JKBC
Quest
Journal of Kathmandu BernHardt College

Vol. 3, No. 1 & 2 July - December 2021 Issue No. 3

CONTENTS

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Corporate Governance Practices in Nepalese Development Banks

Agni Dhar Parajuli[*]

Abstract

Based on the sample of six development banks listed in Nepal Rastra Bank up to 2020, this study examines the corporate governance of Nepalese development banks. Bank's board of directors, CEO and employees always commit to responsibility, accountability, fairness in work and performance, policy formulation and implementation, transparency in decisions, maintaining effective internal control system, ethical leadership and stakeholder management and helps to achieve better performance of the bank. The data was analyzed on the basis of descriptive statistics. The results show that those development banks still need much more attention to corporate responsibility. The research concludes that corporate responsibility needs to remain stable in order to create wealth, job and maintain financial and management sustainability.

Keywords: *Unbridled growth, Likert scale, Transparency, Investment risk, Stakeholder management.*

Today's business world is highly competitive. Every organization needs to perform its activities with its own plan and goals for the purpose of creating wealth, jobs, and maintaining financial sustainability. Most organizations fail to create wealth, jobs, and financial sustainability when they do not properly adhere to organizational norms, goals, and standards. The purpose of corporate governance is to help build the environment of trust, transparency, and accountability necessary for fostering long-term investment, financial stability, and business integrity, thereby supporting stronger growth of wealth and more inclusive societies. This environment is helpful to every stakeholder, nation, investor, employee, and customer. Corporate governance is one of the best techniques to direct and control organizational activities and protect the rights of stakeholders. Corporate governance will encourage active cooperation between

[*] *Mr. Parajuli is Associate Professor, P.K. Multiple Campus, Faculty of Management, T.U. email: agnidharp@gmail.com*

corporations and stakeholders in creating wealth, jobs, and financially sustainability in enterprise. Every investor wants a return from investment. The return will be possible only if they can direct and control their work according to the organizational philosophy, law of the country, goals, and ethical standard of the organization. Cadbury (1992), states that corporate governance is the system by which companies are directed and controlled.

Corporate governance framework should recognize the rights of stakeholders established by law or through mutual agreements. They encourage active cooperation between corporations and stakeholders in creating wealth, jobs, and the sustainability of financially sound enterprise. The board should apply high ethical standards. It should take into account the interests of stakeholders.

Corporate governance has been emerging as one of the screening tools for both financial and non-financial organizations as a series of corporate frauds happened in developed and underdeveloped countries. Fraud brought negative effect to the corporate performance and stakeholders' interest, and even made some firms go bankrupt (Friedman, 1970). In addition, organizational failure to address the governance in many circumstances created the worst condition. For example, as presented in Monem (2001), One-Tel had a major corporate collapse in Australia in 2001. At the time of its collapse, it was the fourth largest telecommunications company in Australia with more than two million customers and operations in eight countries. Numerous scholars and their analyses of quantitative and qualitative data suggest that One-Tel's is a classic case of failed expectations, strategic mistakes, wrong pricing policy, and unbridled growth. The company had serious deficiencies in organization standards and its corporate governance, including inappropriate and inadequate internal control, financial reporting and audit quality, board's scrutiny of management, poor internal communications, and unjustified executive remunerations.

Banking supervision cannot function well if it lacks sound corporate governance (Bauwhede & Willekens, 2008; Babalola, & Adedipe, 2014). Fanta, Kemal and Waka (2013) have stated that good corporate governance improves economic efficiency and growth as well as enhances investor confidence as it increases access to external financing, lowers cost of capital and increases operational performance. Hence, it can be argued that good corporate governance will lead to increase in firm value as well as better firm performance.

Today's world has seen that organization transparency, financial disclosure, independency, board size, board composition, board committees, board diversity, and fiduciary duties of directors are the cornerstone of good governance practices. These variables are in the main agenda of most meetings and conferences worldwide including the World Bank, International Monetary Fund (IMF) and Organization of Economic Co-operation and Development (OECD) (Inyanga, 2009; Shungu et al., 2014). Moreover, these institutions consider informed corporate governance standards as critical in helping emerging markets rebuild competitiveness, restore investor confidence, and promote sustainable economic growth (Inyanga 2009).

Lakshan and Wijekoon (2012), based on Sri Lankan companies, have concluded that the outside director ratio, presence of an audit committee, and remuneration of board members have negative effects on the probability of corporate failure, while board size, auditors opinion, and outside ownership appeared to be unrelated to failure status. Most importantly, CEO duality is positively related with the likelihood of corporate failure.

Poor governance is often cited as one of the reasons why investors are reluctant to invest in companies in certain markets. The corporate governance itself is a risk for investors and in fact it determines the investment decision. The company that is transparent is likely to have better quoted price and market value. In much of the world where corporate governance does not have an important role, companies face difficulty raising funds. Even in developed economies where family-owned businesses rule the markets, most companies fund their investments internally (Mayer; Diapaolo; Salovey, 1990; Shleifer & Vishny, 1997).

The benefits of effective corporate governance can be listed as: a tool for building a better reputation; higher credit rating; mitigation of risk through effective board control; higher valuation of the stock; mitigation of non-diversifiable risk; operational performance improvements; reduction in investment risk; improvement in capital efficiency; reduction in the cost of capital; and improving access to capital markets (Madhani, 2012). In support of these scholars, a report of the committee on financial aspects of corporate governance (the UK Cadbury Code), London 1992, justifies that corporate governance is essential for improving access to capital, improving organizational performance, and adding value to the stakeholders including community and reducing investment risk.

The concept of corporate governance has been increasing in public interest in recent years due to its plausible importance on the economic health of corporations in general. Financial regulators, governments, and academics tend to focus on corporate governance enthusiastically to enhance investors' confidence and attract more employment. Evidences suggest that firms in growing economies are low-priced in financial markets because of weak governance (LaPorta, Lopez-de-Silanes, Shleifer, and Visny, 2000). As such, improvements in corporate governance can enhance investor confidence and increase these firms' access to capital market (Rajagopalan & Zhang, 2009). Nowadays, it is not sufficient for a company merely be profitable; it also needs to show good corporate citizenship through environmental awareness, ethical behavior, and good corporate governance practices. Generally, corporate governance in non-financial sectors require judicious and prudent use of resources of the firm to increase corporate value, increase employee morale, maintain market discipline, and stabilize the organization. Corporate governance is thus rightly defined as the ways in which suppliers of finance and goods assure themselves that they will receive a fair return on their investment (Shleifer and Vishny, 1997). If this situation does not exist, outside investors will not be motivated to buy the equity of that firm. This would force a firm to employ internal resources for the firms' profitable investment opportunities. If so, then efficiency of the overall performance would likely to suffer, and employees and consumers move to other firms in the industry. Jensen and Meckling (1976), Fama and Jensen (1983) revealed that inducement has been given to managers to confiscate assets of a firm by endorsing profitable projects, but this is much beneficial to the executives rather than the value of the firm. Brown and Caylor (2004) assert that in most of the cases market value becomes overpriced due to poor governance, and if this is right, the market value of well-governed firm should be relatively undervalued over apoorly governed firm. Empirical evidence show greater shareholder's rights create higher growth rates, higher profitability, and lower cost of capital. Shareholder's rights have often been measured after following certain rules and regulation adopted by concerned authority (Gompers, Ishii and Metrick, 2003; Bebchuk, 2006).

Nepal has recorded a substantial number of development bank failures over the last decade. Several banks were placed under the management of Nepal Rastra Bank; some closed their doors whilst many are still facing survival challenges and most writers are relating this to poor corporate governance. Banks are not the only affected part of the economy - even other public and private companies are shaking.

Several studies have also been carried out in the area of corporate governance and financial performance in state corporations, in cooperative societies, in companies listed NEPSE. Everyone concludes that corporate governance affects the banks' performance and value of the firm and to improve performance in commercial banks good corporate governance practices must be implemented. However, there was lack of the study specially focusing on the development bank of Nepal. Therefore, on the basis of the aforementioned statement, this study investigates and examines the following aspects.

- Are they following polices, norms of organization, standard of the organization, and goals?
- Has the board of director, CEO and employees properly accepted their responsibilities and accountabilities; have they practiced transparency in the performance and internal control system of the bank for the creation of wealth, job and maintained financial sustainably?

For development-oriented economies like Nepal, improving corporate governance in development bank will be one of the cornerstones of economic and business sustainability. Development banks are accessing the rural economy of Nepal. Good corporate governance reduces emerging market vulnerability to financial crises, reinforces property rights, reduces transaction costs and the cost of capital, and leads to capital market development. Weak corporate governance frameworks, on the other hand, reduce investor confidence and can discourage outside investment. The main purpose of this research is to examine the policies, responsibilities, accountabilities, internal control system, disclosure and transparency system.

Conceptual Framework

The pillars of successful corporate governance are: responsibility, accountability, fairness, transparency, assurance, leadership and stakeholder management. After careful review of the literature, following a conceptual model is formulated to illustrate the relationship between corporate governance, banking performance and sustainable banking

Model of Corporate Governance

There are different models of corporate governance practiced around the world. The US rules-based model, the UK/commonwealth principles-based model, the continental European two-tier model, the Japanese business network model, and the Asian family-based model are practicing in corporate sectors in different regions (Tricker, 2015). The US rules-based model is practiced throughout the United States and in other countries influenced by US. The major aspects in this model are focused on investor protection, auditing requirements, and financial disclosure. Moreover, commonwealth principle-based model highlights the corporate governance codes for listed companies.

It further emphasizes the remuneration policies, AGM results, engagement of shareholders, etc.

The Japanese business network model is a hybrid model of corporate governance in which market-based structures are merged. This model also emphasizes the role of independent directors and the role of audit committee for the strengthening of corporate governance. The last one is the Asian family-based model of corporate governance, which is family-centric with close family control found in the corporation. The decision making is centralized in this model with the convergence of all models of corporate governance. In this study, the following model assists to discuss and analyze to know the situation of corporate governance.

Independent variables

- Responsibility of BOD, CEO and employees
- Accountability
- Fairness
- Transparency
- Experience
- Effective internal control system
- Ethical leadership
- Stakeholder management.

Dependent variables

Performance of Bank

- Wealth creation
- Job creation
- Financial sustainability
- Management sustainability

Methodology

This study has employed descriptive research designs to deal with the impact of corporate governance on financial performance of development banks in Nepal. The descriptive research design searches for adequate information about effect of corporate governance on financial performance. This study was based on a 30 percent convenient sample size of 20 developmental banks in Nepal. The sample size was taken from those banks which were registered in NRB up to the year 2020. The required information was collected from primary sources using questionnaires from 60 respondents. The 15 questionnaires were given to the head office staff of each bank. From the 90 questionnaires, 80 responded. Of these, twenty did not respond to all of the questions. For this reason, the study was based on 60 respondent's answers. Those respondents were working as head of department and above. The data are analyzed by applying arithmetic mean. The questionnaires were shared with people who had major responsibilities, such as of board of director, chief executive officer, and people in charge of corporate responsibility, especially employees' responsibilities, accountability, fairness, transparency, internal control system and ethical leadership. The researcher assumed that the variables were adequate to measure corporate governance and bank performance. The respondents' answers were measured in a Likert scale where the board members, CEO, and employees were rated as always involved, often involved, sometimes involved, rarely involved, or never involved in corporate governance activities.

Respondents' Profile

In any research, respondents' profiles play important role. Without understanding them, it would be misleading. The respondent's profiles included in this study are gender and work span. Respondents include employees of 6 development banks in the Kathmandu valley and 60 questionnaires for the analysis. Table 1 shows the demographic characteristics of the respondents in number and percentage.

Table 1

Demographic characteristics of the respondents

Respondents Character	No. of Responses	Percentage
Male	36	60
Female	24	40
Total	60	100

Source: Field survey, 2021.

As per table 1, out of the total respondents (60), 60 percent were male and the rest (40%) female which reveals a 20 percent variability.

Analysis

The banking industry is unique because it is simultaneously consolidating and diversifying. There is a significant public dimension to the banking firms; bank managers function in the light of two distinct sets of interests: one is the private interest, internal to the firm, and the other is the public interest, external to the firm. The sound corporate governance system of banks increases the performance efficiency of bank and also enhances the credibility of the banking industry, which has positive economic effects in the countries. Corporate governance is a regulation on forcing the disclosure of accurate, comparable information about banks. Corporate Governance is concerned with the functioning of the responsibility and accountability –its structure, styles, process, their relationships and roles, activities etc. Therefore, Boards of directors (BODs) and top level employees are considered as a crucial part of the corporate governance. Directors are appointed by the shareholders of the company, who set overall policy for the company, and the board appoints one chief executive officer (CEO) as managing to the bank. The primary responsibilities of CEO are making major corporate decisions, managing the overall operations and resources of a bank, acting as the main point of communication between the board of directors (the board) and corporate stakeholders. For getting the conclusion regarding the corporate governance a question was asked to the respondents. The question was – I believe that Board of directors, CEO and employees always committed for their responsibility, accountability, fairness in work and performance, policy formulation and implementation, transparency in decisions, maintained effective internal control system, ethical leadership and stakeholder management. The respondents' answer was measured in never, rarely, sometime, often and always responsible, accountable, fairness, transparent, and ethical activities they did in the organization for the wealth creation, job creation, financial sustainability, and management sustainability.

Table 2

Respondents result

S.N.	Independent Variables	Never	Rarely	sometime	Often	Always	Mean
		1	2	3	4	5	
1	Responsibilities of board of directors, CEO and employees		1	20	15	24	4.03
2	Accountability of board members, CEO and employees	2	10	20	25	7	3.6
3	Fairness of board members CEO and employees	4	8	19	20	9	3.4
4	Policy formulation and implementation	3	7	14	20	16	3.7
5	Transparency of decision	4	10	22	13	11	3.3
6	Effective internal control system			15	20	25	4.2
7	Ethical leadership		8	12	25	15	3.8
8	Stakeholder management	4	13	15	15	13	3.4
	Overall mean						3.7

Source: Field survey, 2021

The data as presented in table 2 explain the respondents' opinion about the independent variables such as responsibility, accountability, fairness, policy formulation and implementation, transparency of decision, effective internal control system, and ethical leadership and stakeholder management. It is assumed if the board members, CEO, and employees were always aware about the aforementioned variables there would be the organizational good governance.

Responsibility of Board of Director and Chief Executive Officer

The main responsibility of the board of director and chief executive officer is formulation of organizational plan, strategies, goals, objectives and policies to achieve the goals of the bank and to put mechanisms in place to monitor progress against the objectives. The responsibility of the board of directors is to ensure the effectiveness of plan, strategies, goals, objectives and policies and commitment to implement effectively to these responsibilities is 'good' corporate governance. The table-2 shows that board members, CEO and employees seem often responsible toward the bank performance. The mean value the respondent is 4 which means those development banks did not always keep attention from Board members, CEO and employees. For the good governance of banks board members, CEO and employees need to keep always close attention in their responsibility. Nepalese development banks did not seem that they need to be other more responsible to create wealth, creation of job, financial sustainability and management of sustainability.

Accountability of Board, CEO and Employees

The board of directors, CEO, and employees of the bank need to be always accountable to shareholders. For the operation and corporate governance board members, CEO and employees need to work in accordance with management objectives and maximization of shareholders' benefit within the framework of sound business ethics whilst taking into account the benefits of all stakeholder groups. In general, Board accountability is about taking responsibility for a bank's activities and presenting a fair, balanced and understandable assessment of an organization's position and prospects to stakeholders. The board of directors, chief executive officer and employee sare accountable for the effective overall management of the company, and for conformity with policies agreed upon by the Board. The CEO providing leadership and vision with a view to ensuring the implementation of the bank's strategy.

Table 2 shows that the respondents give their answers within the mean value of 3.6 which indicate bank's board members, CEO and employees were often accountable in their works. It seems that still they were not always accountable for the good corporate governance.

Fairness of Board Members CEO and Employees

The beauty of corporate governance of the bank is fairness. Fairness is the quality of making judgments that are free from discrimination. Fairness refers to equal treatment, for example, all shareholders should receive equal consideration for whatever shareholdings they hold. In addition to shareholders, there should also be fairness in the treatment of all stakeholders including employees, communities and public officials. The results exhibit that the fairness in the banking activities still do not seem to be free from the discrimination. The mean value (3.4), justifies the unequal treatment of the customers, shareholders and employees.

Policy Formulation and Implementation

Policy formulation and implementation are both central parts of the strategic planning process. It is one of the responsibility of board members and CEO of the bank. The policy formulation stands at the top and builds up the framework for corporate governance, implementation is a direct consequence of the decisions, which give the result or performance of the whole corporate governance activities.

The board members, CEO and employees did not keep much concern all the time for the policy formulation and implementation. In fact, the derived mean value (3.7) explicitly states that there is still much efforts to be made and exercise to be done for the policy formulation and implantation.

Transparency and Disclosure

Transparency and disclosure (T&D) are essential elements and set of parameter of a robust corporate governance framework. Transparency and disclosure provide the base for informed decision making by shareholders, stakeholders and potential investors in relation to capital allocation, corporate transactions and financial performance monitoring. In short, transparency and disclosure are essential and pivotal feature for financial reporting and supervision. In the market- based companies transparency is central to shareholders' ability to exercise their ownership rights on an informed basis, which can help attract capital and maintain confidence in the capital markets. By adopting greater financial transparency, companies provide the necessary information for investors to monitor their governance process and behavior. The mean value of respondents 3.3 indicates that Nepalese development banks were unable to maintain full transparency of their work, and financial transaction. As a result, one can deduce the fact that the investor and customer of the bank still are unaware of disclosure of financial transaction. This sort of condition exemplifies the low degree of confidence for investment as safe and to be assured that the company is growing on right track.

Internal Control System

Internal control has four basic purposes: safeguarding assets, ensuring financial statement reliability, promoting operational efficiency, and encouraging compliance with management's directives. Internal corporate governance controls (internal controls) play a vital role in ensuring the success of a business organization and preventing corporate fraud. In Nepalese development bank internal control system is better than the other indicator of corporate good governance. Table 2 shows that the respondents were rated the internal control system with the mean value of 4. 2, which is the highest mean among all other indicators. In banks internal control activities always ensure for proper corporate governance include: monitoring by board, internal audits and robust policies. A well-functioning internal control system is a fundamental management element that seeks to ensure that the bank's goal may be achieved.

Ethical Leadership

Ethical leadership must display honesty, integrity, and total transparency in their dealings to influence others positively. People respect leaders more for their ethical values than any other traits such as charisma, compassion, or commitment. Ethical leadership is the main attraction of any company as well as good governance. The ethical leadership has five key principles: honesty, justice, respect, community and integrity. Table 2 shows that, the respondents of the bank rate the ethical leadership in bank is shown often not all the time. The mean value of ethical leadership (3.8), however, seems to be more but they could not maintain all the time. It means that there is still need of lot of improvement in ethical leadership for corporate governance.

Stakeholder Management

Stakeholder management is the process by which management of bank organize, monitor and improve the relationships with stakeholders. It involves systematically identifying stakeholder; analyzing their needs and expectations; and planning and implementing various tasks to engage with them. The stake holder management seems to be the second lowest rated by respondents, that is the mean value of 3.3 which is slightly higher than the transparency. It is clear that Nepalese development bank still do not work by analyzing what the stakeholder expectation. They do not plan and implement their needs in the corporate plan.

Bank Performance:

Bank performance is the integrated reflection of responsibility, accountability, fairness, transparency and disclosures, internal control system, ethical leadership and stakeholder management of the banks. Firm performance is represented by creation of wealth, creation of job, financial sustainability and management sustainability. Good corporate governance practices affect firm performance. Therefore, firms that practice good corporate governance bring about better management resulting in monitored transparency and accountability and prudent allocation of company's resources, which enhances the financial performance resulting in growth of wealth, creating job, and financial sustainability, which in turn will result in higher share prices. The overall mean value of the respondent is only 3.7, which means that Nepalese development bank still need to do much for the area of corporate responsibility. Without maintaining the corporate good governance the growth of the bank, wealth creation, job creation to the society, financial sustainability and management sustainability will rather be impossible. If happens so, management by expectation could not be for long lasting.

Conclusion

This study analyzed the level of corporate governance in Nepalese development banks. There were assumed eight independent variables visualized responsibility of board members, CEO and employees; accountability of board members, CEO and employees; fairness of activities of bank; transparency and disclosure of financial transactions and decisions; internal control system of banking activities; ethical leadership of board members and employees; and stakeholder management of the banks. This research assumes that, if the Nepalese development banks perform all these activities with balance and in the integrated ways, banks certainly would have good performance (wealth creation, creation of jobs, strong financial sustainability, and management sustainability). The above analysis shows that Nepalese development banks need to begin and maintain corporate social responsibility. They currently do not perform these activities all the time, on account of which share value of the banking area is not high. This finding is similar with the study of LaPorta, Lopez-de-Silanes, Shleifer, and Visny (2000).

The benefits of effective corporate governance include a better reputation; higher credit rating; mitigation of risk through effective board control; higher valuation of the stock; mitigation of non-diversifiable risk; operational performance improvements; reduction in investment risk; improvement in capital efficiency; reduction in the cost of capital; and improving access to capital markets (Botosan, 2006). In support of these scholars, a report on financial aspects of corporate governance (the UK Cadbury Code), London 1992, justifies that corporate governance is essential for improving access to capital, improving organizational performance, adding value to the stakeholders, including the community; and reducing investment risk. Development banks in Nepal need to build better reputations and higher credit ratings. They commonly do not control investment risk, do not improve capital efficiency, and are unable to reduce the cost of capital. Therefore, Nepal Rastra Bank always creates pressure about building capital and improving performance. It is necessary to follow corporate governance norms and philosophy for suitability of banks.

References

Babalola, A and Adedipe, O. A. (2014). Corporate governance and sustainable banking sector: Evidence from Nigeria, *Research Journal of Finance and Accounting, Vol.5, No.12.*

Bauwhede, H. V. & Willekens, M. (2008). Disclosure on corporate governance in the European Union. Corporate Governance (2008). *Corporate Governance: An International Review*, 16(2) : 101-115. DOI:10.1111/j.1467-8683.2008.0067/.x

Bebchuk, L. (2006). What matters in corporate governance? *The Review of Financial Studies*, Vol. 22, (2), February 2009, Pages 783 -827, https://doi.org/10.1093/rfs/hhn099

Bebchuk, L.A., Cohen, A. & Farrell, A. (2002). Does the evidence favor state competition in corporate law? *University of California Law Review 90, 1775-1821.*

Botosan, C.A. (2006). Disclosure and the cost of capital: What do we know? Accounting and Business Research, 36, 31-40. http://dx.doi.org/10.1080/00014788.2006.9730042

Brown, L.D. and Caylor, M.L. (2004). Corporate governance and firm operating performance. *Review of Quantitative Finance and Accounting*, 32(2):129-144. Doi.10.1007/511156-007-0082-3.

Cadbury, A. (1992). *The financial aspects of corporate governance*. London: Gee (a division of Professional Publishing Ltd). Retrieved from http://www.ecgi.org/codes/documents/cadbury.pdf.

Fama, E., and Jensen, M. (1983). Separation of ownership and control. *Journal of Law and Economics 26 (June): 301-325.*

Fanta, A. B., Kemal, K. S., & Waka, Y. K. (2013). Corporate governance and impact on bank performance. *Journal of Finance and Accounting; 1(1): 19-26.*

Friedman, M. (1970). The social responsibility of business is to increase its profits. *New York Times Magazine*, 13 September 1970, 122-126.

Gompers, P., J. Ishii, and A. Metrick. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics118 (February): 107-155.*

Inyang, B. J. (2009). Nurturing corporate governance system: The emerging trends in Nigeria. *Journal of Business Systems, Governance and Ethics, 4(1), 2.*

Jensen, M., and Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics 3 (October): 305-360(7) (PDF) Corporate Governance and Firm Operating Performance*. Available from: https://www.researchgate.net/publication/225756247_Corporate_governance_and_firm_operating_performance [accessed Jul 10 2021].

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.(2002). Investor protection and 134 corporate valuation. *Journal of Finance 57, 1147-1170*

Lakshan, A. M. I., Wijekoon, W. M. H. N. (2012). Corporate governance and corporate failure. *Procedia Economics and Finance 2, 191-198*. Retrieved from http://ac.els-cdn.com/S2212567112000792/1-s2.0-S2212567112000792-main.pdf?_tid=a2e23dcc-8685-11e5-ba0500000aacb35e&acdnat =1447034602_4e171137b3faaa 2f4507726412dc67fb

Madhani P. M. (2012). Managing sales force compensation: The strategic choice between direct sales force and independent reps. *Compensation and Benefits Review*. https://doi.org/10.1177/0886368712450660.

Mayer, J. D., DiPaolo, M., Salovey, P.(1990). Perceiving the affective content in ambiguous visual stimuli: A component of emotional intelligence, *Journal of Personality Assessments*, 50, pp. 772–781, 1990

Monem, R. (2001). *The one-tel collapse: Lesson for corporate governance*. Retrieved from:http://www98.griffith.edu.au/dspace/bitstream/handle/10072/42673/74746_1.pdf.

Rajagopalan, Nandini; Zhang Yan (2009). Once an outsider, always an outsider? CEO origin, strategic change, and firm performance. *Strategic Management Journal*. Vol. 31(3), pp. 334-346. https://www.jstor.org/stable/40587480.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance, Vol. 52, No. 2. pp. 737-783*. Retrieved from http://down.cenet.org.cn/upfile/45/200815123912106.pdf.

Shungu, P., Ngirande, H., and Ndlovu, G. (2014). Impact of corporate governance on the performance of development banks in Zimbabwe. *Mediterranean Journal of Social Sciences. Vol 5 No 15.*

Tricker, B. (2015). *Corporate governance principles, policies, and practices*. Oxford, UK: Oxford University Press.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Corporate Governance Practices and Financial Performance: A Study with Reference to Commercial Banks in Nepal

Padam Dongol*

Abstract

This paper investigates corporate governance practices and the financial performance of Nepalese Commercial banks. Two corporate governance indicators (Board size and board gender diversity) are chosen in the relationship between corporate governance practices with bank performance, which is measured by return on equity and return on assets. The return on equity (ROE) and return on assets (ROA) are selected as the bank's performance dependent variables for this study. Board size and board gender diversity are considered as independent variables. The data are collected from the annual report of selected commercial banks. Out of the total of 27 banks, 10 banks are selected as samples for the study from 2013/14 to 2017/18. The study covers descriptive statistics and a correlation matrix model to describe the corporate governance practices and financial performance of banks. The finding of the study indicates that there is a mixed result found regarding board size with ROE and ROA and a negative relationship between board gender diversity and financial performance of banks.

Keywords: *Corporate governance, Financial performance, Board size, Board gender diversity, Return on equity, Return on asset.*

The financial sector is the backbone of the economy of a country. It works as a facilitator for achieving sustained economic growth through providing efficient monetary intermediation (Pradhan, 2018). The banking sector is one of the most important service sectors which influence the lives of millions of people. Nepalese banks and financial institutions are classified according to BAFIA Act. Banking law regulation financial good governance and maintaining financial stability and promotion of transparency and protection of deposits are incorporated by BAFIA Act.

* *Mr. Dongol is Ph. D. Research Scholar,* Lincoln University College, Malaysia.
Email: padamdongol2000@gmail.com.

Nepal Rastra Bank, a central bank of Nepal, has graded commercial banks as ‘A’ class financial institutions. Commercial Banks are financial institutions that provide services like accepting deposits from the general public, making business loans, and also act as a bridge between those who have surplus money and those who need it. They also provide short-term, medium-term, and long-term loans to the business organization. At present, there are 27 commercial banks in Nepal. Corporate Governance is the collaboration of well-defined rules, processes, and laws by which functions and regulations of business take place. It is a combination of corporate policies and best practices adopted by corporate bodies in achieving the objectives of their stakeholders. It aims to protect shareholder’s rights, enhance disclosure and transparency, facilitate effective functioning of the board, and provide an efficient legal and regulatory enforcement framework. The structure of the corporate governance comprises of the Board of Directors, Management and Shareholders in the organization.

OECD (1999) provides a more encompassing definition of corporate governance. It defines corporate governance as the system by which business corporations are directed and controlled. The corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation such as, the board, managers, shareholders, and other stakeholders, and spells out the rules and procedures for making decisions on corporate affairs. By doing this, it also provides the structure through which the company’s objectives are set and the means of attaining those objectives and monitoring performance. This definition is in line with the submissions of Wolfensohn (1999), Uche (2004), & Akinsulire (2006). According to Lu & Batten (2001), corporate governance refers to the private and public institutions, including laws, regulations, and accepted business practices, which together govern the relationship, in a market economy, between corporate managers and entrepreneurs (corporate insiders) on one hand, and those who invest resources in corporations, on the other. In recent years, the focus on corporate governance has increased due to the increased number of bankruptcies caused by errors in financial accounting. The reason behind those cases was the absence of corporate governance regulations in the organizations leading to the implementation of different accounting practices, increment in personal interest, and biased reporting (Ioana & Mariana, 2014). Financial performance is the process of measuring the results of a firm's policies and operations in monetary terms. It means how well the organization can use its assets to generate revenue. It is used to measure a firm's overall financial health over a given period. To this end, exploring the relationship between corporate governance and financial performance is worthwhile.

The commercial bank uses the financial resources of the country which is important for the economic development of a nation. Therefore, to run the banks effectively, the board size and gender diversity play important role in a firm. The commercial banks operating in a nation and all the banks have differed in size and gender. Most studies found mixed findings result regarding board size, gender diversity, and financial performance of banks. Therefore, it is necessary to study corporate governance practices and the financial performance of commercial banks. The objectives of the study are i) To investigate the corporate governance practices and financial performance of commercial banks. ii) To measure the relationship between board size, board gender diversity with the financial performance of commercial banks.

Review of Literature

Corporate Governance

Corporate governance frameworks in Nepalese banks are designed on the premise of the provisions of Bank and Financial Institutions Act 2006, Companies Act 2006, and NRB Directive-No.6 on Good Corporate Governance. The laws and regulations need reform to come with a more stringent governance system including properly defining authority and responsibilities of board directors, qualification of directors, board governance system, and oversight function of independent directors, transparent reporting, and disclosure practices in an ethical manner. The lack of transparency and disclosure has been considered as one of the major causes of corporate scandals and governance failures in recent years around the globe that adversely affecting public confidence in the reliability of disclosure practices. The Nepalese financial sector has yet to establish full good governance practices to become the more reliable and competitive sector of the economy (Adhikari, 2014). Melvin & Hirt (2005), explained the concept of corporate governance as referring to corporate decision-making and control, particularly the structure of the board and it's working procedures. And they added that corporate governance also sometimes used widely, embracing a company's relations with a wide range of stakeholders or very narrowly referring to a company's compliance with the provisions of best practice codes. According to Imam & Malik (2007), the corporate governance theoretical framework is the widest control mechanism of corporate factors to support the efficient use of corporate resources. It will certainly not be the same for all organizations but will take into account the expectations of all the key stakeholders. Corporate governance is the relationship among shareholders, the board of directors, and the top management in determining the direction and performance of the corporation

Board Size

The definition of board size is the total number of directors on a board (Panasian et al., 2003; Levrau & Van den Berghe, 2007). Optimal board size should include both the executive and non-executive directors (Goshi, 2002). The effectiveness in structuring the board is important for governing the company. John & Senbet (1998), opined board size is one aspect that determines board effectiveness in its monitoring function. Indeed, the effectiveness of the board does not solely depend on board size. The effectiveness of a board could be also affected by many other variables like its composition in terms of outside directors, female directors, and people with a sound finance background. So far, there is no clear consensus on the size of the board. To this end, there are arguments for both smaller and larger boards to be effective in controlling managers. Lehn, Patro & Zhao (2009), explained that the relationship between board size and performance might differ not just by firm-specific characteristics but also by national and institutional characteristics. John & Senbet (1998), Dalton *et al*., (1999), Kiel & Nicholson (2003), Adams & Merhan (2008), Uadiale (2010), Poudel & Hovey (2012), found that large boards led to better financial performance. On contrary, Stepanova & Ivantsova (2012), Jensen (1986), M.C (1993), Staikouras, Staikouras, & Agoraki (2007); Adnan, Htay, Rashid, & Meera (2011), Ranti (2011), Alabdullah, Yahya, & Ramayah (2014), found that smaller board size brings the better performance of the banks. In this regard, Jensen (1983), suggests that a board should have a maximum of seven or eight members to function effectively and Adams & Merhan (2005), Horváth & Spirollari (2012), Htay (2012), Velnampy (2013) found that board size has no significant association with firm's performance.

Board Gender Diversity

Women are increasing in number among corporations' boards of directors, yet their representation is far from uniform across firms (Hillman & Cannella, 2007). Board diversity means the number of women directors on the board of the company. Gender diversity in top corporate positions has got consideration in recent years due to legislative changes, financial scandals, and crises. Dutta & Bose (2007), Romano *et al*. (2012), explained the presence of women on boards of directors is limited, even if the literature reveals a slow but steady rise in the female presence on corporate boards throughout the world. Moreover, the study of (Lakhal, Aguir, Lakhal & Malek, 2015) found that the females are viable on their monitoring part and considered as a vital corporate governance device. In this regard, it is important to refer that the empirical evidence demonstrated the mixed as well as inconclusiveness on the effect of board gender diversity and financial performance. One may also come across the significant and positive influence of corporate board gender diversity on a firm's financial performance (Abubakar, Garba, Sokoto, & Maishanu, 2014). Pathan & Faff (2013) found a positive association between gender diversity and bank performance. Similarly, Julizaerma & Sorib (2012), found a positive association between gender diversity and firm performance on Malaysia publicly listed firms. Besides, Carter *et al*. (2003), found a significant positive relationship between the fraction of women and firm values. Gautam (2019), examined the effects of corporate governance on the performance of Nepalese commercial banks and found that women on the board of directors have a positive relationship on return on assets (ROA) and negative relation with return on equity (ROE). On contrary, some of the previous empirical evidence has shown that there is no significant relationship between board gender diversity and firm's performance (Horváth & Spirollari, 2012; Bukar, M. & Ahmed (2020), explained that gender diversity had a significant positive effect on ROA and no significant effect of board gender diversity on return on equity (ROE).

Financial Performance

The financial performance of the banks is measured by return on assets and return on equity (ROA and ROE).These were accounting tools used by Hermalin & Weisbach (1991); Yermach, (1996), Abdullah (2004), Lam & Lee (2012), Fanta, Kemal, & Waka (2013), Velnampy (2013). ROA shows the profitability of the company's assets in generating profits. ROA is calculated as follows.

$$\text{ROA} = \frac{\text{Profit after tax}}{\text{Total assets}}$$

ROE measures the rate of return on shareholders' equity. It shows how well the company uses the shareholders' investments to generate earnings. This measures the efficiency of generating profits from shareholders' equity. A higher ratio indicates a higher return. It is expected that there will be a positive relationship between corporate governance and firm performance. It is calculated as follows:

$$\text{ROE} = \frac{\text{Profit after tax}}{\text{Total Equity}}$$

Methodology

The total population of the study consists of 27 commercial banks operating in Nepal. NRB is the Central bank of Nepal. Rastriya Banijya Bank, which is 100 percent government-owned, Nepal Bank Ltd., which is 40.5 percent government-owned, and the Agricultural Development Bank are three state-owned commercial banks that play important role in an economy. Thus, these 3 state-owned banks still hold nearly 16% of total banking assets and total deposits of the financial sectors.

A purposive sample technique was used in this study. The researcher has taken 10 banks as a sample from the population for the study. These banks have been taken based on first private sector banks, merged banks, joint venture banks, and leading commercial banks in the banking industry.

Secondary data were used in this study. These data were collected from the annual reports of sample banks between the years 2013/14 to 2017/18. Similarly, the other necessary secondary data were collected from the website of Nepal Rastra Bank and the Nepal stock exchange.

Statistical Package for Social Sciences (SPSS-26) was used to assess and analyze the collected data to examine the relationship between corporate governance practices and the financial performance of the banks. Descriptive statistics and correlation matrix methods were used to analyze the data of the study.

This study applies corporate government practices variables viz board size and board gender diversity as independents and ROA and ROE as dependent variables.

Presentation and Analysis of Data

This section deals with data analysis and presentation which include the descriptive statistics and correlation matrix model for the study.

Table 1

Descriptive Statistics Results

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Return on Equity (ROE)	50	-26.88	36.04	17.0010	8.95153
Return on Assets (ROA)	50	-1.44	2.89	1.6390	0.63533
Board Size	50	5.00	9.00	6.6000	1.12486
Board Gender Diversity	50	0.00	2.00	0.6000	0.67006

Source: Authors' calculation.

The mean value of the board size was 6.6000 persons (approximately 7 persons), and the standard deviation was 1.12486 (approximately to1). This lower standard deviation value indicated that the data tends to be very close to the mean. Thus, the average number of board of directors in sample banks was identified as between 5 and 9 persons. Likewise, the mean value of board gender diversity was 0.6000, and the standard deviation was 0.67006. This indicated that the average number of female directors in the sample banks was identified between 0 and 2 persons. On the other hand, the mean value of ROE over the past five years was 17.0010 with a standard deviation of 8.95153. Therefore, the average mean of ROE was between -26.88 and 36.04. In this way, the mean value of ROA over the past five years was 1.6390 with a standard deviation of 0.63533. This indicated that the average mean of ROA was between -1.44 and 2.89.

Table 2

Correlation Matrix Result for the Dependent and Independent Variables

		Return on Equity (ROE)	**Return on Assets (ROA)**
Board Size	Pearson Correlation	0.003	-0.144
	Sig. (2-tailed)	0.985	0.317
Board Gender Diversity	Pearson Correlation	-0.044	-0.040
	Sig. (2-tailed)	0.760	0.784
	N = 50		

*** Correlation is significant at the 0.01 level (2-tailed)*
** Correlation is significant at the 0.05 level (2-tailed)*

Correlation analysis was conducted to examine the relationship between two variables. A strong correlation means that two or more variables have a strong relationship with each other. Likewise, a weak correlation means that the variables are hardly related. The correlation coefficient reveals the strength of the relationship between two variables and the direction of the relationship i.e., positive and negative. It can range from -1.00 (a perfect negative value) to + 1.00 (a perfect positive value). The 0 value of correlation indicated that there is no relationship between the variables.

Table 2 shows the correlation matrix between the dependent variable (ROE and ROA) and independent variables (board size and gender diversity) of the banks. The Pearson correlation between ROE and board size was 0.003. This value indicates that these two variables have a low positive correlation. This means that the board size was proportional to the firm's ROE. The large board size will cause a higher firm's ROE. The significance value of p = 0.985 was greater than 0.05, this means the value was insignificance. It means there is no relationship between board size and ROE of the firm. The correlation between ROA and board size was - 0.144. This negative value indicated that these two variables have a weak negative correlation. This means that the board size was inversely proportional to ROA. The large board size will cause the lower firm's ROA. The significance value of *p =0.317* was more than 0.05; this means that the value was insignificant. The results show that the relationship between board size and firm performance was inconclusive.

The positive and negative values of the correlation coefficient with ROE (0.003) and ROA (-0.144)indicated a weak positive and negative correlation between these two variables. The positive correlation indicated that a larger board size would cause a higher firm's ROE. This finding seems to be consistent with the result of Poudel & Hovey (2013) which indicates that the large boards led to better financial performance. Previous research conducted by Jensen (1983) suggested that a board should have a maximum of seven or eight members to function effectively in a firm. On the other side, the negative correlation indicated that larger board size will cause inversely proportional to the firm's ROA. This finding was consistent Jensen (1993), Staikouras, Staikouras, & Agoraki (2007), Adnan, Htay, Rashid, & Meera (2011), Ranti (2011), Alabdullah, Yahya, & Ramayah (2014), who found that smaller boards bring better performance in a firm. Jensen (1986) argued that smaller boards enhance communication, cohesiveness, and co-ordination, which makes monitoring more effective within board members in a firm.

The correlation coefficient between board gender diversity and ROE (–0.044) exhibited a weak negative correlation that confers inversely proportional to the firm's ROE. The higher number of females on the board will perform the lower firm's ROE. As the probability value ($p = 0.760 > 0.05$) is greater than the 5 percent level of significance, there seems to be a situation of the absence of a relationship between the board gender diversity and the firm's ROE.

Likewise, the correlation coefficient between board gender diversity and ROA (–0.040) was exhibited. a weak negative correlation that confers inversely proportional to the firm's ROA. The higher number of females on the board will perform the lower firm's ROA. The significance value of *P= 0.784* was more than 0.05, this means that the value was insignificant and it can be concluded that there is no relationship between the board gender diversity and the firm's ROA. The findings results show that there are negative relationships between board gender diversity with the firm's performance and the significance value of the firm's ROE (*P = 0.760*) and ROA (*P = 0.784)* were also insignificant.

Conclusion

In conclusion, this paper examines the relationship between corporate governance practices and the financial performance of ten sample commercial banks. The result shows that in banks the average number of directors on the board is approximately 7 people in which 1 female director is incorporated. Board gender diversity negatively influences the financial performance (ROE and ROA) with a statistically insignificant between gender diversity and financial performance. Likewise, board size positively influences ROE and negatively influences ROA and the result also shows that there is a statistically insignificant between board size and the financial performance of commercial banks.

References

Abdullah, S. N. (2004). Board composition, CEO duality and performance among Malaysian listed companies. *Corporate Governance: The International Journal of Business in Society*. DOI:10.1108/14720700410558871.

Abubakar, B. A., Garba, T., Sokoto, A. A., & Maishanu, M. M. (2014). Corporate board gender diversity and performance: Evidence from Nigerian stock exchange. *An Unpublished PhD Thesis, Department of Economics, Usmanu Danfodiyo University, Sokoto*.

Adams, R. B., & Mehran, H. (2005, August). Corporate performance, board structure and its determinants in the banking industry. *In EFA 2005 Moscow Meetings*.

Adams, R. B., & Mehran, H. (2008). Corporate performance, board structure and their determinants in the banking industry. *FRB of New York Staff Report*, (330).

Adhikari, P. (2014). Corporate governance practices in commercial banks in Nepal. *Journal of Research in Management & Technology, 3 (9)*, *56*.

Adnan, M. A., Htay, S. N. N., Rashid, H. M. A., & Meera, A. K. M. (2011). A panel data analysis on the relationship between corporate governance and bank efficiency. *Journal of Accounting*, *1*(1).

Akinsulire, O. (2006). *Financial management*, (4th Edition), Lagos, El-Toda Ventures.

Akpan, E. O., & Amran, N. A. (2014). Board characteristics and company performance: Evidence from Nigeria. *Journal of Finance and Accounting*, *2*(3), 81-89.

Alabdullah, T. T. Y., Yahya, S., & Ramayah, T. (2014). Corporate governance mechanisms and Jordanian companies' financial performance. *Asian Social Science*, *10*(22), 247.

Bukar, M., & Ahmed, A. (2020). Effect of board of directors gender diversity on financial performance of deposit money banks in Nigeria. *Global Journal of Applied, Management and Social Science,* 18, 9-19

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, *38*(1), 33-53.

Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal*, *42*(6), 674-686.

Dutta, P., & Bose, S. (2007). Gender diversity in the boardroom and financial performance of commercial banks: Evidence from Bangladesh.

Fanta, A. B., Kemal, K. S. & Waka, Y. K., 2013. Corporate governance and impact on bank performance. *Journal of Finance and Accounting*, 1(1), pp. 19-26.

Gautam, M. S. (2019). Effect of corporate governance on financial performance of Nepalese commercial banks. *International Journal of Scientific and Research Publications*, 9, (12), 340-348.

Goshi, R.S. (2002). Board structure, executive compensation and firm performance. Evidence from India. Indira Gandhi Institute of Development Research, Mumbai, India

Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. *Financial management*, 101-112.

Hillman, A. J., Shropshire, C., & Cannella Jr, A. A. (2007). Organizational predictors of women on corporate boards. *Academy of Management Journal*, *50*(4), 941-952.

Horváth, R., & Spirollari, P. (2012). Do the board of directors' characteristics influence firm's performance? The US evidence. *Prague Economic Papers*, *4*(1), 470-486.

Htay, S. N. (2012). Better boards towards higher profitability. *World Review of Business Research*, *2*(2), 149-163.

Imam, M. O., & Malik, M. (2007). Firm performance and corporate governance through ownership structure: Evidence from Bangladesh stock market. *International Review of Business Research Papers*, *3*(4), 88-110.

Ioana, A., & M. Mariana. (2014). Study regarding the impact of the audit committee characteristics on company performance. 9 (2), 5-15.

Jensen, M. C. (1983). Organization theory and methodology. *Accounting Review*, 319-339.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76, 323–329.

Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. *The Journal of Finance*, *48*(3), 831-880.

John, K., & Senbet, L. W. (1998). Corporate governance and board effectiveness. *Journal of Banking & Finance*, *22*(4), 371-403.

Julizaerma, M. K., & Sori, Z. M. (2012). Gender diversity in the boardroom and firm performance of Malaysian public listed companies. *Procedia-Social and Behavioral Sciences*, *65*, 1077-1085.

Kiel, G., & Nicholson, G. (2003). *Boards that work: A new guide for directors*. McGraw-Hill Australia.

Lakhal, F., Aguir, A., Lakhal, N., & Malek, A. (2015). Do women on boards and in top management reduce earnings management? Evidence in France. *Journal of Applied Business Research (JABR)*, *31*(3), 1107-1118.

Lam, T.Y., Lee, S.K. (2012), Family ownership, board committees and firm performance: Evidence from Hong Kong. *Corporate Governance: The International Journal of Business in Society*, 12(3), 353-366.

Lehn, K. M., Patro, S., & Zhao, M. (2009). Determinants of the size and composition of US corporate boards: 1935-2000. *Financial Management*, 38(4), 747-780.

Levrau, A., & van Den Berghe, L. (2007). Corporate governance and board effectiveness: Beyond formalism.

Lu, J., & Batten, J. (2001). The implementation of OCED corporate governance principles in post-crisis. *Asia Journal of Corporate Citizenship*, (4), 47-62. https://doi.org/10.9774/gleaf.4700.zool.wi.0000

Melvin, C., & Hirt, H. (2005). Corporate governance and performance: A brief review and assessment of the evidence for a link between corporate governance and performance. *London: Hermes Pensions Management Ltd*.

Mirza, S. A., & Javed, A. (2013). Determinants of financial performance of a firm: Case of Pakistani stock market. *Journal of Economics and International Finance*, *5*(2), 43-52.

OECD (1999): OECD Principles of Corporate Governance. Ad-Hoc Task Force on Corporate Governance, OECD, Paris

Panasian, C., Prevost, A. K., & Bhabra, H. S. (2003). Board composition and firm performance: The case of the Dey report and publicly listed Canadian firms. *Global Journal of Business Research*, *8*(1), 27-38.

Pathan, S., & Faff, R. (2013). Does board structure in banks really affect their performance? *Journal of Banking & Finance*, *37*(5), 1573-1589.

Poudel, R. P., & Hovey, M. (2012). Corporate governance and efficiency in Nepalese commercial banks. *International Review of Business Research Papers*, 9(4), 53-64

Pradhan, R. P., Arvin, M. B., Nair, M., Bennett, S. E., & Hall, J. H. (2018). The dynamics between energy consumption patterns, financial sector development and economic growth in Financial Action Task Force (FATF) countries. *Energy*, *159*, 42-53.

Ranti, U. O. (2011). Corporate governance and financial performance of banks: A study of listed banks in Nigeria. *Unpublished doctoral dissertation, Covenant University, Ota, Ogun State*.

Romano, G., Ferretti, P., & Rigolini, A. (2012, September). Corporate governance and performance in Italian banking groups. *In Paper presented at the International Conference* (pp. 1-35).

Staikouras, P. K., Staikouras, C. K., & Agoraki, M. E. K. (2007). The effect of board size and composition on European bank performance. *European Journal of Law and Economics*, *23*(1), 1-27.

Stepanova, A., &Ivantsova, O. (2012). Role of corporate governance in banking sector: Evidence from all over the world. *Journal of Corporate Finance Research,* 6(4), 80-86.

Uadiale, O. M. (2010). The impact of board structure on corporate financial performance in Nigeria.

Uche, C. (2004). Corporate governance in Nigerian financial industry. *Chartered Institute of Bankers of Nigeria Journal*, *2*, 11-23.

Velnampy, T. (2013). Corporate governance and firm performance: a study of Sri Lankan manufacturing companies.

Wolfensohn, J. (1999). Corporate governance is about promoting corporate fairness, transparency and accountability. *Financial Times*, *21*.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185-211.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Impact of Earthquake on Out-of-Pocket Health Care Expenditures: A Natural Experiment.

Vishnu Prasad Sapkota [*]
Amita Poudel [**]

ABSTRACT

The World Health Organization has been advocating for resilient health system, meeting the Universal Health Coverage (UHC) goals even in context of emergency; however, populations are likely reduced their health care expenditures as a consequence of loss during the earthquake in the absence of formal protection mechanism. This study investigates whether the earthquake is associated with variation in health care expenditures at the lower and higher tails of the health care expenditure distribution. The analysis is based on two rounds of cross sectional Annual Household Surveys in 2014/15 and 2016/17 to examine the research question adopting difference-in-difference approach. The findings indicated that health expenditure generally decreases in the face of emergencies like earthquake and most of the health expenditure decrease was observed at the lower end of the percentile distribution. A larger decrease was observed for outpatient and inpatient health expenditures indicating that such services even at the upper tail of the distribution. The expenditure on medicine and supplies were found to be relatively inelastic at the upper end of the expenditure distribution. More variability was observed in the lower end of the health spending distribution compared to the higher end, which indicates that primary health care services, which are often associated with lower health expenditure, are relatively compromised during the earthquake. Health expenditures for outpatient and inpatient services decreased even at the upper tail of the distribution. The disaster response mechanism should take into account this phenomenon to make the resilient health systems for UHC and financial protection.

Keywords: *Health care expenditure, Percentile distribution, Variability, Primary health care services, Resilient health systems.*

[*] *Mr. Sapkota is Lecturer in Economics, Nepal Commerce Campus, T.U. Email: visapkota@gmail.com*
[**] *M/s Poudel is Instructor in Health Sciences, Affiliated to Purbanchal University, Stupa, Kathmandu*

On 25 April, 2015, a 7.8 magnitude earthquake racked Nepal. A second major earthquake of 7.3 magnitude struck on 12 May 2015, causing further death, injuries and devastation among the affected population. The two earthquakes together have claimed over 8000 lives and injured more than 16000(WHO, 2015). The earthquake had a major impact on health system functioning and services ranging from primary health care to tertiary care. A total of 36 districts have been affected, 14 severely: Gorkha, Dhading, Rasuwa, Sindhupalchok, Kavre, Nuwakot, Dolakha, Kathmandu, Lalitpur, Bhaktapur, Ramechhap, Okhaldunga, Sindhuli and Makwanpur (MoHA, 2015). As of 11 May, more than 1,000 health facilities, predominantly village health posts, had been assessed by the Ministry of Health and Population (MoHP) as being totally or partially damaged(WHO, 2015). These smaller health facilities were predominantly village health posts, which supply basic medicines and other routine services in remote communities outside the Kathmandu valley. The same report indicated that twenty-five hospitals have been damaged (six completely and 19 partially). The MoHA (2015) estimated 2.8 million have been displaced. Similarly, as of 17 May 2015, 8,567 people have been killed and more than 16 000 injured. In addition, thousands of people were in need of psychosocial support due to the trauma experienced in both earthquakes and from the ongoing aftershocks.

The earthquake was significantly associated with a lower incidence of health care utilization of primary health care services as primarily indicated by Annual Health Report series produced by Ministry of Health and Population and Department of Health Services (DoHS, 2016).In the same vein, it also slowed health care spending to historical low growth, driven by reductions in spending on inpatient visits, physician visits, and drug supplies (DoHS, 2016). Spending growth, however, increased across payers particularly Ministry of Health and Population which are particularly focused on organizing health services for population affected by earthquake (FMoHP and NHSSP, 2018). In the same year, the out-of-pocket (OOP) payments for health care was found to decrease as reported by Ministry of Health and Population (2017). However, the earthquake could have had heterogeneous effects across the distribution of health care expenditures, types of expenditures, and healthcare utilization coverage. In addition, heterogeneous income and socioeconomic disparities across the health care expenditure distribution might existed before the earthquake and may have been exacerbated during the earthquake. This is the first study to investigate the differential relationship between the major earthquake and health care spending across the distributions of health care expenditures, with a focus on impact of natural disasters on health expenditures.

Examining health care expenditures improves upon outcome variables such as utilization counts because it captures the variation in intensity of care(Cook & Manning, 2009). Health spending is also indicative of consumers' different health needs (Cook & Manning, 2009). Lower expenditures reflect consumer demand for relatively elastic primary and preventive health care services, and they may be driven by differential access to and preferences for preventive services (Cook & Manning, 2009). The higher expenditures may reflect consumer demand for more inelastic, expensive, and intensive health care services, such as chronic illness and high-technology care, especially among those individuals with severe health issues.

This study investigates whether the earthquake is associated with variation in health care expenditures at the lower and higher tails of the health care expenditure distribution. Populations likely reduced their health care expenditures as a consequence of shift in priorities in the face of loss during the earthquake. It is intuitive that during the time of loss, people direct expenditure to the sphere of living where they have suffered loss due to earthquake. This leads to decreased expenditure in healthcare until and unless it is acutely needed. This situation is further exacerbated by the fact that during the earthquake, there was a loss of public and private primary health care facilities (MoHA, 2015). Similarly, the households of lower wealth quintile are likely to be affected the most by this phenomenon (Cook & Manning, 2009). This paper also examines differentials in health expenditure across earthquake and over the time period along the expenditure distribution. The demand for primary health care services (e.g., prescription drug use, physician visits) might be more income sensitive, compared to the demand for the expensive health care services. Thus, this study hypothesizes that the earthquake may relate to a relatively substantial reduction in health spending at the lower end of the distribution. Besides total health expenditure, the study also analysed the components of total health expenditure for specific types of care are analysed to capture potential trade-offs in care-seeking behaviour during the earthquake.

Methods

Data

For data analysis this study has used nationally representative Annual Household Surveys (AHS) conducted by Central Bureau of Statistics (CBS) on an annual basis (NPC, 2015 & 2017). The primary aim of these annual surveys is to report annual consumption, poverty and income estimates using Living Standard Measurement System (LSMS) proposed by The World Bank(Grosh & Glewwe, 1998). The earthquake hit the country in April 2015. Therefore, this study used data before and after the earthquake i.e. 2014/15 and 2016/17. The outcome variables are annual health care expenditures per person: total health care spending and spending on specific types of health care services, including prescription drug, outpatient visits, inpatient visits and diagnostic tests. All health expenditures are adjusted to constant dollars using the Consumer Price Index medical component as reported by Nepal Rastra Bank.

Design

This study exploited the opportunity to use natural experiment to understand the impact of earthquake on health expenditure; the natural experimental studies are often recommended as a way of understanding the impact of population-level policies, unintended events and their impact on health outcomes or health inequalities(Gertler, Martinez, Premand, Rawlings, & Vermeersch, 2016). Since variation in exposure to an intervention to be not random, a special care is needed in the design, reporting and interpretation of evidence from natural experimental studies, and causal inferences must be drawn with care. Natural experimental approaches are important because they widen the range of interventions that can usefully be evaluated beyond those that are amenable to planned experimentation. Such interventions may be intrinsically difficult to manipulate experimentally – as in the case of national legislation to improve air quality, or major changes in transport infrastructure – or implemented in ways that make a planned experiment difficult or impossible. In this case, the earthquake affected 36 districts out of 77 leaving the opportunity to evaluate the differential impact of earthquake on health expenditure over the two year period. After adjusting for the key variables, the study setting has potential to answer some of the research questions that ideally required an experimental design which for ethical reason is not feasible.

The key explanatory variables for this investigation are time and earthquake dummies which are dichotomous indicators. The time dummy is equal to 0 if the survey year was 2014/15, and 1 if the survey year was 2016/17. Similarly, the earthquake dummy is 1 to indicate the districts affected by earthquake and 0 for those not affected. The interaction term between these two variables captures the differential impact of earthquake on health expenditure over the period of time.

Analysis

Quantile multivariate regressions are employed to estimate the different associations between the recession and health care expenditures along the health care expenditure distribution(Koenker & Hallock, 2001). In quantile regressions, coefficients at the lower percentiles of the expenditures distribution (e.g., the 10^{th}, 25^{th}, and 50^{th} percentiles) reflect the association between the earthquake and expenditures on low-intensity health care, or the demand for and access to primary health care services (e.g., prescription drug use, physician visits). The coefficient at the higher percentiles of expenditures (e.g., the 75^{th}, 90^{th} percentiles) indicates the association between the earthquake and high-intensity care (such as the highly intensive cares or expensive high-technology care).

In the datazero-mass expenditures were found in total health spending and spending on specific types of services. Zero expenditure may indicate no utilization, and it may also reflect populations' unwillingness to spend on health care. Likewise, it may be related to good health status. Thus, this study used a two-part model to first analyse the probability of encountering any health care expenditure for all the populations using logistic regressions. Among populations with positive spending, this study employed a quantile regression approach to estimate the association of the economic recession across the distributions of health care expenditures. A the natural log of health care expenditures was used to adjust for the skewed distribution of the data. The two-step approach has been widely adopted in the literature (Cragg, 1971).

This paper first summarized health care expenditures before and during the earthquake among the earthquake affected districts. The probability of having any health care expenditures and expenditures at different percentiles (10th, 25th, 50th, 75th, 90th) were summarized from the lower levels of health care spending to the higher level of health care expenditures. This study used logistic regression to estimate the association between the earthquake and the probability of having any health care expenditure, distinguishing over the time period. The study then implement the quantile regressions to estimate the different associations between the earthquake and different levels of health care expenditures. Subsequently, same models were used to estimate the association between the earthquakes and spending on different types of health care services, including prescription drugs, inpatient stays, outpatient visits, and diagnostic services.

Results

Table 1 summarizes the details of the health care expenditure distribution. The 10th percentile of total health expenditure across all services was 187 NPR before 2014/15 and 237 NPR in 2016/17 in the districts that are not affected by the earthquake. However, during the same period, 10th percentile health expenditure was found 253 NPR and 190 NPR in the districts affected by the earthquake. Similar pattern was observed at the higher end of the distribution; however, the decrease in health expenditure is mild at 90th percentile. The mean health expenditure also decreased drastically in the districts that were affected by earthquake.

The expenditure on medicines and medical products also decreased only in the districts affected by earthquake while a slight increase was observed in the districts not affected by the earthquake. The 10th percentile expenditure on medicine and medical products also showed similar decrease. A slight different scenario appeared at the upper end of the expenditure distribution (90th percentile) i.e. increase in expenditure in the earthquake affected districts was observed.

The mean expenditure on outpatient services was found to increase for both types of districts over the two time periods. The percentile expenditure also increased from lower end to upper end of the distribution except for the 90th percentile where a decrease was observed in the districts affected by the earthquake. An increase in any health expenditure was observed in the districts not affected by the earthquake but the converse was observed in the districts affected by earthquake.

The mean expenditure for inpatient services was found to be drastically decreased in the districts affected by earthquake while it increased for the districts not affected by earthquake. Similarly, comparatively lower percentage of HHs incurred any expenditure due to inpatient services in the districts affected by earthquake. The expenditure percentile was also found to be systematically lower across all the percentiles.

The expenditure proportion for diagnostic services was found to be relatively lower in districts not affected by earthquake. However, mean expenditure was found to be slightly higher across the type of districts but lower over the time period for districts affected by earthquake. A different trend was observed for the expenditure percentile. An increase in percentile was observed from lower to upper tail of the expenditure distribution for both types of the districts except for 90th percentile in districts affected by earthquake where a decrease in percentile expenditure was observed.

Overall, relatively higher expenditure was observed for medicine and medical products. Similarly, higher mean expenditure was observed for medicine and medical products and inpatient services and lower mean expenditure for outpatient services.

Table 1

Summary Statistics of Health Care Expenditures

Earthquake affected	Any Health Expenditure		Mean		10%		25%		50%		75%		90%	
	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Total Health Expenditure														
No	0.90	0.85	2978	3031	187	237	422	475	1055	1092	2637	2800	5942	6596
Yes	0.93	0.93	4641	3371	253	190	534	475	1450	1252	3516	3249	8755	7914
Medicines and Medical Products														
No	0.87	0.83	1898	2068	169	211	338	396	791	844	1758	2009	4219	4219
Yes	0.91	0.91	3002	2580	211	176	452	422	1055	1055	2484	2461	5860	5981
Outpatient Services														
No	0.39	0.42	333	428	38	53	74	88	141	185	281	422	527	847
Yes	0.5	0.47	486	496	53	53	105	105	230	264	475	527	1055	912
Indoor Services														
No	0.34	0.28	1481	2063	39	53	105	105	264	352	923	1319	2901	3692
Yes	0.22	0.22	3572	2160	53	53	169	137	527	422	1758	1661	6329	5274
Diagnostic Services														
No	0.26	0.33	615	723	63	88	114	158	253	331	527	738	1055	1582
Yes	0.38	0.37	894	849	80	98	158	185	316	396	703	800	1656	1582

Source: Authors' calculation.

Table 2 shows the findings of logistic regression of two part model. This part explains the conditional distribution of any health expenditure. The HHs reporting any health expenditure increased for districts affected by earthquake. However, over the period of time, any health expenditure decreased as shown by negative coefficient but disproportionately increased in the districts affected by earthquake as indicated by positive sign of interaction term. Similar trend was observed for any expenditure for medicine and medical products but the coefficients are relatively lower than that of total health expenditure.

Table 2

Logistic Regression for any Health Expenditure

Variables	Estimate	Std. Err.	Pr (> |z|)
Total Health Expenditure			
(Intercept)	2.191	0.078	0.000
Earthquake affected	0.429	0.111	0.000
Year	-0.443	0.101	0.000
Earthquake × Year	0.378	0.149	0.011
Medicine and medical products			
(Intercept)	1.886	0.069	0.000
Earthquake	0.473	0.099	0.000
Year	-0.278	0.092	0.003
Earthquake × Year	0.286	0.136	0.036
Outpatient Services			
(Intercept)	-0.467	0.048	0.000
Earthquake	0.480	0.063	0.000
Year	0.160	0.067	0.016
Earthquake × Year	-0.291	0.087	0.001
Inpatient Services			
(Intercept)	-0.647	0.049	0.000
Earthquake	-0.614	0.069	0.000
Year	-0.300	0.071	0.000
Earthquake × Year	0.289	0.098	0.003
Diagnostic Services			
(Intercept)	-1.028	0.053	0.000
Earthquake	0.552	0.067	0.000
Year	0.326	0.072	0.000
Earthquake × Year	-0.399	0.092	0.000

Source: Authors' calculation.

A slightly different scenario appeared for any health expenditure for outpatient services; the proportion of any health expenditure increased both over the time period and across the districts affected by earthquake but the any expenditure probability decreased over the time period for districts affected by earthquake as indicated by negative sign of the coefficient for the interaction term. Any expenditure for inpatient service was found to decrease for the districts affected by earthquake and over the time period, on average. However, the positive coefficient for the interaction term indicates that the any health expenditure proportion though decreased over the time period increased relatively for the earthquake hit districts. The proportion of any health expenditure for diagnostic services increased both over the time period and across the districts affected by earthquake but the any expenditure probability decreased over the time period for districts affected by earthquake as indicated by negative sign of the coefficient for the interaction term.

Table 3

Quantile Regression Results: The Association of the Earthquake and Health Care Expenditures

Variables	10 Percentile		25 Percentile		50 Percentile		75 percentile		90 Percentile	
	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value	Coef.	P-value
Total Health Expenditure										
(Intercept)	5.218	0.000	6.045	0.000	6.961	0.000	7.877	0.000	8.696	0.000
Earthquake	0.316	0.000	0.236	0.000	0.318	0.000	0.288	0.000	0.382	0.000
Year	0.252	0.000	0.118	0.078	0.035	0.528	0.069	0.265	0.119	0.177
Earthquake × Year	-0.539	0.000	-0.236	0.009	-0.181	0.012	-0.147	0.065	-0.220	0.066
Expenditure on Medicines										
(Intercept)	5.129	0.000	5.822	0.000	6.673	0.000	7.472	0.000	8.347	0.000
Earthquake	0.223	0.000	0.292	0.000	0.288	0.000	0.348	0.000	0.329	0.000
Year	0.223	0.002	0.159	0.002	0.065	0.289	0.140	0.029	0.000	1.000
Earthquake × Year	-0.405	0.000	-0.228	0.006	-0.065	0.415	-0.151	0.059	0.026	0.824
Outpatient visits										
(Intercept)	3.629	0.000	4.302	0.000	4.946	0.000	5.639	0.000	6.268	0.000
Earthquake	0.336	0.001	0.357	0.000	0.492	0.000	0.523	0.000	0.693	0.000
Year	0.336	0.001	0.174	0.033	0.272	0.000	0.405	0.000	0.511	0.000
Earthquake × Year	-0.336	0.010	-0.174	0.114	-0.136	0.126	-0.300	0.002	-0.644	0.000
Indoor Stays										
(Intercept)	3.629	0.000	4.659	0.000	5.575	0.000	6.828	0.000	7.973	0.000
Earthquake	0.336	0.104	0.470	0.000	0.693	0.000	0.644	0.000	0.780	0.000
Year	0.336	0.083	0.000	1.000	0.288	0.023	0.357	0.006	0.241	0.230
Earthquake × Year	-0.336	0.153	-0.219	0.220	-0.511	0.007	-0.397	0.072	-0.423	0.130
Diagnosis										
(Intercept)	4.148	0.000	4.739	0.000	5.534	0.000	6.268	0.000	6.961	0.000
Earthquake	0.223	0.055	0.325	0.000	0.223	0.004	0.288	0.001	0.470	0.004
Year	0.329	0.006	0.325	0.000	0.269	0.001	0.336	0.001	0.405	0.009
Earthquake ×Year	-0.119	0.406	-0.171	0.106	-0.046	0.662	-0.197	0.104	-0.470	0.019

Source: Authors' calculation

Discussion

This study shows that the associations between the earthquake and health care expenditure varied along the health expenditure distribution. This study hypothesized that more variability would be observed in the lower end of the health spending distribution compared to the higher end. Results (Table 3) confirm the hypothesis that the earthquake was associated with significant drops in health care expenditures, though in the probabilities of having any health care expenditure increased, and the lower end of its distribution, given any expenditure. This finding implies that health care access and spending in primary care might have been more adversely impacted during the recession compared to higher intensity care that may be more inelastic due to health need. This finding is consistent with previous findings on reductions in health care utilization when exposed to similar other events (Mortensen & Chen, 2013) and spending during the changes in economic and other variables (Karaca-Mandic, Choi Yoo, & Sommers, 2013).

The results (Table 3) did showed a significant relationship between the earthquake and health expenditures at higher distributions of health care spending, which indicated that the health needs of populations requiring a large amount of health care resources were not impacted at the overall level of health expenditure. Individuals with higher health spending may have been less willing to substitute health spending as this type of spending is more likely to be inelastic due to perceived health need (Newhouse & Phelps, 1976). For instance, individuals with relatively low health spending, such as on primary care, may have been more willing to go without annual doctor check-ups or a flu shot, whereas patients being treated for Non Communicable Diseases (NCDs) may not have been as willing to reduce their health spending due to the immediacy of perceived need. Which means that during the time of natural disasters, individuals may be more willing to sacrifice visits to primary care providers than to specialists due to perceived need.

A lower prescription expenditures was found on medicines and medical products at the lower end of distribution as the result of earthquake. However, at the upper end of the distribution, the expenditure on medicine and medical products, the expenditure is highly inelastic and increasing as it was observed that earthquake was associated with higher spending on medicine and medical products, especially at the higher end of the distribution of physician expenditure, which may be indicative of resilience of OOP for payments to income shocks. Because supply of medicines is limited and substitutes are not available, such expenditures remain relatively constant and individuals have less flexibility to adjust their respective expenditure as in other categories of health expenditure such as prescription drugs or hospitalization.

This study has several important limitations. First, given the AHS survey design, this study is only able to conduct a pooled cross-sectional analysis. Thus, it is not possible to establish a causal relationship between the earthquake and health care expenditures. It is likely that the trends of health care spending during 2014/15 and 2016/17 were affected by other unobserved factors, such as geographic variation in health status and access to health services across the geographies and the implementation of different state and local policies to mitigate the impact of the earthquake on health expenditures. Future research is needed to estimate the impact of the earthquake on health care expenditures by geographic areas. It will also be interesting to estimate the long-term health effect due to the reduced health care expenditures. Second, health care expenditures were self-reported and had recall bias. Third, different health care expenditures may reflect the severity of health illness, which this study could not be controlled for in this study due to the unavailability of data. Fourth, this study could not adjust the findings of quartile regression with many potential confounders due to unavailability of data.

The findings from this study have important policy implications. The disaster management plan should be prepared keeping in mind the potential impact of disaster on health expenditure and associated utilization of health services. Similarly, provisions of the affordable care and financial protection may affect health care spending, particularly for the low-income families that had greater reductions in spending during the earthquake. Policies such as those mandating Essential Healthcare Services, which prioritize low-cost services with a high benefit to society such as vaccination or chronic disease detection and management, may prove beneficial at avoiding decreased utilization of these services during the natural disasters. The expansion of eligibility in National Health Insurance scheme for individuals with income up poverty line allows many individuals protected by such effects. Subsidies for purchasing insurance through the state-based marketplaces will result in more low-income individuals with insurance coverage. All of these provisions, as well as others in the Act, should lessen the burden of health care spending for low-income families and may help to narrow racial/ethnic disparities in health care spending during the earthquake.

Conclusion

This study shows that the relationship between the earthquake and health care spending varied along the health expenditure distribution. In general, more variability was observed in the lower end of the health spending distribution compared to the higher end which indicates that primary health care services, which are often associated with lower health expenditure, are relatively compromised during the natural disasters like earthquake. Health expenditures for outpatient and inpatient services decreased even at the upper tail of the distribution. The disaster response mechanism should take into account this phenomenon to make the resilient health systems for Universal Health Coverage and financial protection.

References

Cook, B. L., & Manning, W. G. (2009). Measuring racial/ethnic disparities across the distribution of health care expenditures. *Health Services Research,* 44(5p1), 1603-1621.

Cragg, J. G. (1971). Some statistical models for limited dependent variables with application to the demand for durable goods. *Econometrica* (pre-1986), 39(5), 829.

DoHS. (2016). *Annual Health Report*. Department of Health Services, Ministry of Health and Population, Kathmandu.

FMoHP and NHSSP. (2018). *Budget analysis of Ministry of Health and Population FY 2018/19*. Federal Ministry of Health and Population and Nepal Health Sector Support Programme.

Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. (2016). *Impact Evaluation in Practice*. The World Bank.

Grosh, M. E., & Glewwe, P. (1998). The World Bank's living standards measurement study household surveys. *Journal of Economic Perspectives, 12*(1), 187-196.

Karaca-Mandic, P., Choi Yoo, S. J., & Sommers, B. D. (2013). Recession led to a decline in out-of-pocket spending for children with special health care needs. *Health Affairs,* 32(6), 1054-1062.

Koenker, R., & Hallock, K. F. (2001). Quantile regression. *Journal of Economic Perspectives,* 15(4), 143-156.

MoHP. (2017). *Nepal National Health Account 2012/13-2015/16*. Kathmandu: Ministry of Health and Population, Government of Nepal.

MoHA. (2015). *Nepal Disaster Report 2015*. Ministry of Home Affairs, Government of Nepal.

Mortensen, K., & Chen, J. (2013). The great recession and racial and ethnic disparities in health services use. *JAMA Internal Medicine,* 173(4), 315-317.

Newhouse, J. P., & Phelps, C. E. (1976). New estimates of price and income elasticities of medical care services. *The role of health insurance in the health services sector* (pp. 261-320): NBER.

NPC. (2015). *Annual Household Survey 2014/15*. Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal.

NPC. (2017). *Annual Household Survey 2016/17*. Kathmandu: Central Bureau of Statistics (CBS), National Planning Commission, Government of Nepal.

WHO. (2015). *Country update and funding request of earthquake - 2015 Nepal*. World Health Organization.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Monetary Approach to Balance of Payments: A Study of Nepal (1975-2019)

Sahadev Sigdel [*]

Abstract

The monetary approach assesses the Balance of Payment situation of Nepal in terms of current account, capital account and foreign reserves; and examines the determinants. The application of co-integration test and error correction model distinctly has demonstrated the positive relation between GDP and NFA. Higher national output seems to be on account of higher value of balance of payment. Interest rate and BOP are negatively related. The estimated coefficient of Domestic Credit (NDC) has negative sign as expected theoretically. Given the level of money supply, higher domestic credit is related to lower net foreign assets and hence the lower the value of balance of payment. Higher domestic credit may lead to BOP deficit. The coefficients of interest rate and domestic credit are negatively significant as and so has negative impact on balance of payment. The estimated coefficient of CPI is positive and is consistent with monetary approach to BOP which assists to deduce the fact that, in short run, high inflation creates BOP surplus in Nepal and unobserved long run relationship between CPI and BOP.

Keywords: *Monetary policy, Economic growth, Domestic credit, Balance of payment, Net foreign assets, Consumer price index.*

Monetary policy is one of the utmost significant policy to manage aggregate demand. Like other policies, the prime objective of monetary policy is to accomplish the macroeconomic objectives such as stability, growth, full employment, satisfactory BOP and so on. Foreign exchange reserve plays dynamic role in the aggregate economic activities of the nation. As a developing nation, Nepal, the demands for foreign exchanges are high for different types of development arrangement, trade and

[*] *Mr. Sigdel is PhD Research Scholar in Economics and is associated with Kathmandu BernHardt College. E-mail: ssigdel@kbc.edu.np*

repay the debt and its interest. Foreign assets reserve affects money supply of the nation and money supply effects on different macroeconomic variables like price level, interest rate, exchange rate, exports, imports, production and employment which eventually affects the BOP.

As a monetary phenomenon, MABP expresses the relationship between a country's BOP and its money supply. It shows that the overall BOP (measured by foreign reserves) is influenced by imbalances prevailing in the money market. Under a pegged exchange rates system, excess money supply induces increase expenditure, hence increased domestic demand for foreign goods and services. The high domestic demand needs to be financed by running down foreign exchange reserves, thereby worsening the BOP. The outflow of foreign exchange reserves reduces money supply until it is equal to money demand, thereby restoring monetary equilibrium and halting an outflow of foreign exchange reserves. Therefore, an excess demand for money leads to an opposite adjustment, which in turn induces foreign exchange reserves inflow, and hence causes a BOP surplus. This triggers domestic monetary expansion and eventually a restored BOP equilibrium position. Therefore, net foreign exchange (NFA) is the dependent variable in this study.

The BOP situation of Nepal indicates the adverse effects on economic growth and stability. The main focus of this research is the BOP situation of Nepal since 1975 to 2019 A.D, and the determinants of BOP in Nepal with references to monetary approach. The Nepalese economy is overwhelmed by chronic BOP deficits. It demonstrates whether the equilibrium in BOP is maintained which is the burning issue for Nepal. Therefore, in this context, this study tries to answer the following queries.

- What are the determinants of BOP in Nepal with references to monetary approach to BOP?
- The objectives of the study is to examine the determinants of BOP in Nepal with references to monetary approach to BOP.

Review of Literature

Theoretical Review

Monetary approach states that the phenomenon of a nation’s BOP depends onthe given demand for money in that country and in the rest of the world upon the rate of the growth of the money supply in the country vis-à-vis the rate of growth of the money supply in the rest of the world. The main feature of the monetary approach is the automatic BOP adjustment instrument i.e., a BOP surplus or deficit is impassive by adjustment of money supply to money demand. The monetary approach to the BOP assumes stable exchange rates. This description related with Johnson (1976) and his supporters became fashionable in the early and middle 1970s. It recognizes a nation's BOP surplus under stable exchange rates with a procedure of sustaining a demand for national money to hold in excess of genuine holdings, and it recognizes a payments deficit with a procedure of working off a supply of national money in excess of anticipated holdings. Definitely, such relationship between monetary and payments imbalances is common and possibly even typical. But several authors disapprove them severely, and this is misleading. Whether those authors stick to their declarations under cross- investigation is another question. Even though, a huge gulf persists in the studies at international level absence of in depth researches in study on monetary approach to balance of payments.

According to Johnson (1976) the significant theme of the monetary approach to BOP system is that BOP deficits or surpluses reveal stock imbalance between demand and supply in the market.

Although small in market size, Nepal is an open economy under fixed exchange regime but the country has no control over its money supply. The money supply is considered an endogenous variable rather than an exogenous or a policy variable. The pursuit of any domestic objective, such as price stability, by altering the domestic component of the monetary base will be unfulfilled by offsetting changes in the international component through reserve flows. If a country is unable to pursue sterilized policies, the government can do is to control the composition of the money supply, not its level. For this, the division of the base into its domestic component, consisting of domestic credit created by the monetary authorities and foreign components. (Krein in, M.E., and L.H. Officer, 1978).

The monetary approach incorporates a money supply identity, money demand function, and an equilibrium condition. Equating change in money demand and money supply, and isolating NFA, the following equations are derived.

$$\Delta F = \Delta\,[Pf(Y, I)] - \Delta C$$

The aforementioned basic equation of the monetary approach states BOP as the result of divergence between the growth of money demand and domestic credit, whilst the monetary consequences of the BOP bring the money market into equilibrium. With money demand being stable, an increase in domestic credit will cause an equal and opposite change in international reserves. The coefficient of ΔC is, therefore, known as an offset coefficient and it shows the extent to which changes in domestic credit are offset by changes in the money supply as a consequence of a loss in international reserves.

Empirical Review

The monetary approach to balance of payments has been verified by different researchers, and the diversified findings have been reckoned. Johnson (1975) opines that the monetary policy can govern the volume of internal credit and nation's foreign reserves and finally to the BOP. Akpansung (1998) notes that any inconsistency between the volume of money balances demanded and the stock of money created by the monetary system is eliminated by a reserve movement created by BOP surplus or deficit.

On account of BOP deficit and required 1967 devaluation, Britain had to face low growth rate and a high rate of internal credit creation (Beare, 1978).Spanos and Taylor (1984) concludes that the monetary approach to BOP as being a monetary phenomenon using a reserve - flow method is more suitable to be considered in the framework of adjustment/or instability.

Obstfeld (1986) noticed that from the Mexican crash, people's expectations have been identified as a key trigger for a disaster. Even though the economy is essentially sound, individuals anticipate a devaluation in the near future. Leon (1987) finds the relationship between internal credit and foreign reserve flows. Calvo and Mendoza (1996) estimates the sources of the December 1994 financial crash in Mexico and attempts an exploration of the five previous separate steps taken since 1945 towards restoring/determining the BOP crises. Chaudhary and Shabbir (2004) found that an increase in the allocation of domestic credit leads to a corresponding increase in foreign reserves inflows. Jimoh ((2004) points out that if domestic money supply exceeds foreign money supply by around one percent, the exchange rate will depreciate by nearly 0.89 percent. Adamu and Itsede (2009) found a strong negative relationship that exists between domestic credit and net foreign assets. Interest rate and growth rate of GDP too have significant impacts on the balance of payments for the WAMZ countries. Adouka et al., (2013) finds an increase in international reserves results in a relative appreciation of the exchange rate and also finds a positive relationship between the exchange rate and domestic credit.) A common consensus and inference drawn from the review revealed that major disequilibrium in the BOP is often occasioned by distortions in the economy's monetary aggregates (Akpansung, 2013). It also lends support to the view that the demand for domestic credit can either be used to correct the BOP disequilibrium or to aggravate it. Khvostova et al., (2013) balance of payments changes for seventy-eight countries with different exchange rates regimes (free floating, currency board, conventional peg, crawling peg, currency band and managed to float) from 2006 to 2010. The study considers the balance of payments as an intermediate target of monetary policy.

So far as the case of Nepal is concerned, pragmatic investigation advises the levels of the Nepalese and Indian monetary base that do not share a long-term relationship (Maskey, 1998). McNown (1980) observes a negative and nearly one-to-one relationship between domestic credit and balance of payments and positive relationship between exchange rate changes (measured in terms of domestic currency per unit of foreign currency) and balance of payments. Sharma (1987) finds that the demand for money is a stable function of certain variables, and regulation of cash with commercial banks is an appropriate instrument for controlling the money supply. Khatiwada (1992), the nearly negative relationship between changes in net domestic credit and NFA of the monetary authority, money multiplier and required reserves find significant factors affecting NFA negatively and positively respectively, real income and domestic prices are found a significant positive effect on NFA, the coefficient of foreign prices is found less significant indicating that Nepal does not have a perfectly open economy, i.e. domestic price are not determined by international prices alone. Khatiwada (1994) observes that there is significant relationship between changes in the stock of money and money income and the growth of money stock did not apply one to one positive effect on price.

Kharel & Koirala (2010), conclude that money demand functions are useful for conducting monetary policy in Nepal. Buda (2011), proved the short-run relationship between the real money balances and its determinants. Buda (2012), the CUSUM and CUSUMSQ tests reveal that the money demand function is stable, but the M2 money demand function is not stable implying that the monetary policy pays more attention to M_1 than M_2. Buda (2015) notes that the monetary stability largely depends on India due to the convergence of the price level in Nepal to the Indian price level in the long-run. The weak correlation between lending rate and the deposit rate with the interbank rate shows the weak interest rate pass-through.

In this regard, various factors may be reckoned to make an assessment of monetary approach to balance of payments. Therefore, limited amount of in-depth researches regarding the field of the monetary approach to balance of payments of Nepal, naturally insists one to make query. Therefore, the study attempts to evaluate monetary approach to balance of payments empirically.

Methodology and Analysis

The formal monetary approach to BOP theory (Johnson, 1976) postulates a money supply identity and a money demand function and an equilibrium situation. Johnson's small country model is used to investigate the overall BOP problem of Nepal.

The model involves the following set of equations:

(a) The Supply of Money

$$Ms = (R+D) \qquad \text{------------------------ (1.1)}$$

(b) The Demand for Money

$$M_D = L(Y,P,I) \qquad \text{------------------------ (1.2)}$$

(c) For equilibrium

$$Ms = M = M_D \qquad \text{----------------------- (1.3)}$$

Where,

Ms = money supply; R = international reserves; D = domestic credit; M_D = money demand; Y = level of real domestic income; P = price level; I = rate of interest; and M = equilibrium stock of money.

Equation (1.1) suggests that money supply is determined by the convenience of foreign reserves and the level of internal credit created by the nation's monetary reserves, while equation (1.2) sets out the real demand for money as a function of real income, the inflation rate and the interest rate. It follows from money market equilibrium that equation (1.1) and (1.2) are equal and expressed as

$$M_s = M_D \qquad \text{------------------------------- (1.3)}$$

Or, $R+D = L(Y, P, I)$

The functional form of the money demand function is expressed in the linear form as under:

$$R + D = C + m_1Y + m_2P + m_3I$$

Where, C is the intercept, m_i are the coefficient of corresponding variables. Furthermore, algebraic simplification gives the following equation;

$$R = C + m_1Y + m_2P + m_3I - D \qquad \text{.................. (1.4)}$$

Econometric Specification of the Model

Following the theoretical framework, the empirical model as applied is illustrated in the equation (1.5). The variables are further taken with log values owing to the desirable time series properties of the variables which allows computing the elasticity directly. Therefore, the model for the estimation is

$\ln(NFA) = a + \beta_1 \ln(GRDP) - \beta_2 \ln(DC) + \beta_3 \ln(CPI) - \beta_4 I - \beta_4 GDP\_India + u$ ... (1.5)

Where,

ln(NFA) = the log of value of Net Foreign Assets

ln (RGDP) = log of Real GDP

ln (DC) = log of Domestic Credit Creation

ln (CPI) = log of Consumer's Price Index

I = Interest Rate

GDP_India = Log of Indian GDP

u = Stochastic Error Term

The expected sign of the coefficients and corresponding theoretical reasons are stated as under

Table 1

Coefficient	Expected Sign	Reasons
GDP (Nepal)	+	There is positive relationship between real GDP and NFA to money supply which supports the MABP theory.
Interest Rate	-	There is negative relationship between interest rate and NFA to money supply with the assumption of the monetary approach to the balance of payments theory.
Price Level	+	Price level has a positive impact on the ratio of change in NFA to money supply and this result supports the MABP theory
Domestic Credit	-	There is a negative relationship between domestic credit and NFA to money supply and this result support the MABP theory
Indian GDP	-	Taken together with the open and contiguous boarder, the close relation of prices and the temporary divergence of monetary base level, that Nepalese monetary policy may be endogenous to output shock (Maskey, 1998)

Findings

Augmented Dickey-Fuller (ADF) test is employed to determine whether there is a unit root in variables. ADF is applied to the level variables as well as to their first, second and third differences in logarithmic terms. The null hypothesis tested that the variables under investigation have a unit root, against the alternative that they do not have. The null hypothesis for unit root testing is ρ =0 in the following equation (Koop, 2008). To this end, the presence of unit root can be examined as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \,.\, t + \phi Y_{t-i} + \sum \psi \Delta Y_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots.. (1.6)$$

Where, Y is the variable under consideration, Δ is the first difference operator, t captures time trend, ε_t a random error. α_0 ; α_1 , ψ are the parameters to be estimated. If, cannot reject the null hypothesis ϕ = 0 then we conclude that the series under consideration has a unit root and is therefore non-stationary.

All the dependent variables Net Foreign Assets (NFA) and independent variables Nominal and Real (NGDP and RGDP), Price Level (CPI), Interest Rate (I), Net Domestic Credit (NDC) and $GDP_{(IN)}$ have unit root at a level and they become stationary after first difference.

Summary of Unit Root Test

	Level Form		**First Difference**		
Variable	**Specification**	**t-stat**	**Specification**	**t-stat**	**Results**
Log of GDP (LGDP)	Intercept	0.28 (0.97)	Intercept	-5.05 (0.0001)	I (1)
Log of Net Foreign Assets (LNFA)	Intercept	--0.511 (0.87)	Intercept	-5.95 (0.000)	I (1)
Log of Net Domestic Credit (LNDC)	Intercept	-1.082 (0.71)	Intercept	-6.84 (0.000)	I (1)
Interest Rate (I)	Intercept	-1.64 (0.452)	Intercept	-5.17 (0.000)	I (1)
Log of Price Level (CPI)	Intercept	-0.96 (0.75)	Intercept	-5.11 (0.000)	I (1)
Log of Indian GDP (INDIAN_GDP)	Intercept	2.05 (0.99)	Intercept	-6.49 (0.000)	I (1)

Summary of Unit Root Test (Trend and Intercept)

	Level Form		First Difference		
Variable	**Specification**	**t-stat**	**Specification**	**t-stat**	**Results**
Log of Nominal GDP (LNGDP)	Trend & Intercept	-1.55 (0.79)	Intercept	-4.97 (0.001)	I (1)
Log of Net Foreign Assets (LNFA)	Trend & Intercept	-2.81 (0.19)	Intercept	-5.88 (0.000)	I (1)
Log of Net Domestic Credit (LNDC	Trend & Intercept	-3.76 (0.02)	Intercept	-7.214 (0.000)	I (1)
Interest Rate (I)	Trend & Intercept	-2.54 (0.30)	Intercept	-5.219 (0.000)	I (1)
Log of Price Level (CPI)	Trend & Intercept	-0.76 (0.96)	Intercept	-5.37 (0.000)	I (1)
Log of Indian GDP (INDIAN_GDP)	Trend & Intercept	-0.82 (0.95)	Intercept	-7.42 (0.000)	I (1)

Co-integrating Relation

Engle-Granger methodology tries to establish causal links among the variables. A particular and long-run relationship is compatible with many short-run adjustment processes. As given above, the strong evidence of foreign reserves, real income, the price level, interest rates and domestic credit are co-integrated and present the short-run dynamics of the system where the movements in all the variables are considered explicitly. The application of the conventional ECM, takes into account the co-integrating relation among the variables. These tests should not be viewed as showing that the one variable is the effect or the result of the other. Rather, it measures preference and information content and, thus, does not show causality as commonly expressed. The EG co- integration test follows two-step procedure. In the first step, the model as specified by equation (1.5) is estimated using ordinary least square technique and the residual (u_t) is computed. In the second step, the stationary properties of the u_t are checked and the variables are said to be co- integrated if u_t is found to be stationary. The empirical model as stated is

$$\ln (NFAt) = \alpha + \beta_1 \ln(RGDPt) + \beta_2 \ln(DCt) + \beta_3 \ln(CPIt) + \beta_4 \mathrm{I}t + ut \text{ ----------- } (1.7)$$

Following OLS the u_t is estimated and usual ADF is applied to check whether u_t is stationary. For this, the ADF is given by:

$\Delta u_t = \alpha_0 + \phi u_{t-i} + \Sigma \psi \Delta u + \varepsilon_t$ where, u_t is the residual of equation (1.7), Δ is the first difference operator, and ε_t is a random error. α_0, ψ are the parameter to be estimated. If we cannot reject the null hypothesis $\phi = 0$ then we conclude that the series under consideration has a unit root and is therefore non-stationary. Alternatively, the residual is said to be stationary if we reject null hypothesis. In this case, the variables given by equation (1.6) will be co-integrated in long-run.

It is clear from unit root test that all the relevant variables are non-stationary at level but stationary at first differences. Thus, the researcher examines the co-integrated relation among these variables. Finally, the following relation is investigated as a co-integrated relation in the sense of Granger co-integration.

Table 2

Co-integrating Relation

Dependent Variable: LNFA
Method: Least Squares
Sample: 1975 2019
Included observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.46485	1.865640	-6.145266	0.0000
I	-0.059936	0.015583	-3.846323	0.0004
LCPI	2.316907	0.699219	3.313562	0.0020
LGDP	0.638521	0.447225	1.427740	0.1613
LNDC	-0.978655	0.140187	-6.981089	0.0000
LINDIAN_GDP	0.667633	0.181160	3.685315	0.0007

R-squared	0.993918	Mean dependent var	3.526450
Adjusted R-squared	0.993138	S.D. dependent var	2.181233
S.E. of regression	0.180689	Akaike info criterion	-0.460515
Sum squared resid	1.273289	Schwarz criterion	-0.219627
Log likelihood	16.36159	Hannan-Quinn criter.	-0.370714
F-statistic	1274.603	Durbin-Watson stat	0.961149
Prob(F-statistic)	0.000000		

Source: Researcher's Estimation using EViews 12.

The estimated co-integrated relationship shows a long run equilibrium relationship. All the explanatory variables have expected sign. To examine the co-integrating relation residual from the above equation is obtained and is examined for unit root test. The critical values of Granger co-integration test at one, five and ten percent level are -5.017, -4.324, and -3.979. Thus, that equation shown in table 1 is the co-integrating relation at the 10 percent level of significance.

Table 3

Unit Root Test of the Residual
Null Hypothesis: ECT has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, Maxlag = 9

	t-Statistic	**Prob.***
Augmented Dickey-Fuller test statistics	**-6.468963**	**0.0000**
Test critical values:	**1% level**	**-3.592462**
	5% level	**-2.931404**
	10% level	**-2.603944**
***MacKinnon (1996) one-sided p-values**		

Source: Researcher's Estimation using EViews 12.

The co-integrating relation shows that there is a positive relationship between GDP and NFA. The higher national output is on account of higher value of the balance of payment. The estimated equation states GDP increases by one percent. NFA increases by 0.63 percent but is statistically insignificant. The coefficient of interest rate seems to be significant at less than 1percent level with expected sign and so illustrates negative relation to BOP. On the other hand, given the level of money supply, it is justified that higher the Domestic Credit, lower the net foreign assets and hence, the lower the value of the balance of payment that may lead to BOP deficit.

Error Correction Model

The error-correction mechanism is employed to look at the short- and long-run behavior of the net foreign asset in relation to its explanatory variables such as real GDP, Domestic credit creation, Consumer price index, and Interest rate. This equation incorporates the short-run adjustment mechanism into the model. Therefore, the error term equation is employed to eliminate deviation from the long-run equilibrium.

If the variables as specified in equation (1.5) or (1.6) are co integrated then Error Correction Model is applied to examine the short-run relationship between the variables. The error correction model is stated by

$$\Delta\ln(NEA) = \varnothing + \varnothing_1\ \Delta\ \ln(RGDPt) + \varnothing_2\ \Delta\ln(DC) + \varnothing_3\ \Delta\ln(CPI) + \varnothing_4\Delta It + u_{t-1}\ \text{-------}\ (8)$$

Error correction model is developed capturing the long run disequilibria and short-run dynamics. The estimated coefficient of error correction term is negative as expected and statistically significant at less than one percent level which states 95 percent of the last year's disequilibria are corrected by this year.

The expected negative sign of the coefficient of interest rate, significant at less than one percent level, has impacted the growth rate of balance of payment by 4.8 percent. Similarly, the impact of the domestic credit on the growth rate of BOP has been found by 125 percent towards negative direction. In contrary to this, CPI is found to be positively significant and consistent with the monetary approach to BOP and helps to deduce a positive impact of inflation leading to BOP surplus in Nepal in the short run. However, CPI is found which leads to increase the rate of BOP by 235 percent, albeit, an unobserved long run relation between them.

Table 4

The First Error Correction Model

Dependent Variable: D(LNFA)
Method: Least Squares
Sample: 1976 2019
Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.104641	0.123736	8.927390	0.0000
D(I)	-0.048043	0.015311	-3.137824	0.0033
D(LCPI)	2.353890	0.451083	5.218303	0.0000
D(LNDC)	-1.246089	0.164857	-7.558610	0.0000
D(GDP)	4.27E-05	0.000157	0.271616	0.7874
D(LINDIAN_GDP)	0.346199	0.276458	1.252268	0.2183
ECT-1	0.950473	0.123768	7.679486	0.0000

R-squared	0.754657	Mean dependent var	0.156874
Adjusted R-squared	0.714872	S.D. dependent var	0.190219
S.E. of regression	0.101572	Akaike info criterion	-1.591184
Sum squared resid	0.381726	Schwarz criterion	-1.307336
Log likelihood	42.00605	Hannan-Quinn criter.	-1.485920
F-statistic	18.96823	Durbin-Watson stat	0.926114
Prob(F-statistic)	0.000000		

Source: Researcher's Estimation using EViews 12.

Table 4 shows that Indian GDP is positive value (0.3461) but the theory of BOP is expected negative sign and also it seems statistically insignificant because of probability value is also more than 5 percent. Therefore, there is no relation between BOP of Nepal and Indian GDP.

The results of the ECM have justified the joint influence of the independents to NFA by 75.46 percent and remaining by the exogenous factors. DW statistics is near to one, R-squared is also less than DW statistics, it means the estimated variables are 'autocorrelation free', and variables are stationary. Similarly, prob (F- statistics) is also less than 1 percent, means the significant variables jointly influence the dependent variable which is the Net Foreign Assets and the model is good fitted.

All the variables in the ECM model are in growth rate except the error correction term. Thus, in general, ECM explains the short-run relationship. However, the estimated coefficient of the growth rate of GDP of Nepal seems to be positive as expected but statistically insignificant and supports previous findings.

The result suggests that unnecessary creation of credit generates the situation where reserves are lost. For Nepal Rastra Bank (NRB), easy creation of debt need constraint on monetary policies. Net domestic assets (NDA) of the NRB factor is affecting reserve money, and taken as the operating target in order to attain the intermediate target of monetary policy. To keep NRB's net domestic assets within the desired level, open market operations and short-term interest rates are used as instruments of monetary policy. The secondary open market operations are strengthened to manage the short-term liquidity of the system. The repo facility is continued as a standing liquidity facility for commercial banks. As a result, domestic credit leads to fluctuating the Net Foreign Assets.

Conclusion

The study concludes that desired NFA and BOP of Nepal can be achieved by managing supply and demand for money efficiently. Among many macroeconomic variables that determine the supply and demand for money, real GDP, price level, interest rate and net domestic asset are considered as major influencing factors for NFA and BOP of the country. Theory suggests a significant positive relationship in long-run equilibrium between net foreign assets (NFA) as a proportion of GDP and real exchange rates. A real exchange rate appreciation reduces the absolute value of NFA denominated in foreign currency relative to domestic GDP, because of the sizeable component of non-tradable goods in domestic GDP. In this study, the price level, interest rate, and net domestic credit have a satisfactory level of significance.

Net credit creation affects extensively for a change in NFA and can be regarded as a policy variable. The monetary authority of Nepal can control the magnitude and direction of BOP by controlling this measure. It is the most important tool to control foreign assets of Nepal. The relationship of interest rate with foreign asset reserve shows the inconsistent result in Nepalese context and contradicts with the monetary theory.

Suggestions

Several economic variables have strong impact in changing NFA of Nepal. If these factors are left free, they can make far-reaching adverse effects. The application of the limited number of variables : income, price, interest, domestic credit and Indian GDP, calls for further studies and suggests to incorporate non-monetary variables such as Government expenditure so as to click a comprehensive picture of variables that significantly affect BOP of Nepal.

References

Adamu P. A. & Itsede, O. C. (2009). Balance of payments adjustment: The West African monetary zone experience. Nigeria: *Journal of Monetary and Economic Integration* Vol. 10, No 2.

Adouka et al., (2013). The monetary approach to balance of payments and exchange rate equilibrium determination with an empirical application to the case of Algeria. Algeria: *Canadian Center of Science and Education,* University of Mascara, Algeria, Vol. 6, No. 4.

Akpansung, A. O. (1998). A review of empirical literature on balance of payments as a monetary phenomenon. Nigeria: *Department of Economics, Modibbo Adama University of Technology,* Yola, Nigeria, Vol. 1,No 2.

Beare, J. B. (1978). *Macroeconomics: Cycles, growth and policy in a monetary economy*. London: Macmillan Press, Vol. 45, No 180.

Buda, B.B. (2011). An empirical analysis of money demand function in Nepal, Kathmandu: *Economic Review*, Nepal Rastra Bank.

-------- (2012). Demand for money in Nepal: An ARDL bounds testing approach. Kathmandu: *Economic Review*, Nepal Rastra Bank.

--------- (2015). Monetary policy transmission in Nepal, NRB working paper No. 29.

Calvo, G & Mendoza, E. (1996). Mexico's balance of payments crisis: A chronicle of a death foretold. *Journal of International Economics*, Vol. 41.

Chaudhary, M.A. & Shabbir, G. (2004). The impact of domestic credit, deficit and changing exchange rate regimes on foreign reserves in Pakistan. *Pakistan Economic and Social Review,* 42 (1&2).

Granger, C.W.J. & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of Econometrics,* 2, 111-120.

Granger, C.W.J. (1988). Some recent developments in a concept of causality. *Journal of Econometrics*, Vol. 39.

Jimoh, A. (2004). The monetary approach to exchange rate determination: Evidence from Nigeria. Nigeria: *University of llorin, Department of Economics*, Vol. 25.

Johnson, H. G. (1975). The monetary approach to balance of payments theory: A diagrammatic analysis. *Manchester School 43*.

----------- (1976). The monetary approach to balance of payments theory. London: George Allen and Unwin; Toronto: *University of Toronto Press.*

Johnson, H. G., & Frenkel, J. (1976). The monetary approach to the balance of payments: Essential concepts and historical origins, in Jacob Frenkel and Harry G. Johnson, eds., *The Monetary Approach to the Balance of Payments,* Toronto: University of Toronto Press, 1976.

Kharel, R. S. & Koirala, T.P. (2010). Modeling demand for money in Nepal, Kathmandu: *Research Department*, Nepal Rastra Bank

Khatiwada, Y.R. (1992). Monetary approach to balance of payments: Its applicability and policy implementation for Nepal. Kathmandu: *Economic, Review*, Nepal Rastra Bank.

------------(1994). Some aspects of monetary policy in Nepal, New Delhi. India: *South Asian Publishers*, New Delhi.

Khvostova, A. (2013). The balance of payments dynamics in the period of crisis, Russia. Moscow: *National Research University Higher School of Economics.*

Koop, G. (2008). Bayesian econometrics. *NJ: John Wiley & Sons*, Hoboken.

Kreinin, M.E., & L.H. Officer (1978). The monetary approach to the balance of payments. *Princeton Studies in International Finance*

Leon, H. (1988). The monetary approach to the balance of payments. *A Simple Test of Jamaican Data. Social and Economic Studies*, December, 37(4)

Maskay N. M. (1998). The impact of the Indian monetary policy and the official exchange rate on Nepalese monetary policy. Kathmandu: *Economic, Review*, Nepal Rastra Bank.

McNown, R. (1980).International constrains on macroeconomic policies in Nepal, 1957-78. Kathmandu: *Economic Journal of Nepal,* Vol. VIII.

MOF. *Economic survey*, *Various Publication.* Kathmandu: Ministry of Finance.

N.R.B. *Quarterly economic bulletin*, *Various Publication.* Kathmandu: Nepal Rastra Bank.

Obstfeld, M. (1986). Rational and self –fulfilling balance of payments crises. USA: *American Review*, Vol. 1.

Salam, M. A. (1995). The balance of payment as a monetary phenomenon: An econometric study of India's experience. India: *The Indian Economic Journal, vol.42, NO.3,* January-March 1995

Spanos, A. & Taylor, M. (1984). *The monetary approach to the balance of payments: A critical appraisal of some empirical evidence from United Kingdom. London:* Birchbeck College, University of London.

Whiteman, M. V. N. (1975). Global monetarism and the monetary approach to the balance of payments. *Brookings Papers on Economic Activity, Vol. (3*),

http://www.factfish.com/statistic-country/nepal/lendingpercent20interestpercent20rate

http://bfr.nrb.org.np/bfrstatistics.php?tp=interest_rate_structure&&vw=15

Annex

The Data Series Used in the OLS and ECM

Data in Billion

Y	GDP	NFA	NDC	I	CPI	Indian GDP- NPR
1975	16.6	0.99	1.04	15	4.2	108926.88
1976	17.39	1.58	0.95	15	4.1	118893.6
1977	17.28	1.88	1.35	12	4.3	120870.88
1978	19.73	1.78	1.99	12	4.7	129639.84
1979	22.22	2.29	2.22	12	4.9	137045.6
1980	23.35	2.25	3.05	12	5.4	129866.88
1981	27.31	2.36	3.89	12	6.1	138614.4
1982	30.99	3.1	4.36	12.5	6.7	146939.84
1983	33.82	2.61	6.61	12.5	7.7	152047.2
1984	39.29	2.54	7.92	13	8.2	163129.76
1985	44.44	1.9	10.4	13	8.5	169362.4
1986	53.22	2.6	12.56	12.5	9.8	178261.28
1987	61.14	3.06	14.44	12.5	11.2	186776
1988	73.17	5.57	15.85	12.5	12.4	194182.4
1989	85.83	6.2	20.4	12.5	13.4	212877.76
1990	99.7	9.34	22.21	11.5	14.7	225538.4
1991	116.13	16.15	21.56	11.8	16.1	238018.4
1992	149.49	20.79	24.88	12	19.5	240533.92
1993	171.49	29.13	29.2	12	21.2	253720.96
1994	199.27	36.22	33.56	8.8	23.1	265774.72
1995	219.18	37.09	43.9	8.8	24.9	283472.32
1996	248.91	37.7	54.95	10.3	26.9	304944
1997	280.51	40.19	63.53	10.3	29.1	327965.76

Y	GDP	NFA	NDC	I	CPI	Indian GDP- NPR
1998	300.85	55.57	70.89	9.8	31.5	341247.84
1999	342.04	65.03	87.77	8.4	35.1	362352
2000	379.49	80.47	105.65	6.9	36.3	394404.64
2001	441.52	87.8	126.66	6.1	37.2	409553.76
2002	459.44	88.42	135.57	5.3	38.3	429310.4
2003	492.23	91.41	154.5	5	40.1	445641.28
2004	536.75	108.8	168.51	4.3	41.7	480670.4
2005	589.41	107.74	192.7	3.6	43.6	518753.44
2006	654.08	139.53	207.98	3.6	47.1	566919.04
2007	727.83	131.91	207.38	3.6	49.8	619438.24
2008	815.66	171.46	263.61	4.3	53.2	680151.52
2009	988.27	220.15	323.92	6	59.9	706616
2010	1192.77	216.53	402.85	8.1	65.6	766535.52
2011	1366.95	221.27	503.24	8.1	71.9	845181.76
2012	1527.34	383.77	700.05	6.2	77.8	901288
2013	1695.01	468.24	746.53	5.3	85.5	1397812.64
2014	1964.54	599.22	847.14	4.1	93.3	1474082.72
2015	2130.15	747.29	966.75	3.94	100	1568219.2
2016	2253.16	956.02	1130.51	3.28	109.93	1684427.84
2017	2674.49	1014.63	1288.6	6.15	114.83	1819118.88
2018	3044.93	1054.29	1577.07	6.49	119.6	1967732.32
2019	3458.79	984.78	2040.18	6.6	125.14	2108777.12

Source: MOF (1976, 1986, 1990, 2002,2004,2009,2014 and 2015) Economic Survey, MOF, Kathmandu and NRB (1990, 2000,2005,2010,2014, 2019) Quarterly Economic Bulletin, Nepal Rastra Bank

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Role of Direct and Indirect Tax on Revenue Generation of Nepal

Surya Prasad Poudel[*]

Abstract

Tax, a source of government revenue, distinctly plays a significant role in macroeconomic development of the country. Direct tax has positive impact to the interest of government on macroeconomic stability and income distribution but it has posed reverse impact on economic growth and direct foreign investment by higher direct tax rate. The indirect tax has been found skewed towards rich that makes wealth concentration to them by similar tax rate imposed to all the people. The fifteen years panel data of total revenue, direct and indirect taxes are analyzed through trend and percentage methods and found that all the considered variables significantly increased but the direct tax at a faster rate than others. The application of the multiple linear regression in log linear form states that the contribution of indirect tax on total revenue is around 60 percent whereas only 32 percent of direct tax; implies a danger of income inequality in the country.

Keywords: *Total revenue, Direct tax, Indirect tax, Economic growth, Cochrane-Orcutt estimates.*

Tax is a compulsory payment to government by persons and entities from income, profits, expenditure and properties. The-payment of tax is a legal responsibility of taxpayers at prescribed rates, places and time otherwise would be punished according to existing tax law of the country. It is not voluntary payment or donation given to government but a compulsory payment to government. It is a burden of taxpayer because taxpayer has not direct benefit from payment of tax. The government has different sources of revenue out of which tax is a vital and permanent source of revenue. The government spends such revenue in social benefits, development activities, national defenses, regular operating activities etc. of the country. The benefits of taxes are optimal allocation of available resources, raising government

[*] *Mr. Poudel is Associate Professor, Faculty of Management, P.K. Multiple Campus, T.U.*
Email: suryapoudel2024@yahoo.com

revenue, acceleration of economic growth, encoring saving and investment, control over consumption of health hazard goods etc. The financial policy of the government has addressed the sources of income and expenditures allocate budget of government. Tax policy is a device of government for tax collection through direct or indirect taxes. So taxation is an important part of fiscal policy which can be used effectively by government for economic efficiency of the country.

Atkinson, (1977) defined taxes as direct taxes those that may be adjusted to the individual characteristics of the taxpayer and as indirect taxes those that are levied on transactions irrespective of the circumstances of buyer or seller. The definition categorized tax into direct and indirect tax. Direct tax is that it is levied on individual taxpayers' income, profit, properties, gifts etc. The burden of direct tax should not shift to other by the person and entity which have levied it. On the other side indirect tax is levied on transactions rather than the buyers' ability to pay. It is equally charged to the person and entity which have consumed or purchase of goods and services. Normally indirect tax is charged in each stage of dealing of goods and services.

The burden of tax payment should not shift to other who has levied it. It pinched to the tax payer because it is paid directly from salary, profit, assets, interest and expenses of taxpayer. The amount of tax to taxpayers is depended on level of income, profits, properties etc. so it is called progressive tax system. But taxpayer away from proper tax payment due to burden on persons and entities without direct benefits. The-payment of tax will be reducing will power of investors because they are losing portion of saving for investment.

It is also called consumption or expenditure tax. The burden of its hould shift by taxpayer to other wholly or partly. The taxpayer has not knowledge of payment of tax so it is convenient to taxpayer. The government should charge it on all the goods and services as their necessity; so it is broad base tax system. The major weakness of this tax system is regressive because equal tax charged to all the people which boosting up income inequality in the country. So it is in favor of rich peoples rather than poor. However it is beneficial to control over the consumption of health hazard goods over excise and duty tax. Likewise control over tax evasion through proper recording and billing system in each stage of dealings. The feature and preferences of indirect tax was pointing out by Atkinson (1977) as supposedly taxpayers may show preference for indirect taxation on the grounds that it offers them choice and some politicians may have similar preferences because indirect taxes may be perceived by the public as being less visible. The tax has ability to enhancing the economic growth of the country by creating investment opportunity but it could not maintain social harmony. Sources of indirect taxes are value added tax (consumption tax), custom and duties (boarder tax), excise duties, service tax etc.

The direct and indirect tax have played important role in economic development of a country. In case of developed countries direct tax had played vital role in economic development of the country because it is stable and reliable sources of government income. On the other hand indirect or consumption types cost are more unstable, so it could not show strong position of economic stability and growth of the country. Direct and indirect taxes are the sources of revenue of the government but they have contrasting impact on economic dimension of macroeconomic of the country. The macro economic dimensions are stability, growth, income distribution and direct foreign investment (FDI). Normally higher the direct rate reduces in economic stability and direct foreign investment. On the other hand research has showed that higher indirect tax raise economic disparity in society of the country. However still the research works of the researchers unable to finding out equilibrium of direct and indirect taxes in macroeconomic of the country.

The modern taxation history of Nepal is not as long as the history of United Kingdom (UK) and other countries in the world. Business Profits and Salaries Tax Act 1960 was the pioneer Income Tax Act of Nepal. The government of Nepal has tried to increase contribution of taxes on government revenue. For this purposes different direct and indirect tax policies are recommended and implemented in practices. Such policies are expressed by different laws like Income Tax Act, 2058, Custom Act, 2064, Excise Duty Act, 2058, and Value Added Tax Act 2052. All these acts are guiding to tax authority to collection and control of direct and indirect taxes. Economic Survey (2018/19) records 21.8 percent on GDP contributed by tax revenue. The government of Nepal has enumerated the sources of revenues namely are tax revenue, nontax revenue, grants, debts (internal and external sources).

Review of Literature

Every government in the world adopts catchy slogans of economic growth, economic stability, social equity etc. They tend to prepare their financial policies in the periphery of such slogan. Fiscal policies mainly encompass the use of revenue and expenditure decisions to affect macroeconomic variables and to stimulate growth (Obeng, 2015). It is a document of estimated expenditures and revenue for certain period of a country. The expenditure higher than income of a country refers to deficit financial policy. The deficit financial policy (budget) has imposed different effects in macro economy of the country like upward in interest rate downsizing the investment. The government has needed additional funds to meet the deficit budget and taken loan from public ultimately shortage of money supply in market hiking up interest rate. The investment will be reduced at market due to higher interest rate unfortunately depreciate purchasing power of money and raised trade deficit. In this condition the government has remedial alternatives either prepare balance budget or raise government revenue. Taxation is a robust revenue collection weapon of economy.

The importance of tax policy had been expressed by Bagchi and Nayak, (1994) as in the initial years, the tax policy was directed to increase the level of savings, transfer available savings for investment as envisaged by plan strategy and the need to ensure a fair distribution of income, to correct inequalities arising from the oligopolistic market structure, exchange control and administered price determination. In modern era, tax policies of the country is recognized as the means of creating investment environment, minimizing gaps between rich and poor and providing funds for boosting up economy. Romer (1986) noted that government expenditures and policy of taxes have an enduring long period growth effects. It is clear that tax policy of a country is a remedy of macro-economic enhancement of the country. The macroeconomic dimensions are macroeconomic stability, growth, income distribution and flow of direct foreign investment (FDI) (Vazquez, Vulovic and liu, 2009).

Direct and indirect taxes generate revenue for the country but have reverse impact on macroeconomic dimensions. Higher direct tax helps to reduce economic discrimination and induce economic stability. There has been a long debate for the choice of the tax structure between direct and indirect tax policies. Atkinson (1977) rightly expressed that the choice between direct and indirect taxes is one of the *oldest issues of taxation policy*. This is conforming since basically all economics employ together broad forms of direct and indirect taxation even though we are far from fully understanding what the main determinants of the direct and indirect mix will (Kenny & Winer, 2006). The various studies in the past showed that combination of direct and indirect tax policy influenced by other variables like political system, contribution of natural resources on national revenue, condition of industrialization, market base, inflation rate, geographical location etc. Tax revenue is a better source for economic health of a country and therefore, higher tax revenue may lead to sustainable development of the country.

Regarding income distribution, there has been positive correlation between direct tax and income distribution. The reason behind progressive features in direct tax is that it charges higher tax to rich people and redistributes such amount through social welfare program and discoursing wealth concentration with particular persons and corporations. Duncan and Peter (2008) pointed out that the tax progressively reduces observed inequality in reported gross and net income. On the other hand indirect tax is regressive in nature so that tax on goods and services are equally charged to all the purchasers and consumers. The more the indirect taxes in country, the more will be increasing gap between rich and poor and thus the more will be the exploitation of labor class (Aamir; Qayyum; Nasir; Hussain; Khan & Butt 2011).

It is believed that the economic stability excessively rely on stable income of the government. Direct income tax is stable than indirect tax because income/ profit level of individual and corporate taxpayer could estimate easily rather than consumptions base tax. One of the well benefits of direct tax is that they can act as automatic stabilizers. Easterly and Rebelo (1993) remarked that the developed countries depended a lot on income tax in order to match to developing states. These statements are indicating economic stability until and unless depend on stable income that is direct tax. Indirect tax is volatile in nature because consumption and border tax are inconsistent. Indirect taxes contain their own protection against abuse. They cannot be raised too high or revenue will decrease because consumption will decline (Aamir et al. 2011). They indicate that consumption tax has different constraints because consumption is the choice of consumers. Indirect tax have negative and significant effect on economic growth in long run due to one percent increase in indirect taxes economic growth would decrease by 1.67 percent (Ahamad, Sail & Ahmad, 2018). Since, indirect tax is more volatile in revenue collection, economic stability could be attended with the help of direct tax.

Economic growth is another dimension of measuring the success of financial policy. The contribution of direct tax on national gross production (GDP) would be a measuring rod of economic growth. The ratio of direct tax to GDP significantly reasoned the real GDP growth which showed high stage of direct taxes that would augment the real economic growth (Mashoor, Yahya & Ali, 2010). The statement has given a message that economic growth of country extensively depends on direct tax rather than indirect tax. But the study of Vazquez, et al. (2009) showed that higher direct to indirect tax ratios appear to have a significant and negative impact on economic growth. The reason behind is that the higher direct tax refers unfavorable investment condition in the country. Engen and Skinner (1996) had noted as we find that the evidence is consistent with lower taxes having modest positive effects on economic growth. Direct tax is to be collected from taxpayer at the level of payment capacity rather than higher their paying capacity. It is proved that well structure efficient and successful tax system is an essential prerequisite for economic growth.

Economic growth largely depends on investment capacity of investors in the country. There has been found reverse relationship between direct tax rate and investment like higher direct tax means frustration of investor. The increases in corporate income taxes have taken place despite the fact that statutory corporate tax rates have declined internationally as a response to the increasing mobility of capital and firms in the last two decades in an attempt of many governments to remain attractive to international capital (Vazquez et al 2009). They added that the higher direct to indirect tax ratio significantly affects direct foreign investment in developed and developing countries excessively in developing country. The study of De Mooij and Ederveens (2005) found the semi-elasticity measures the percentage change in FDI in response to a 1 percent point change in the tax rate, e.g. a decline from 30 percent to 29 percent. This finding has shown the sensitivity of direct tax on foreign investment. Slemrod (1995) has suggested that taxes exert a significant negative effect on this aggregate FDI variable.

The study of 116 countries panel data from 1975 to 2005 by Vazquez, Vulovic and liu, (2009) noticed the increasing trend of both direct and indirect taxes. However, the ratio of direct to indirect tax seemed to be higher in developed countries than developing countries but could not conclude optimum ratio of tax combination between direct and indirect taxes in tax policy. The balancing problem of direct to indirect tax ratio was pointing out as while lowering the direct to indirect ratio it seems would bring advantages in terms of economic growth and enhanced competitive stand regarding direct foreign investment, it would also dampen the ability to rely on automatic stabilizers for the macro economy and possibility reduce the scope or ability for income distribution policy. A comparative study of direct and indirect tax in Pakistan and India organized by Amil, Qauyum, Nasir, Hussain, Khan and Buh (2011) from the helps of panel data from 2000-2009 concluded that the tax policy of Pakistan based on indirect tax but India had emphasized to direct tax. They noted a danger of inequality gap between rich and poor in Pakistan due to weak income distribution tax policy.

Statement of Problem and Objectives

At present world economic growth, economic stability is major concern of every developed and developing country. They have expressed their interest on the matter through their financial and tax policies. Financial policies focused on distribution of expenses and collection of revenue with different heads. But tax policy is focusing the collection of government revenue from direct and indirect tax sources. Such tax policies are preparing from the analysis of impact on economic growth, economic stability, income distribution and foreign direct investment in the country because they are the major dimensions of macroeconomic. The direct and indirect taxes have different impact on microeconomic dimensions. In this context, although different researchers have discussed on the subject but finding the answer of the following questions has become as the prime task. Which tax combination (direct and indirect taxes) is applied in macroeconomic development of Nepal? What is the present trend of revenue, direct and indirect tax collection of Nepal?

The main objective of this study is to analyze the contribution of Nepal's direct and indirect taxes on revenue. The specific objectives are:

1. To analyze the incremental trend of direct, indirect taxes and total revenues of Nepal.
2. To disclose the contribution of direct and indirect taxes on government revenue of Nepal.

Research Methodology

The descriptive and analytical research model is used to analyze the research objectives. Statistical tools such as trend analysis is used for identification of incremental trend of direct and indirect taxes and total revenue of Nepal. Similarly a regression model has been developed to understand the contribution of direct and indirect taxes in total revenue of Nepal. Total revenue (TR) is assumed as dependent variable and direct tax (DT) and indirect tax (INDT) are as independent variables. The purpose of developing the regression line was to see the individual effect of direct and indirect taxes on total revenue. The linear and log linear form of models are expressed as here under:

$$TR = a + b_1 DT + b_2\, INDT \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.1$$

Where, $b_1 > 0$, $b_2 > 0$

$$LTR = a + C_1 LDT + C_2\, LINDT \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1.2$$

Where, $C_1 > 0$, and $C_2 > 0$

To this extent Cochrane-Orcutt auto-regressive model has been applied so as to solve the problem of autocorrelation. The data were collected from Economic Survey from

2003/004 to 2016/017 published by Ministry of Finance, Nepal Government and publication of Inland Revenue Department of Nepal, research articles from website etc.

Data Presentation and Analysis

Table:1 Direct and Indirect Tax, Total Revenue and Incremental Trend of Total Revenue (TR), Direct Tax (DT) and Indirect Tax (IND.T)

(Rs. in 10 million)

Year	TR	Trend TR	DT	% DT on TR	Trend DT	IND T	% INDT on TR	Trend IND T
2003/04	6233.1	1	1021.5	0.164	1	3795.8	0.609	1
2004/05	7012.27	1.125	1127.3	0.161	1.104	4283.2	0.611	1.128
2005/06	7228.21	1.16	1178.7	0.163	1.154	4564.3	0.631	1.203
2006/07	8771.21	1.407	1672.7	0.191	1.638	5440	0.62	1.433
2007/08	10762.3	1.727	2014.7	0.187	1.972	6500.9	0.604	1.713
2008/09	14347.5	2.302	2909.7	0.203	2.849	8795.5	0.613	2.317
2009/10	17994.6	2.887	3623.9	0.201	3.548	12006	0.667	3.163
2010/11	19837.6	3.183	4563.3	0.23	4.467	13159	0.663	3.467
2011/12	24437.4	3.921	5644.6	0.23	5.526	15528	0.635	4.091
2012/13	29602.1	4.749	7140.8	0.241	6.99	18781	0.634	4.948
2013/14	35662.1	5.721	8473.5	0.238	8.295	22771	0.639	5.999
2014/15	40586.7	6.511	9849.1	0.243	9.642	25746	0.634	6.783
2015/16	48196.2	7.732	13056	0.27	12.781	29054	0.603	7.654
2016/17	60918	9.773	16728	0.275	16.375	38659	0.635	10.185

Source: Economic Survey 2004/005 to 2018/019

The Table 1 shows the total revenue, direct tax, indirect tax and trend of them on the basis of base Financial Year 2003/004. The increasing trend of total revenue, direct tax and indirect tax has been found as mixed. In the first 4 year (2004/05 to 2007/008) it has been found increased by less than 1 time of base year value of each variables. FY 2008/009 to 014/015 has found increase by more than one time and rests were near about two or more times from the base year. The incremental rate of direct tax has found highest 16.4 times of base year 2003/004. Indirect tax has increased by 10.2 times in 13 years period from base year 2003/004. The contribution of indirect tax seems to be very higher than direct tax. The analysis has showed that the incremental trend of total revenue is not at the satisfactory level as the trend of direct and indirect taxes. The indirect tax has played vital role in government revenue generation than direct tax and other incomes.

Analysis of the Results

Cochrane-Orcutt estimates are presented in the following table 2. The coefficients of both the independents; direct tax and indirect taxes are positively significant. A one percent change in indirect tax and direct tax lead to a 0.54 percent and around 4 percent on total revenue of Nepal respectively. Even if, the explained percent of variation (Adj R^2) and t-statistics have shown high values that permit to say a good fit of the model, Durbin-Watson test (D-W = 1.228) has exhibited the value in the region of inconclusiveness.

Table 2

Dependent	Constant	Coefficients of Independents		Adj R^2	SEE	D-W
TR	1.714	0.542 LINDT	0.366LDT	0.998	0.0241	1.228
		0.147	0.120			
		(3.48)***	(3.04)**			

Therefore, to solve the degree of inconclusiveness, the Cochrane-Orcutt (C-O) iterative procedure has been followed by using SPSS software. The estimate of autocorrelation coefficient is found as, Rho = 0.40271984 and SE of Rho = 0.28945066. Since all parameter estimates were changed by less than 0.001, the estimation terminated at iteration number 4. The results of the final parameters are demonstrated as follows:

Table 3

Dependent	Constant	Coefficients		Adj R^2	SEE	D-W
TR	1.565	0.595 LINDT	0.324 LDT	0.997	0.0234	1.728
		0.125	0.102			
		(4.76)***	(3.168)**			

A close look at the results obtained from the iterative method as presented in the table 3 easily permits one to make a clear judgment that the model is the good fit one. Not only the coefficients of direct tax and indirect taxes are significant, the degree of association between the independents and the dependent (TR) is highly considerable. A one percent change in indirect tax leads to around 0.60 percent change in total revenue and 0.32 per cent change in total revenue by one percent change in direct tax (DT). Quite high explained percent of variation (99.7%) along with significant D-W (1.728) value that justifies the absence of autocorrelation, clearly provides the situation to accept all the results of the model. There is neither positive nor negative auto correlation which is found by the rule of decision, $du < d < 4 - duas$ $1.350 < 1.728 < 4 - 1.350$. To this end, it may be stated that the indirect tax significantly influences the total revenue of Nepal. No matter, direct tax too exerts positive effect on total revenue of the economy. In this regard, the alternative hypothesis is accepted because p value has been found to be low. It means that there is a significant role of indirect tax revenue in total revenue of government of Nepal.

Discussion and Finding

The robust macroeconomic development of the country excessively rely on tax revenue as collected by government in the form of direct and indirect taxes. A tax policy of the country is governed by the process of tax collection. The trend analysis of total revenue, direct tax and indirect tax on the basis of the base year 2003/04found the total revenue has increased by more than 9 times, indirect tax revenue by 10 times and 16 times in direct tax revenue. Similarly the contribution of direct tax on total revenue has been found in increasing trend which was 16.4 percent to 27.5 percent. Likewise the indirect tax has occupied 60.9 percent in financial year 2003/04 and 63.5 percent in fiscal year 2016/17. The contribution rate and increased trend of direct tax seems to be faster than indirect tax. But the occupancy of indirect tax has dominating character in total revenue with incremental trend. The incremental trend of total revenue has not been as of direct and indirect tax refers. For adopting the positive growth path be Nepal's tax revenue, some responsible causes may be laid down. As for example, the settlement of ten years long insurgency in the country, created investment environment with new job opportunities. On the other hand, indirect tax increased excessively on account of the increment in the income of the people due to employment opportunity in the country and abroad. In this period Value Added Tax Act has been matured and properly implemented. A lower incremental trend value of total revenue than direct and indirect taxes implies that the government is unsuccessful for proper utilization of the natural resources and other devices of nontax income.

There seems to be no fundamental differences between the study and the results derived by Vazquez, et al. (2009).

The values derived from the Cochrane-Orcutt auto-regressive model confirm the priori fact that indirect tax leads to increase by 59 percent and direct tax by 32 percent and confirms indirect tax as more revenue generating instrument than the direct tax. So the government of Nepal has to focus on indirect tax rather than the direct tax for revenue generation. The analysts of economics have focused their study on impact of taxes in macroeconomic dimension separately and agreed on raising the tax revenue for economic growth, stability, reducing income discrimination and promoting direct foreign investment. However, the ratio of tax collection has not been clearly stated between direct and indirect taxes. The direct tax has power of enhancing stable economic growth and reducing income discrimination in the country. The reason behind this points out as progressive tax system, certain sources of income rather than consumption and border tax etc. This may reduce investment capacity of investor and the extent of foreign direct investment because higher taxes naturally discourage the investors. So the investors, in general, prefer indirect tax because of the shifting nature of the burden of tax to customers or purchasers. The indirect tax depends on purchasing power and consumption habit of customers which seems to be uncertain and a punishment to poor than to the rich, ultimately creates economic gap in the society that affects the social welfare program of the government. The analysis has showed that the government of Nepal has tried to increase the role of direct tax in economy in latter period. It requires additional investment in near future for increasing corporate and personal taxes. Direct foreign investment is needed to enhancing the investment of developing countries. But the previous research and theories showed higher corporate tax reduces investment in the country. In this situation, a separate analysis is required for measuring the impact on revenue of corporate tax for solution of foreign direct investment. So the direct tax to indirect tax ratio of this study has followed the finding of Vazquez, et al. (2009).

The analysis encompasses the panel data of total revenue, direct and indirect taxes of fourteen years. The trend analysis showed that direct tax, indirect tax and total revenues were increasing more than 16 times, 10 times 9 times respectively in fifteen years period. But the regression analysis has shown revenue generating capacity of direct tax higher than indirect tax. The higher incremental trend of direct tax with higher positive beta coefficient than indirect tax refers taxation policies of Nepal directing toward direct tax to indirect tax ratio. The theories of economics is assuming direct tax boosting up economy through raising economic growth, economic consistency, and reducing the economic inequality of the country. But there must be balance in corporate tax rate with personal tax for enhancing the direct foreign investment in the country. But the indirect tax has got significant role in revenue of Nepal and it invites challenges in economic growth, economic stability and reducing income distribution gap because, indirect tax is equally charged to all the people, and it is highly reliance on consumption and import tax. Indirect tax is derived by purchasing habits of the people.

Limitation and Implication

This research is organized on the basis of total government revenue, excluding grants, direct and indirect tax of fourteen years. The revenue capacity of the country is influenced by different factors like political system, development level, industrialization position, literacy rate, nontax revenue, geographical structure, population structure and rate of urbanization.

References

Aamir, M., Qayyum. , A., Nasir, A., Hussain, S., Khan, K. I., & Butt, S. (2011). Determinants of tax revenue: A comparative study of direct taxes of Pakistan and India. *International Journal of Business and Social Science, 21*, 173-178.

Ahmad, S., Sila, M. H., & Ahmad, N. (2018). Indirect taxes and economic growth: An empirical analysis of Pakistan. *Pakistan Journal of Applied Economics, 28 (1)*, 65-81.

Atkinson, A. B. (1977). Optimal taxation and direct vesus indirect tax controversy. *The Canidian Journal of Economic, 10(4)*, 590-606.

Bagchi, A., & Nayak, P. (1994). *A survey of public finance and the planning process: The Indian experience. In Amaresh Bagchi and Nichilas Stern (Ess). Tax policy and planning in developing countries.* Delhi, Oxford and New York: Oxford University Press.

Cochrane, D. & Orcutt,G .H.(1949). Applications of least squares regressions to relationships containing auto correlated error terms. *Journal of the American Statistical Association*, vol. 44, pp32-61.Adapted from Damodar N. Gujrati (2005). Basic Econometrics, Fourth edition, Tata McGraw-Hill.

De Mooij, R. A. & Ederveen, S. (2005). *Explaining the variation in empirical estimates of tax elasticity of foreign direct investment.* Tinbergen Institute Discussion Paper 108/3.

Duncan, D., & Sabirianova, P. K. (2008). *The progressive tax and income inequality.* Andrew Young School of Policy Studies Research Paper Series 08-29.

Eastrly, W. & Rebelow, S. T. (1993) Marginal income tax rate and economic growth in the developing countries. *European Economic Rewiew* 37, 409-417.

Engen, E., & Skinner, J. (1996). Taxation and economic growth. *National Tax Journal, 49 (4)*, 617-642.

MoF (2003/004 to 2018/019). *Economic survey.* Ministry of Finance, Nepal Government.

Kenny, L. W., & Winer, S. L. (2006). Tax system in the world: An empirical investigation into the importance of tax bases administration costs, scale and political regim. *International Tax and Public Finance, 13* , 181-215.

Mashkoor, M. Yahya, S. & Ali, S. A. (2010). Taxes and economic growth: An empirical analysis for Pakistan. *World applied Science Journal*, 10 (11), 1283-1289.

Musgrave, R. (1959). *The theory of public finance.* New york: McGraw Hill.

Obeng, S. K. (2015). A casual test of the revenue expenditure nexus in Ghana. *Adrri Journal of Art and Sciences, 11 (11), 1-7.*

Romer, P. M. (1986). Increasing return and long run growth. *Journal of Political Economy, 94 (5)* , 1002-1037.

Selmrod, J. (1995). *What do cross country studies teach about government involvement prosperity and economic growth?* 373-431: Brookings Papers on Economic Activity, 2.

Vazquez, J. M., Vulovic, V., & Liu, Y. (2009). *Direct vs indirect taxation: Trend theory and economic significance.* International Studies Program, AndrewYoung School of Policy Studies.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Safe and Enhanced Intrusion Detection System For Mobile Ad hoc Networks

*Kumar Prasun**

Abstract

There has been tremendous development in the area of wireless and mobile communication in the past few years. Mobile Ad-hoc Network(MANET) is a group of independent nodes that form a self-creating, self-organizing, and self-administering infrastructure less network. Each node in MANETt executes both transmitter and receiver functions. The features of MANET make it very helpful in several applications like: Tactical Networks (Military communications and operations), Emergency Services like disaster recovery etc. But because of its open medium, lack of central administrator, and wide dissemination are constantly evolving. This attracts malicious attackers to gain entry in Manet. In the proposed framework, a Enhanced Intrusion Detection Scheme ***EAACK (Enhanced Adaptive Acknowledgement)*** *is described for mobile ad hoc networks which uses acknowledgement approach to observe malicious node in mobile ad hoc networks and prevents attacks.*

Keywords: *Mobile ad-hoc network, Local area network, watch dog mechanism, Intrusion detection system, Simulation, Malicious nodes.*

MANET or Mobile Ad-hoc Network is a set of independent nodes in which mobile nodes shape less network infrastructure that is self-creating self-organizing, and self-administering (Shakshuki & Sheltami, 2013). Each node in Manet executes both the transmitter and the receiver functions. A local area network (LAN) that is randomly developed as devices connect is an ad-hoc network. The individual network nodes forward packets to and from each other rather than relying on a base station to organize the flow of messages to each node in the network. In Latin, ad hoc literally means "for this," and also by implication, improvised or impromptu, means "for this

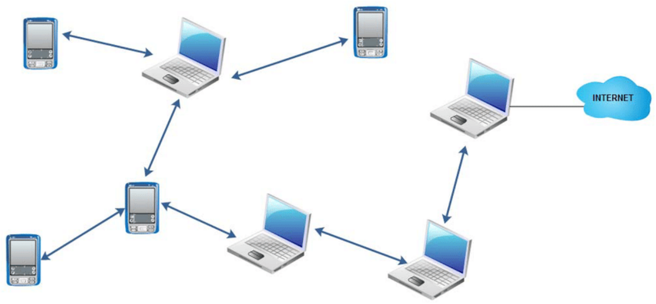
**Mr. Prasun is Lecturer in Computer Application, Padma Kanya Multiple Campus, Tribhuvan University. Email: erkprasun@gmail.com.*

special purpose" The idea of an ad hoc mobile network is not fresh and can be traced back to the 1972 DARPA Packet Radio Network Project (Akbani, Korkmaz and Raju, 2012).

There are two types of Mobile ad hoc networks namely , Single hop and Multi ho Single-hop ad hoc networks are ad hoc networks where nodes do not act as routers and therefore communication is possible only between nodes which are within each other's Radio Frequency (RF) range. On the other hand, multihop ad hoc networks are ad hoc networks where nodes are willing to act as routers and route or forward the traffic of other nodes (Anantvalee and Wu, 2008). Typical example of Manet is shown in figure 1.

Figure 1

Mobile Ad Hoc Network



Vulnerabilities of MANETS

Wireless Networks are more vulnerable to attacks due to the following reasons:

- Autonomous: Lack of centralized infrastructure which is responsible for managing different operations of mobile nodes as compared to fixed wired networks.
- Dynamic Topology: Mobile nodes can leave and join networks arbitrarily and can move independently due to this there is no fixed set of topology Manets. Nodes which do not have sufficient protection may become malicious.
- Device Discovery: Identifying relevant newly moved in nodes and informing about their existence need dynamic update to facilitate automatic optimal route selection.
- Bandwidth Optimization: Wireless Networks have significantly less capacity than wired networks.

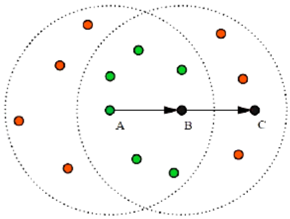
Review of Literature

Watchdog

Watchdog is an example of an intrusion detection system, and the method for detecting malicious or greedy nodes is the Watchdog monitoring technique. The Watchdog monitoring technique is based on the principle that, even though it is not intended, each node hears the communications of the surrounding nodes. Over the past few years, Watchdog has been served as the latest IDS tool, this technique is used to boost the network efficiency even in the presence of selfish or malicious nodes. If Watchdog overhears that the packet is not forwarded by the intermediate node, its failure counter will be increased, and once the failure counter of a particular node reaches a predefined number, the malicious node will be recorded (Barbeau and Kranakis, 2007).

Figure 2

Conventional Watchdog Mechanism



In figure 2, suppose that node A wants to send a message to node C which lies outside its radio range, in order to send it relies on the intermediate node B and node B forwards the message to node C, let S_A be the set of nodes that hears the message from A to B and S_B be the set of all the nodes that hears the transmission from B to C.

Then it can be said that set of possible watchdogs for the node B is the intersection of S_A and S_B. In other words, $W_D = S_A$ (intersection) S_B . This also means that any node that lies in the region of W_D is able to hear the both messages and can decide whether node B forwards the message to node A or not.

The major advantage of the Watchdog Scheme is that it improves the throughput or the performance of the network even in the presence of selfish or misbehaving nodes, the

Watchdog is a solution to the problem of selfish (or "misbehaving") nodes in MANET.

On the hand limitations or disadvantages of the current IDs (Watchdog) are it may fail to detect the malicious or selfish nodes in presence of: ambiguous collisions, receiver collisions, limited transmission power, false misbehavior report, collusion, partial dropping.

Intrusion Detection Systems in MANETs

An intrusion can be defines as set of actions that aims to compromise the integrity, confidentiality and availability of the resources and intrusion detection system is a system which is used to detect such kind of intrusions.

An intrusion detection system (IDS) monitors network traffic and monitors for suspicious activity and alerts the system or network administrator in case it detects any suspicious activity. Intrusion Detection System is generally considered as the second layer of the security system.

There are three main components of IDS namely: data collection, detection, and response.

The data collection component is used for collection and pre-processing the data: collection of data and sending data to detection module. In detection component the sent data is analyzed for the detection of any abnormal activity and indications of detection intrusions are sent to the response component.

Depending on the detection algorithms used, IDS can be classified into three major categories:

Specification-based detection: The IDS monitors the behavior of a certain protocols or programs and compare it with set of pre-defined specification that describes the normal behavior of a program or protocol. This type of IDS is capable of detecting previously unknown attacks with a low false positive rate.

Signature-based detection: The IDS keeps track of known attacks or misbehavior and compare them with the captured data traffic. However, it is vulnerable to unknown attacks. Different signature-based IDSs separate each other by their abnormal behavior detection algorithms; the most common techniques include expert system, pattern recognition and state transition analysis.

Anomaly-based detection: The anomaly-based IDSs compare captured data traffic with the pre-deployed normal profiles. With appropriate matching algorithms, it reports any activities that deviate from the baseline to the administrator. This is suitable for detecting unknown attacks, but it comes with a high false positive rates.

Methodology

As discussed earlier, the malicious nodes in MANETs can bring down the network performance or it can even collapse the whole network by dropping packets. Packet dropping can be caused by various factors including selfish node, malicious node. Here the focus is given on selfish node and malicious node. Since they cause significant harm to the network performance.

Selfish nodes drop packets to conserve their battery power, while malicious nodes generally drop packets because they are compromised by attackers. As selfish and malicious both have same output (Drop Packets), we use malicious node to refer to both selfish and malicious nodes in the rest of this thesis.

In this research work, concentration is given on resolving three of the six weaknesses of Watchdog. They are receiver collisions, limited transmission power and false misbehavior report:

Receiver Collisions: While monitored by the nodes at its previous hop, the attackers send out the packet exactly when the intended receiver is busy with other transmissions. In this case, the attackers cheated the Watchdog scheme while in fact dropped the packet.

Limited Transmission Power: The attackers can control the compromised nodes to limit its transmission power so that it is strong enough to be overheard by Watchdog nodes, but too weak to be received by the destination nodes.

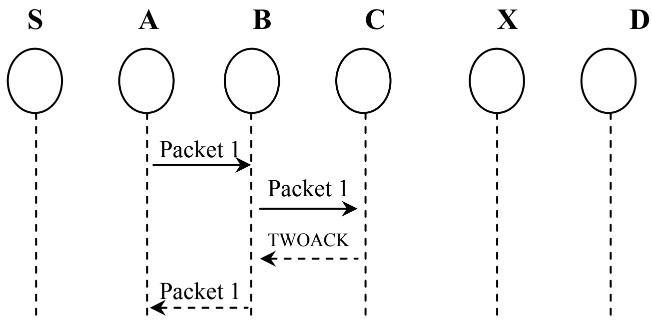
False Misbehavior Report: The attackers compromise the Watchdog nodes and control it to send out false misbehavior report. Due to the open medium in MANETs, attackers can easily capture and compromise nodes to achieve such an attack.

(Liu, Deng, Varshney et al*, 2007)* proposed an acknowledgement-based approach to verify the delivery of packets by considering three nodes at a time. TWOACK successfully solved the receiver collision and limited transmission power problem in Watchdog. However, the acknowledgement scheme in TWOACK requires considerable extra network overhead, as the acknowledgement process is required on each transmission. Later after TWOACK, (Sheltami *et al., 2009*) proposed another scheme called AACK, which combines an adaptive scheme with TWOACK. With introduction of these hybrid schemes, AACK successfully reduce the overhead problem in TWOACK. Nevertheless, AACK is still vulnerable to false misbehavior report attack. On the other hand, both schemes are vulnerable when the attackers are smart enough to forge acknowledgement packets.

The disadvantage of TWOACK lies in the fact that every forwarded packet must be acknowledged. This adds considerable amount of unwanted overhead to the network.

Figure 3

TWOACK Scheme



In this research, a new mechanism called **Enhanced Adaptive Acknowledgement (EAACK)**is proposed. Although evolved from AACK, EAACK differs from AACK in the fact that it is not only capable of detecting false misbehavior attack, but also is able to ensure authentication and packet integrity. These enhancements are brought by the introduction of a new scheme called Message Receiving Authentication (MRA).The proposed scheme is an improvement based on AACK mechanism, which is capable of solving the false misbehavior report problem.

Assumptions

In this research, following assumptions are made:

- All of the schemes investigated and compared in simulation is based on DSR routing protocol. The reason being Watchdog requires DSR routing protocol.
- In order to evaluate performances, we compared every other schemes based on the same routing protocols.
- It is always assumed that the nodes in MANETs are capable of committing bi-directional communication this is due to the fact of general behavior of MANET.
- Even though malicious nodes drop data packets, they still participate in the routing activity. Furthermore, malicious nodes always try to conceal themselves from being detected.
- During any packet transmission, source node and destination node are not malicious.

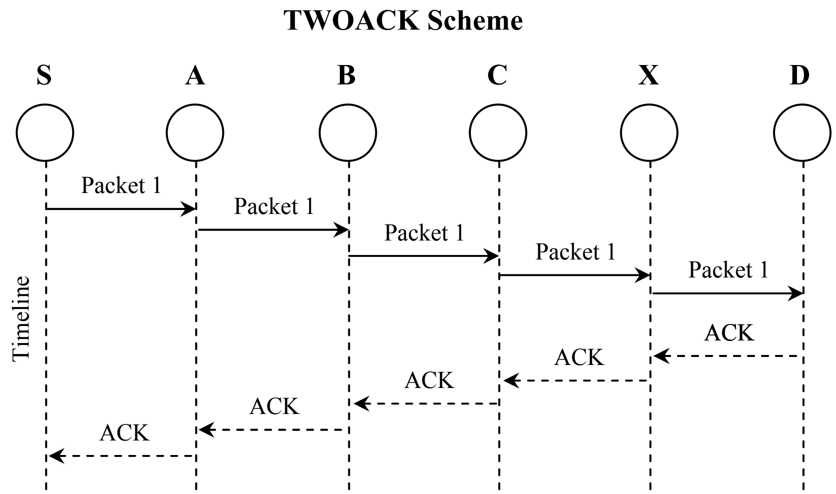
Scheme Description (EAACK)

EAACK mechanism consists of three major parts namely: Acknowledgement (ACK), Secure Acknowledgement (S-ACK) and Misbehavior Report Authentication (MRA).

Acknowledgement (ACK)

The Acknowledgement (ACK) Scheme is essentially an end-to-end Acknowledgement Scheme; it is the first aspect of the EAACK scheme aimed at reducing the overhead of the network when there are no malicious nodes in the network. As seen in Fig.4, in the ACK method, Source node S, sends Packet 1 data through its intermediate nodes to the destination node D (A, B, C, X). If the entire intermediate node in the network is cooperative and none of them misbehaves or is malicious, then packet 1 is successfully received by destination node D. Destination Node D is now expected to send the ACK packet along the same path, but in reverse order, to the source node S. If the ACK packet is received within a predefined time node S, then the packet transmission is considered efficient, one other source node S switches to the next scheme identified in the next section by Secure Acknowledgement S-ACK to detect the route's misbehaving nodes.

Figure 4



ACK Scheme: The destination node is required to send acknowledgement packets to the source node.

Secure Acknowledgement (S-ACK)

The updated and improved version of the ACK method is Safe Acknowledgement (S-ACK); the basic concept of the S-ACK scheme is to allow three consecutive nodes to detect any misbehavior nodes in the path. The third node is needed to send the Acknowledgment packet to the first node through 2 nodes for every three consecutive nodes. The intent behind the implementation of the S-ACK framework is to identify the malicious nodes in the presence of a collision with the receiver and limited power transmission.

Three consecutive nodes A, B, C work in the community to detect any malicious node as shown in Figure 4. Node A sends packet 1 to node B, then this packet is forwarded by node B to node C. When node C, which is the third node, receives the packet, it is necessary to send the S-ACK packet back to the first node A along the same path, but in reverse order. If node A fails to obtain S-ACK within the predefined period of time, all nodes B and C are stated to be malicious, then the first node A will produce a false misconduct report and send it to the source node S. The S-ACK scheme works similar to the TWO-ACK scheme, but the difference is the S-ACK packet instead of the ACK packet, and the S-ACK scheme also adds a packet flag indicating the type of packet as shown in Table 1.

Table 1

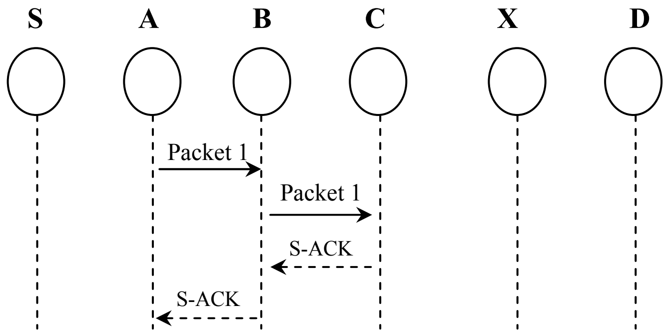
Packet Type Indicators

Packet type	General Data Pkt	ACK	S-ACK	MRA
Packet Flag	00	01	10	11

S-ACK solves the two problem of Watchdog Scheme which is collision (receiver collision and limited power transmission)

Figure 5

S-ACK Schemes



Misbehavior Report Authentication (MRA)

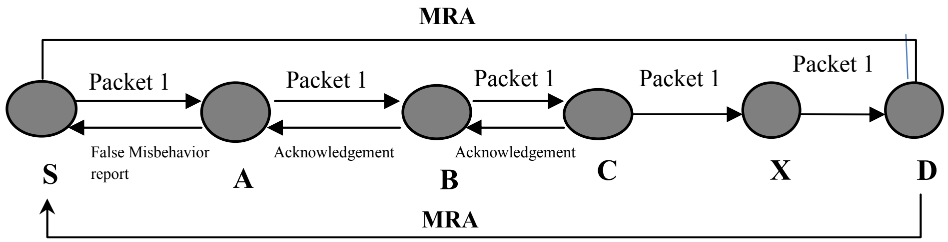
To overcome the false misconduct report attack, the Misbehavior Report Authentication (MRA) is intended. When the malicious nodes send out a misbehavior notification that falsely reports innocent nodes as malicious, the false misbehavior attack is a smart attack. This attack can cause problems that are far more severe than standard packet dropping attacks. Such an attack will break down the entire network by falsely reporting other nodes as malicious. It is recommended that the MRA scheme be included in EAACK to counter this attack.

The MRA scheme principle is used to authenticate whether the recorded missing packet has been received by the target node. The source node sends an MRA packet to the destination node through a different route to start the MRA scheme. If an alternate route does not exist in the knowledge base of the source node, a DSR routing request to find a new route will be initiated. It is normal to have several routes from one node to another because of the existence of ad hoc networks. We bypass the fake misbehavior reporter by following an alternate path to the destination node. The MRA packet contains the ID of the packet stated to have been lost. When the MRA packet is received by the destination node, it is expected to check its local knowledge base to see if the reported packet matches. If it already existed, then we would infer that the dropped packets reported were received and that everyone sending out this report of wrongdoing is malicious. Otherwise, the misbehavior report is trusted. The destination node acknowledges the source node by sending back an MRA acknowledgement packet.

By adopting MRA scheme, the possible attack when the attackers send out false misbehavior report and try to break down the network by falsely marking other nodes as malicious were eliminated.

Figure 6

MRA Scheme



Simulation and Performance Evaluation

Simulation Tool

One of the most common methods to conduct research in the networking and security fields is to simulate and evaluate the protocols in the various Scenarios. Fortunately, there are different applications for computer simulation which are available for performing such assignments, for example NS-2,OPNET, GLOMOSIM, OMNET++ etc.

This research is heavily based on the implementation and experiments in the NS-2 simulation

Environment. NS-2 was chosen as the simulation environment because it is one of the leading Environments for the network modeling and simulation it supports large number of built-in-Industry standard network protocols, devices and applications. In addition, it's programming library helps researchers to easily modify the networks elements and measures their performance in the simulation environments.

Simulation Configurations

Network Simulator

The default network settings in NS 2.35was chosen to run the simulation. The reason being the default configuration is likely to bring more typical results and makes it easy to compare the simulation results with others work. Our simulation contains 50 nodes randomly distributed in a flat space with the size of 670×670m. The maximum hops allowed in this configuration are four and the physical layer and 802.11 MAC layer are included in the wireless extensions of NS2. To simulate different network topology, for each mechanism, three distinct network scenario are run and calculated the average performance. The moving speed of a mobile node is set between the range of 1 to 20m/s. The UDP traffic with Constant Bit Rate (CBR) is implemented through a packet size of 512 bytes. A list of the configuration parameters' setting is demonstrated in Table 2.

Table 2

Simulation Settings

Parameters	Value
Channel Type	Wireless Channel
Propagation Model	Two Ray Ground
Mac Protocol	802.11 CSMA/CA
Dimension of Topology (x)	670m
Dimension of Topology (y)	670m
Antenna Model	Omni-directional Antenna
Number of Nodes	50
Simulation Time	1000 second
Agent Trace	ON
Router Trace	ON
Node Moving Speed	1-20m/s
CBR Packet Size	512 Bytes
Transmission Range	250 meter
Routing Protocol	DSR
Watchdog Timeout	0.1 second
Watchdog and TWOACK Threshold	40 packets
AACK and EAACK threshold	30 packets

Performance Metrics

To measure the performance following two performance metrics were introduced:

Packet Delivery Ratio (PDR): PDR defines the ratio of the number of packets received by the destination node and the number of packets sent by the source node. PDR indicates the detection rates of our proposed IDS systems. High PDR is likely to indicate higher detection rates of IDS, as malicious nodes will be circumvented if detected correctly.

Routing Overhead (RO): RO defines the ratio of the amount of routing-related transmissions (RREQ, RREP, RERR, ACK acknowledgement, S-ACK acknowledgement, MRA acknowledgement) in bytes to the amount of data transmissions in bytes in a network.

Results Comparison

In this research, the implementation of simulation is based on such scenarios. This way, one can better evaluate the performance of the proposed mechanism in certain type of attacks.

Malicious Scenario 1

It is a simple packet drop attack. Malicious nodes actually drop data packets if they receive one by achieving receiver collision attacks. It is aimed at checking the efficiency of our system against Watchdog's two weaknesses, namely, restricted transmission power and collisions with the receiver.

Malicious nodes in this scenario drop all data packets that pass through it. This is achieved through receiver collision attack, where the malicious nodes overhear its next hop's transmission and only forward packets when its next hop is busy. The simulation result based on PDR is shown in figure 7.

Figure 7

Simulation Scenario 1: Packet Delivery Ratio

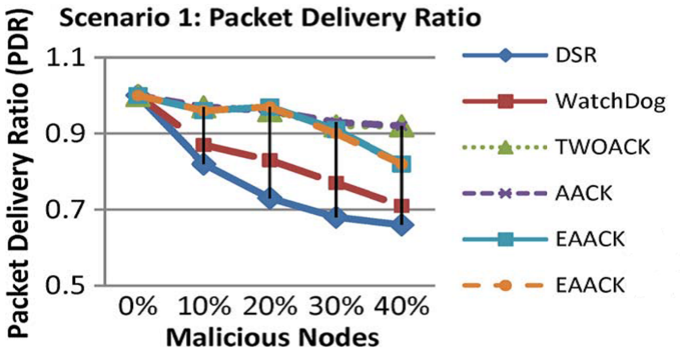
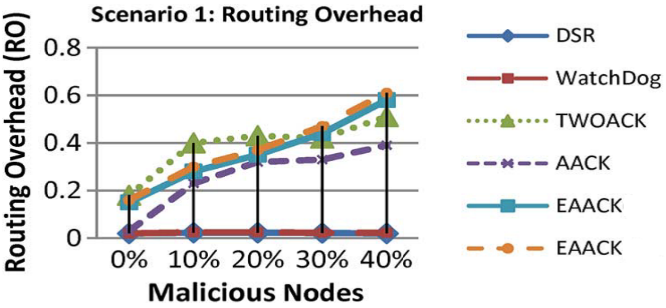


Figure 8

Simulation Scenario 1: Routing Overhead



When there are no malicious nodes in the network, all IDSs' output is identical. As the ratio of malicious nodes increases by up to 10 percent, all the IDSs based on two-hop recognition outperform the Watchdog system. The PDR exceeded Watchdog by 21 percent via the proposed scheme after the malicious nodes ratio is over 20 percent. When the malicious nodes cross 30 and 40 percent, the advantage remains. All IDS two-hop identification works better than Watchdog. All IDS two-hop identification works better than Watchdog. As long as the IDS does not depend only on neighboring nodes, their PDR output is identical.

In the routing overhead test, Watchdog scheme achieves significant low result. The result is demonstrated in Figure 8. This is because it detects misbehavior by overhearing and thus eliminates the need for acknowledgement packet overhead. For the other tested IDSs, overall AACK achieves the lowest overhead due to its hybrid scheme. EAACK scheme incurs less overhead than TWOACK when malicious nodes are less than 30 percent. This is because EAACK uses the same hybrid scheme as AACK; this eliminates the requirement for doing acknowledgement in every packet transmission. However, when malicious nodes exceeded 30 percent, the extra overhead brought by digital signature eventually overcomes this advantage.

In conclusion, the proposed scheme EAACK, despite its cryptography scheme, performs better than Watchdog in terms of PDR. Although consumes more routing overhead than TWOACK when malicious nodes exceed 30 percent, it is still a decent choice when malicious nodes are less than 30 percent.

Malicious Scenario 2

This scenario is designed to assess the efficiency of EAACK when the attackers are smart enough to submit a complaint of false misconduct. In this case, they drop it if malicious nodes receive packets, and send a malicious report back to the source node. In this scenario, all malicious nodes were set to be smart enough to generate false misbehavior report and send it back to the source node.

From Figure 9, when the malicious node is at 10 percent, our proposed EAACK performs 2 percent better than AACK and TWOACK. When malicious node reaches 20 percent, EAACK extended this advantage to 7 percent and maintain a packet delivery rate of 92 percent. When the malicious node rate arrives 30 percent, EAACK still maintains a 5 percent lead. It is believe this is caused by the fact that neither TWOACK nor AACK has a report verification scheme; they simply chose to believe whatever misbehavior report they receive. The introduction of MRA scheme to EAACK makes it perform better when the malicious nodes are smart enough to generate false misbehavior report. When the malicious node rate is 40 percent, EAACK's performance drops to the same level as TWOACK and AACK. It is believed that this is caused by the fact that there are not enough good nodes in the network that allow MRA to always find an alternative route to the destination node. In such case, it simply accepts the misbehavior report. Similar to scenario 1, our proposed mechanism EAACK tend to increase its routing overhead with the increase of malicious nodes, as shown in Figure 10.

Figure 9

Simulation Scenario 2: Packet Delivery Ratio

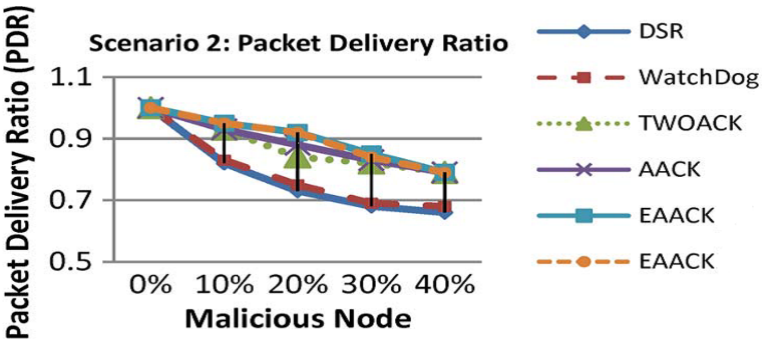
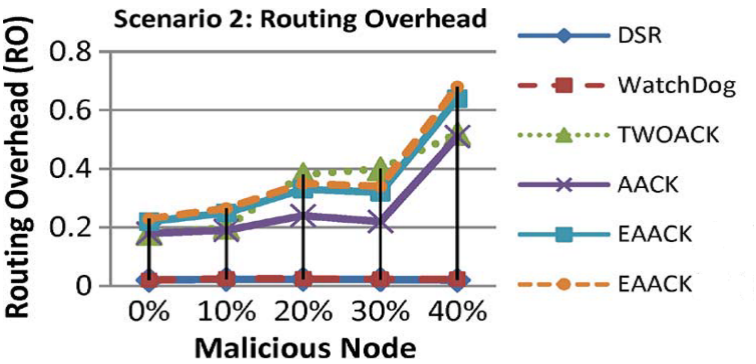


Figure 10

Simulation Scenario 2: Routing Overhead



Conclusions

One of the biggest threats to MANETs has been packet dropping attacks. Various methods have been suggested in order to avoid and eradicate packet dropping attacks. A large literature review on various approaches has been conducted to prevent attacks from falling packets. One of the most significant strategies against packet dropping attacks is the recognition-based IDS. It has been examined the gain and drawbacks of three common systems in the sector, namely Watchdog, TWOACK and AACK by comparing and categorizing various recognition-based schemes. None of the current methods, however, fix the issue if the attackers are smart enough to forge or send out fake acknowledgment packets. Therefore, a hybrid scheme called EAACK is suggested to resolve these two issues. AACK is extended to a new level where EAACK is capable of detecting forged acknowledgement packet or false misbehavior report. The efficiency of the proposed systems has been checked and compared by simulation with other schemes. The findings show that of all three test scenarios, EAACK has the highest packet delivery ratio. To lower the overhead to a minimal level, a hybrid scheme was implemented. Although in some cases, EAACK generates a significant amount of network overhead, and the proposed scheme is valuable when it comes to security.

Future Work

Depending on the number of malicious nodes, the network overhead produced by EAACK can consume up to 70 percent of entire network traffic in some extreme cases. This is certainly not desirable in an environment when battery energy and computational power is strictly limited.

Future work includes the following:

Investigating the possibility of adopting hybrid cryptography technique to further reduce the network overhead caused by digital signature.

References

Akbani, R. , Korkmaz, T., and Raju, G.V. (2012). Mobile ad hoc networks security. *Recent Advances in Computer Science and Information Engineering*, Vol. 127, pp. 659-666. https://DOI.org/10.1007/978-3-642-25769-8_92

Anantvalee, T., Wu J. (2007). A survey on intrusion detection in mobile ad hoc networks. In: Xiaoy, Y. Shen X; *Wireless Network Security*. Signals and Communication Technology Springer, Boston, MA. https://doi.org/10.1007/978-0-387_33112-6_7.

Barbeau, M. & Kranakis, E. (2007). *Principles of ad-hoc networking*. Wiley Publishing; 1st edition, John Wiley & Sons.

Elhadi M. Shakshuki, Nan Kang and Tarek R. Sheltami (2013). EAACK – A secure intrusion detection system for MANETs. *IEEE Transactions on Industrial Electronics*, Vol.60, Issue-3. https://doi.org/10.1109/TIE 2012.2196010.

H. Debar, M. Dacier, and A. Wespi (2000).A revised taxonomy for intrusion detection systems. *Annales des Telecommunications*, vol. 55, pp. 361-378, 2000.

K. Liu, J. Deng, P. K. Varshney, and K. Balakrishnan (2007). *An acknowledgment-based approach for the detection of routing misbehavior in MANETs*. In the IEEE transactions on mobile computing, Vol. 6, pp. 536-550. https://doi.org.10.1109/TMC.2007.1036

Nan Kang, Elhadi M. Shakshuki, Tarek R. Sheltami, (2010). *Detecting misbehaving nodes in MANETs*. Proceedings of the 12th International Conference on Information Integration and Web-based Applications & Services. PP. 216–222. https://doi.org/10.1145/1967486.1967522.

U. Sharmila Begam, Murugaboopathi, G. (2005). A recent secure intrusion detection system for MANETs. *International Journal of Emerging Technology and Advanced Engineering. https://doi.org.10.24297/ijct,V4i 2b2.3312.*

T. Sheltami, A. Al-Roubaiey, E. Shakshuki, and A. Mahmoud (2009).Video transmission enhancement in presence of misbehaving nodes in MANETs. *International Journal of Multimedia Systems*, Springer, Vol. 15(5), pp. 273-282. https://doi:10.1007/500530-009-0166-0.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Factors Affecting Customer Satisfaction towards E-Payments

*Ms. Ranu Maiya Shrestha**

Abstract

Having been set the objective of identifying the factors that affect the customer satisfaction this study tries to find the relationship of price, quality, information and security with that of customer satisfaction towards e-payment. This study has analyzed data as collected from 150 samples for which applies descriptive and inferential statistical tools such as mean and standard deviation along with regression correlation. The results indicate significant positive relationship between price, service quality, information, security and customer satisfaction towards e-payment.

***Keywords**: Customer satisfaction, E-payment, Correlation, Regression.*

In 21 century, modern science and technology have made peoples' life becoming easier and more convenient than previous. One of the modern science and technology has been internet. Under internet, e-payments is one of best examples of it. Now a days, banking services begin through e-payment and appear on a large scale. E-payment define as technology that enable the customer to perform financial transaction through internet. Recently Nepalese bank are also using e-payments. Beside these telecommunication, hotels, airlines cinema halls are also utilizing e-payment. On other way E-sewa, Khalti are popular local payment system have been providing e-service in different way. E-payment system is way of transaction for any goods or service through electronic medium without using bank check or cash. Online-payment is other word of e-payment. Credit card and debit card are popular form of electronic payment system. E-Customer payment has become one of the latest services. Customer satisfaction rate get increasing on payment rather than traditional service. Customers are willing service on their own way without anyone help. E-payment is part of e-service. E service was beginning from Federal Reserve banks through telegraph in 1918 with three engineers' contribution. Under this e-service, e-payment has grown. Recently most of banks have used e-service for electronic

* *Ms. Shrestha is Assistant Professor in Management Faculty and associated with BernHardt College. Email: ranu_shrestha2007@yahoo.com.*

payment mechanism, E-payment transaction, e commerce website, IT infrastructure. Computer skills people's acceptance of IT solution play vital roles. The E-payment is one of important foundation of e-service. The e-banking helps bank to extend their bank market as well as reduce bank operational banks. E service-payment is very important for cash transaction in market. Therefore e-payment help in development of financial states of county. E-payment tries to reduce banking costs. E-payment improve business and expand market area. E-payment help in fund transfer which play significant role for customer satisfaction.

E-payments have improved financial transaction of whole world. E-payment systems is strategic information system and are considered one of the main components of economic development, particularly in developing countries, and they greatly help to reinforce the capabilities and provision of financial services. A payment system is in fact a set of regulations that allows users to transfer money. The-payment system is a mechanism, which can transfer money from an account in a bank to an account in another bank and therefore, its role in economy is like veins that flow money to different economic firms. E-payment is a form of financial exchange that is done between a buyer and a seller and electronic communication facilitates this financial exchange.

Customer refer to the person who does the buying of the product and satisfaction can refer to the person's feelings of pleasure or disappointment that results from comparing a product's perceive Performance or outcome with their expectations. Customer satisfaction refers to the degree of customer happy about the quality of products and services. Consumer satisfaction is the result of comparing the customer expectations and the experience. In other words, the consumer is pleased when the delivery meets or exceeds their expectations. Satisfied customers are always ready to repeat the purchase if the service provider reached or exceeded their expectations.

Customer satisfaction is also described as the capability of an organization to accomplish the emotional, business and psychological needs of the potential customers (Pairot, 2008).

Madhaushi et al (2005) analyzed the features of different e-payment systems from the view of Iranian users. This study explained that security and trust are the most important features and the ability to transform and track is the least important features of e-payment systems. The features specified by different users for e-payment systems are not only considered important in designing new systems, but also engender its acceptance among users. Sherafat et al (2007) concluded that the most important and effective factors of e-payment methods are the subscribers` familiarity, culture, and tendency to use them. Akindele and Rotimi (2014) argued that there is a significant relationship between e-banking and customer satisfaction even though e-banking is full of insecurities among Nigeria customers due to its convenience, flexibility, speed, efficiency, and accessibility of transactions.

person's feelings of pleasure or disappointment that results from comparing a product's perceived performance or outcome with their expectations. Customer satisfaction refers to the degree a customer is happy about the quality of products and services

The purpose of this study is to analysis the factors affecting customer satisfaction toward e-payment.

- What are the factors affecting consumer satisfaction towards e-payment?
- What is the relationship between independent variables (price, quality, information and security) with customer satisfaction towards E-payments?

Objectives of the Study

The general objectives of the study is to understand the factors affecting customers' satisfaction towards e-payment, but the specific objectives of this study are:

- To identify the factors affecting consumer satisfaction towards e-payment.
- To identify the relationship of price, quality, information and security with customer satisfaction towards e-payment.

Significance

The significance of this study is to help in increasing quality of electronic payment in Nepal. This study help in identifying the remaining factors that influence on electronic payment. E-payment will be very helpful in pandemic case like COVID.

Literature Review

This research concluded that most of non-degree holders were inconvenient and feel costly about e-payment whereas degree holder's clients were concerned about security privacy while using e-payment. This study showed that both respondents were believed that e-payment were costly but better than traditional one.

Alhammadi and Tariq (2020) has explained the e-payment on customer satisfaction and tried to the effect of service quality of e-payment system one - users' satisfaction in Abu Dhabi city UAE by using quantitative approach with 233 respondents. The result concluded that service quality dimension tangible, reliability, responsiveness, assurance and security and empathy were positive impact on e-payment system on customer satisfaction.

Gautam (2012) on the other hand measured the impact of new technologies through electronic banking on profitability of banks, and stated the major intention of banks were to provide service to customers. The research used qualitative analysis with interviews of bank managers of 14 Indian banks. This study found that e-banking has increased the profitability as well as retention of customers. Further, expressed that banks have increased their profits from e-banking rather than traditional transformation.

In this regard, Khatoon and Xu (2015) also exhibited the relationship between e-banking service quality dimension and customers purchasing intention with mediating role of customer satisfaction by using 235 respondents through correlation and regression analysis. The result concluded e-payment service quality have positive impact on customer purchasing intention with mediating role of customer satisfaction.

By applying the information system success model and technology acceptance model for determining e-payment system successiveness users satisfaction was taken as dependent variable. Besides this, the study analyzed the relationship between each modified factors and users satisfaction by using Pearson product moment correlation method and ANOVA and multiple regression. The author found that the service quality, perceived speed, perceived benefits and actual use were significant with users' satisfaction with e-payment, (Tella, 2012).

Asfour & Haddad (2014) in his study the impact of mobile banking on enhancing customers' E-satisfaction which consist of 360 samples from commercial banks in Jordon. This study analyzed the independent variables such as reliability, flexibility, privacy, accessibility, ease to navigation, efficiency, security on dependent variable i.e. customer satisfaction. This study concluded that all variables were statistically significant and had effect on overall dimension of customer e-satisfaction. Moreover, security dimension enhancing was found to be the customer e-satisfaction than other dimension.

According to Heckmann (2005) applied that efficiency and quality of service depends on network engineering and interconnection.

Ranaweera and Prabhu (2003) explained a holistic approach for analyzing the combined effects of satisfaction, trust and switching barriers on customer retention in a continuous purchasing setting. Such approach helps neglected effects on retention and, in the process but cost effective ways of retaining customers. This study concluded that switching barriers have both a significant positive effect on customer retention as well as a moderating effect on the relationship between satisfaction and retention.

Dubey and Srivastava (2016) have tried to find out the impact of service quality on customer relationship management and customer loyalty in the Indian telecom sector. In this study, Service quality was taken as independent variable and customer relationship management and customer loyalty were taken as dependent variables. Empathy, Assurance, Responsiveness, Tangibility and Reliability were service quality dimensions. A survey-based exploratory and casual research design has been used as data analysis tool along with 262 sample size by using online questionnaire. Exploratory factor analysis was conducted to check the validity and Cronbach's coefficient alpha was used to determine the casual relationship between both the independent & dependent variables. Results explained that the service quality had significant and positive impact on customer relationship management and customer loyalty. Out of the five dimension of service quality, tangibility and assurance have significant and positive impact on customer relationship management, while tangibility has a significant impact on customer loyalty.

The innovative technology provides improved information about the products which affect customer adoption. Customers try to research the product before buying, and consumers try to adopt e-payment functions and get the details about the procedure, advantages, disadvantages feature, security, and privacy options (Pikkarainen et al. 2004).

Ahmad and Zubi (2011) have attempted to address the functionality of internet banking and consequences of customer satisfaction. This study has been done by considering banks of Jordan through the random sampling technique with 185 sample size. This study explained the variables like privacy, accessibility, design, convenience, content and security have a significant influence on the customer satisfaction. Out of these variables, three variables namely, privacy, content and security have the most numerous impact on customer satisfaction rather than accessibility and design.

Alkhowaiter (2020) however has argued that e-service helps in maintaining the relationship of marketing with their clients in banking field. To this extent, Lussier and Headon (2017) argued two benefits from e-payment of banking. E-payment provide better, faster and cheaper way to deliver service and customers can do their banking transaction anytime and anywhere if internet facilities. The customers' satisfaction is affected by service quality in e-payment. Although to Robinson (2000) e-service as has been taken as important factors for managing customer purchasing intentions, some researcher have depicted that e-banking is the result of internet business in banking sectors and financial sectors. Nevertheless customer satisfaction is the key factor for companies to retain their customers, build customer loyalty and gain more profits (Reichheld, 1996). It is also described as the capability of an organization to accomplish the Emotional, business and psychological needs of the potential customers (Pairot, 2008).

Security can improve customer satisfaction by providing personalized services to them, and customers will be reluctant to change to other companies if organization were able to verify that and maintain information on participants in the banking services that the electronic banking service does not allow the use of personal information to clients and customers as well as banks do not allow the use of personal information must be characterized by secure electronic banking service in the authorized banking operations (El Kiki et al., 2012).

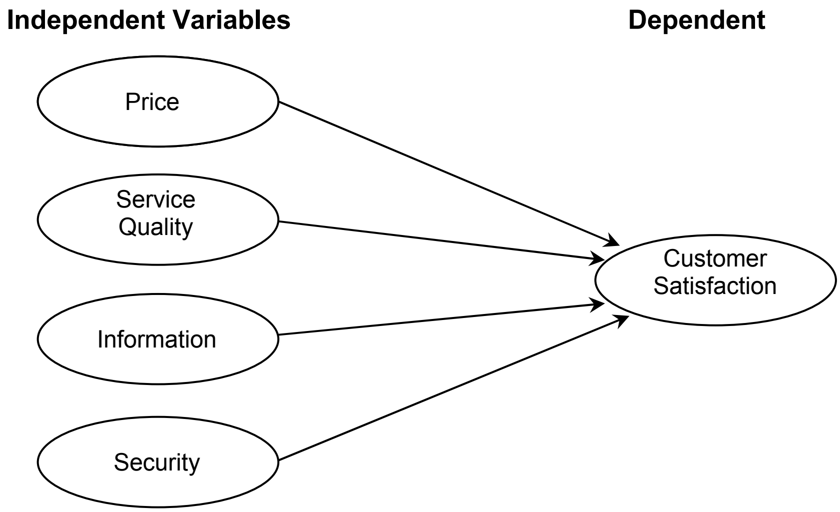
Customers may feel the E-system trustworthy, service provider keep their promises and commitment, keep the identity secure and customers may feel safe and secure while doing transaction. Security and preserving privacy have a large impact on the trust of users in a technology (Polatoglu & Ekin, 2001). Fears of hackers and privacy invasion compound the uncertainty surrounding online services (Yap et al., 2010).

Service quality has been determined as an analytical factor of success for the organization through which the organization can formulate their competitive advantage as well as to enhance their competitiveness. Pioneered by Parasuraman et al. (1988)described that the SERVQUAL instrument comprises of five distinct dimensions. The dimensions of SERVQUAL include tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al., 1988).

Rod et al. (2009) examined the association among the service quality of internet banking and customer satisfaction in New Zealand by using SERVQUAL instrument, having 300 sample size who were the regular users of internet banking. The results of the study show that the dimensions of service quality of internet banking have a positive as well as an indicative relationship with the customer satisfaction. It has been recommended by the researchers that the management of online service providers of banks be compelled to constantly analyze the level of fulfillment of the requirements and demands of customer with the site of the company, if they desire to endure the customers loyal with their online services. Quality is customer's evaluation of the excellence in the performance of goods or service. (Mowen & Minor, 1997).

Figure 1

Conceptual Framework



Hypothesis

H1: There is significant relationship between price and customer satisfaction towards E-payment

H2: There is significant relationship between service quality and customer satisfaction towards E-payment

H3: There is significant relationship between information and customer satisfaction towards E-payment

H4: There is significant relationship between security and customer satisfaction towards E-payment

Research Methodology

Research methodology is the systematic, theoretical analysis of the methods applied to a field of study. Research methodology is a path from which researcher can solve research dilemma systematically to accomplish the basic objective of the study.The study is based on descriptive research design and inferential design. This study aims to investigate the relationship between the factors like price, service quality, information, security and customer satisfaction towards electronic payment by using regression, consisting of questionnaire field survey. The field survey is conducted to further enhance the collection of primary data. The survey has used the 150 respondents as sample size and convenience sample method. The data obtained from the questionnaire are analyzed using SPSS software. The result thus obtained were analyzed, interpreted. The data were analyzed by using statistical techniques like mean and standard deviation and correlation analysis for various dependent and independent variables to achieve the research objective.

Data Analysis

Basically, means and standard deviation have been applied to analyze the data.

Table 1

Descriptive Statistics for Satisfaction Level of Customer

Factors		Minimum	Maximum	Mean	Std. Deviation
Satisfied with service	150	1	5	3.93	1.197
Intend to use more in future	150	1	5	3.97	1.161
Average	150	2.00	5.00	3.950	0.837

Source: Field Survey, 2020.

The above table 1 explains the respondent's opinion about satisfaction level towards e-payment. The mean response is 3.95 and the standard deviation is 0.837 that almost all of the respondents are satisfied with service of e-payment and intend to use more in future.

Table 2

Descriptive Statistics for Price

		Minimum	Maximum	Mean	Std. Deviation
Extra Price	150	1	5	3.74	1.178
No problems in extra Price	150	1	5	3.97	1.346
Average	150	1.00	5.00	3.857	1.054

Source: Field Survey, 2020.

The table 2 explains that the respondents opinion about price for customer satisfaction toward e-payment. The mean value is 3.857 and the standard deviation is 1.054. Thus, these factors explained almost all of the respondents agree that price effected on customer satisfaction toward e-payment.

Table 3

Descriptive Statistics for Security

Factors		Minimum	Maximum	Mean	Std. Deviation
Security	150	1	5	3.29	1.517
Trust	150	1	5	3.87	1.217
Maintain privacy	150	1	5	3.99	1.331
Average	150	1.00	5.00	3.72	

Source: Field Survey, 2020.

The table 3 explains the respondents' opinion about security for customer satisfaction towards e-payment.. The mean value is 3.72. Thus, these factors explained that almost all of the respondents agree about security effected on customer satisfaction toward e-payment.

Table 4

Descriptive Statistics for Information

Factors		Minimum	Maximum	Mean	Std. Deviation
Quick Response	150	1	5	3.53	1.469
Update information	150	1	5	3.15	1.737
Timely information	150	1	5	3.34	1.579
Average	150	1.00	5.00	3.340	1.294

Source: Field Survey, 2020.

The table 4 explains the respondents' opinion about information for customer satisfaction towards e-payment where mean value is 3.34 and standard deviation value is 1.294. Thus, these factors explained that almost all of the respondents agree about information effected on customer satisfaction toward e-payment.

Table 5

Descriptive Statistics for Quality

Factors		Minimum	Maximum	Mean	Std. Deviation
Quick Response	150	1	5	3.67	1.293
Update information	150	1	5	3.77	1.280
Timely information	150	1	5	3.84	1.395
Average	150	1.67	5.00	3.762	0.877

Source: Field Survey, 2020.

The table 5 explains the respondents' opinion about quality for customer satisfaction towards e-payment where the mean value is 3.76 and the standard deviation is 0.877. Thus, these factors explained that almost all of the respondents agree that quality effected on customer satisfaction toward e-payment.

Table 6

Correlation Analysis among the Variables

	Price	Quality	Information	Security	Satisfaction
Price					
	1				
Quality	.647**				
	0.00				
Information	.420**	.838**			
	0.00	0.00			
Security	.398**	.674**	.767**		
	0.00	0.00	0.00		
Satisfaction	.215*	.513**	.610**	.750**	
	0.08	0.000	0.000	0.000	1

*** Correlation is significant at the 0.01 level (2-tailed).*
** Correlation is significant at the 0.05 level (2-tailed).*

The correlation between the customer satisfaction level related with Quality is 0.513 and corresponding p-value is 0.000 which is less than 0.01. It means that there is positive relationship between satisfaction level and service quality towards payment. Hence, there is significant relationship between satisfaction level and service quality toward e-payment.

Furthermore, the correlation between the customer satisfaction levels related with price is 0.215 and corresponding p-value is 0.0 which is less than 10 percent. There is positive relationship between satisfaction level and price towards payment. Hence, there is significant relationship between satisfaction level and price toward e-payment.

However, the correlation between the customer satisfaction levels related with security is 0.750 and corresponding p-value is 0.000 which is less than 0.01 which shows a positive relationship between satisfaction level and security towards payment. Hence there is significant relationship between satisfaction level and security toward e-payment.

The correlation between the customer satisfaction levels related with information is 0.610 and corresponding p-value is 0.000 which is less than 0.01 which does mean that there exist a positive relationship between satisfaction level and information towards payment. Hence, there is significant relationship between satisfaction level and information toward e-payment.

Conclusion

This research study has investigated the factors affecting customer satisfaction towards electronic payment in Nepal, which explain the price, quality, information, security have relationship with customer satisfaction towards e-payment. Quality is highly related to customer satisfaction towards e-payment whereas information is not highly related.

Reference

Ahmad, D. A & Zu'bi, D. H. (2011). E-Banking functionality and outcomes of customer satisfaction: An empirical investigation. *International Journal of Marketing Studies*, Vol. 3 (1), 50-65.

Akindele, J. O. & Rotimi, O. (2014). Analysis of electronic banking and customer satisfaction in Nigeria. *European Journal of Business and Social Research Science*, Vol. 3 (3), pp 14-27.

Alkhowaiter, W. A. (2020). Digital payment and banking adoption research in Gulf countries: A systematic literature review. *International Journal of Information Management*, Vol-*53*. doi:10.1016/j.ijinfomgt.2020.102102.

Asfour, K.H. & Hadded, I. S. (2014). The impact of mobile banking on enhancing customers e-satisfaction: An empirical study on commercial banks in Jordan. *International Business Research*; Vol. 7 (10). http//dx.doi.org/10.5539/ibr, p. 145.

Dubey, A & Srivastava, A. (2016). Impact of service quality on customer loyalty: A study on telecom sector in India. *IOSR Journal of Business and Management*, (18), pp. 45-55.

EL-Kiki, T., & Lawrence, E. (2007). Mobile user satisfaction and usage analysis model of m-government services. Unpublished PhD Thesis, University of Technology Sydney, Australia.

Gautam, V. (2012). Measuring the impact of new technologies through electronic-banking on profitability of banks: Evidence form Indian banking industry. *Romanian Journal of Marketing RRM* 3:20-26 https://doi.org/10.1177/2158244020935887.

Heckman, O. (2005). A system-oriented approach to efficiency and quality of service for internet service providers. Ausgezeichnete Informatik dissertationen.

John, C & Michael, M (1977). Consumer Behavior: A Framework a kindle e book.

Khatoon, S & Zhengliang, XU, (2020). The mediating effect of customer satisfaction on the relationship between electronic banking service quality and customer purchase intention: Evidence from the Qatar banking sector. https://doi.org/10.1177/2158244020935887.

Lussier, R. N & Hendon, J. R. (2017). Human resource management: Functions, applications, and skill development. Sage.

Madhoushi, M., Zali, M., & M. Amani, R., (2005). Evaluating the features of a variety of electronic payment systems from the perspective of Iranian users," *Journal of Humanities and Social Sciences*, pp. 65-96.

Mowen, J. C., & Minor M. (1997). *Consumer behavior: A framework*: Upper Saddle River, NJ: Prentice Hall.

Parasuraman, A. Leonard, L. B. & Valarie A. Z. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, Vol. 64, pp.12-40.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49(4), 41–50.

Pikkarainenin, T., Pikkarainen, K., Karjaluoto, H., & Pahnila, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. Internet research.

Polatoglu, V. N., & Ekin, S. (2001). An empirical investigation of the Turkish consumers' acceptance of Internet banking services. *International Journal of Bank Marketing*, 19, 156–165.

Ranaweera, C & Prabhu, J. (2003). The influence of satisfaction, trust and switching barriers on customer retention in a continuous purchasing setting. *International Journal of Service Industry Management,* (14), 374-395.

Ranaweera, C., Sigala, M. (2015). From service quality to service theory and practice. *Journal of Service Theory and Practice*, 25(1), pp. 2–9.

Robinson, T. (2000). Internet banking: Still not a perfect marriage. Information Week.com, pp. 104–106.

Rod, M., Ashill, N. J., Shao, J., & Carruthers, J. (2009). An examination of the relationship between service quality dimensions, overall internet banking service quality and customer satisfaction: A *New Zealand Study. Marketing Intelligence & Planning*, 27, 103-126. https://doi.org/10.1108/02634500910928344

Sherafat, S.A., Mahdavi, M., and Lari, M. A. (2007). Electronic payments and attitudes of people about them, the first international conference on commerce, Tehran.

Tellla, A. (2012). Determinants of e-payment systems success: A user's satisfaction perspective, University of Ilorin, *Nigeria International Journal of E-Adoption (IJEA)*, Vol. 4(3), pp 24. doi:10.4018/jea.2012070102

Yap, K. B., Wong, D. H., Loh, C. & Bak, R. (2009). Offline and online banking-where to draw the line when building trust in e-banking. *International Journal of Bank Marketing*, Vol. 28(1), pp. 27-46.

Quest JKBC, Vol. 3, No. 1 & 2 July-December 2021, Issue No. 3

Introduction to Qualitative Research Methods

Narayan Shrestha[*]

Abstract

This paper, in a nutshell, dwells on the theoretical understanding of the qualitative research methods. The overall focus has been on the interpretative aspect of socio-cultural realities in a context with focus on emic perspectives using multi-methods for the triangulation of the facts gathered ethnographically.

***Keywords**: Qualitative, Ethnography, Case study, Narrative, Methods, Field notes, Data analysis.*

The purpose of this paper is to share the preliminary theoretical understanding on the qualitative research which is increasingly in demand in the contemporary academic and professional world. The interpretive perspective in central for the qualitative research. The focus of qualitative research in on search of meanings in human cultures in natural settings, thick description, locally crafted meanings, experiential underpinnings of knowledge, subjectivity, inter-subjectivity, meaningfulness of social life, interpretive elasticity, and context of social and cultural actions (Flick, Kardoff and Steinke, 2004). It provides the depth of understanding, asks "why"?; is subjective and exploratory; enables discovery; allows insights (such as into socio-cultural norms, beliefs, religion, perception, gender roles, ethnicity, religion, social/cultural context, behavior, trends, and so on), and interprets (Theis and Grady, 1991). The basic assumptions of it can be enumerated as follows: (i) social reality is understood as a shared product and attribution of meanings (understood as the result of meanings and context that are jointly created in social interaction); (ii) processual nature of social reality is assumed; (iii) objective life circumstances are made relevant to a life-world through subjective meanings (hermeneutic interpretation of subjectively intended meanings), and (iv) the communicative nature of social reality permits the reconstruction of construction of social reality to become the starting point for research (Flick, Kardoff and Steinke, 2004).

[*] *Mr. Shrestha is Assistant Professor, associated with BernHardt College, Email:Narayanshrestha090@gmail.com*

Distinguishing Features of Qualitative Research

The major distinguishing features of qualitative research comprise: (i) spectrum of methods rather than a single method; (ii) appropriateness of methods; (iii) orientation to everyday events and/or everyday knowledge; (iv) conceptuality as a guiding principle; (v) perspectives of participants; (vi) reflective capability of the investigator; (vii) understanding as a discovery principle; (viii) principle of openness; (ix) case analysis as a starting point; (x) reconstruction of the construction of reality as a basis; (xi) qualitative research as a textual discipline (produces data in text/field notes/transcribed interviews); and (xii) discovery and theory formation as a goal (Flick, Kardoff and Steink, 2004). The three keys for the successful qualitative research comprise: (i) **the art of asking "why?"** (ask in a neutral manner , avoid leading the informants, ask only one question at a time, and note the verbal and non-verbal clues of confusion/evasion); (ii) **the art of listening** (creative listening requires high degree of sensitivity, intuition, empathy, and reflection), and (iii) **research as a creative process of investigation** (one has to work like the detective; the key to getting the right answers is to adapt and create the process to suit the specific research issue, and there is a need to apply the creative thinking to each new situation). On the one hand, qualitative research has its openness and it provides greater depth of response (hence, greater consequent understanding is developed) and it is flexible, on the other hand (Theis and Grady, 1991). Two major problems of qualitative research comprise: (i) possibility of inappropriate use by the novice researches, and (ii) high degree of dependence on insight and interpretation and high degree of susceptibility to subjective bias. It is basically used: (i) as a tool to generate ideas (may stimulate new ideas through first – hand experience from observing/hearing the people and interacting with them) ; (ii) a preliminary step to aid in developing a quantitative study (may help to develop hypotheses, identify types of people to be interviewed, etc); (iii) a way to help understand the results of a quantitative study (may help to explain, expand and illuminate quantitative data by furnishing reasons for trends/factors of change), and (iv) the primary data collection method/strategy (mainly for research problems which do not lend themselves easily to a quantified approach (Theis and Grady, 1991)

Ethnographic Approach

Given the fact that qualitative researches are conducted by using the ethnographic approach, it is necessary to have conceptual understanding on it. Generally speaking, ethnographic is an approach to learning about the social and cultural life of communities, institutions and other settings that is scientific and investigative. It uses the researcher as the primary tool of data collection; uses rigorous research methods and data collection techniques to avoid bias and ensure accuracy of data; emphasizes and builds on perspectives of the people in the research setting and is inductive (develops local theories). **The characteristics** that mark a study as ethnographic are as follows: (i) it is carried out in a natural setting, not in a laboratory; (ii) it involves intimate, face-to-face interaction with participants; (iii) it involves an accurate reflection of participants' perspectives and behavior; (iv) it uses inductive, interactive, and recursive data collection and analytic strategies to build local cultural theories; (v) it uses multiple data sources, including both quantitative and qualitative; (vi) it frames all human behavior and belief within a socio-political and historical context, and (vii) it uses the concept of culture as a lens to which through interpret results. Ethnography should be used to: (i) define the problem when the problem is not clear; (ii) define the problem when it is complex and embedded in multiple systems or sectors; (iii) identify participants when the participants, sectors, or stake-holders are not yet known or identified; (iv) clarify the range of settings where the problem or situation is occurring at times when the settings are not fully identified, known or understood ; (v) explore the factors associated with the problem in order to understand and address them, or to identify them when they are not known; (vi) document a process, and (vii) answer question that cannot be addressed with other methods or approaches (Lecompte and Schensul, 1999: 1-21)

Goal of Ethnographic Fieldwork

Bronislaw Malinowski, in his monumental work entitled 'Argonauts of Western Pacific' (1922) summarized the goal of ethnographic fieldwork as follows: (i) the organization of the tribe or the community, and the anatomy of its culture must be recorded in firm, clear outline; (ii) within this framework, the imponderabilia of actual life and the type of behavior have to be filled in, and (iii) a collection of ethnographic statements, characteristic narratives, typical utterances, items of folk-lore and magical formulae has to be given as documents of native mentality. Thus, the **goal** of ethnographic research is to grasp the native's point of view, his relation to life, to realize his vision of his world (Malinowski, 1922:24).

Research Designs as Worldviews, Strategies and Research Methods

J.W. Creswell(1998) views research designs as worldviews, strategies and research methods. Worldviews provide perspectives to look at the empirical realities. Strategies of inquiry are designs or models that provide specific direction for procedures in a research designs. Qualitative strategies can be: (i) **ethnography** (local groups/

individuals (men and women, young and old) to be studied in natural settings-where development interventions have been made-for a prolonged period of time by using observational and interview data-flexible design by considering context); (ii) **case studies** (a strategy of inquiry in which the researches explore in depth programs, events, activities, and processes- cases are bounded by time and activity and researches collect detailed information using a variety of data collection procedures over a sustained period of time), and (iii) **narrative research** (a strategy of inquiry in which the researches study the lives of individuals/groups (Creswell, 2009). Most frequently used qualitative research method comprise: (i) key informant interview; (ii) group interview; (iii) focus group discussion; (iv) participant observation, and (v) narratives (case stories of individuals/groups/events with in-depth focus). Use of multiple methods would be instrumental for the triangulation of the data/information-a key for enhancing the validity and reliability of the data. A theoretical overview of each furnished underneath.

Key Informant Interview

Interviewing is an interactional process. It is a mutual view of each other. The aim of the interview is to penetrate the outer and inner life of persons and groups (with focus on ascertaining the experiences, perceptions, opinions, motivations, actions, attitudes, values, ideological trends, behaviors, etc.). Interviewing is not only a simple two-way conversation between an interrogator and informant. Gestures, glances, facial expressions, pauses often reveal subtle feelings. The behavior is in itself important data for the interviewer. Key informant interview (KII) is an important technique of data collection in the ethnographic research. Using the semi-structured checklist, researches conduct this interview with people who have specialized knowledge on the issue being researched/investigated. It shows that everyone in the community cannot be the key informants. Good key informants are people who understand the information researches need and are glad to give it by using their expertise (Young, 1982 and Bernard, 1988).

Group Interview

Group interviews help to obtain community-level general information vis-à-vis the study. They provide access to a larger body of knowledge, and provide an immediate cross-check on information as it is received from different people in the group. At the most, there can be up to 20 participants in the group. These interviews are not useful for discussion of sensitive information (Theis and Grady, 1991).

Focus Group Discussion

Focus group discussions (FGDs) are used when: (a) interaction of informants/ respondents may stimulate a richer response or new and valuable thoughts; (b) group/peer pressure will be valuable in challenging the thinking of respondents and illuminating conflicting opinions; (c) subject matter is not so sensitive that respondents will temper responses or withhold information; (d) the volume of stimulus is not extensive; (e) a specific or single subject area is examined in depth, etc. Characteristically, focus groups involve people; focus group discussions are conducted in series; participants are reasonably homogenous; focus groups are a data collection procedure; focus groups make use of qualitative data (they provide insights into the attitudes; perceptions, and opinions of the participants), and focus groups have a focused discussion .The topics of focus groups are carefully predetermined and sequenced based on an analysis of situation. The questions are placed in an environment that is understandable and logical. The moderator uses the predetermined open-ended questions. The note-taker records all the opinions of the participants. One of the unique elements of FGD is that there is no pressure by the moderator to have the group reach consensus. Instead, attention is placed on understanding the thought processes used by participants as they consider the issues of discussion .There is the need to avoid asking dichotomous questions (that can be answered with yes or no). A topic guide is needed for the FGD. Generally, there are three types of the question in the FGD, namely, opening question, introductory questions, and transition questions. Opening questions are designed to identify characteristics that the participants have in common. Usually, it is preferable for these questions to be factual as opposed to attitude- or opinion-based questions. Introductory questions introduce the general topic of discussion and/or provide participants an opportunity to reflect on past experiences and their connection with the overall topic (uncritical questions that contribute to fostering conversation and interaction). Transition questions move the conservation into the key questions that drive the study. A question is a “stimulus” for the respondent. Most of the questions have to begin with “what”?, “how”? “where”? “why”?, “why not”?, etc. There is a need to generate the issue-based questions ranging from a minimum of five to maximum of 10 (generally). The size of the group ranges from a minimum of six to a maximum of 12 (Young, 1982 and Krueger, 1994).

Participant Observation

Participant observation is considered as the ‘foundation of anthropological research’; Generally speaking, the researcher engaged in participant observation tries to learn what life is like for an “insider” while remaining, inevitably, an “outsider”. What people say they believe and say that they do are often contradicted by their behavior. Given the frequency of this very human inconsistency, observation can be a powerful check against what people report about themselves. The reasons of the use of participant observations are as follows: (i) it is a strategy that facilities data collection in the fields;(ii) it reduces the problem of reactivity;(iii) it helps the researcher to formulate sensible questions in the local context, and (v) it gives you an intuitive understanding of what is going on in a culture, and allows to speak with confidence about the meaning of data (Bernard, 1988).

Narrative

A narrative may be oral or written and may be elicited or heard during fieldwork, an interview or naturally occurring conversation. In any of these situations, a narrative may be: a short typical story about a particular event and specific characters; an extended story about a significant aspect of one's life, and a narrative of one's entire life, from birth to the present. Narratives of all sorts constitute text data that provide rich descriptions of particular events, situations or personal histories (Chase, 2005:652). The anthropologist's focus remains on the culture of the group and stories of particular individuals are used by the anthropologists to typify the behaviors and beliefs of the group. A fairly exhaustive study of a person or group is called a life or case history. A comprehension study of a social unit-be that unit a person, a group, a social institution, a district or a community-is called a case study. Case study method is the 'social microscope' as termed by Burgess. Personal life records constitute the perfect type of sociological materials. Representativeness and typicalness of cases and life histories are important. Criteria for narrative or case data include as follows: (i) the subject must be viewed in a cultural/social context; (ii) behavior of individuals/groups must be viewed as socially relevant; (iii) the continuous related character of experience from one stage to the next should be stressed; (iv) the 'social situation' must be studied in order to learn kind and degree of social pressures, social forces, social participation or abstention, exercised by the subject, and (v) the life history must be conceptualized and organized (Young, 2982 : 246-260).

Sampling Procedure: Use of the Purposive or Judgment Sampling

Choosing informants is critically important for the ethnographic/qualitative research. The researcher has to decide the purpose he/she wants an informant to serve and go out to find. Purposive samples emerge from the experience in ethnographic research (The researcher learns in the field, as he/she goes along, to select the units of analysis that will provide the information he/she needs). Purposive sampling is particularly suited to naturalistic inquiry (just the sort that anthropologists do a lot). Purposive sampling is often used in qualitative/ethnographic studies. It is also used in the selection of a few cases for intensive study. Researchers would not select a research community by chance but would rely on their judgment to find out that reflects the things they are interested in. Life history research and qualitative research on special populations rely on purposive or judgment sampling. Choosing key informants in the fieldwork is a kind of critical-case sampling. It would be pointless to select a handful of people randomly from a population and try to turn them into trusted key informants. There has to be the criteria-based selection which involves choosing study participants or units because they possess characteristics related to study's central questions. Common approaches to criteria-based selection comprise: (i) extreme or dichotomous case selection (extreme cases are those representing the ends of defined population continuum); (ii) typical case selection(typical case selection involves selection based on a known average for the population), and (iii) intensive case selection (Lecompte and Schensul, 1999).

Culture of Maintaining the Field Notes

According to Bernard (1988), five basic rules to remember for taking and managing fieldwork notes are as follows: (i) do not try to put all notes into one, long, running commentary; use plenty of paper and make many shorter notes than fewer longer ones; (ii) separate note taking into four physically separate sets of writing such as field jottings, field notes, a field diary, a field log; (iii) take field jottings all the time, not just at appointed times during the day; keep a note pad at all times and make field jottings on the spot, whenever something is seen or heard that strikes the researcher as important; field jottings are the basis of field notes; (iv) be sensitive to the feelings of the informants, and it is sometimes a good idea to just listen attentively to an informant and leave the notebook in the pocket, and (v) set aside a time of day to devote to writing up fields notes from jottings (Bernard, 1988 : 181-82).

Bernard (1988) also shares his view on the discrepancies between and among field notes, diary, and log. Field notes are based on observations that form the basis of the report. A diary is personal that helps the fieldwork to deal with loneliness, fear, and other emotions that make fieldwork difficult. It also helps him/her interpret his/her field notes, and makes him/her aware of his/her personal biases. A log is a running account of how the fieldworker plans to spend his/her time, how he/she actually spends his/her time, and how much money he/she spends. Bernard (1988) also distinguishes three types of field notes to be maintained by the field researches. These are as follows: (i) methodological notes (they deal with the techniques in collecting data; they have to do with the conduct of field inquiry itself, and the researcher will have to make notes especially when he/she does something silly that breaks a cultural norm); (ii) descriptive/substantive notes (the bulk of the field notes are descriptive; they are the meat and potatoes of the fieldwork in qualitative research, and these must be written every day at the end of interview by being based on the field jottings or listening to the recorded tapes), and (iii) analytic notes(they are the product of the fieldworkers' understanding, and that comes about through organizing and working with descriptive and methodological notes over a period of time).

Qualitative Data Analysis

Data analysis, being a continues process of reviewing the information as it is collected, classifying it, formulating addition questions, verifying information and drawing conclusions, is crucially important in the research process (Theis and Grady, 1991). Discussing the principle of analysis, Kerlinger (1983:134) writes that analysis means the categorizing, ordering, manipulating, and summarizing of data to obtain answers to research questions. The purpose of analysis is to reduce data to small-scale business intelligible and interpretable forms so that relations of the research problems can be studied. Qualitative data are analyzed by searching for patterns in data and for ideas that have helped to explain the existence of those patterns (Bernard, 1988). In so doing, three stages would be followed:

(i) Stage one: Familiarization (immersion in the raw data) and identification of themes, concepts and issues for examining the data.

The qualitative data are first analyzed by perusing all the original texts of the field descriptive/substantive notes/listening to tapes and then identifying and listing all conceptual categories/ thematic patterns/ core issues in data (in doing so, the semi-structured checklist themes and new themes emerged during the fieldwork would be identified and listed in tabular form either in the computer or the broadsheet papers).

(ii) Stage two: classifying the key messages of qualitative data under themes/ sub-themes/concepts with short text description.

During this stage, relevant information given by different informants in the interview of same questions would be organized/summarized as the key messages by perusing the original texts of the each question (be it pre-determined or supplementary one developed during the interview) of a particular checklist (be it KII or FGD). While organizing the data, there is always a need to take note of all commonalities and differences in the data. Once the organizing of the data begins, one does not have to record the same common information if it appears again and again in the text of the field descriptive note under a particular question/theme/concept of a checklist. However, he/she must record the different information on the same issue/theme if it appears every time.

(iii) Stage three: reflection upon the thematically organized qualitative data and developing generalizations on each theme/sub-theme/concept

Finally, generalizations would be developed by looking at the key messages recorded under the themes, sub-themes, and concepts (by taking care of the relationships/ associations between and among the variables under study). Generalizations are to be substantiated by the specific set of information thematically classified. Thus, thematic classification of data is applied by the qualitative researchers in process of data analysis (Uprety, 2006). Of late, there is also the development of software for the qualitative data analysis which can be used after a short training.

Qualitative Data Presentation, Writing and Interpretation

Bernard (1988) underscores the use of quotes of the people/informants, matrices, tables, casual flow charts and native taxonomies or folk taxonomies for presenting the qualitative data analysis. Researchers can also use of cartographic tools to interpret the relationships and analyze trends. Richardson and St. Pierre (2005) have opined 'writing as a method of inquiry'. They have argued that 'writes interpret as they write, writing is a form of inquiry, a way of making sense of the world'. They concluded, "Writing is thinking, writing is analysis, and indeed writing is a method of discovery". Data Interpretation is critically important in the qualitative research by furnishing the thick description (emphasis on the hierarchy of meanings and interpretations of local people's interpretations) as underscored by C. Geertz in 1973.

References

Bernard, H. R.(1988). *Research methods in cultural anthropology*. New Delhi: Sage Publication, India

Chase, S.E. (2005). Narrative inquiry: Multiple lenses, approaches, voices. In N.K. Denzine, & Y.S. Lincoln (Eds.). *The Sage Handbook of Qualitative Research*, 3rd edition (pp. 651-679). London.

Creswell, W. J. (2009). *Research design: Qualitative, quantitative and mixed method approaches*. New Delhi: Sage Publication Inc.

Denzin, N. K. and Lincoln. (eds.). (2005). *Qualitative research*. London: Sage Publications.

Flick, U., Kardorff. E. & Steinke, I. (2004). *A companion to qualitative research*. Sage Publication, London.

Geertz, Clifford.(1973). *The Interpretation of cultures*. New York: Basic Books Inc; Publishers

Kerlinger, F. N (1978). *Foundations of behavioral research*. Delhi: Surjeet Publications, India.

Krueger, R.A. (1994). *Focus groups: A practical guide for applied research*. London: Sage Publications.

Lecompte, M. D and Schensul, J. J. (1999). *Designing and conducting ethnographic research*. New Delhi: Altamira Press

Malinowski, B. (1950). *Argonauts of western pacific.* London: Routlage and Kegan Paul LTD.

Richardson, L., St. Pierre, E. A. (2005). Writing: A method of inquiry. In N.K. Denzin & Y.S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research* (pp. 959-978). Sage Publication Ltd.

Theis J. and Grady., H. M. (1991). *Participatory rapid appraisal for community development: A training-based manual on experiences in the middle east or north Africa*. International Institute for Environment and Development and Save the Children Federation.

Uprety, L. P. (2006). *Managing water for irrigation as a common property resource. A case study of Sora-Chhattis Mauja indigenous irrigation systems of Rupandehi district*. Unpublished PhD Dissertation, Tribhuvan University, Kathmandu, Nepal.

Young, P. V. (1982). *Scientific social survey and research*. New Delhi: Prentice Hall of India Pvt. Ltd.

Young, P.V. (1988). *Scientific social survey and researches*. New Delhi: Prentice Hall of India Pvt. Ltd.