPS of Nepalese Commercial banks'	Accepted
H_6:	'A significantly positive relationship exists between sensitivity to market risks and EPS of Nepalese Commercial banks'.	Accepted

5. Conclusion

This research aimed to explore the financial stability of top-performing banks in Nepal using the CAMELS approach and a market stress test. The findings provide valuable insights into the factors that contribute to bank performance

and their ability to withstand market uncertainties. The analysis revealed that capital adequacy (CA), asset quality (AQ), management quality (MQ), liquidity quality (LQ), and sensitivity-to-market risks (SQ) are significant factors influencing bank performance in Nepal. The findings of this research are consistent with prior studies in several aspects. Similar to previous studies, it was proved that capital adequacy ratios (CAR) exert a substantial influence on the health of banks and the likelihood of their failure (Mpuge, 2002). The importance of asset quality, particularly the loans/assets ratio, in assessing a bank's risk and financial stability was also supported (Berger & DeYoung, 1997). Furthermore, the study confirmed the positive association between management quality and profitability, as well as the crucial role of efficient management in bank performance (Wall, 1985; Zimmerman, 1996). The analysis also highlighted the significance of earnings per share (EPS) as a key indicator of bank profitability (Kosmidou, 2008). The study found a positive correlation between EPS and asset quality and earnings quality, aligning with previous findings but revealed a negative correlation between EPS and capital adequacy, management quality, liquidity quality, and sensitivity-to-market risk. This suggests that a balance must be struck between profitability and risk management to achieve sustainable performance. Multiple regression analysis confirms significant relationships between EPS and CAMELS factors, with no significant relationship with earnings quality. Variance inflation factor analysis shows no multicollinearity in the variables. The market stress test conducted in this study demonstrated that the selected commercial banks were capable of maintaining the required level of soundness to withstand market risks. Although some variations were observed, all banks maintained their capital adequacy ratio (CAR) above 11%, indicating their ability to navigate different scenarios. This resilience reflects the importance of periodic stress testing in assessing and managing risks within the banking sector (Flannery et al., 2004). The market stress test suggests that NABIL Bank is better at maintaining stability than others. All banks have CARs above 11%, showing market resilience. NABIL Bank tops the CAMELS study and market stress testing. Taking into account all components of the CAMELS study and market stress testing, NABIL Bank comes out on top, followed by Nepal Investment Bank.

The study suggests that policymakers and regulators should focus on enhancing risk management frameworks, improving capital adequacy, and promoting efficient management practices in the banking sector. By addressing these factors, banks can enhance their profitability, stability, and overall performance. The findings also emphasize the need for ongoing monitoring and stress testing to ensure the resilience of the banking system in the face of market uncertainties. It is critical to recognize that this research has certain limitations. The use of ratio-based analysis may not capture all aspects of bank performance, and further research incorporating qualitative factors is warranted. Additionally, the study focused on a specific set of top-performing Nepalese banks, limiting the generalizability of the findings. Future research could explore a broader sample of banks and consider additional variables to gain a more comprehensive understanding of bank performance in the country. Especially, this research contributes to the existing literature on financial performance evaluation in the banking sector and provides valuable insights for decision-makers, policymakers, and stakeholders in Nepal.

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Impact of Climate Change on Tourism Sector in Nepal

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Abstract

Climatic variations might have a negative impact on the activities and services provided by the tourism industry. However, this idea has not yet been investigated in the context of Nepal. This study examines the monetary impact that climate change has had and will continue to have on Nepal's tourism industry and makes projections on such impacts. The economic impact assessment of climate change on Nepal's tourism sector is the first study of its sort to be conducted anywhere in the nation. This research is predicated on a conceptual model that was established on the theoretical foundation, a mathematical model that generated the tourism demand function, and an economic effect analysis that was performed on the tourism sector using secondary data. The findings of the study's analysis have been broken down into three distinct sections: a trend analysis of tourism and its contribution; regression results based on the models that have been established; and a projection of GDP for the years 2020-2030 and 2100. It is abundantly clear from the trend analysis, the analysis of loss and damage from climate-induced hazards, the econometric modeling for tourism function analysis and correlation on tourism GDP, and other research that the tourism sector is extremely vulnerable to the effects of climate change and that it will have significant repercussions. The projection of tourism's contribution to the national GDP shows that this sector has the potential to make a larger contribution, provided that the conditions that could prevent this from happening do not change. On the other hand, the rising trend of climatic factors and climate-induced dangers could potentially lead to a greater overall loss and damage in the tourism industry. As a result, it will have an immediate bearing on the contribution made to the national economy.

Keywords: Tourism GDP; Climate Change Induced Disaster; Tourism Loss and Damages; Tourism Demand Function; Economic Impact Analysis, Nepal

1. Introduction

The tourism impact of climate change is widely discussed (Berrittella et al., 2006; Scott et al., 2012, 2019; Kompas et al., 2018; Dube et al., 2019). The Intergovernmental Panel on Climate Change [IPCC] (2014) has recognized recreation and tourism as one of the most vulnerable economic sectors to climate change. It is estimated that the economic impact of climate change varies in its coverage of subsets of economic sectors and is dependent on a vast number of assumptions, many of which are debatable. Furthermore, many estimates fail to account for catastrophic shifts, tipping points, and other issues. Taking into account these constraints, it is anticipated that global economic losses will range between 0.2% and 2.0% of total income for every 2°C increase in surface temperature (IPCC, 2014). The tourism sector contributes significantly to such economic losses. Tourism destinations, notably ski resorts, beach resorts, and nature resorts, will be impacted by climate change, and tourists may spend their vacations at higher elevations and latitudes (IPCC, 2014). The tourism business relies on natural resources, which are particularly vulnerable to climate change extremes and disasters caused by climate change. As its services are accompanied by travel, transportation, and usage of numerous goods and services, the tourism industry is also an emitter of greenhouse gases (GHGs) and contributes to global warming. By 2035, tourism's contribution to the global total of

carbon dioxide emissions is predicted to climb substantially (UNEP-UNWTO-WMO, 2008). Moreover, tourism is especially susceptible to climate change since its services are significantly impacted by climatic extremes and events, such as changes in temperature, precipitation, weather, and climate (UNWTO & UNEP, 2008). Similar implications will be observed for tourism products dependent on forests, mountains, coastal areas, glaciers, bodies of water, biodiversity, and wildlife (Devkota, 2017; Yuxi & Linsheng, 2020). Similarly, climatic conditions can be viewed as a valuable asset for places and a significant tourist draw (Deng et al., 2002; Alexandrakis et al., 2019). The weather is a motivation; bad weather might discourage travel. Long-term, a destination's reputation for terrible weather may discourage visitors (Thapa, 2012).

The tourist industry is one of Nepal's main businesses, contributing significantly to the country's gross domestic product (GDP) and employment (Devkota et al., 2020). It is also one of the most important sources of foreign exchange and revenue. The Nepalese government has given increasing the tourism sector's contribution to the nation's economy the utmost importance in order to achieve its stated objectives of contributing to greater GDP growth and employment, reducing poverty, and increasing sustainable access to foreign exchange for national development (MoCTCA, 2015). Nepal serves as one of the world's richest natural and cultural heritage sites. The extensive natural and cultural heritage draws international travelers. Nepal has twelve National Parks, one hunting reserve, and five conservation areas at the present time. The United Nations Educational, Scientific, and Cultural Organisation (UNESCO) has designated 10 sites as World Heritage, eight of which are of cultural significance and two as natural heritage sites. The country is a popular destination for mountaineers as it is home to eight of the world's fourteen peaks above 8,000 meters. In addition, trekking routes, particularly in the Annapurna, Everest, and Langtang regions, are among the world's most popular tourist attractions. Over fifty-one percent (51,4%) of all tourists who visit the country visit national parks, making conservation areas particularly appealing locations. The bulk of international visitors to Nepal are there for vacation and enjoyment (65%), although a substantial number also travel for pilgrimage, adventure, business, and other formal reasons (MoCTCA, 2016). March to April and October to November are called high season since the bulk of tourists visit during these months, but June and January are considered low season because fewer tourists arrive during these months.

As the home of eight of the world's highest mountains exceeding 8,000 meters, the country is a major destination for outdoor and adventurous tourism. Nepal has recognized 1,310 peaks above 6,000 meters, of which around a fourth are open to climbing activity. Mount Everest, Annapurna, and Lantang are prominent and popular climbing, expedition, and trekking destinations. In 1971, approximately 1,400 people visited the Everest region, compared to over 37,000 in 2014. (Rai, 2017). Similarly, the nation is home to the world's most exciting rivers for river sports like rafting. The rivers Karnali, Sunkoshi, and Trisuli are the most popular for rafting. Nepal is also a location for tourism activities not specified above, which fall under the category of other tourism. A substantial number of people travel to Nepal for various formal and informal meetings, incentives, conferences, and exhibitions (MICE). In 2015, over 105,000 guests visited Nepal for MICE, compared to only 36,000 in 2014. (MoCTCA, 2017). Seasonality and environmental conditions have a major impact on the tourism business. Even a minor shift in these conditions might have a negative impact on tourism-related activities and services. The seasonality and environmental conditions, on the other hand, depend on climate variables that have direct and indirect effects on the economic activity and means of subsistence of tourism-dependent people. The rapid changes in climate variables and extreme occurrences can be detrimental to the health and safety of tourists and those directly engaged in tourism-related activities. The sustainability of tourism activities is significantly impacted by an increase in the frequency and severity of climate-induced disasters.

Tourism was one of nine theme sectors to be addressed in the formation of Nepal's National Adaptation Plan (NAP), which was supported by Practical Action through the Action on Climate Today (ACT) program. The tourist stocktaking report in the NAP process has underlined the need for a comprehensive analysis of climate change's effects on tourism. In addition to fostering private sector engagement, the research highlights that policy instruments relating to the tourism sector, especially the Tourism Policy, must incorporate climate change concerns for sustainable and resilient tourism development. This study examines the economic effects of climate change on Nepal's tourism industry, as well as their projections. The economic impact assessment of climate change on Nepal's tourism sector is the country's first study of its sort. Consequently, this study and its conclusions would have numerous benefits for the development of a climate-resilient tourism industry in Nepal. This report provides diverse recommendations to all key stakeholders, such as collaborating to close data gaps and launching new partnerships to develop a resilient tourist industry in Nepal.

2. Methodology

This section begins by describing the theoretically based conceptual model. It then uses secondary data to model the impact analysis in two dimensions, namely the tourism demand function and the economic impact analysis on the tourism sector.

Conceptual Framework

The tourism industry largely depends on seasonality and environmental conditions (Amelung et al., 2007; Martín et al., 2014). Even a small change in these conditions can have a detrimental effect on tourism activities and services (Butler, 2001). The seasonality and environmental conditions on the other hand depend on the climatic variables that directly and indirectly affect the economic activities and livelihood of tourism-dependent communities (Kajan, 2014). The abrupt changes in climatic variables and extreme events can be damaging to the health and safety of tourists and people directly involved in tourism activities (Scott et al., 2012). An increase in the frequency and intensity of climate-induced disasters negatively impacts the sustainability of tourism activities (Field et al., 2012; Dube et al., 2020). The conceptual framework (Figure 1) developed for this study considers that changes in climatic variables trigger changes in the frequency and impact level of climate-induced hazards. The increase in such hazards and resulting disasters has a direct and indirect impact on different tourism subsectors and services. It results in the loss of revenue from tourism and an increase in cost for adaptation with direct implications for the country's GDP.

The framework considers that tourism resources are exposed to climate extremes and that tourism activities are highly sensitive to climate variability and change. Considering that each tourism sub-sectors provide different economic opportunities and contributions, and has a different degree of exposure to climate change, this study has categorized these sub-sectors as; a) outdoor and adventure, b) culture and pilgrimage, c) nature and wildlife, and d) leisure and recreation[1]. The study recognizes that there are other purposes to visit Nepal such as for meetings, seminars, and conferences which are categorized as other tourism when required in the analysis. The key economic variables of different sub-sectors that are affected or likely to be affected are broadly explained by different activities such as employment generation, supply and sales of goods and services, establishment of tourism enterprises, investment on infrastructure and spending, and tax and levy generation as socio-economic variables to conceptualize the tourism activities into a single spectrum.

As presented in Figure 1, different climate extremes including temperature and precipitation trigger the frequency of climate-induced hazards such as landslides, flooding, snow storms, and avalanches. Tourism sub-sectors and relevant tourism activities are exposed to such climatic events. For example, climatic events escalate the degree of exposure to different tourism activities and services such as mountaineering, trekking, paragliding, and rafting under 'Outdoor and adventurous' tourism sub-sector. Increasing exposure further triggers impact level on different socio-economic channels such as opportunities of employment generation, tourism enterprises and investment. These channels are directly links to livelihood of engaged human resources including hotel staffs, tour guides, and revenue generation. Impacts on all these activities, good, and services are subject to economic incentives or transactions which cumulatively contributes on GDP. Similar linkage remains for other tourism subsectors. The study has employed the same 'impact theory' while analysing climate change impacts on tourism, tourism GDP, and on national GDP.

[1] The Tourism Vision 2020 of the government of Nepal has clustered the tourism products under five major categories as: a) Culture, heritage and people, b) Cities and leisure, c) Outdoors and adventure,d) Religion and pilgrimage, and e) Nature and wildlife (MoCTCA, 2009). However, for the purpose of this study culture and religious tourism were considered a single category as the data availability was limited and overlap between the two categories is high.

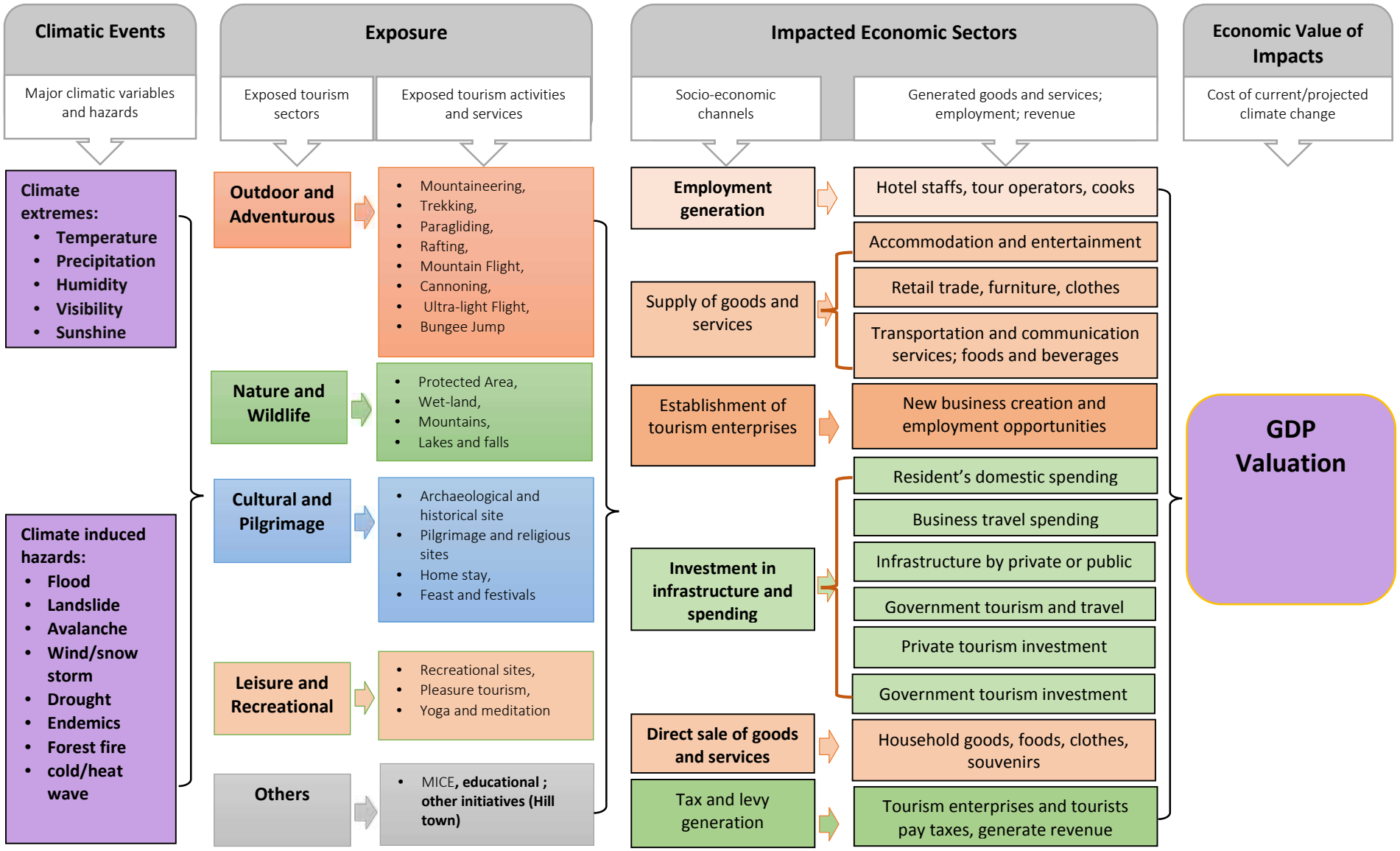

Figure 1: Conceptual Framework for Climate Change Impact in Tourism in Nepal

Data Collection

The study has adopted quantitative information collected through secondary data. Socio-economic data were collected from Ministry of Finance (MoF), National Planning Commission (NPC), Nepal Rastra Bank (NRB) and Central Bureau of Statistics (CBS). Tourism related statistics and data were gathered from Ministry of Culture, Tourism and Civil Aviation (MoCTCA), Nepal Tourism Board (NTB), Tourism Department, and Himalayan Rescue Association (HRA). The data on observed climate change trend and projections were collected from Department of Hydrology and Meteorology (DHM). The data on disaster events relevant to tourism sector and their loss and damage was extracted from the DesInventar dataset in the disaster risk reduction (DRR) Portal of the government of Nepal. The information from different sources was cross-checked to maintain uniformity. The study has also collected information of each activities of tourism sector to figure-out the main physical losses and damages on tourism sectors caused by climate change over the period.

Impact Assessment Methods

The study analysed the current costs of climate variability and extremes to tourism in Nepal based on the current and historical evidence, trend analysis of climatic variables, and economic impact of climate change on tourism sectors. It also has projected the economic costs of climate change in tourism sector for longer term. The impact analysis consist two-folds of data collection and processing methods: a) loss and damage (L & D) estimation from selected disaster events, and b) econometric model.

Loss and Damage (L & D) Estimation: The loss and damage (L&D) in tourism sector incurred by different disaster events is calculated after obtaining narratives and stories from local level. This study has considered four major disasters while calculating L&D at the nation level over last 30 years based on three criteria: a) periodic data availability of disaster events at least for last 30 years, b) direct linkages to tourism activities and services, and c) most frequent disasters occurred in major tourism destinations in the country. Four major disaster events: flood, landslide, avalanche, and snowstorm were shortlisted as the selected disaster events to calculate L&D over past 30 years. The data on frequency of selected disaster events and L&D was extracted from DisInventar data set (http://drrportal.gov.np/home). Both direct and indirect L&D was converted into the economic term while calculating the total annual L & D. The cost of direct loss and damage was used as mentioned in the DisInventar data set. However, the cost of indirect loss such as collapse and damage of private properties, and loss of human lives was calculated and converted into the monetary term based on the current government practice of compensation[2] even though human lives are invaluable. The total L & D is then converted into the portion of GDP.

Econometric Model: The econometric models are used mainly to analyse tourism demand function and impacts on tourism economy and hence on GDP while changing climatic variables. Initially, a baseline model was developed using annual data for the study period (1985-2015) in which econometrical techniques were employed to estimate the correlation between the climatic variables and the tourism activities. Based on this relationship, the tourism demand function was established. Finally, using the regressions value between climate change and tourism activities identified from the historic review, the impact on tourism activities were estimated at different climate change and disaster scenarios. A trend of tourism activities was projected based on the historic data of last thirty years. It was compared with projected climate change for the mid-term (by 2030) and long term (2050). This gave the changes between the growth projection at normal scenario and projected climate scenario. The details specification of econometric model is described in next sub-section. This study has estimated the costs of impact of climate change on tourism sectors based on current plans and tourism outlook. It looked through possible impact of climate change using tourism activities related information and climate variables as stated in the conceptual framework as specified in the following models. It has captured under two model, Model 1 – Tourism Demand Function, and Model 2 – Economic Impact Analysis on Tourism Sector.

Model 1 – Tourism Demand Function: A typical tourism demand function, with tourist arrivals as the dependent variable, was used in the analysis. Several econometrical techniques previously employed to estimate the demand for tourism and to forecast such demand and cost (Lim &McAleer, 1999) were used. Similar toAshworth and Johnson (1990), this model is used to estimate the demand function for the calculation of total cost and GDP contribution in the economy from these sectors in a stipulated time frame. It is necessary to understand the underpinning determinants to makes tourism industries more successful considering tourism sector as an important sector for

[2] Based on the current compensation practice of Nepal government, the cost of death and missing of human life is considered equivalent to one million NPR; that for house collapse is equivalent to three hundred thousand NPR, and one hundred thousand NPR for structural damage.

economic benefits. However, the scale and underlying determinants of tourism in the country is not analysed through models of demand. This study has utilised the single equation model of demand as itis the most common methodology for the implication of the foreign tourist demand. Such model could offer the statistically more accurate results and provides comprehensive overview of demand model for tourism.

The linear form of single equation demand function utilised in this study is explained as:

$$TA_{it} = f(Y_{i,t}, ER_{i,t}, AC_{i,t}, CPI_{i,t}, P_t, T_t)$$
$$= A_{it}(Y^{\beta 1}{}_{i,t}, ER^{\beta 2}{}_{i,t}, AC^{\beta 3}{}_{i,t}, CPI^{\beta 4}{}_{i,t}, P^{\beta 5}{}_{it}, T^{\beta 6}{}_{it}) \quad \text{---------- (1)}$$

Where,

$TA_{i,t}$	=	Total number of tourists arrival from 'origin' country *i* in time period *t*
Y	=	Gross domestic product (GDP) for 'origin' country *i* in time period *t*
ER	=	Exchange rate for 'origin' country *i* in time period *t*
AC	=	Average cost for visit on 'destination' in period *t* (per day average income per visitors)
CPI	=	Consumer price index in Nepal
T	=	The *temperature*
P	=	The *precipitation*
$A_{i,t}$	=	Unobserved variable (regression constant)

Model 2 – Economic Impact Analysis on Tourism Sector: As described in conceptual framework, tourism economy is the function of all tourism service sectors and climatic variables which ultimately has implication on GDP. Hence, economic impact assessment (EIA) on Tourism =f (Outdoor and adventurous tourism; Cultural and pilgrimage tourism; Nature and wildlife tourism; Recreational and leisure tourism; Other tourism sectors; and Climatic variables). The study establishes linear functional relationship of tourism activities and services in the country based on national tourism sectors data for 1985 to 2015. This study first quantified the contribution of tourism sector on national GPD in current price on local currency using the entire time series data specifications to take into account the relationship of tourism GDP and climatic variables in the time dimension. This study utilised the model close to that Ashworth and Johnson (1990) to establish such relations. However, instead of using emissions as a proxy for climate change in Ashworth and Johnson (1990) model, we directly use data on temperature and precipitation. This makes it possible to investigate more precisely the impact of these climate variables on each sector of GDP for each year.

Functionally,

$$GDP_{i,t} = f(OA_{i,t}, CP_{i,t}, NW_{i,t}, LR_{i,t}, OTS_{i,t}, T_t, P_t)$$

Where,

$GDP_{i,t}$	=	total *GDP* generated by tourism sectors *i*in time period *t*
$OA_{i,t}$	=	economy generated from *outdoor and adventure* tourism in time period *t*
$CP_{i,t}$	=	economy generated from *cultural and pilgrimage* tourismin time period *t*
$NW_{i,t}$	=	economy generated from *nature and wildlife* tourismin time period *t*
$LR_{i,t}$	=	economy generated from *leisure and recreation* tourism in time period *t*
$OTS_{i,t}$	=	economy generated from *other tourism sector* in time period *t*
T_t	=	The *temperature*
P_t	=	The *precipitation*

As stated in model-2, the temperature and precipitation are the main indicators of climate change which have direct and indirect impact on physical losses and damages and regular economic activities of tourism sectors and hence are considered as the independent variables. Whereas, the total economic valuation of the activities and services under different tourism sector categories, which contribute in GDP formulation, is considered as one of the dependent variables. The impact of climate change on tourism sub-sectors was quantified and then, measured in terms of monetary units3 and its impact on GDP contribution was estimated. Furthermore, the events and activities were measured in terms of monetary value as stated in above equation for this assessment.

[3] Tourism activities are quantified and measured in terms of the monetary value based on the price of products and services each year.

Table 1: Description of explanatory variables used in the model

Explanatory Variables	Description	Expected Sign	Description
Y	Gross Domestic Product (GDP) for 'origin' country i in period t	+	If GDP of origin country increases, it allows people to have more money and flourishes tourism
$TA_{i,t}$	Total number of tourists arrival from 'origin' country *i* in time period *t*	+	Positive strategies and focused policy help to increased tourism arrival in the nation
$GDP_{i,t}$	total *GDP* generated by tourism sectors *i*in time period *t*	+	The GDP from tourism enhances in time being as tourism activities within the nation flourish
ER	Exchange rate for 'origin' country i in period t	±	If Nepalese currency is less powerful among their currencies, it allows them to have more money which enhance tourism
AC	Average Cost for visit on 'destination' in period t	-	Cost calculated based on per day average income generated by per visitor; Higher the average cost, lower the tourism demand and vice versa
CPI	The consumer price index in Nepal	-	Higher the value of CPI, lower the tourism demand
$OA_{i,t}$	economy generated from *outdoor and adventure* tourism in time period *t*	+	Outdoor activities play positive role on tourism growth in the nation and helps to generate economic activities
$CP_{i,t}$	economy generated from *cultural and pilgrimage* tourismin time period *t*	+	Religious activities play positive role on tourism growth in the nation and helps to generate economic activities
$NW_{i,t}$	economy generated from *nature and wildlife* tourismin time period *t*	+	Adventurous activities play positive role on tourism growth in the nation and helps to generate economic activities
$LR_{i,t}$	economy generated from *leisure and recreation* tourism in time period *t*	+	Leisure and recreational activities in nation play positive role on tourism arrival and generating economic activities
$OTS_{i,t}$	economy generated from *other tourism sector* in time period *t*	+	Other activities play positive role on tourism growth in the nation and helps to generate economic activities
T	The temperature	±	Temperature may vary in major destinations and has implication of tourists flow
P	The precipitation	±	Precipitation may vary in major destinations and has implication of tourists flow

3. Results

The result has divided into three categories. First deals with trend analysis of tourism and its contribution on Nepalese economy. Second section deals with the regression results where result from the both model is presented. The model we adopted for the analysis was Model- 1: Climate change impact on foreign tourist arrival, and Model - 2: Climate change impact on tourism GDP. Sector-wise Climate change impact on tourism GDP is also calculated as per the model. In third section, Projected Economic Costs of Loss and Damages on Tourism Sector is analyzed. Such projections are made for the year 2020-2030 and 2100.

Tourism's Contribution to National Economy

The tourist arrival trend over the period 1985-2016 shows that the foreign tourist arrival in Nepal is increasing rapidly for last few decades. There was a small downfall in the year 2000 to 2006 and 2015 which potentially was due to internal political instability and due to massive earthquake and unofficial blockade along Nepal-India border points respectively. Over the period more than one third (36%) tourists visiting Nepal are visiting for the purpose of

recreation and leisure followed by nature and wildlife tourism (29%). About 12% of total visitor have visited the country for outdoor and adventurous tourism purposes, and 5% visit the destination culture and pilgrimage related tourism. Interestingly, the country is hosting significant number of tourists for other tourism purposes (18%) including for business, meetings, conferences, and educational activities. Majority (roughly 85%) of the tourists are entering by using the flights. The trend of tourists flow over the period shows that about 31% tourist travel in the autumn and about 25% do so in spring seasons. However, significant numbers of tourists are visiting the country even summer and winter seasons despite considering it as relatively-off seasons. It reveals an opportunity to attract tourists round the year offering varieties and seasonal tourism services. On an average, an individual tourists was staying about 11 days per visit in 1985 while it reached about 13 days in 2016. It indicates that there is an opportunity to put more efforts on elongating the total days of stay of tourists visiting Nepal which as equally important as putting efforts to increase the number of tourists.

The relationship between tourism and economic growth has long been studied and recognized (Sahli & Carey, 2013). As it has multi-dimensional effect on the economy, tourism has enormous potential to be an engine of economic growth in the countries and could provide impetus to other sectors through its backward and forward linkages.

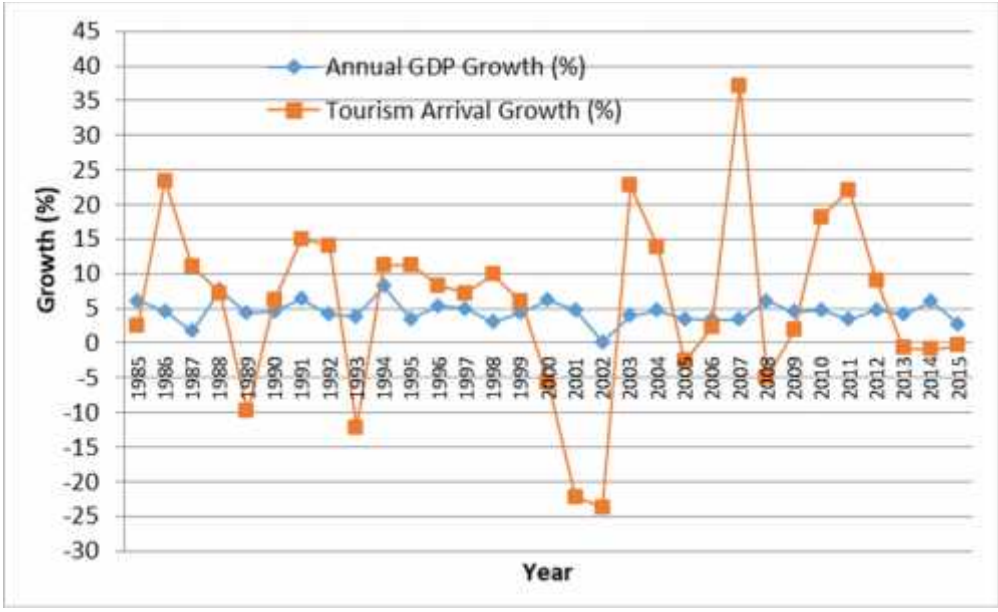

Figure 2: GDP growth and trend of tourists flow over the period in Nepal
Source: Calculated based on MoCTCA, 2017 and IMF, 2017

Figure 1 shows the positive relation between GDP growth rate and the number of tourist arrival. It broadly indicates that the tourism sector has generated different economic opportunities in the country and hence contributing on the GDP growth. However, there are other factors that effects on the GDP growth. Result indicates that, tourists' spending per visit is increasing over the period of last 30 year in Nepal. The average spending of a tourist was about US$ 300 per visit in 1985 while it is reached more than US$ 900 per visit in 2016. The total spending amount is dependent to different factors such as varieties of services and increasing market price. However, it also indicates that the total spending of an individual tourists could be increased offering multiple options such as service diversification so that the number of stay could be elongated. The growth of tourism itself is observed while analyzing its contribution on the GDP. The scope of tourism industry has significantly increased over the study period. The contribution of tourism industry on national GDP was about US$ 0.7 billion while it was about US$ 54.7 billion in 2015. Despite some downfall for 2005 to 2007, it was gradually increasing till 2010. The contribution share of tourism sub-sectors on total tourism GDP over the period of last 30 years (1985-2015) is different (see Table 2).

Table 2: Five years' average GDP contribution by tourism sectors

Years	Entire GDP of Tourism	ADT	CT	RT	EBT	OT
1885-1990	2.05	0.28	0.01	1.31	0.18	0.04
1990-1995	6.82	1.10	0.12	3.00	0.79	0.34
1995-2000	10.75	3.04	0.37	7.38	1.56	0.66
2000-2005	12.27	3.04	1.22	6.06	1.59	3.08
2005-2010	19.13	4.77	2.90	8.51	2.78	5.38
2010-2015	38.48	3.74	3.16	21.81	3.50	6.08

Similarly, the Lost and Danage (L&D) on national GDP because of different disaster events is significant over the last 30 years. Result shows that such trend of overall L&D on national GDP and tourism GDP is increasing. The overall loss and damage on tourism GDP is increased from NRs 0.0778 billion in the period of 1985-1990 to NRs 1.4624 billion in the period of 2010-2015. The share of loss is higher from outdoor and adventure tourism and leisure and recreation tourism sub-sectors within the tourism sector (Table 3).

Table 3: Five years' average loss on tourism GDP by damage

Years	Entire GDP of Tourism	OAT	CPT	RLT	EBT	OT
1885-1990	0.0778	0.0106	0.0004	0.0497	0.0068	0.0015
1990-1995	0.2591	0.0418	0.0044	0.1140	0.0302	0.0129
1995-2000	0.4084	0.1155	0.0141	0.2803	0.0592	0.0249
2000-2005	0.4662	0.1154	0.0462	0.2301	0.0606	0.1169
2005-2010	0.7270	0.1813	0.1102	0.3235	0.1056	0.2043
2010-2015	1.4624	0.1422	0.1199	0.8289	0.1330	0.2311

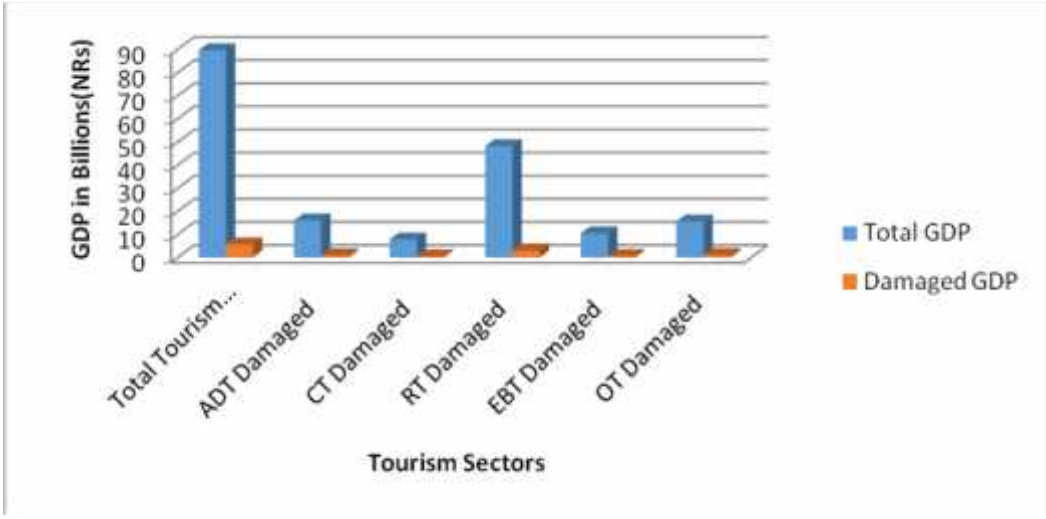

Figure 3: Composition of share of tourism subsector on loss of tourism GDP in over the period in Nepal (1985-2015)

This study also calculates economic loss and damages incurred from climate induced disaster on both national and tourism GDP. As it is well discussed, natural resources and nature-based system of development are more exposed to climate change. As explained earlier, tourism sector in Nepal is more natural resource based and hence is more vulnerable to climate change. The tourism sector is mostly impacted by increasing frequencies of climate induced hazards over the years. Such impact includes significant loss on local and national economy. The calculation reveals that the country has incurred annual economic loss on tourism GDP equivalent to $987,968/year in last 30 years because of identified fours climate induced hazards. It further reveals that the economic loss on both national and tourism GDP is significant due to climate induced hazards over the last 30 years though the heterogeneity consists (Figure 3). The trend of economic loss is more in certain periods. For instance, the economic loss due to climate induced hazards was higher in early 1970s compared to late 1970s. Similarly, the same was higher in early 1980s compared to mid-1980s. However, it is observed that the numbers of higher pitches in the graph are occurred in the recent decades. It indicates that the frequencies of climate induced hazards – in terms of both amplitude and impact level, are increasing, and hence so on economic loss.

Among four major climate induced hazards, flood and landslides have cause more economic losses compared to avalanche and snow storm over the last 30 years. It is potentially due to the omni- occurrence of these two hazards across the geographical zones in the country while avalanche and snow storm are occurred in the high Himalayan regions only. However, the amplitude and level of impacts of all four major climate induced hazards are observed to be more frequent in recent decades and hence increasing the economic loss in tourism sector. The study also analysed GDP loss in tourism based on four major hazards and indicated following losses and damages:

- L&D from Flood: $ 728,036/year in tourism GDP
- L&D from Snow Storm: $ 2,475/year in tourism GDP,
- L&D from Landslide: $237,740/year in tourism GDP
- L&D from Avalanche: $4,031/year in tourism GDP

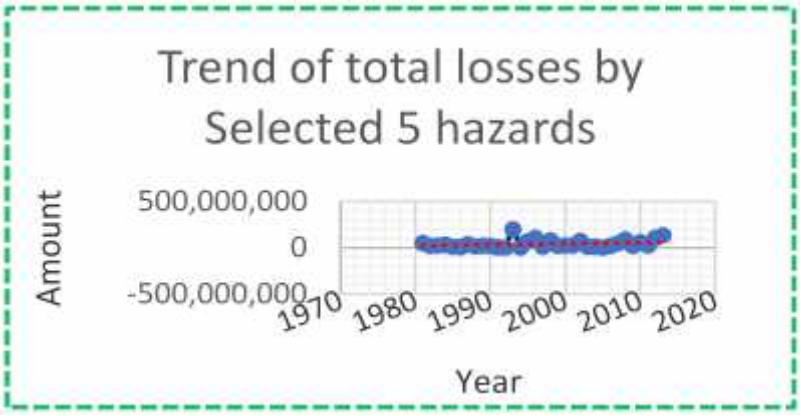

Figure 4: Economic loss on national and tourism GDP due to major climate induced hazards over the period in Nepal

Different literature has also indicated the increasing impact and economic loss due to climate change and climate induced hazards in the country. The increasing frequencies of landslides and flood have destroyed many bridges and trekking trails in major tourism destinations including Mt. Everest and Annapurna Circuit. Similarly, increasing warmer and drier conduction caused by changes on climatic variable such as increase on temperature further triggers other hazards including wild fires thereby on habitat and biodiversity loss, and risk of extension of endangered species (WRF, 2006; Lal, 2012). It also has implication on the tourism sector.

Regression Result

The possible economic impact of climate change on tourism activities also measured from regression model. The results from Model 1 – Tourism Demand Function, and Model 2 – Economic Impact Analysis on Tourism Sector are presented in this section.

Model - 1: Climate change impact on foreign tourist arrival

When initially regressed, the model shows a very high R-squared and there is no multi-co linearity since VIF is very low. The result shows that 1 % increase in the GDP of the origin country leads to 0.199% increase of total arrival of tourist in Nepal. Similarly, 1% increase in exchange rate and per day average income per visitor will decrease the flow of foreign tourist by 0.464% and 0.459% respectively. Whereas 1% increases in the consumer price index (CPI) will lead to increase on the flow of foreign tourist by 0.749% in Nepal. In addition, the analysis reveals that tourism activities for foreign tourist are sensitive to temperatures and rainfall. As a matter of fact, a 1 % increase in minimum temperature leads to 1.047 % decrease on tourist arrival. It means 0.091 ^{0} C increase on average minimum temperature causes to decrease on tourism flow by 1.047 % in the country. Whilst, 1% increases in maximum temperature leads to 1.533 % increase on the tourist arrival, meaning, 0.091 ^{0} C increase on average maximum temperature causes to decrease on tourism flow by 1.533 % in the country. It indicates that tourists prefer pleasant and warm weather while visiting Nepal. Similarly, tourist arrival seems to be less sensitive to rainfall. The regression model result reveals that 1% increase on precipitation facilitates to increase on total arrival by 0.749%. It means, 13.884 mm increase on precipitation may facilitate to increase on total tourists arrival by 0.749%. However, the regression model cannot sure for these claims as the value generated by the model is not statistically significant. It is potentially because of the fact that more than 80% of the total annual precipitation is recorded in the rainy season in the country which is not considered as the tourist arrival seasons.

Model 1 - **Climate change impact on foreign tourist arrival**		**Model 2 - Climate change impact on tourism GDP**	
Y	0.199**	ADT	0.572**
ER	-0.464**	CT	0.078**
AC	-0.459*	RT	0.431**
CPI	0.749*	OthT	0.134*
T_{Max}	1.533**	T_{Max}	9.360**
T_{Min}	-1.047	T_{Min}	-3.664
P_t	0.726	P_t	-0.525
Constant (α)	1.103	Constant (α)	-3.624
R-Square	0.943	R-Square	0.932
Adjusted R-Sq	0.943	Adjusted R-Sq	0.910

Model - 2: Climate change impact on tourism GDP

The regression result shows the impact of climate change on entire tourism GDP. All these tests of the equation suggest that the OLS signification is the most appropriate model. Results of the elasticity show that the GDP contribution of tourism sectors significantly depends on that from tourism sub-sectors (i.e. Outdoor and adventure, Culture and pilgrimage, Nature and wildlife, Leisure and recreation, and Other Tourism Sector). The regression module reveals that 1 % increase in the input factors leads to an increase on tourism GDP generation by *0.572% of ADT, 0.431% of RT, and 0.134 % of OthT* despite having *only 0.078% of CT*.In addition, the module further indicates that tourism activities are very sensitive to temperatures and rainfall. It reveals that change on average minimum temperature is inversely dependent to the tourism GDP. It means, a 0.0909^0C (1 %) decrease in minimum temperature leads to increase in total tourism GDP by 3.66 % while it leads to decrease by the same percentage if the average minimum temperature increases by same degree. Similarly, the regression results demonstrated the positive relation between changes on average maximum temperature and tourism GDP in the country. It reveals that increase on average maximum temperature by 1% facilitates to increase on tourism GDP by 9.36%. Moreover, the tourism GDP and changes on precipitation is seen to be inversely correlated. The regression result depicts that 13.884 mm increase on precipitation/rainfall causes to degrease on tourism GDP by 0.525%. However, it seems to be less sensitive compared to that on minimum and maximum temperature regardless to positive and negative correlation.

Regression results on tourism GDP and changes on climatic variables correlate to that obtained on tourism arrival. It means, the number of tourist arrivals increase/decrease with the decrease/increase on average minimum temperature which is the fundamental determinant for tourism GDP. The similar correlation is obtained for average maximum temperature, tourist arrival, and tourism GDP. Moreover, the tourism GDP does not seem significantly dependent to the changes on precipitation as the tourist arrival in this season is low and hence so as on economic contribution. The degree of impact of changes on climatic variables on different tourism sub-sectors is not homogenous. So, the separate recreation module and analysis is demanded to understand the climate change impact on such sub-sectors. As stated in conceptual model, we have hence estimated the extended regression equations to sasses the climate change impact on tourism GDP contributed by tourism sub-sectors.

Sector-wise Climate change impact on tourism GDP

The OLS results also derived to estimate of the average effects of changes on climatic variables on sector-wise GDP per capita. The results are presented as:

Climate Change Impact on outdoor and adventurous tourism: The OLS results provide the estimate of the average effects of changes on climatic variables on GDP per capita generated from outdoor and adventurous tourism (OA). The regression result depicts that 1 % changes on independent factor leads to a proportionate changes on outdoor and adventurous tourism GDP by 1.42%. It means if there is positive change on the independent input factor then the outdoor and adventurous tourism GDP will also increase and vice versa. Similarly, changes on climatic variables are observed to be directly impacted on the outdoor and adventurous tourism GDP irrespective to positively or negatively. As obtained in previous regression results, the impact of changes on average maximum temperature is observed to be positive correlation on outdoor and adventurous tourism GDP. It reveals that changes on 1% of average maximum temperature could facilitate to increase outdoor and adventurous tourism GDP by 14.55%. It seems very significant impact level. However, it clearly reveals that tourists prefer warmer environment for such outdoor and adventurous tourism activities which relates to the tourist arrival and hence on GDP contribution. However, the outdoor and adventurous tourism GDP is negatively correlated to changes on average minimum temperature and precipitation. The regression module reveals that increase on 0.0909^oC (1%) on average minimum temperature could decrease on the outdoor and adventurous tourism GDP by 3.37%. Moreover, increase on 13.884 mm (1%) precipitation leads to decrease of outdoor and adventurous tourism GDP by 2.11 %. It clearly indicates the outdoor and adventurous tourism activities are sensitive to changes on minimum temperature and precipitation.

	Outdoor and Adventurous	**Culture and Pilgrimage**	**Leisure and Recreational**	**Other Tourism**
Tourism Sector	1.42***	0.15***	0.61*	0.35***
T_{Max}	14.55*	21.36***	34.45***	18.11**
T_{Min}	-3.37	-8.55*	-11.70*	-8.03**
P_t	-2.11*	0.87	-0.25	-0.72
Constant	-6.01	-12.97*	-21.16***	-6.89
R-squared	0.825	0.860	0.709	0.831
R-Bar Sq	0.797	0.838	0.662	0.804

Climate Change Impact on Cultural and Pilgrimage Tourism Sector: Climate change impact on cultural and pilgrimage tourism sub-sector is considered to be significant. It is determined by the changes on tourist flow and GDP contribution from it while changing climatic variables. The regression model demonstrates the similar correlation between culture and pilgrimage tourism GDP and changes on temperature and precipitation. However, the degree of correlation differs. The regression model results that 0.090^0C (1%) increase on average minimum temperature leads to decrease on culture and pilgrimage tourism GDP by 8.55%. Moreover, the positive correlation is observed between precipitations and cultural and pilgrimage tourism GDP though it seems insignificant. The regression module reveals that increase on 13.884 mm (1%) precipitation leads to increase of culture and pilgrimage tourism GDP by 0.87 %. The regression model reveals the similar correlation obtained in the tourist arrival function analysis that indicates that the tourist visiting for cultural and pilgrimage activities also prefer warmer and pleasant environment.

Climate Change Impact on Leisure and Recreational Tourism GDP: This study further analysed the regression model to obtain the correlation between changes on climatic variables and its impact on leisure and recreational tourism GDP. The result of regression model demonstrates that changes on average maximum temperature leads to proportionate changes on leisure and recreational tourism GDP. The regression model reveals that increase of 1% on average maximum temperature leads to increase leisure and recreational tourism GDP by 34.45%. Whilst, increase on average minimum temperature and precipitation leads to decrease on the leisure and recreational tourism GDP. The regression model reveals that 0.090^0C (1%) increase on average minimum temperature leads decrease on leisure and recreational GDP by 11.70%. Similarly, increase on 13.884 mm (1%) precipitation leads decrease on leisure and recreational tourism GDP by 0.25% though it is statistically insignificant. The result of regression model for leisure and recreational tourism sub-sector resembles correlation between GDP and climatic variables for outdoor and adventurous tourism though the level of significance differs. It indicates that there is overlap on tourism activities between these two tourism sub-sectors.

Climate change Impact on Other Tourism: Nepal is increasingly being a popular destination for other activities than categorised in above mentioned four tourism sub-sector such as for meetings and conferences. It also contributes on overall tourism GDP. So, this study has analysed the correlation between GDP from other tourism and climatic variables. The regression model reveals that other tourism sub-sector has similar correlation between GDP contribution out of it and climatic variables. The result shows that 1% increase on average maximum temperature leads to increase GDP generated from other tourism sector by 18.11 % which statistically significant. However, it has shown negative correlation with minimum temperature and precipitation. It demonstrates that 0.090^0C (1%) increase on average minimum temperature leads to decrease on other tourism sector GDP by 8.03% whilst increase on 13.884 mm (1%) precipitation leads decrease on it by 0.72%.

The over results of regression model reveal that climatic variables have direct co-relation to the total tourism GDP and sub-sector wise GDP contribution in the country. In fact, the tourism GDP contribution is primarily dependent on the number of tourists. So, the analysis demonstrates that the colder and rainy days are not the preferred days for tourist to visit Nepal. So, changes on such days have direct implication on tourist flow and hence on GDP. Broadly, increase on average maximum temperature could offer positive result on tourism GDP. It simply indicates that tourist prefer warmer and pleasant weather condition while visiting different destinations in the country. However, it is still a scope of further research on correlation on abrupt and unprecedented change on climatic variables than in current trend which is being observed in recent years.

Projected Economic Costs of Loss and Damages on Tourism Sector

This section provides the estimation of projection made for economic cost of lost and damages, projected economics cost of loss and damages on tourism sector.

Projected Economic Costs of Loss and Damages in 2020-2030: The analysis discussed in previous section on loss and damage incurred by climate induced disaster, tourism function analysis, and regression model analysis on the climate change impact on tourism GDP reveals that tourism sector is already experiencing climate change impacts. Scholarly literatures have also argued that tourism is likely to affect at the place where already temperature has risen with occurrence of extreme events that makes the place unattractive though it could have some positive impacts in some destinations (Markandya et al. 2017; OECD, 2015). Similarly, tourism economic projections based on climate change impacts are uncertain.

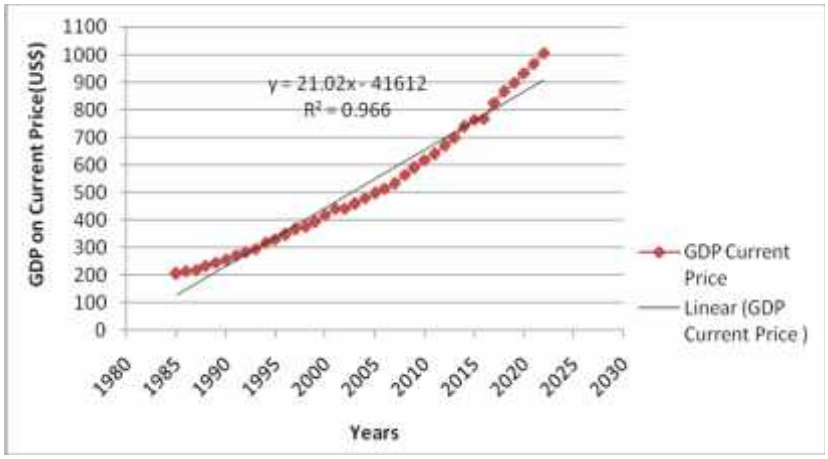

Figure 5: Trend of GDP on Current Price in Nepal

The estimated economic costs of loss and damaged from such climatic impact are equivalent to an annual cost 3.8 % of GDP in Nepal, and projected future economic costs additional to 3.8% of current GDP/year are by mid-century (ref). Climatic impacts on tourism sectors could be much severe with extreme rainfall variability in coming years (IDS-Nepal, PAC and GCAP, 2014). As provided by the data set till 2022 – IMF projection, we have also extracted the values from2022 to 2030 – multiply the baseline data by 3.8% per annum. Applying the same method we have projected the trend and scenario of GDP from 1985 to 2100.

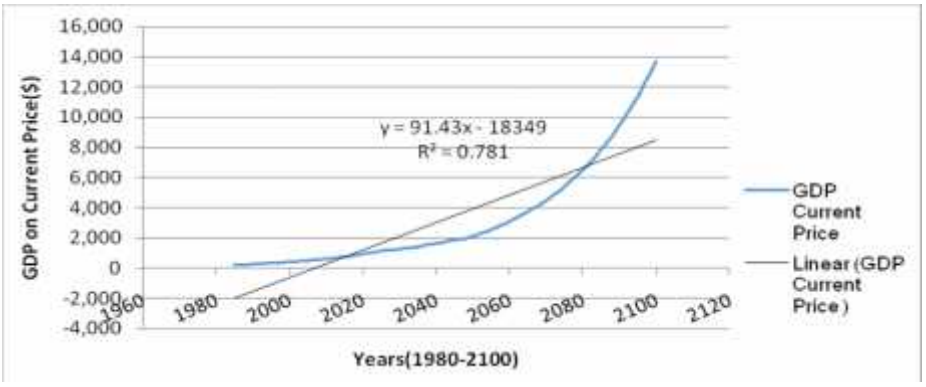

Figure 6: Projection of GDP

Projected Economic Costs of Loss and Damages on Tourism Sector: As discussed in previous section, the tourism sector has significant contribution on economic development in the country. The World Travel and Tourism Council (WTTC) reveals that tourism accounts for 7.5 percent of Nepal's GDP and is forecast to rise 4.3 percent annually to Rs 287.6 billion, or 8.3 percent of the GDP in 2027 (WTTC, 2017). The figure 16 shows the trend of tourism GDP in the country and projects the same till 2050. For the future Projection: from the years 2022 to 2027 – multiplying 2022 data by 4.3% per annum (WTTC: Travel and Tourism Economic Impact 2017, Nepal). And from 2028 to 2040 – multiplying 2017 data by 4.2% per annum (OECD, 2015) and finally, from 2040 to 2050 – multiplying 2017 data by 3.7% per annum (OECD, 2015), we have obtained the full set of data of the years 2017 to 2050.

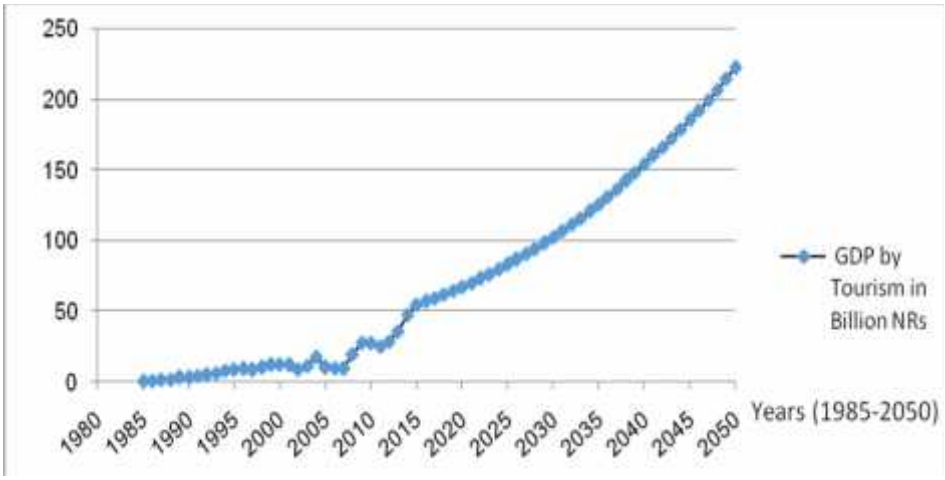

Figure 7: Tourism GDP by Future for Nepal (in billions)

Globally, the economic cost of loss and damages in tourism is calculated to be small and not particularly greater as it ranges from 0.1% to 0.5% of GDP by 2060 (Bosello et al., 2009, 2012; OECD, 2015). However, the degree of loss and damage is estimated to be further triggered by unprecedented climate change (Bigano et al., 2007). The loss and damage triggered by climate change in countries like Nepal where the tourism activities are mostly nature based and is one of the major economic sector – would be significant. The changes on the trend of climatic variables and the climate change extremes have different level of impact to the national and tourism industry and GDP. Changes on the climate variables and extremes impacts on the resources in tourist destinations, contributed on indirect environmental impacts on other relevant resources such as biodiversity, water resources, landscapes, visibility, health, agricultural, and small industries. It further triggers potential societal change such as migration of indigenous community, changes on tangible and intangible culture. Some cases of triggering conflict and political instability are also argued due to climate change extreme like long spell of drought and shortage of drinking water. These impacts are also related to the tourism industry and hence GDP generated from the tourism sector. Moreover, the direct loss and damage on the tourism sector mainly because of climate induced hazards is increasing and predicted to be more significant in forthcoming days.

4. Conclusion and Way Forward

This study analyses the economic impact of climate change in Nepal's tourism industry along with projection of such impacts. To measure the economic impact this study develop two models Model- 1: Climate change impact on foreign tourist arrival, and Model - 2: Climate change impact on tourism GDP and then analyzed the collected secondary data. While analyzing result, it is presented in three different categories, trend-analysis of available data to see the climatic impact on undertaken variables, regression results to identify whether there is impact or not, and forecasting the future based on projection. The estimation from available data demonstrated that the trend of loss and damage (L&D) in the tourism sector is more significant and is increasing since last 30 years. The analysis reveals that the L&D in tourism sector is equivalent to $987,968 per year. The frequencies of flood and landslides incidences are occurring all over the country and are in increasing trend and hence are causing significant L & D in tourism sector.

The regression model for tourism function analysis reveals that changes on minimum average temperature and precipitation leads to decrease of total number of tourist arrival. The result shows that 1 % increase in the GDP of the origin country leads to 0.199% increase of total arrival of tourist in Nepal. Similarly, 1% increase in exchange rate and per day average income per visitor will decrease the flow of foreign tourist by 0.464% and 0.459% respectively. Whereas 1% increases in the consumer price index (CPI) will lead to increase on the flow of foreign tourist by 0.749% in Nepal. In addition, the analysis reveals that tourism activities for foreign tourist are sensitive to temperatures and rainfall. The correlation analysis reveals that increase on average minimum temperature by 0.0909^0 C leads to decrease on tourism flow by 1.047 % in the country. Whilst, 13.884 mm increase on precipitation may facilitate to increase on total tourists arrival by 0.749%. However, the regression model cannot sure for these claims as the value generated by the model is not statistically significant. It is potentially because of the fact that more than 80% of the total annual precipitation is recorded in the rainy season in the country which is not considered as the tourist arrival seasons.

Similar correlation is obtained between tourism GDP and change on climatic variables. It reveals that change on average minimum temperature is inversely dependent to the tourism GDP. It means, a 0.0909^0C (1 %) decrease in minimum temperature leads to increase in total tourism GDP by 3.66 % while it leads to decrease by the same percentage if the average minimum temperature increases by same degree. Moreover, the tourism GDP and changes on precipitation is seen to be inversely correlated. The regression result depicts that 13.884 mm increase on precipitation/rainfall causes to degrease on tourism GDP by 0.525%. However, it seems to be less sensitive compared to that on minimum and maximum temperature regardless to positive and negative correlation. The tourism sub-sector wise analysis also reveals the similar correlation though the level of significance differs. The outdoor and adventurous tourism and leisure and recreation tourism out of five tourism sub-sectors have observed to be more and direct implication of changes on climatic variables. In fact, these two sub-sectors have significant share of contribution on total tourism GDP.

The trend analysis, analysis of loss and damage from climate induced hazards, and econometric modelling for tourism function analysis and correlation on tourism GDP clearly indicates that the tourism sector is very vulnerable to climate change and poses significant impacts. The tourism GDP projection demonstrates that the potential of contribution of tourism sector on national GDP is higher provided the hindering factors remained constant. However, the increasing trend of climatic variables and climate induced hazards potentially would increase the total loss and damage in tourism. It hence will have direct implication on the contribution on national economy.

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Corporate Social Responsibility of Commercial Banks in Nepal: Expectation or Dilemmas

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Abstract

This study examines the practices and dilemmas of the corporate sectors to CSR in Nepal. Using explorative and descriptive methods, the study analyzes secondary and primary combo data sets covering only the financial sector, particularly private commercial banks to unlock CSR issues of the corporate sectors. As a result, the study finds a positive perception, higher awareness level and good adoption of the private commercial banks on CSR. In practice, the study gets CSR as voluntary social responsibility in almost all private commercial banks. Similarly, the study finds the least CSR size. Its flow is discrete and irregular without priority. Lastly, the satisfaction level of almost all stakeholders is poor and says that it should be obligatory to banks for encouraging implications. Since CSR practices is a dilemma to the corporate sector and the government in the imperfect open market in developing countries like Nepal, the government should come beyond the policy frameworks of CSR to transform voluntarily CSR to mandatory CSR in the practices. Furthermore, the government should improve the monitoring and evaluation system for CSR to make mandatory additional resource mobilization for social causes for improving social welfare and socio-economic justice in society for reducing have and have-not gaps.

Keywords: CSR, Corporate sector, Commercial bank, Value, Ethical business, Social responsibility

1. Introduction

Market economy, corporate sector, and corporate social responsibility (CSR) are interdependent issues to check and balance within the system of an open economy for economic growth, stability, and welfare. CSR of the corporate sector is a good stabilizer factor for goodwill of the corporate sector and the welfare of needy people and society. Despite a provision, the malpractices of CSR reveal a big dilemma of the corporate sectors. In this context, CSR has become a key issue in Nepal, where the deregulation of the economic reform in 1992 Nepalese economy has increased corporate investment in the banking sector and the number of commercial banks and development banks (Bista, 2011, 2016 & MoF, 2017). As the surprise achievement, the growth of commercial banks and development banks jumped up with four hundred times and eight hundred times more than the base year of the 1990s respectively (NRB, 2017 & MoF, 2017). Similarly, NRB (2017) has accounted for a significant growth of net profit in the banking industry, along with the increasing competition in banking services and products in the banking industry and freedom and choice to the customers of the banking industry. These financial indicators have shown the financial growth of the banking industry, financial stability, and financial health. To some extent, almost all commercial banks have initiated their CSR at a limited level, although CSR is voluntary in nature in the industrial policy. In India, 2 percent of total profit is obligatory to CSR in the community. This practice in the USA is 1 percent of their profit as legal and ethical mandatory. Despite voluntary CSR, the consumer expects a huge CSR contribution and investment from these banks by global corporate governance's standards and principles so the corporate sector should be responsible to the consumer and the people to reduce the gap between the corporate sector and the society and disparity in the society and to promote fair competition for a win-win situation between producer and consumer.

Despite the importance of CSR issues in policy, market, and institutional aspects, a handful of relevant literature is available. They are Bista (2005), FNCCI (2006), and Bista (2016). The available literature has covered only the issues of foreign direct investment (FDI) and multinational corporation (MNC). In the banking industry, this issue is still new having a big scope of new knowledge and policy initiation. In the limitation of the relevant literature, the CSR of the commercial bank is itself a relevant issue. Besides, these banks have started a practice of CSR activities investing in different socially sensitive issues in their own format. This practice has made it relevant to this study. In this context, the study examines types, characters, magnitude, drift and shape of CSR for its advancement and growth in the banking sectors with the expectation of new knowledge.

The board objective of the study is to inspect the CSR's types and practices of the commercial banks in Nepal. Specific objectives are to analyze the structure and trend of their CSR budget in Nepal and explore CSR size and CSR and profit ratio and identify their primacy areas.

2. Literature Review

Concept of CSR

In the market economy, CSR is an automatic stabilizer to check and balance the supernormal profit motives of the corporate sector like in a monopoly market and unfair competition and unequal distribution of resources. This portion of corporate profit reduces corporate profit. Therefore, the corporate sector is in a dilemma on CSR funds and activities to execute either as mandatory or as voluntary. However, this important approach arose in 1917, when Henry Ford started social accountability in forms of the worth of all shareholders' interests as well as the societal happiness of workers and stakeholders (Lee, 2008). Its nature was a business approach to being a good corporate citizen. Its practices have been popular later across the globe. Instantaneously later World War II, business world approved it as the prerequisite to obligate around of their returns to societal reasons. Such CSR focuses only on social causes (Afful, 2003). In the meantime, there are constructive practices in which the business proprietors taking a humanoid arrogance toward their labors and reinforced community reasons, fix consequently aimed at spiritual or generous drives. But, allocating nutrition and cash toward the deprived through centenaries cannot be entitled CSR (Afful, 2003). Thus, CSR is a philanthropy nature.

Sen et al. (2006) distinguished the progress of CSR events and their effect on trades development, jobs and investment. Carmeli (2005) stated it as a maintainable viable benefit. Therefore, it has converted an ingredient of business power for reasonable benefit.

Besides, the concept is limited only as a part of the corporate governance of the corporate sector. Academically, Dodd (1932) and Berle (1932) raised a query on CSR in his article in a Harvard Law Review in 1932. 20 years later, Bowen (1953) highlighted it in his book concentrating on the association of corporations with humanity and the essential for commercial morals (Carroll, 1979). After the big lap of 19 years, Milton Friedman (1970) raised this issue in 1970 in his article in the New York Times Magazine. So, this evolution has made it an important issue for social interest.

In the existing literature, there are two different supplementary approaches. Borok (2003) and Donohue (2005) argue CSR is the activities of the company to be good citizens contributing to people's happiness elsewhere their own egocentricities. Differently, Elhauge (2005) argues CSR as forgoing returns in the societal importance, like Graff Ziven and Small (2005), Portney (2005) and Reinhardt (2005). Thus, CSR is an expenditure of the company for social causes including public utilities, environmental activities, and social activities (health, education, and sanitation).

CSR: Mandatory or Voluntarily

CSR dilemma is either mandatory or voluntary, although it is practiced for social interest. On this dilemma, Griffin, (1998); Afful, (2003); Government of Nepal (2017); Kootz and Weihrich, (1990) and Kreitner, (1999) discuss academically. Almost all literatures argue it for mandatory because the social responsibilities of business mean responsibilities of business towards customers, workers, shareholders and the community (Afful, 2003). In India, it is mandatory in the industrial policy in accordance with the government of India (2017). In the USA, it is a mandatory provision. However, the government of Nepal (2017) argues it voluntarily by giving freedom to the corporate sector. Thus, CSR is both mandatory and voluntary in accordance with the country's perspective and policy on corporate governance.

CSR practices in Nepal

CSR is not a new issue in Nepal. In the medieval and even modern periods, the social responsibility of individuals and business companies is an ingredient of a legacy of history. Merchant uses it to be a good citizen to improve goodwill and value addition of the business particularly in constructing public water taps, scholarships, charity to the

poor, public schools, temples, and public places. It is purely philanthropy and religious nature (Bista, 2016). It is voluntary nature in the absence of the rule and regulation of the government. Its concern is limited. In modern eras, CSR ideas came in Nepal along with corporate investment of private and foreign investors and multinational companies (MNCs) after the 1990s liberalization. The government of Nepal is soft on CSR provisions unlikely India. Therefore, CSR practices in Nepal are not better than in India. Thus, CSR is left to the will of the corporate sector in terms of business ethics and responsibility (Bista, 2005). However, the business community in Nepal observes CSR as the promise as of commercial enterprises to maintainable financial growth, making decent employed atmosphere for worker/their relatives and the native communal/humanity wellbeing at great to advance the worth of lifetime. Additionally, the workers must be measured as businesses' greatest properties and representatives. Employees, owners, clients, régime, and civic people reflect the situation an important component of CSR. Business organizations engage in CSR by taking proactive or preventive measures (FNCCI, 2006). Afful, (2003) explains that the business area in Nepal is captivating societal accountability earnestly. Bista (2005) cited around degree of CSR in MNC companies in Nepal. Legal and policy documents including Foreign Direct Investment Act and One Window Policy 1992, Industrial Policy 1993, and Interim Plan 2007-2010 have said CSR but not obligatory.

3. Methodology

Conceptual Framework

Carroll (1999) explains CSR as having economic responsibility, legal compliance, ethical, and philanthropy. It has three objectives: value creation, risk management, and philanthropy (Figure 1).

Figure 1: CSR Framework

Despite the CSR concept and practice, MNCs are completely guided by profit motive. The profit function of an MNC is to optimize net profit at a large scale. In order to check and balance, the CSR approach argues that MNCs must be accountable to the people for maintainable corporate with worth, sales, and goodwill sacrificing a definite fraction of return for social cause. So, CSR hang on business supremacy and return. Subsequently making worth, CSR has progressive effects on transactions development and return. Consequently, return rest on CSR. Based on the concept of CSR, the conceptual framework of CSR is constructed for further analysis as follows (Figure 2).

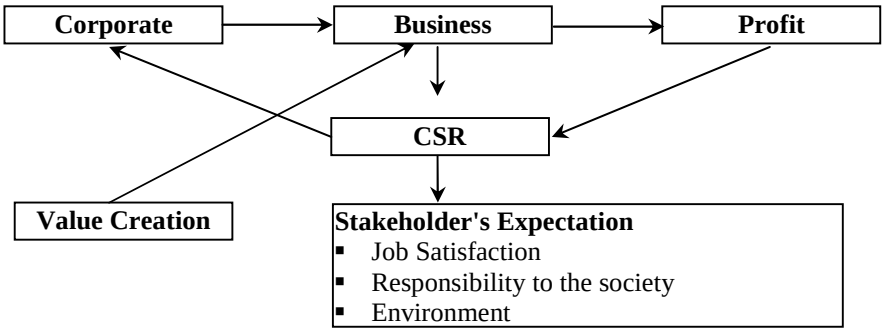

Figure 2: Conceptual Framework of CSR
Source: Bista (2018)

Data Sets and Data Collection Method

In accordance with the conceptual framework, the study covers the objectives in the study area of Nepal including the commercial banks. Selecting the commercial banks, the study has three major reasons: commercial banks have vertical and horizontal financial growth in Nepal, these banks have initiated CSR and spent CSR funds for different activities for social causes, and almost all banks have published their CSR funds, and expenditures annually in their websites.

Employing an explorative and descriptive method to understand the nature and practices of CSR of the commercial bank, the study uses mainly secondary data sets of CSR based on the data gathered from the printed papers of the commercial banks, predominantly their printed audit statement from 2008 to 2017.

The 28 commercial banks are the universe of the study. We nominated six commercial banks employing Daniel (1999)'s Sampling methods. Mathematically, it is

$$n = z^2 p (1-p)/d^2 \ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Where,

n is sample size i.e. 6

z = confidence level i.e. 95%

p = proportion i.e. 0.02 %

d = margin of error i.e. 8 %

The sample include three types of banks: partnership banks (NABIL), private banks (Nepal Investment Bank, Mega Bank, Siddhartha Bank and Civil Bank), and state banks (Nepal Bank Limited). Nepal Bank delivers amenities across the country. The partnership and private banks have reached out 70 percent of total districts, except Himalayan districts. Besides, sample of stakeholders is calculated using Daniel's Sampling Method.

As supplementary, the study uses the primary data. The survey method is used for data collection. Its tool is a questionnaire. In 2016, the survey team conducted a telephone and questionnaire survey to 60 staffs of the sample Banks in the initial phase and 100 shareholders in the next phase. The initial level of information was gathered through telephone interview method. The additional level of information was gathered through a structured questionnaire survey in Kathmandu. The survey was held in March 15- March 30, 2016.

4. Results and Discussion

CSR Characteristics

The CSR of the commercial bank is essential to business governance. Since 1990s, bank has been using CSR as philanthropy irregularly and voluntarily. Such CSR funds and activities are crucial for value addition, goodwill and sales as per the context of global standards of Multi-national Companies and Social Development Goals (SDGs). It may raise a query about their CSR characteristics for understanding CSR activities, status, pattern, size and institution. In order to capture the CSR characteristics, the study uses eight indicators: No of Years for CSR, Regularity in some years, CSR size, percentage of profit, CSR team, CSR events, CSR disclosure and the year of establishment. Its details are presented in Table 1.

Table 1: CSR characteristics of Commercial Banks

Indicators	NABIL	Nepal Investment Bank	Mega Bank	Siddhartha Bank	Civil Bank	Nepal Bank
CSR activities (No of Years)	5	3	4	2	1	1
Consistency of CSR (yes/no)	yes	yes	yes	yes	no	no
CSR Magnitude (Rs.)	41,43,094	38,04,000	0	610,000	60,000	53,00,000
% of Return	0.04	0.14	0	0	0.013	0.18
CSR group(yes/no)	No	No	No	No	No	No
CSR actions(mean)	5	12	4	6	2	1
CSR confession (yes/no)	yes	yes	yes	yes	yes	yes
Formation Year	1984	1986	2010	2002	1993	1937

Source: Audit Report of the commercial Banks, 2008-2017 and Official Websites of the Banks

Table 1 shows the CSR characteristics of the commercial bank. These banks are major pillars and players in the financial market and its fair competition, growth and stability. As an indicator of establishment year, these banks of 28 commercial banks are well established with more than 15 years old age. The establishment years of the commercial bank are two categories: the first structural adjustment program (SAP) in the 1980s and the second structural adjustment program in the 1990s. In the first SAP, Nepal Bank (1937), NABIL (1984) and Nepal Investment Bank (1986) were founded. In the second SAP, Mega Bank (2010), Siddhartha Bank (2002) and Civil Bank (1993) are established. By age, Nepal Bank is 81 years' old. Similarly, NABIL is 34 years old. Nepal Investment Bank is 32 years old. Civil Bank is 25 years old. Mega Bank is 18 years old. Siddhartha Bank is 16 years' old. Their ages are sufficient for a good history of CSR funds and activities. However, CSR funds and activities are not well-functioned. In accordance with the CSR disclosure of these banks, CSR activities are conducted for few years. It is noted that Nepal Bank has conducted CSR for a year. It shares 1.23 percent per year. It is a least one. It is followed by 4 percent of Civil Bank, 9 percent of Nepal Investment Bank, 12.5 percent of Siddhartha Bank, 14 percent of NABIL and 22 percent of Mega Bank. Top three banks for CSR are Mega Bank, NABIL and Siddhartha Bank for time allocation. It reveals that CSR is irregularly and voluntarily and its size is negligible.

Let's analyze the CSR of multinational companies alike Apple, Google, MacDonald, Microsoft, etc. We can find consistent and consistent CSR activities, alike their operative actions so that CSR has contributed to the society, the business community and the regime. Its unplanned result will promote business, sales and client (www.microsoft.com; www.google.com; www.macdonald.com & www.apple.com). However, in Nepal, CSR activities are asymmetrical and unreliable since their establishment. However, when these banks initiated CSR events, consistent and constant CSR was found in four banks: Mega Bank, NABIL, Siddhartha Bank and Nepal Investment Bank, except Civil Bank and Nepal Bank.

In general, the business sector sets CSR department as global practices for whole-year CSR activities. Almost all commercial banks do not include CSR department as institutional structures, functions, and policies for CSR activities. These means CSR activities are not important to the banks in Nepal because of their voluntary nature and provision. Further, it is validated by negligible CSR size as a percent of profit and discretionary character, although the profit of these banks is double-digit billion rupees per annum. However, social sacrifice for social cause is less than 1 percent which is 0.05 percent. Thus, CSR characteristics of commercial banks are issues of ignorance without clarity, certainty, regularity, reliability, and causality.

CSR Status and Trends of the Commercial Bank

It is claimed that CSR is an instrument of the commercial bank to create ethical business as well as value creation. Statistics of CSR in the world show such practices to value creation, goodwill and sales. It is a curiosity whether the commercial bank has CSR practice to understand their CSR status and trend for value creation, goodwill and sales of six commercial banks (NABIL, Nepal Investment Bank, Mega Bank, Siddhartha Bank, Civil Bank and Nepal Bank). Its details are in Figure 3.

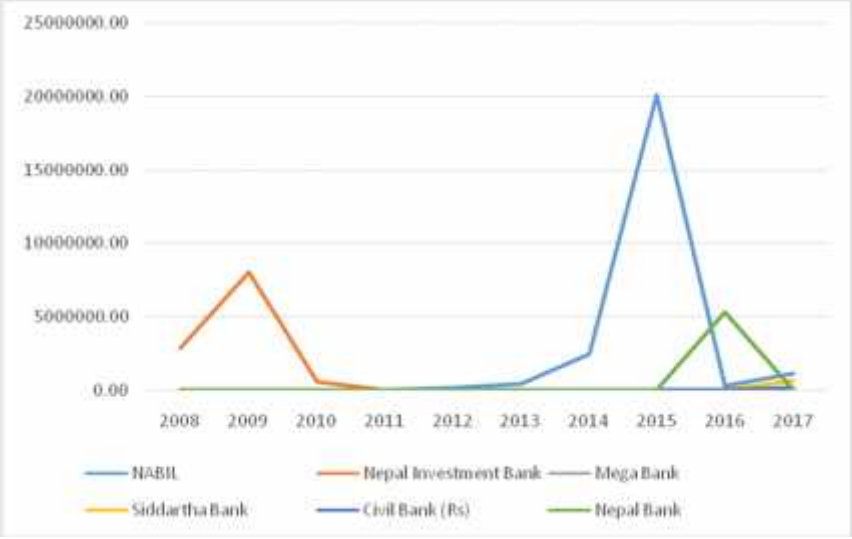

Figure 3: CSR status and trend of Commercial Banks

Source: Audit Report of the commercial Banks, 2008-2017 and Official Websites of the Banks

Figure 3 shows the CSR status and trend of commercial banks in which almost all commercial banks have CSR funds and activities to some extent. Out of these commercial banks, NABIL, Nepal Investment Bank, and Nepal Bank have a noticeable size of CSR relative to Mega Bank, Civil Bank, and Siddhartha Bank. NABIL Bank maintains the top

rank but Siddhartha Bank is the least one. These mixed and scattered commercial banks on CSR funds and activities have indicated awareness about CSR funds and activities.

Similarly, Figure 3 reveals CSR trends of the commercial banks in which all the commercial banks have discrete and irregular natures in the nine-year time series data from 2009 to 2017. In these trend lines, all these banks have not shown a strong practice of CSR funds and activities. NABIL bank claims best for CSR. This has only a six-year trend with fluctuation. Similarly, Nepal Investment Bank has three years CSR trends in the meantime Mega Bank, Siddhartha Bank, Civil Bank, and Nepal Bank have not their trend line with a discrete CSR fund and activities. These trend lines which are erratic and unpredictable are unlike to positively inclining CSR trend lines of the USA and Europe. Therefore, CSR funds and activities of the commercial bank have not been impactful in society and the economy.

CSR Pyramids

Indicators of CSR Pyramids that are measures of CSR funds and activities in the CSR practice of the commercial bank include worth formation, humanity, lawful delivery, and moral accountability. In industrialized countries, the corporate sector has practiced these indicators as CSR. However, developing countries do have not such good practices. In this study, the small size and irregular activities of CSR raise the question of whether indicators of CSR Pyramids are effective in understanding their CSR's structure and composition and what about four indicators: ethical responsibility, legal provision, philanthropy, and value creation in the commercial bank based on dual option in form of Yes and No. Its detail is presented in Table 2.

Table 2: Indicators of CSR Pyramids of the Bank

CSR Pyramids	NABIL	Nepal Investment Bank	Mega Bank	Siddhartha Bank	Civil Bank	Nepal Bank
Ethical responsibility (Yes=1, No=0)	0	0	0	0	0	0
Legal provision (Yes=1, No=0)	0	0	0	0	0	0
Philanthropy (Yes=1, No=0)	1	1	1	1	1	1
Value creation (Yes=1, No=0)	1	1	0	0	0	0

Source: Audit Report of the commercial Banks, 2008-2017 and Official Websites of the Banks

Table 2 presents the indicators of CSR Pyramids of the commercial bank in which there are four indicators ethical responsibility, legal provision, philanthropy, and value creation. Out of four indicators, CSR funds and activities of almost all commercial banks concern only philanthropy. This indicator reveals that 100 percent of commercial banks have a top priority in this irregular and small size of CSR, ignoring ethical responsibility and legal provisions. Similarly, the value creation indicator shows NABIL and Nepal Investment Bank having such approaches and practices, except the remaining four commercial banks (Mega Bank, Siddhartha Bank, Civil Bank, and Nepal Bank).

Let's analyze the CSR practices of the commercial banks assuming 100 percent for four indicators' weightage of the CSR pyramid. In Table 2, philanthropy receives 25 percent weightage, whereas value creation receives 12 percent weightage only. Thus, the commercial bank has not followed the international practices of CSR. Thus, the practice of CSR pyramids cannot be said as an effective measure in the commercial bank.

CSR size of the so-claimed CSR Bank, NABIL

For in-depth analysis, NABIL is selected based on its long length and significant size of CSR funds and activities for a case study in accordance with the CSR revelation. Despite voluntary types of CSR, there is a enquiry around CSR magnitude in the fraction of NABIL's Return per annum. The study uses three indicators: CSR fund, CSR size of profit, and profit per annum. Its detail is presented in Figure 4.

Figure 4 shows the status and trend of NABIL's CSR size. When we see nine years' time series data of CSR and Return of the bank from 2008 to 2017, the bank has continued 2.12 billion mean profit. But, the bank spends 0.11 percent of total profit on CSR. It is nominal. It is less than 1 percent CSR provision. Because of voluntary and non-ethical practices, whatsoever size of CSR is inspiring. When we see other banks, their situations are worse more than NABIL. It shows no education and performance of the bank on CSR.

For in-depth analysis, NABIL is selected based on its long length and significant size of CSR funds and activities for a case study by CSR revelation. Despite the voluntary type of CSR, there is a query about CSR magnitude as the percent of NABIL's Profit per annum.

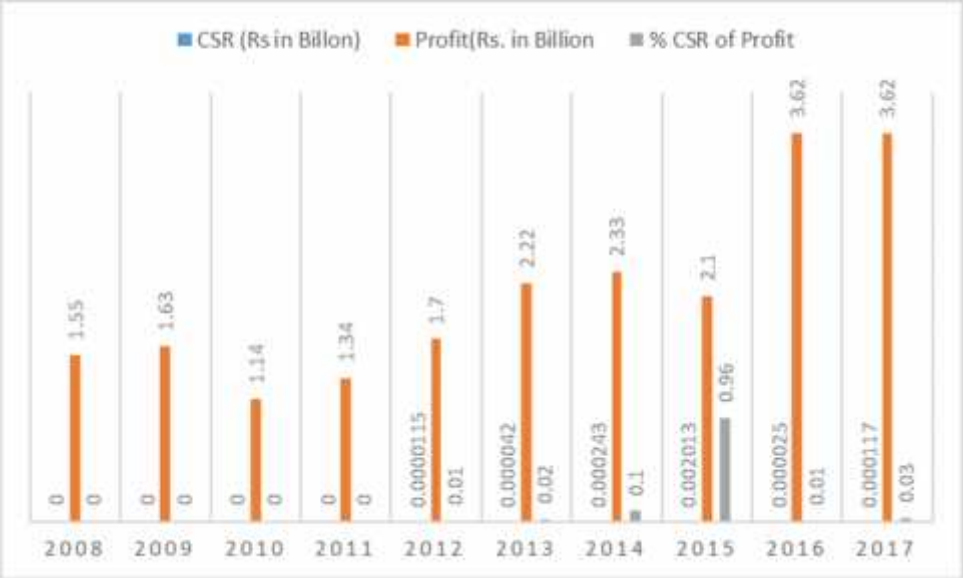

Figure 4: Status and Trend of CSR size of NABIL

Source: Audit Report of the commercial Banks, 2008-2017 and Official Websites of the Banks

The relationship between CSR and the profit of NABIL bank is a curiosity. To capture the relationship, descriptive statistics and correlation analysis are used. The result of descriptive statistics is presented in Table 3.

Table 3: Descriptive statistics of CSR and Profit of Bank

Description	CSR	Profit of Bank
Mean	0.00027	2.18888
Standard Error	0.00021	0.30039
Median	0.000025	2.1
Mode	0	3.62
Standard Deviation	0.0006576	0.90118
Sample Variance	0.00000043	0.812136
Range	0.002013	2.48
Minimum	0	1.14
Maximum	0.002013	3.62
Sum	0.0024507	19.7
Count	9	9

Table 3 shows descriptive statistics of CSR and profit of the bank in which the profit of NABIL bank is a great figure in the small financial market in Nepal. Its range is 2.28 Billion Rupees in the capital investment of 8 Billion Rupees. Out of the capital investment, net annual profit is approximately 27 percent. It is higher profit and higher return in such size of investment. Its range is 2.48 Billion Rupees. In this range, the minimum profit is 1.14 Billion Rupees and the maximum profit is 3.62 Billion Rupees. However, CSR funds are only in the thousand and million figures. It is less than 1 percent voluntary provision of CSR. It is quite a discouraging and demotivating factor to measure the goodwill of NABIL Bank.

The result of correlation analysis is presented in Table 4.

Table 4: Result of Correlation Analysis

Description	***CSR of Profit***	***Profit of Bank***
CSR of Profit	1	
Profit of Bank	0.011	1

Table 4 shows the result of the correlation analysis in which there is 0.011 correlation coefficient value (ρ). It lies between -1 and 1. Further, its value is positive lying between 0 and 1. Furthermore, it lies at nearly zero. It indicates a very weak correlation between CSR and Profit of the bank. In another way, it means the profit of the bank is increasing but the CSR of the bank is declining. It means the elasticity of profit to CSR is nearly inelastic. It means the CSR policy of the bank is not effective as per the rule and regulation of industrial policy. Therefore, value

addition, goodwill, and sales of banks have not gained as targeted, whereas the satisfaction of the customer is not convincing for reducing risk for improving the sustainability of the bank.

CSR provision of the Industrial policy

Since in the market economy, CSR is an instrumental to the corporate sector to reach out the society for goodwill, popularity and brand, CSR provision in the policy must be mandatory in terms of 1 percent of annual profit. This is found 2 percent CSR as a mandatory provision in the USA, European countries, and India. In 2017, Microsoft counted 8 billion US$ profit, out of which the company generated 1 billion US$ funds for CSR. It was closely 12.5 percent of the profit. It was not mandatory but also moral and worth-formation activities. Microsoft was motivated by the positive implications on sales and profit. In Nepal, it is voluntary. In this context, there is a curiosity about what is a CSR provision in Industrial Policy and which type of CSR is in the practice of the commercial bank. In the telephone survey, there are asked questions related to mandatory, voluntary and need of mandatory to the corporate professionals. Its result is presented in Table 5.

Table 5: CSR provision

CSR provision	NABIL	Nepal Investment Bank	Mega Bank	Siddhartha Bank	Civil Bank	Nepal Bank
Mandatory (Yes=1, No=0)	0	0	0	0	0	0
Voluntarily(Yes=1, No=0)	60	60	60	60	60	60
Need to Mandatory (Yes=1, No=0)	60	60	60	60	60	60

Source: Field Survey, 2018

Table 5 shows CSR provisions in the commercial bank. Almost all respondents (100 % of 60 respondents) consider voluntary CSR, the CSR practice in commercial banks, instead of mandatory CSR. This is a strong reason behind the small size of CSR. In addition, almost all respondents opine the need for CSR mandatory as the best alternative to regulate CSR funds and activities and its growth. Therefore, this result would be a valuable input to reform the corporate law for improving CSR funds and activities.

CSR Survey with Stakeholders

The perception of stakeholders about CSR is a key determinant factor in finding an alternative to the CSR practice of the bank. In this regard, four indicators include perception of CSR, understanding of CSR, satisfaction level on CSR practice, and suggestions to improve CSR practices are used. Similarly, stakeholders include five categorical people: politicians, professionals, businesses, general customers, and general people. The result of the CSR survey is presented in Figure 5.

Figure 5 shows the result of the CSR survey in which customers and general people of commercial banks have less knowledge about CSR relative to politicians, professionals, and business people. About 20 percent of general customers and 5 percent of general people know about CSR. The policymakers have sufficient awareness level but the target people do not. This means the knowledge of these policymakers is not transformed into CSR funds and activities. CSR information is significant to shareholders to mark operative CSR events. If we accept all shareholders take data and information about CSR, it will be mistaken. The survey shows customers, and people have the least information about CSR, except politicians, professionals, and business people. It may be due to poor, small, and irregular CSR.

Figure 5 displays that politicians, professionals, and business people have some extent of knowledge about the CSR activities of the bank except for customers and people, However, most of the respondents have no information about the CSR activities of the bank, although most respondents including politicians, professionals, and business people have approved that they are CSR shareholders.

Similarly, most of the stakeholders reject the CSR activities of commercial banks relative to politicians, professionals, and business people. It indicates poor coverage, nature, and size of CSR. It is supplemented by the frequency of CSR activities. Almost all respondents underrate the frequency of CSR activities. It is validated with the CSR disclosure of the commercial banks.

Furthermore, the study explores the perception of stakeholders on CSR events of the bank. Four categorical respondents including politicians, professionals, business people and customer accept it but general people reject it. May be the general people do not feel CSR activities and their cascading effects at individual level as well as the community level. Its reflection can be found in terms of satisfaction level. Major of all respondents opine poor satisfaction on CSR activities of the commercial bank, although they expect higher satisfaction level. Figure 5

displays their poor satisfaction level. Almost all shareholders have said need of CSR and banks should initiate CSR. Therefore, minor CSR of the banks is still inadequate to make respectable impress to the shareholders.

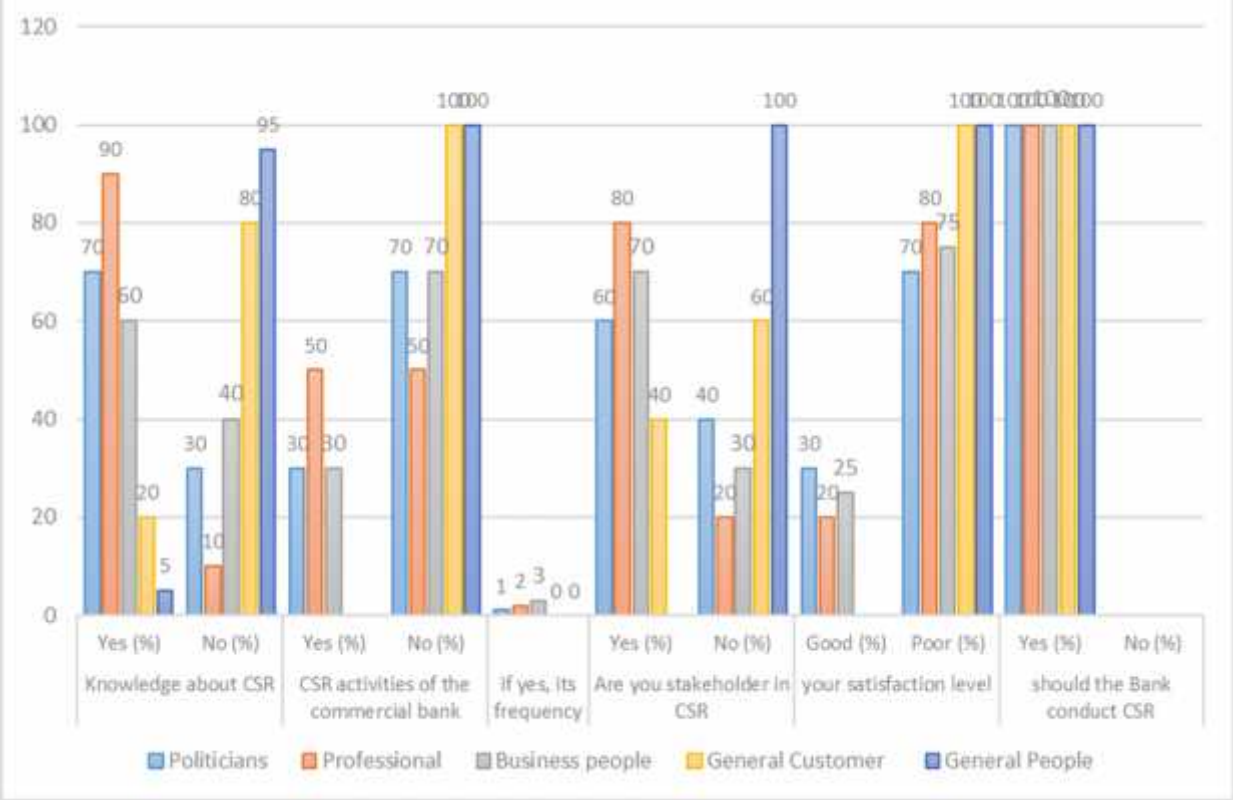

Figure 3: Result of CSR survey
Source: Field Survey, 2018

5. Conclusion

This study aims to examine the practices and dilemmas of the corporate sectors to CSR in Nepal based on primary and secondary data employing explorative and descriptive methods. As a result, the commercial bank has a positive perception, higher awareness level, and good adoption of CSR. In practice, CSR is effective as a voluntary social responsibility of the commercial bank. Similarly, CSR size is unexpectedly at least one. Its flow is discrete and irregular without priority. Lastly, the satisfaction level of almost all stakeholders is poor and says that it is mandatory for its positive implications. Since CSR is still a dilemma for the corporate sector and the government in Nepal, the government should go beyond the policy frameworks of CSR to transform voluntary CSR into mandatory CSR in the practices. Furthermore, the government should improve the monitoring and evaluation system for CSR to make mandatory additional resource mobilization for social causes for improving social welfare and socio-economic justice in society for reducing have and have-not gaps and sustaining corporate governance and culture.

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Informality and Children's School Performance in Nepal

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Abstract

The study confirms that education is the prime determinant of whether an individual worker ends up in informal jobs that are underpaid than their formal counterparts. Educated workers are paid higher wages, mostly among wealthy quintiles with more extended work experience. Most of the females are in informal employment and are getting paid less than males. Parental work significantly relates to children's academic achievement, as the offspring of formally employed parents tend to excel. Parents' level of education shapes children's school performance through motivation, monitoring, and positive behavior. Informality might push individuals into further vulnerable situations via fewer earnings, more workload, and no access to social security. We found that the parents working in informal jobs who are already paid less than their formal counterparts are less confident about the future school performance of their kids. Thus, informality could have been a vicious circle of vulnerability that less-educated parents are underpaid and less optimistic in household human capital formation through child education. It underscores the urgency of policy interventions, including facilitating the transition from informality to formality and reducing the gender wage gap.

Keywords: Informality, Wage disparity, Child education, Nepal

1. Introduction

Informality[1] raises global concerns for policymakers and businesses due to its impact on productivity, growth, workers' rights, and sustainable enterprises. It negatively influences fiscal revenues, decent working conditions, and social stratification. Informal employment is associated with wage disparity and serves as a source of precarity. It often serves as a survival option for those excluded from formal employment opportunities (Bernabé, 2002; Fields, 1975; Mazumdar, 1976; Perry et al., 2007), leading to far-reaching implications across economic, social, and environmental domains (Blau & Scott, 2003; Fields, 1975; ILO, 2018).

The informal sector employs a substantial workforce in developing economies, available as cheaper-wage temporary jobs without social protection. Such precarity undermines informality's role in poverty reduction. Approximately 60% (two billion) of the global employed population works informally due to limited formal opportunities. Informal work is more predominant (63%) among men than women (58.1%) (ILO, 2018). However, in Nepal, the lion's share of females (90%) work in the informal sector compared to males (81.1%) (CBS/GoN, 2019). Such female-dominant and low-paid jobs are crucial for livelihood options; however, they might lead to low capital formation and human development at the household level.

Reduction in informality and promotion of decent work, innovation, and formal entrepreneurship is a thematic target well described in the Sustainable Development Goals (SDGs) list. Nepal's policy framework aligns with these goals,

1 Informality in this paper means those workers (i) who have not benefitted from social security contributions by the employer and who are not entitled to paid annual leave and paid sick leave, (ii) those family members contributing to the family business and (iii) the employers and own account workers engaged in the production of goods for informal/formal or household (Details in Annex D).

incorporating them into their 15th periodic plan (2019/20-2023/24) to address poverty through education, skills, and productive work. As a sustainable development catalyst, education secures jobs and enhances earnings (Psacharopoulos & Woodhall, 1993). Moreover, parental employment significantly influences children's education and achievements (Vellymalay, 2012), shaping their attitudes and aptitudes for effective learning.

The rise of informality has implications for wage inequality (Thapa-Parajuli, 2014) and children's educational outcomes. Children of informal sector workers may experience compromised educational performance compared to those from the formal sector. The intricate link between informal employment, wage disparities, and the influence of parental employment on children's learning is challenging yet pivotal for policy formulation. This understudied area prompts questions about how parental employment affects children's educational achievements, potentially creating new marginalization.

In this study, informality and informal employment are used interchangeably. We examine wage disparities between formal and informal employment in Badikhel and explore the factors affecting them, shedding light on informal earnings. We also investigate the relationship between parental employment and children's schooling, emphasizing the roles of parents. The findings from our research provide valuable insights for policymakers and stakeholders to shape relevant policies. After this introduction, we delve into the relevant literature. The third section outlines our research methodology, while the fourth presents descriptive and empirical analyses. Our conclusions are presented in section five, and references and raw materials are appended at the end of the paper.

2. Informality: Causes and consequences

Informality encompasses behaviors, activities, or employment arrangements that deviate from strict rules and formal procedures, often characterized by the absence of official practices. Various legal and social security-based definitions exist in labor market studies. Herrera-Idárraga et al. (2015) define formal workers as those contributing to health and old-age insurance following ILO standards. Informal jobs need more regulation and official oversight, with a focus on the job nature rather than the employing firm.Bargain and Kwenda (2011) adopt a social security view, defining informality based on factors like registration, taxation, labor regulations, and social security coverage. For instance, unregistered social security contributions classify workers as informal in countries like Mexico and Brazil.

The 17th ICLS defines informal employment as work outside labor laws, lacking taxation, social protection, and employment benefits. In 2003, the ICLS expanded this concept to encompass various workers across sectors. Informal employment encompasses formal or informal sector employees, employers, own-account workers, and those producing for household use. The literature reveals two perspectives: the exclusion (subsistence economy) and the exit (micro-entrepreneur choice) hypotheses. India's NCEUS distinguishes the informal sector (enterprises) from informal employment (workers), with the informal economy encompassing both. In this regards, Ulyssea (2020)characterizes informal activity as low-income, low-productivity work.

Informality can buffer against unemployment; it might limit access to benefits and formalization. Weak institutions, taxation, and technological change contribute to the prevalence of informality. Climate change (Timsina, 2019), technological change, such as capital-skill complementarily, contributes to wage disparities. Trade openness might expand informal labor markets due to layoffs driven by competition. Education plays a significant role(Thapa-Parajuli, 2011), with human capital theory emphasizing its importance in skill development and future income. The connection between wage inequality and informality is intricate and context-specific, with research spanning definitions, causes, consequences, and interactions. Informal sector employment is influenced by economic, social, and institutional factors, shaping labor markets, wage inequality, and economic development (Bacchetta & Bustamante, 2009; Thapa-Parajuli, 2014; Ulyssea, 2020).

Empirical studies highlight wage disparities between formal and informal sectors. Gender-specific factors affected wage gaps in Australia (Mahuteau et al., 2017), structural factors in China (Jong-Wha & Wie, 2017) and composition and structural factors both in India (Deshpande et al., 2018). The informality and precarity has to do with education in Colombia (Herrera-Idárraga et al., 2015)and similar is the case in Turkey inked regional wage disparities in Colombia to informality and education. In Turkey, (Tansel & Kan, 2012) highlighting education and occupation's role in earnings, and such occupation based income or wage disparities has sectoral dimension in Egypt (Tansel et al., 2020). And, the wage partiality in informal employment relative to their formal counterpart is evident in Korean (Cho & Cho, 2011) as well as in Brazil, Mexico, and South Africa(Bargain & Kwenda, 2011). These studies unveil diverse determinants to wage disparities, among them education, gender, occupation, and region are detrimental ones and common around the globe. Understanding these dynamics informs policies addressing wage inequality and promoting inclusive growth.

Informality can emerge when formal firms or the public sector fail to expand proportionally to the labor market supply. While a significant informal economy implies lower productivity, higher corruption, and less stability and protection, it is also recognized as crucial for expanding economic participation. While the expansion of the informal economy can positively affect poverty, it can also have adverse impacts. Likewise, wage differentials are widespread across labor markets. Education plays a pivotal role in wage differentials, while other factors such as technology, school quality, and employer motives also contribute. Parental employment similarly exerts an influence on children's educational performance. Scholars have employed diverse methodologies in their studies. This research investigates determinants of wage differentials, the relationship between education and wage disparities, and the impact of parental employment on children's educational performance. Detailed methodology to address these research objectives is presented in the following chapter.

3. Research Methodology

The study site, Badikhel which is situated in Godawari Municipality, Lalitpur District, Bagmati Province, is characterized by its diverse caste groups involved in various informal economic activities such as agriculture, bamboo crafting, fishing, construction, and carpentry. Some individuals are also engaged in formal employment, including government services, permanent school teaching, and security forces. We chose this location purposefully to investigate the causes and outcomes of wage disparities across various occupations within Badikhel's ethnically and occupationally diverse setting.

Given our awareness of the Pahari and non-Pahari ethnic strata and the presence of urban and peri-urban clusters, we conducted random selections from wards 1, 3, and 4. From the total population of 3,576 individuals residing in 791 households according to the 2011 Census, we randomly selected 76 households. Within these households, we conducted interviews with 126 wage earners. Further details are provided in Annex B.

Our questionnaire consists of nine sections with 73 specific questions, mostly borrowed from the Nepal Labor Force Survey of 2017/18, designed to collect information on household particulars, children's education, housing, employment details, working hours, income, and more. We incorporate some open-ended questions also. The researcher conducted In-person face-to-face interviews with wage earners from the selected households. Respondents, encompassing both males and females, were categorized into formal and informal salaried groups following the classification by Mahuteau et al. (2017), with self-employed and unpaid family workers excluded from the study.

Nine occupational categories from NLFS were adapted for wage earners, with six categories used due to sample size limitations. Respondents' work activities, whether formal or informal, were recorded. Informal employment was defined as per the Nepal Labor Force Survey (NLFS) report criteria, encompassing self-employed businesses, private unregistered companies with under ten employees, family members in family businesses, and workers without paid leave or social security contributions.

Education levels were grouped into five categories from the original nine, considering the education structure in Nepal. Literature suggests wages depend on variables such as education, experience, skills, age, gender, and employment characteristics. This study hypothesized that hourly wage depends on independent variables like informal employment and years of schooling alongside control variables such as age, gender, and wealth quintile.

The study estimates the Mincer model, originally stemming from the human capital theory to elucidate the wage gap between formal and informal employment, asMincer (1958, 1962) posited; and adapted by scholars such as Tansel and Kan (2012), Thapa-Parajuli (2014) and Bhattarai and Wisniewski (2017). In this study, the Mincer earnings model examines whether informal job workers earn more or less than their formal job counterparts, and this helps to understand the degree and distance of wage disparity.

We model hourly wage in Nepali currency as the dependent variable. Although various functional specifications of the dependent variable have been tried in the literature, the logarithmic form proved to be the most successful one, both in terms of satisfying the assumption of heteroscedasticity assumption and maximizing the explanatory power of the regression as, Dougherty and Jimenez (1991) argues, and we follow them here. The model assumes that three main determinants of individual wages are education, work experience, and its square. We estimate the Mincer regression equation expressed as:

$$In\_wage = \beta_0 + \beta_1 inf\_1 + \beta_2 age + \beta_3 male\_1 + \beta_4 s\_year + \beta_5 wealth + \epsilon_{it} \quad \text{---------- --------- (1)}$$

The dependent variable, wage, is measured in logarithmic level. The variable inf_1 takes the value '1' for individuals in informal employment and '0' otherwise, while age represents the number of years. Male_1 is a gender dummy variable, taking '1' for males and '0' for females. Both years of schooling and wealth quintile are continuous variables.

4. Results and Findings

Determinants of informal employment

Education appears to be a primary determinant of participation in informal employment in Badikhel. Formal degrees are linked to a lower likelihood of being engaged in informal jobs (*Figure1 in Annex A*). Among the sampled parents, around 56.3% work in formal employment, while the remaining 43.7% are in informal jobs. A significant majority (75.8%) of parents with educational levels below primary engage in informal employment, which is notably higher compared to those with lower secondary (59.4%) and higher secondary (35.7%) education. Among undergraduate degree holders, a mere 4.5% are involved in informal jobs, and the percentage further diminishes among post-graduate degree holders. Hence, the level of education appears to be a significant factor influencing the choice between formal and informal employment in Badikhel.

In *Figure 3 in Annex A*, most workers are in formal employment, with males displaying a higher tendency for informal work (51.2%), while females have a lower rate (27.5%). Notably, Badikhel's females are less inclined towards informal employment, which is intriguing. The chi-squared test in Annex A's *Table 1* shows gender's statistical significance ($p<0.1$) concerning informality. *Figure 4* highlights varying formal employment across wards; Ward No. 1 has the lowest informal employment (24.5%), whereas Ward No. 4 has the highest (75%), potentially due to its Pahari population.

In Badikhel, limited opportunities for young workers to start formal employment led to initial engagement in informal work, as evident from the data. This trend aligns with many countries where the younger demographic is more inclined towards informality, while older individuals tend to transition into formal employment. The data underscores that the likelihood of formal work increases with age, reflecting the typical characteristic of informal employment—higher age groups tend to opt for formal jobs with benefits like paid leave, social security, and insurance (*Table 1 in Annex A*).

Ethnicity emerges as another determinant of informal employment in Badikhel. Dalits, followed by Janajati and Pahari, are more inclined towards informal work, potentially due to relevant skills or qualifications. Administrative hurdles may also steer them away from formal employment. Most of them opt for informal jobs as a survival strategy.Marital status also shapes informal employment. Statistics reveal that unmarried individuals lean more towards informality, while married individuals are less likely to choose informal work, possibly to allocate time for family and rituals.

Occupation plays a key role in determining formal or informal participation. Two trends are evident. Firstly, workers in elementary occupations show a stronger association with informality due to skills alignment. Secondly, occupational categories 1 (Legislators, Senior Officials, and Managers) and 2 (Professionals and Armed Forces) predominantly lean towards formal employment, possibly due to the need for high skills and education.

In summary, the data presents insights into the influence of age, ethnicity, marital status, and occupation on informal employment in Badikhel.

Wage Differential

We interviewed 126 working individuals who earned an average of NPR 93 per hour and NPR 5079 per week. While some respondents earned as little as NPR 21, others earned as high as NPR 250, reflecting a broad range. Similarly, the minimum weekly wage was NPR 233, with a maximum of NPR 14,000, resulting in a higher standard deviation. For more detailed information, refer to *Table 2 in Annex A*.

Table 1: Wage differential (In NPR)

Worker's characteristics		Formal	Informal
Education			
	Primary and below	100.38	96.32
	Lower Secondary	69.92	66.74
	Higher Secondary	96.50	82.40
	Bachelor's Degree	110.62	114.00
	Master's and above	121.00	N/A
Gender			
	Male	113.83	90.66
	Female	80.07	56.82

Age Groups			
	15 - 24	85.17	73.50
	25 - 34	102.03	68.86
	35 - 44	85.83	92.07
	45 - 54	114.73	102.30
	56 & above	130.00	108.50
Ethnicity			
	Brahmin/Chhetri/Thakuri	102.31	83.33
	Janajati / Aadibasi	146.00	46.50
	Pahari	79.13	93.37
	Dalit	83.00	67.83
Marital status			
	Unmarried	103.94	78.53
	Married	98.81	85.90
Occupation			
	Senior officials & managers	130.72	N/A
	Professionals & armed forces	103.83	N/A
	Technicians & associate professionals	92.58	101.00
	Sales, service, & clerical	66.58	56.17
	Craft, machine & trade-related workers	89.00	76.71
	Elementary Occupations	56.00	91.41

Source: Authors' own elaboration; N/A stands for 'Not Available'

Table 1 summarizes the wage differentials in formal and informal employment categorized by education, gender, age groups, ethnicity, marital status, and occupation. The data reveals that male workers, individuals with higher education levels, those in the oldest age group, and those of Aadibasi-Janajati ethnicity exhibit higher average wages in formal employment in Badikhel. Marital status demonstrates that singles dominate formal employment, while married individuals are more prevalent in informal work. Occupation-wise, category 1 (Legislators, Senior Officials, and Managers) holds the highest average wage, followed by Category 2 (Professionals and Armed Forces), with no correlation to informal employment. Formal workers generally earn more on average than informal workers. Significant differences in average hourly wages across educational levels are evident. Workers with primary education and below in Badikhel outearn those with lower and higher secondary education, possibly due to their higher inclination towards informal employment and longer working hours, often tied to seasonal peaks. Conversely, returns on investments in lower and higher secondary education show significance in both formal and informal sectors. Among workers with bachelor's degrees, informal workers earn more than formal workers at the same education level. Higher educational degrees correlate with higher hourly wages, especially for those with master's degrees and above, who receive the highest wages and notably lack involvement in informal employment. Regarding age groups, wage differentials for young and pre-retirement workers are lower than those in the twenty-five to thirty-four and oldest age groups. Intriguingly, informal workers aged thirty-five to forty-four earn more than their formal counterparts in the same age range. *Figure 1 in Annex A* plots the frequency distribution of hourly wages in wards 1, 3, and 4. Asymmetric wage distribution indicates fewer individuals commanding higher wages across all wards.

Table 2: Wage difference by informality and gender (t-test)

	Formal	**Informal**	**Difference**	**t-value**
Hourly wage	100.04 (n=71)	83.89 (n=55)	16.15* (8.425)	1.9
Weekly wage	5442.47 (n=71)	4610.89 (n=55)	831.58* (441.466)	1.9
	Male	Female		
Hourly wage	101.977 (n=86)	73.67 (n=40)	28.30*** (8.747)	3.25
Weekly wage	5669.01 (n=86)	3812.00 (n=40)	1857.01*** (446.942)	4.15
	Formal	Informal		
Hourly wage - male	113.83 (n=42)	90.65 (n=44)	23.17** (10.26)	2.25
Hourly wage - female	80.06 (n=29)	56.81 (n=11)	23.25* (13.24)	1.75

**** p<0.01, ** p<0.05, * p<0.1: n is observation and SE is Standard Error in parenthesis*
Source: Authors' calculation

Table 2 summarizes the significance (p<0.1) of wage associations with informality, indicating that formal workers tend to earn higher wages than their informal counterparts. In the subsequent analysis stage, hourly and weekly wages are significantly (p<0.01) different among males and females, underscoring a gender pay gap in Badikhel. Male workers generally earn more than their female counterparts. The Mann-Whitney U Test also supports this gender-based wage discrepancy (*Figure 2 in Annex A*), where the hourly wage is statistically significant (p<0.01) with gender.

Moving to the third analysis stage, hourly and weekly wages within the same gender-both for males and females-are significant (p<0.05 and p<0.1, respectively) when one is in informal employment. This fact reveals that wage disparities persist for both genders in informal jobs. Interestingly, the average wage differential among females is higher than that among males. Among males, formal workers tend to earn more than informal workers, and the same trend holds among females. Thus, changes in wages between genders and variations within genders, particularly in the context of informality, contribute significantly to the growing wage inequality in Badikhel.

Table 3: Wage difference by occupation and gender

Occupation	Difference	Hourly wage (NPR)	
		Male	Female
Legislators, Senior Officials, and Managers	22 (15.9%)	138	116
Professionals and armed forces	23 (20.9%)	110	87
Technicians and associate professionals	23 (22.1%)	104	81
Sales, service, and clerical	29 (38.1%)	76	47
Craft, Machine Operators & related trade workers	54 (58.6%)	92	38
Elementary occupations	20 (21.2%)	94	74

Source: Authors' calculation

Table 3 highlights considerable variation in the average hourly gender pay gap across major occupational categories. Among the presented categories, the average hourly wage for males consistently exceeded that of females. Notably, the six broader occupational groups' most substantial hourly pay gap appeared in Craft, Machine Operators, and related trade workers. Data reveals 59% higher hourly earnings for employed males in this category than their female counterparts. Conversely, the hourly gender pay gap was relatively modest in Legislators, Senior Officials, and Managers, where both male and female hourly wages were the highest. The data indicates that an employed male in the Legislators, Senior Officials, and Managers category earns about 16% more per hour than an employed female. This could signify the presence of job discrimination, potentially leading to reduced expected earnings and discouraging female participation in the labor force. There is a significantly high level of wage discrimination in all occupations.

Table 4: Mincer model of wage determination

	Hourly wage in log scale		
VARIABLES	**(1)**	**(2)**	**(3)**
Years of Schooling	0.0208*		
	(0.0114)		
Wealth Quintile		0.0816**	
Informal Employment		(0.0327)	-0.287***
			(0.0886)
Age			0.00993**
			(0.00397)
Dummy (Male1)			0.407***
			(0.0941)
Constant	4.177***	4.151***	3.896***
	(0.131)	(0.110)	(0.164)
Observations	126	126	126
R-squared	0.026	0.048	0.205

*Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Table 4 summarizes the regression results we estimate for equation (1) specified in the methodology section. In Specification (1), years of schooling stand as a positive and significant factor (p<0.1) in hourly wage determination, holding other variables constant. This indicates that a higher level of education leads to higher earning potential, highlighting the significant returns on educational investment in Badikhel. With each additional year of schooling, hourly wages experience a 0.02% increase.

In Specification (2), the wealth quintile coefficient is positive, and a statistically significant impact ($p<0.05$) on hourly wage becomes apparent, while other variables remain constant. The outcome underscores that individuals in higher wealth quintiles earn significantly more per hour than their lower quintiles counterparts. This finding suggests a growing income gap, potentially driven by privileged access to higher education among the wealthier, who are more likely to secure formal employment due to enhanced education opportunities.

Specification (3) further highlights informal employment as a significant wage determinant in Badikhel. Age and gender also emerge as statistically significant wage influencers. Informal workers earn notably less than their formal counterparts, marked by a negative significance (approximately 0.28% less). It reveals informal workers' disadvantages, lacking benefits like paid leave and social security contributions. The coefficient of informal employment in Specification (3) reveals that an hourly wage increase of 0.28% reduces the likelihood of informal employment, suggesting that individuals tend to transition to formal employment as their wages rise.

Age's influence on wages follows the expected pattern: older workers command higher wages. The coefficient shows that a worker earns 0.009% more each year of age. Gender, a key factor, reflects Nepal's societal norms, as male workers earn significantly more than females (0.40% higher). Overall, regression outcomes mirror the descriptive analysis and traditional theories, indicating that formal workers, older individuals, and males are paid notably more than their counterparts. Despite the modest explanatory power (ranging from 3% to 21%, given the small sample size), all coefficients retain significance, emphasizing the robustness of the findings.

Informality and perceived school performance

This section delves into the correlation between parental employment and children's school performance, investigating how parental employment impacts educational outcomes. Table 5 presents notable percentages signifying children's academic performance to their parents' formal or informal employment status. When parents are engaged in formal employment, children's performance excels, averaging 60% for "good" and 40% for "average." Parents in formal employment generally hold optimistic views about their children's forthcoming academic achievements. In contrast, children of informally employed parents achieve lower scores at 59.26% (good) and 37.04% (average). This difference suggests the influence of parental employment on educational performance. Importantly, 3.70% of parents in informal employment anticipate their children performing poorly in the upcoming year, underscoring the parental role in shaping educational outcomes. Notably, many high-performing children have parents engaged in formal employment.

Table 5: Perception about children's education (%)

Items	Formal	Informal
Good	60.00	59.26
Average	40.00	37.04
Bad	0.00	3.70

Source: Authors' calculation

An evident pattern emerges in Table 2 of Annex A that increased parental schooling positively correlates with improved children's educational performance. For instance, children of parents with 12 years of schooling exhibit good (75%) and average (25%) performance. Parents with 15 years of schooling score well (28.57%) and average (71.43%). Educated parents could afford better school education and could have supported their children's studies at home. Highly educated parents contribute by assisting with homework and cultivating an ideal home learning environment. These findings align with (Eccles, 2005); Mata et al. (2018); and Hernandez et al. (2016), affirming the influential role of parental education on students' academic achievements.

Table 6: Parental education, children's effort and performance (t-test)

	Formal	Informal	dif	t value
Mother's years of schooling	11.75 (n=20)	6.71 (n=28)	5.03*** (1.226)	4.1
Father's years of schooling	13.05 (n=20)	8.607 (n=28)	4.44*** (.919)	4.8
Children's net time effort	94.5 (n=20)	72.14 (n=28)	22.35* (11.99)	1.85

*** p<0.01, ** p<0.05, * p<0.1: n is observation and SE is Standard Error in parenthesis

Source: Authors' calculation

Table 6 presents compelling statistical evidence indicating the significant influence ($p<0.01$) of parents' educational attainment on their choice of working in either the formal or informal sectors. Additionally, the data highlights that children exhibit a noteworthy increase in their net time effort ($p<0.1$) when their parents are engaged in the formal

sector. This implies that children of formally employed parents allocate more time to their studies than those with parents in the informal sector. Consequently, the findings highlight the considerable impact of informality on children's educational performance.

Figure 1 illustrates the correlation between informality, wages, and children's school performance in Badikhel. In the provided graph, a significant proportion of informally employed parents earn lower wages than their formally employed counterparts. Consequently, these parents' express concerns about their children's future academic performance. This apprehension might arise due to their limited income, which necessitates substantial efforts for family sustenance, potentially impacting their children's ability to provide quality education. As a result, access to essential primary school supplies like pencils, erasers, sharpeners, notebooks, and even learning tools such as the internet might be limited or nonexistent.

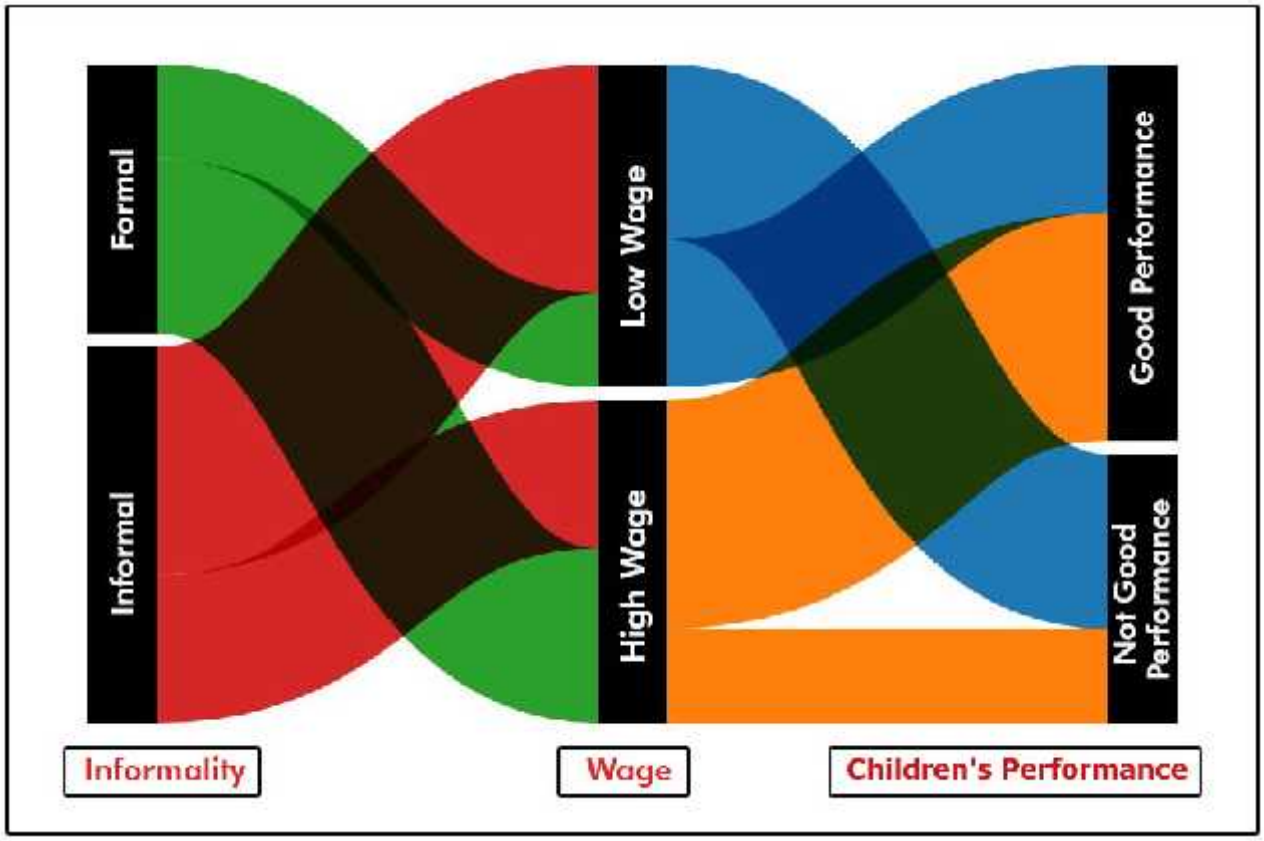

Figure 1: Informality, wage and children's performance
Source: Authors' elaboration

Furthermore, informally employed parents often have lower levels of education, which could hinder their capacity to actively support their children's schooling. They might also need help to allocate time for their children's education. Consequently, these circumstances may lead to diminished awareness among children regarding the significance of investing time and effort into their studies. Interestingly, a minority of informally employed parents earn higher wages and are optimistic about their children's future academic achievements.

Most formally employed parents enjoy higher wages and have an optimistic outlook regarding their children's future school performance. This perspective might stem from their advanced education and skillset. As educated and skilled parents, they recognize the importance of nurturing their children's education and allocate ample time to providing support. Another contributing factor could be their elevated income, affording them the means to secure a quality education for their children. Consequently, their children likely have access to essential learning resources and tools, contributing to a well-rounded education. These children are also more inclined to dedicate ample time and effort to their studies. However, a small subset of formally employed parents experience lower wages, leading them to hold skeptical views about their children's future school performance.

Concerning the relationship between informality, wages, and children's school performance, the study delved into the impact of parents' education on their children's academic outcomes through open-ended questions. Parents, especially in Ward No. 4, acknowledged their relatively lower education levels, and some expressed that this limitation hindered their active involvement in their children's education. Reflecting on parental education, one respondent shared their perspective:

> *"I am extremely eager to support my children's education, but my poor educational background constraints my ability to help them. I cannot adequately assist them with their homework and monitor their educational advancement. It hurts myself and my kids also."* (*Source: Field Survey, 2020)*

We explore whether parents' employment affects their children's educational performance. Most parents in informal employment admit they have little or no time to get involved in their children's educational activities. Relating to parents' employment, one parent had these to say.

> *"I wish to support my children in their educational activities, but my work schedule does not allow me to do so. I work from early mornings to late evenings, even on weekends. I hardly have any time for rest. If I had a 10-5 office job, I could have dedicated some morning and evening hours to assisting my kids. Sadly, it is not. Neither my kids nor I are happy. It hurts instead."* (*Source: Field data 2020*)

However, neither of the parents maintained that they usually manage time to monitor their children's education even though they spend much of their time at work.

5. Conclusion and Possible Extension

We investigated socio-economic determinants of informality in Badikhel, where approximately 43.7% of total employment is in informal. Age, gender, education, ethnicity, and marital status are key determining factors whether one picks informal employment. Youth aged 15-24 constitute the highest informality rate, around 70 percent of total employment, with informality declining post-24 years. A master's degree and higher is predominantly associated with formal employment, while a bachelor's degree holder corresponds to roughly 4.5 percent informality compared to those with lower education levels. Notably, males are more inclined toward informal employment, while unmarried individuals and those from Pahari, Dalit, and Janajati communities are more engaged in the informal sector.

A wage disparity between formal and informal employment prevails in Badikhel, substantiated using the Mincer earnings model. Informal workers notably earn significantly less than their formal counterparts. Schooling duration significantly affects wages; heightened schooling years correspond to elevated earnings, especially among the highly educated. Wealth quintile and age also exert positive, substantial influences on wages. Conversely, worker experience and marital status exhibit no discernible impact. Crucially, a gender wage gap is discernible, with females disproportionately affected. Male workers outearn their female counterparts, and the gender-based wage gap among females surpasses that among males.

This analysis establishes the influence of parental employment on children's educational performance. The offspring of formally employed parents tend to excel academically. Parents' cumulative schooling years also shape children's performance, promoting motivation, monitoring, and positive social behavior. Moreover, informal employment positively correlates with children's invested time in education, with those from formal-working households displaying more significant commitment. The study underscores informal workers' diminished earnings relative to their formal counterparts and the advantageous educational outcomes associated with the children of formal workers.

Informality, in Badikhel, coincides with a notable wage disparity between formal and informal employment. While informal workers earn significantly less than their formal counterparts, it is important to note that informality is not exclusively associated with lower wages. Interestingly, there are even a few formally employed individuals with lower wages. Gender-based wage differences are also pronounced, particularly impacting female workers.

Our findings underscore the vulnerability of those engaged in informal employment. They facereduced compensation and grapple with increased workload and a need for social security provisions. Worryingly, many holds pessimistic views about their children's prospects, fearing that the next generation might not fare well. This pessimism could further erode household capital formation through education, exacerbating the marginalization of vulnerable households.

Informal employment significantly impacts the quality of life regarding household human capital formation. Education, healthcare, income, and training are vital in shaping human capital. Healthy, skilled, trained, and experienced individuals are assets to an economy. However, the informally employed, burdened by low wages, often struggle to afford adequate healthcare, and contribute to their children's education, potentially leading to school dropout and child labor due to financial constraints and uncertainties. Moreover, their uncertain career trajectories cast doubt on their children's prospects, causing skepticism about their educational and income growth.

Over time, parental engagement in informal employment hampers their children's accumulation of human capital, impeding their ability to achieve higher income levels and advanced education. The cycle perpetuates, limiting both individual and societal progress.

Extending the analysis beyond primary education, examining shifts in secondary and tertiary levels is crucial. Facilitating the transition from informality to formality holds the potential for addressing gender wage gaps in Badikhel. Exploring STEM exam outcomes in relation to parental occupations could yield insights into how informality influences education attainment. Further investigations might scrutinize factors impacting educational performance across different levels, including tertiary education. Expanding the study with a larger sample and employing the Oaxaca-Blinder method for thorough decomposition remains a viable avenue for analysis.

Disclaimer: None of the author(s) has any financial and other obligation while producing this paper.

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Annexes

ANNEX A: Descriptive information on sample households

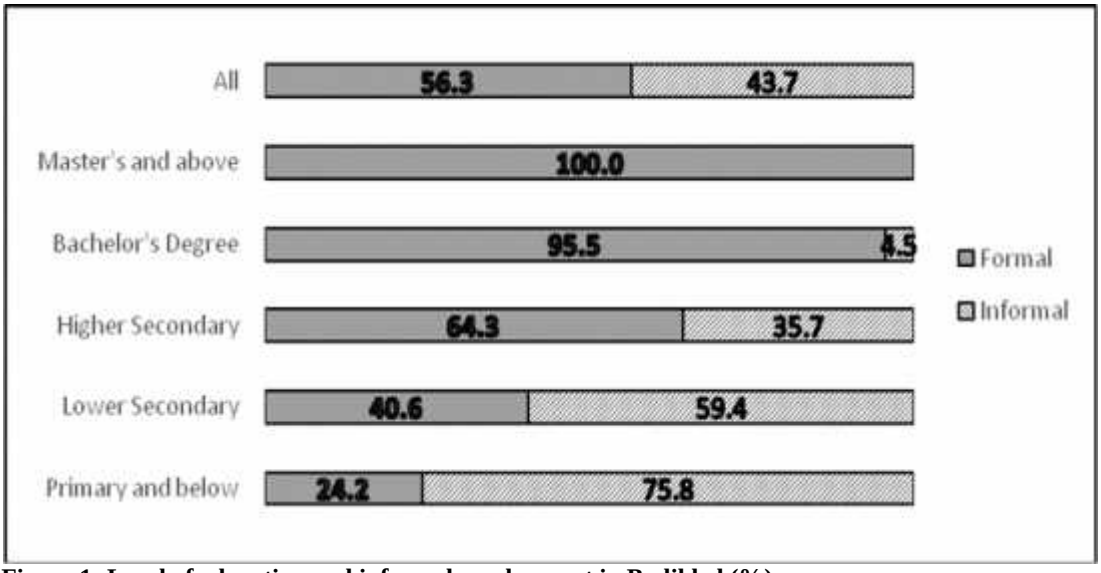

Figure 1: Level of education and informal employment in Badikhel (%)
Source: Field Survey, 2020

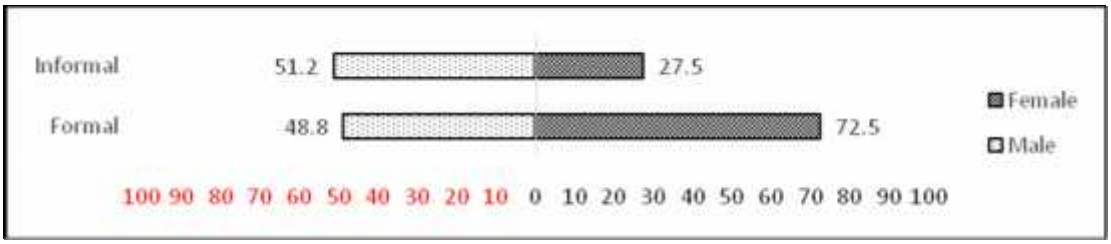

Figure 2: Labor informality and total employment by gender (%)
Source: Field Survey, 2020

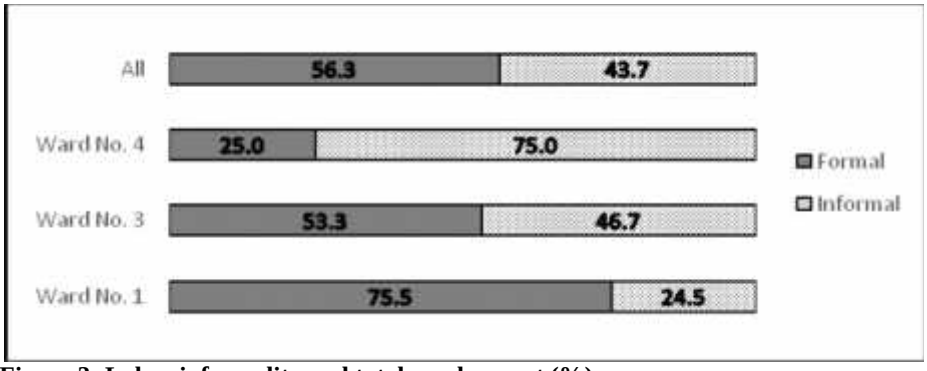

Figure 3: Labor informality and total employment (%)
Source: Field Survey, 2020

Table 1: Informality and socio-economic status

		Formal	Informal
Age Groups			
	15 - 24	6 (30.00)	14 (70.00)
	25 - 34	32 (69.57)	14 (30.43)
	35 - 44	18 (54.55)	15 (45.45)
	45 - 54	11 (52.38)	10 (47.62)
	56 and older	4 (66.67)	2 (33.33)
Ethnicity			
	Brahmin/Chhetri/Thakuri	61 (77.22)	18 (22.78)
	Janajati / Aadibasi	1 (20.00)	4 (80.00)
	Pahari	8 (22.86)	27 (77.14)
	Dalit	1 (14.29)	6 (85.71)
Marital status			
	Unmarried	17 (53.13)	15 (46.88)
	Married	54 (57.45)	40 (42.55)
Occupation			
	(a) Legislators, Senior Officials and Managers	18 (100.00)	N/A N/A
	(b) Professionals and Armed Forces	18 (100.00)	N/A N/A
	(c) Technicians and associate professionals	19 (79.17)	5 (20.83)
	(d) Sales, service and clerical	12 (66.67)	6 (33.33)
	(e) Craft, Machine Operators and related trade workers	3 (15.00)	17 (85.00)
	(f) Elementary occupations	1 (3.57)	27 (96.43)

Source: Authors' own elaboration; N/A stands for 'Not Available'

Table 2: Hourly and weekly wage (in NRs.)

	N	Min	Max	Mean	Sd
Hourly	126	21	250	92.99	47.4
Weekly	126	233	14000	5079.48	2482.58

Source: Authors' own calculation

Table 3: Tabulation of gender informality status

Gender	Formal	Informal	Total
Male	42	44	86
	48.84	51.16	100.00
	59.15	80.00	68.25
Female	29	11	40
	72.50	27.50	100.00
	40.85	20.00	31.75
Total	71	55	126
	56.35	43.65	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 6.2150 Pr = 0.013
likelihood-ratio chi2(1) = 6.4075 Pr= 0.011

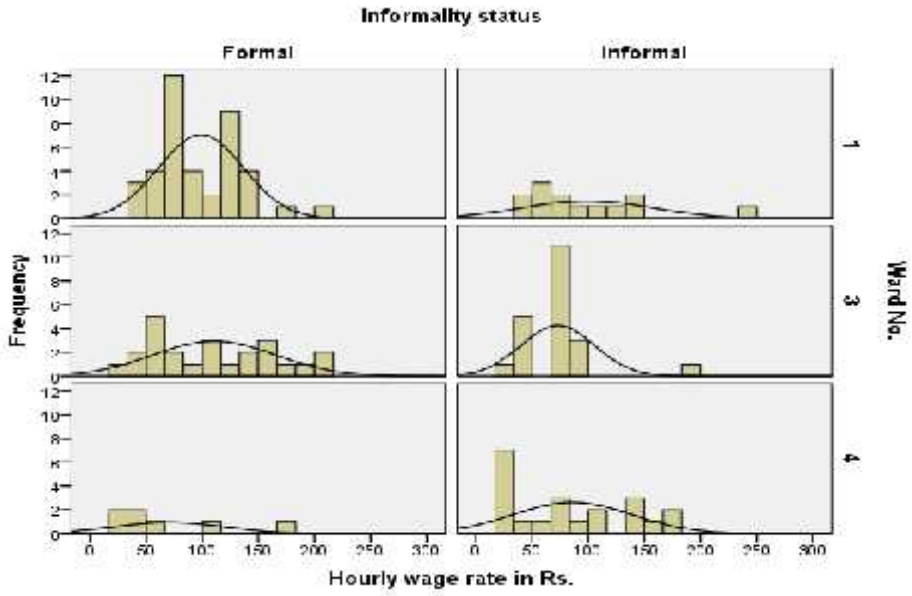

Figure 4: The frequency distribution of hourly wage by wards

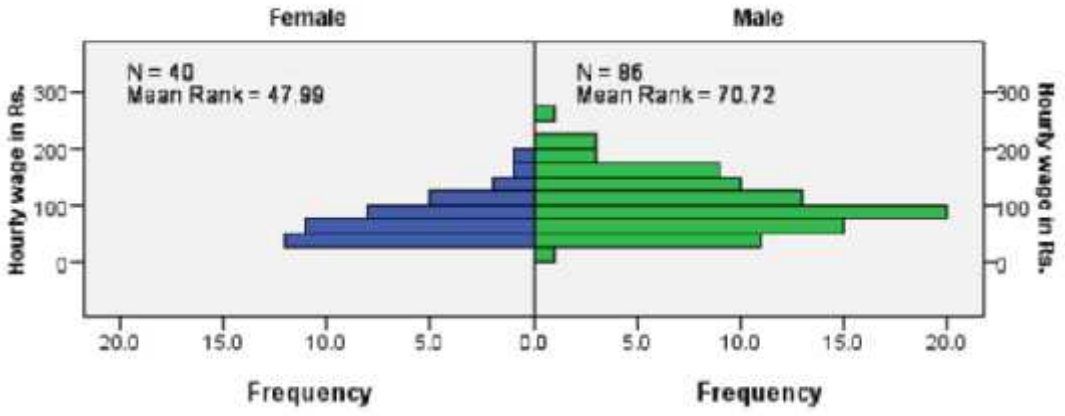

Figure 5: Mann-Whitney U Test

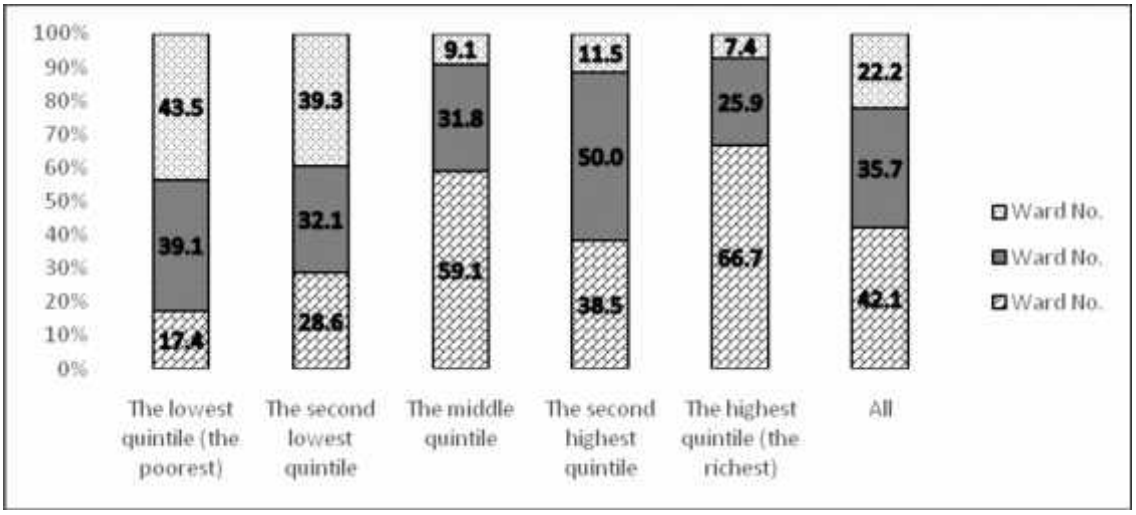

Figure 6: Wealth Quintiles

ANNEX B: Sampling procedure

The households were selected from the list using systematic random sampling with an interval of three. For Ward No. 1, we first calculated the sampling interval by dividing the total number of households (127) by one-third numbers (33%) of households (42). The sampling is 3. We then selected one household randomly, in this case 5. Household #5 was the first household. We then listed starting with household #5 and selected each 3rd household. The second selected household was 5+3, or #8, then #11, #14, #17 and continued until each ward was completed. The same process was applied for peri urban.

Annex C: Variables used to construct the wealth index

Table 4: List of variables used to construct the wealth index

SN	Type of durables	SN	Types of durables
1	House ownership status	14	Types of furniture and fixtures
2	Material of house fountain	15	Types of electric items
3	Material of house's outer wall	16	Has a gas for cooking
4	Roof material	17	Television
5	Rental income or not	18	Camera and radio
6	Source of drinking water	19	Motorcycle
7	Toilet facility	20	Bicycle
8	Sources of lighting	21	Car or four-wheeler
9	Email/Internet facility	22	Sewing machine
10	Fuel used	23	Telephone
11	Refrigerator	24	Mobile phone
12	Oven	25	Computer or laptop
13	Washing machine	26	Own land

ANNEX D: Definition of informality

The informality we mean in this paper is defined as (i) the employees who are not benefitted from social security contributions by the employer and who are not entitled to paid annual leave and paid sick leave, (ii) those family members contributing to the family business and (iii) the employers and own account workers engaged in the production of goods for informal/formal or household. The details on informality are in the following chart.

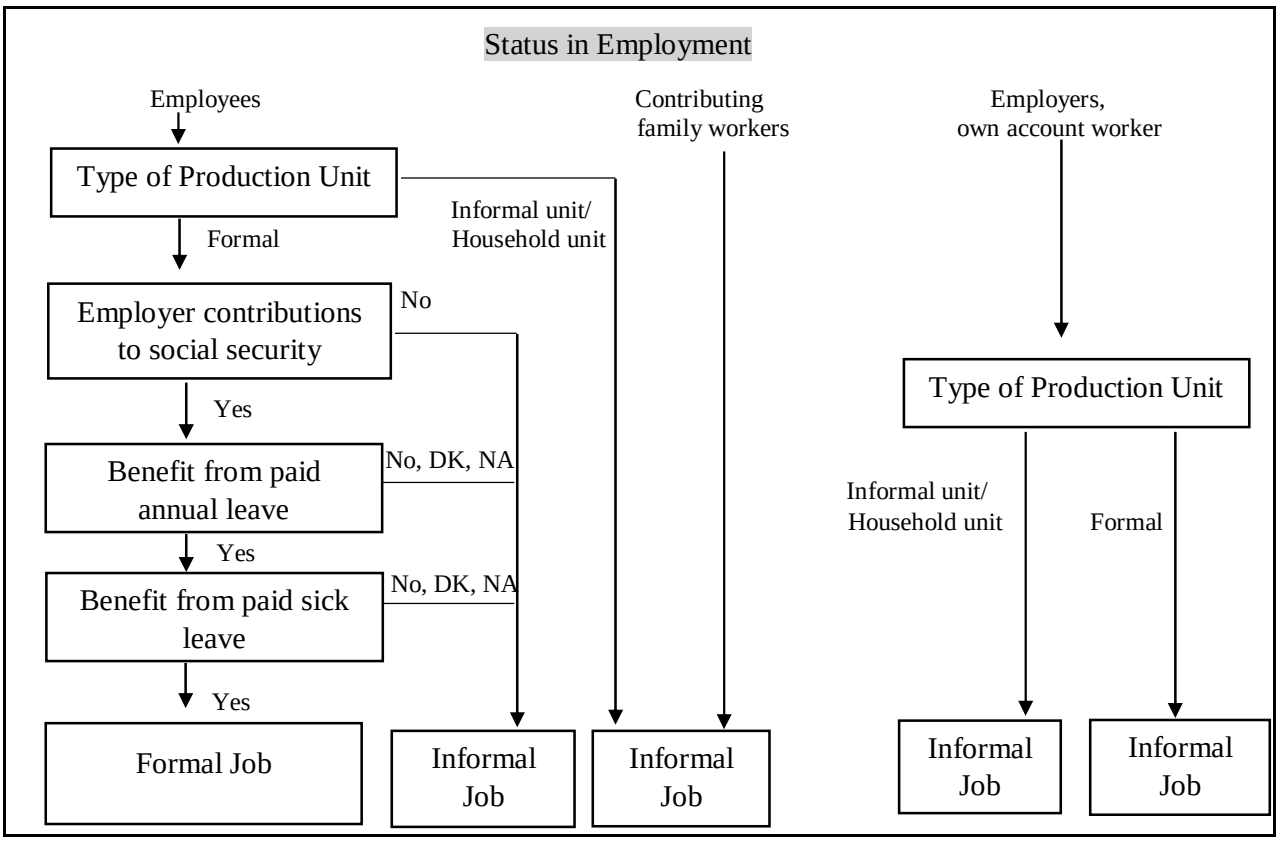

Figure 7: Informal Employment Nepal Flowchart
Source: Compiled from Nepal Labor Force Survey report (CBS/GoN, 2019) and (ILO, 2018)

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Three to Seven Authors

Kernis, M. H., Cornell, D. P., Sun, C. R., Berry, A., Harlow, T., & Bach, J. S. (1993). There's more to self-esteem than whether it is high or low: The importance of stability of self-esteem. *Journal of Personality and Social Psychology*, *65*, 1190-1204.

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Miller, F. H., Choi, M. J., Angeli, L. L., Harland, A. A., Stamos, J. A., Thomas, S. T., . . . Rubin, L. H. (2009). Website usability for the blind and low-vision user. *Technical Communication 57*, 323-335.

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