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Editorial

It is our pleasure to bring out the second volume of journal entitled INTELLIGENCE Journal of Multidisciplinary Research (IJMR) with ISSN 2822-1869 and eISSN 2822-1877. IJMR is fully-open access, blind peer review, and NepJOL indexed international journal published by Research Management Cell (RMC) of Pokhara Multiple Campus Pokhara. The journal provides a forum to publish research outcomes to national and international authors.

The objective of IJMR is to publish up-to-date, high quality, original research papers alongside relevant and insightful reviews from various areas of social sciences. This will, thus, be beneficial to the researchers who are pursuing their research work in various fields as well as practiceners for decision making in relevant areas of their work.

The journal received a total of fifteen manuscripts for this issue, out of which three manu scripts were rejected after preliminary review, one more manuscripts were rejected after the peer review process, and finally eleven papers were selected for the publication. A pool of experts in the relevant field reviewed the manuscripts. The peer reviewed issue comprises papers from diverse areas.

We took this opportunity to acknowledge the contribution of authors, support rendered by the independent expert reviewers, and language editor of the journal. We would also like to acknowledge the support of Advisory Board Members of the journal, Campus Management Com mittee, Campus Administration, and faculties and staffs of the campus. Our editorial team tried its best to make this issue free from errors at the most. Finally, we would like to express our grati tude to all of them and look to their unrelenting support in bring out Volume III in scheduled time.

We welcome further suggestions from our readers to make the future issues as better.

Editorial Team

About the Journal

INTELLIGENCE Journal of Multidisciplinary Research is a peer-reviewed open access journal published in March by the Research Management Cell (RMC), Pokhara Multiple Campus, Pokhara. It publishes only original research papers, which aim to promote research especially in the areas of social sciences. The journal is published annually and appears both in print and online. The journal is indexed in Nepal Journals Online (NepJOL).

Focus and Scope

The journal welcomes original research papers on topics related to business, manage ment, education, tourism, environment, political and other social science areas.

Open Access Policy

This is an open-access journal and appears both in print and online. The research papers published in this journal can be viewed from different search engines including Google Scholar It is published in a manner to adhere with the registration requirements of Nepal Journals On line (NepJOL) providing easy and convenient access to the wider readers. The online version is available on the websites of Pokhara Multiple Campus (https://pmcpokhara.edu.np/) and NepJOL (http:// www.nepjol.info/index.php/ijmr/index).

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The journal employs a double-blind peer-review process. Two reviewers are assigned to each paper for review of the paper. Reviewed papers are sent to the authors for correction along with the peer-review form filled up by the reviewers. The process takes approximately two months to complete. The papers are divided into two parts -title page and manuscript. The title page included the manuscript title, authors names and their affiliations, address of the correspond ing author, including an e-mail address. This page is kept separate with the editorial, which is not sent to the reviewers with manuscript. In manuscripts, alpha-numeric codes were placed above the manuscript title and any identifying information in the anonymized manuscript is checked to ensure that there remains no identity of the authors. The whole process takes approximately two months to complete.

Contents

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Autoregressive Integrated Moving Average Predictive Modelling for Per Capita GDP of Nepal

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Abstract

A nation's Gross Domestic Product (GDP) is an important index that reflects the health and performance of an economy and its aggregate income. In this paper, annual data of Nepal's GDP for the period 1960 – 2022 is used to forecast the GDP of Nepal through Autoregressive Integrated Moving Average (ARIMA) modelling techniques. We seek to make accurate long-term predictions for the period 2023 – 2037 to gain insights into the future expected trajectory of economic growth in Nepal. In the present empirical study, stationarity at the second-order differencing with the ARIMA (2, 2, 1) model is identified to predict the GDP of Nepal for the next 15 years. The finding shows that the forecast values of Nepal's GDP will be $1384.426 per capita in 2023 and $2180.822per capita in 2037. Our study provides skeletal guidance for government bodies and investors who rely on planning and strategizing resources on accurate predictions of GDP per capita. By accurately predicting GDP per capita, administrators in investment and policy making can make informed economic decisions that may steer economic growth, stability, and development in an optimum direction.

Keywords
GDP
ARIMA
Forecasting
Nepal
Box- Jenkins approach
R Studio

GROSS DEMESTIC PRODUCT (GDP) is a strategic component in measuring National Income and Product Accounts. GDP represents the total value of final goods and services. GDP assessment is based on the quantum of consumption and investment by households and businesses in addition to the governmental expenditure and net exports. GDP is, therefore, crucial in maintaining a healthy economy as it embodies all financial transactions, including banking aspects. Planning and decision-making for the entire economy is thus

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conditioned on accurate information with respect of all the three stakeholders in the economic transactions, namely, households, businesses and government, which GDP is capable of delivering. We thus have an estimated nominal GDP (NGDP) which is used for the purpose of future planning by the finance ministry of the country. The real GDP (RGDP) is obtained after adjusting the estimated NGDP for inflation. The latter is also known as observed GDP in actual real-time. However, all budget planning and projections utilize the former, i.e., NGDP, whereas RGDP directly impacts the common citizen. Therefore, fluctuations in the level of GDP covariates are important in determining the gap between NGDP and RGDP. The effective mathematical relationship is represented as NGDP – inflation rate = RGDP.

GDP computation is based on the principle of averages, which has an upward bias. Therefore, GDP does not capture income, expenditure, or production changes at the regional level. For instance, if a large group of people experience declining income at a time when its complement group in the same population is smaller but experiences upwardly rising incomes, then GDP registers rise. To overcome this upward bias to a sufficiently large extent, in this paper, we focus on the concept of GDP per capita, which gives a more realistic picture of a nation's economic health. GDP measures an economy's current market value for all products and services generated during the assessment period. This value encompasses spending and costs on personal consumption, government purchases, inventories, and the foreign trade balance. Thus, the total capital at stake and covered under the GDP envelope of a specific period can be viewed through (i) production undertaken, (ii) income generated and (iii) expenditure accrued for the same period.
Several research studies have been designed on the temporal data template where study units are macroeconomic units like countries or sub-regions like states, districts, or countries. In the present paper, we employ Autoregressive Integrated Moving Average (ARIMA) model proposed by Box and Jenkins (1970) for understanding the GDP movement with time. Past studies have used predictive ARIMA modelling for GDP of different countries. For instance, Kiriakidis and Kargas (2013) used predictive ARIMA model for predicting GDP of Greece, while correctly predicting recession in the near future. The RGDP in Greece for the period 2015-2017 was forecast by Dritsaki (2015) using an ARIMA (1, 1, 1) model based on data for the period of 1980-2013 which correctly indicated a gradual rise in GDP. Wabomba et al. (2016) projected Kenya's GDP from 2013-2017 using an ARIMA (2, 2, 2) model based on data for period of 1960-2012. Predicted estimates correctly indicated that Kenya's GDP will expand faster over the next five years, from 2013-2017. Agrawal (2018) estimated RGDP in India using publicly available quarterly RGDP data from Quarter 2 of 1996 to Quarter 2 of 2017 using ARIMA model. Abonazel et al. (2019) used an ARIMA (1, 2, 1) model over the period 1965-2016 to correctly forecast the rise in GDP for Egypt during for the period 2017-2026 and Eissa (2020) forecasted the GDP per capita for Egypt and Saudi Arabia, from 2019-2030 using the ARIMA (1, 1, 2) and ARIMA (1, 1, 1) models respectively based on data from the period 1968-2018. Their study showed that both Egypt's and Saudi Arabia's GDP per capita would continue to rise. In order to forecast the GDP and consumer `price index (CPI) for the Jordanian economy between 2020 and 2022, Ghazo (2021) employed ARIMA (3, 1, 1) model for GDP and ARIMA (1, 1, 0) model for CPI respectively, based on sample data from the period 19762019. They rightly anticipated stagflation for the Jordanian economy as a result of the predicted shrinkage in GDP and first rise in CPI. In order to escape the stagflationary cycle and achieve more stable CPI, this study provided inputs to the economic policy makers to develop sensible measures for boosting GDP and fending off inflationary forces. Mohamed (2022) used an ARIMA (5, 1, 2) model for the period between 1960-2022 to forecast

trajectory of GDP in Somalia for the next fourteen quarters. In order to forecast the quarterly GDP of Philippines, Polintan et al. (2023) used data from 2018-2022 through an ARIMA (1, 2, 1) model for forecasting GDP in the Philippines, for 2022-2029 and predicted a steady growth trajectory. Lngale and Senan (2023) used predictive ARIMA (0, 2, 1) model for predicting GDP of India, pertaining to the period 1960-2020 and predicted a steady growth trajectory. Tolulope et al. (2023) used an ARIMA (2, 1, 2) model for predicting the Nigerian GDP using both in sample and out of sample prediction method, based on data for the period of 19602020 which correctly indicated a gradual rise in GDP. Urruttia (2019) used an ARIMA (1, 1, 1) model over the period from the first quarter of 1990 to the fourth quarter of 2017 with a total of 112 observations for forecasting future GDP. Remittance income in Nepal vis- a vis GDP has between studied by Gaudel (2006). Srivastava and Chaudhary (2007) looked in to role of remittance in economic development of Nepal. Energy – GDP dependence in Nepal is focus of work under taken by Asghar (2008). Dahal (2010) studied role of GDP on educational enrolment and teaching strength in the school system of Nepal. GDP and oil consumption relations are analyzed by Bhusal (2010). Thagunna and Acharya (2013) assessed investment, saving, exports and imports as determinants of GDP. Chaudhary and Xiumin (2018) analysed determinants of inflation in Nepal. Interrelations between foreign trade and GDP of Nepal are investigated by Prajuli (2021). The present paper is the first study where a self-regressed Bayesian investigation on GDP is made with identification of a unique TS statistical model to project future pattern of GDP in Nepal. One step ahead prediction for the year 2022 is validated by the recent World Bank report. Information about GDP can be quite advantageous for the business and economy, particularly for investors, business people and the governmental units aiming for cost effectiveness and maximizing profit in addition to guiding the government for framing future economic policies and in planning and control of various economic measures.

The Study Region

The Federal Democratic Republic of Nepal is a landlocked country in South Asia sharing its boundaries with India and Tibet. World Bank 2022 report the total GDP (hence froth, GDP) of Nepal to be 36.29 billion USD with 122 billion USD Purchasing Power Parity (PPP). GDP per capita is placed at 1,230 USD and PPP at 4,190 USD for the year 2021. GDP growth rate for Nepal is 2.7% while GDP of Nepal represents 0.02% of the world economy for the year 2021. The main economic sectors in Nepal are agricultural, hydro-power, natural resources, tourism and handicrafts. These sectors have a significant impact on Nepal economy in terms of their contribution to the GDP. Empirical research conducted by Nepal Rastra Bank (NRB) in the year 2020 concluded tourism to be a crucial economic sector for both the short-run and the long- run economic growth of Nepal. The NRB report indicated a significant relationship between tourism industry and the county's economic growth which is one of the fasted growing industries in the country. More than a million indigenous people are engaged in the tourism industry for their livelihood. Tourism accounts for 7.9% of the total GDP while 65% of the population is engaged in agricultural activities contributing to 31.7% of GDP. About 20% of the area is cultivable, another 40.7 % is forested and the remaining land is mountainous. Thus, Nepal's GDP is heavily dependent on remittance. According to the Central Bureau of Statistics Nepal (2022) report, Nepal has received remittance amounting to Nepalese Rupees (NRs.) 875 billion in the financial year 2019-20, which translates into a remittance to GDP ratio of 23.23%. Nepal is primarily a remittance-based country with remittance inflow amounting to more than a quarter of the country's GDP. Nepal's total labour force in the year 2020 was 16,016,900 with sectoral distribution by occupation as 43% in agriculture 21% in industry and share of services at 35%. The inflation rate in Nepal was recorded at 6% and the unemployment rate at 1.4%. Nepal's total exports were reported to be worth 918 million USD in the year 2020, its main exports being carpets, textiles, pulses, tea, etc. Its main export partners are India, USA, Japan, Malaysia, Singapore, Germany, and Bangladesh. Total imports for the same period were recorded at 10 billion USD with prominent import goods being petroleum, electrical goods, machinery, gold, etc. Its principal import partners are India and China.

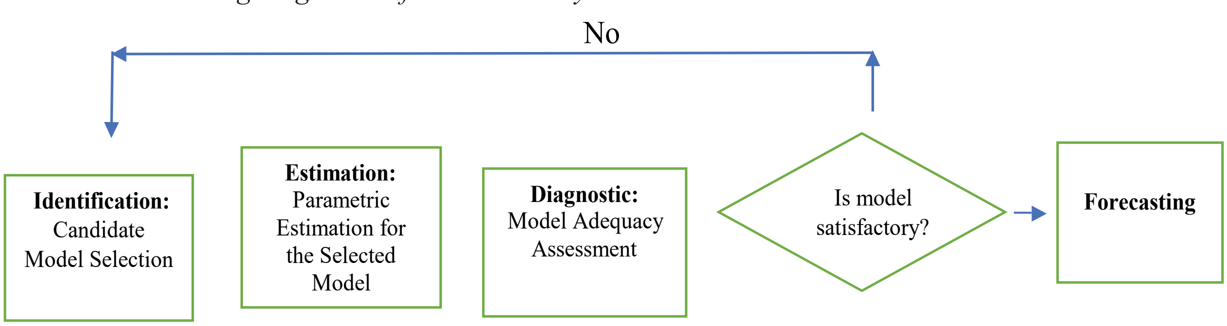
In this paper, we estimate and predict the GDP per capita of Nepal for next one and half decade by using ARIMA time series model. Section 2 describes model determination methodology used in the present work. Section 3 enumerates the models and the model adequacy measures. Section 4 focusses on data description and its analysis. Conclusion and recommendations are summarised in section 5.

Methodology

Time series models are characterized by the clustering effect or serial correlation in time. In the present paper, we employ ARIMA modelling to estimate and forecast Nepal's GDP. ARIMA modelling addresses such issues of dependent errors by introducing time lagged dependent variable and past error terms on the determinant side of the time series model. ARIMA model consists of AR, I, and MA segments where AR indicate the autoregressive part, I indicate integration i.e., the order of differencing in the observed series to achieve stationarity and MA indicate the moving average component in the model. The four stages of the iterative ARIMA model fitting process are Identification, estimation, diagnostic checking, and time series forecasting. (Figure 1).

Figure 1

Iterative ModellingProgression for a Stationary Variable in Box



It employs a general technique for choosing a possible model from a large class of models. The chosen model is then evaluated to see if it can accurately explain the series using the historical data. Auto-correlation function (ACF) and partial auto-correlation function (PACF) are used to select one or more ARIMA models that seem appropriate during the identification stage. The next stage involves estimating the parameters of a specific Box-Jenkins model (1970) for a given time series. This step verifies the parsimony in terms of the number of model parameters or lack of over-specification by determining whether, in addition to the residuals being uncorrelated, the chosen least amount of squared residuals are found in the AR and/or MA parameters. A critical and sensitive aspect of an ARIMA model is parsimony. An over-parameterized model cannot predict as efficiently as a sparse model. Model diagnostics and testing is carried out in the third step. The underlying presumption is that the error terms, ε_t, behave in a manner consistent with that of a stationary, unchanging process. If the residuals are drawn from a fixed distribution with constant mean and variance, they should be white noise. The most adequate Box-Jenkins model fulfils these prerequisites for the residual distribution. The best model needs to be decided based on these four paradigms. Thus, testing of the residuals would lead to a better suitable model. A graphical technique called a quantile-quantile (Q-Q) plot compares the distributional similarities of two datasets. In the context of ARIMA models, a Q-Q plot is often used to check whether the model's residuals follow a normal distribution.

The Model and Forecast

1 Autoregressive Model

With the intent to estimate the coefficients β_(j,) j = 1,2, …,p, an AR process for the univariate model is the one that shows a changing variable regressed on its own lagged values. AR model of order p, or AR (p), is expressed as,

$$y_t = \alpha + \beta_1 y_{t-1} + \beta_2 y_{t-2} + \cdots + \beta_p y_{t-p} + \varepsilon_t \qquad (1)$$

ACF gives a correlation coefficient between the dependent variable and the same variable with different lags, but the effect of shorter lags is not kept constant, meaning that the effect of shorter lag is remained in the autocorrelation function. The correlation between y_t and y_(t-2) includes the correlation effect between y_t and y_(t-1). On the other hand, PACF gives a correlation coefficient between the dependent variable and its lag values while keeping the effect of shorter lags constant. The correlation between y_t and y_(t-2) does not include the effect of correlation between y_t and y_(t-1).

2 Moving Average Model

Let ε_t (t = 1,2,…) be a white noise process, with t standing for a series of independent and identically distributed (iid) random variables expecting ε_t is zero and variance of ε_t is σ^2. After that, the qth order MA model, which accounts for the relationship between an observation and a residual error, is expressed as

$$y \;=\; \alpha \quad \theta\ \varepsilon_{\ -1} + \theta\ \varepsilon_{\ -2} + \cdots + \theta\ \varepsilon_{\ -q} \quad \varepsilon \qquad (2)$$

represents the impact of past errors on the response variable. Estimated coefficients θ_(j,) j = 1,2, … ,q, accounting for short-term memory help in forecasting.

3 Autoregressive Moving Average Model

The model AR, coupled with the MA modelling strategy is called Autoregressive Moving Average (ARMA) models intended for stationary data series. ARMA (p, q) model is expressed as:

$$y_t = \alpha + \beta_1 y_{t-1} + \beta_2 y_{t-2} + \cdots + \beta_p y_{t-p} + \theta_1 \varepsilon_{t-1} + \theta_2 \varepsilon_{t-2} + \cdots + \theta_q\ \varepsilon_{t-q} + \varepsilon_t \qquad (3)$$

An amalgam of the AR and MA models is represented by (3). In this instance, the greatest order of p or q cannot be provided merely by ACF or PACF.

4 Autoregressive Integrated Moving Average Model

The extension of ARMA model is ARIMA model which enable to transform data by differencing to make data stationary. ARIMA model can be written as ARIMA (p, d, q), where p is the order of AR term, d is the number of differencing required to make series stationery and q is the order of MA term. For example, if y_it is a non-stationary series, we will take a first-difference of y_t to make Δy_t= stationary, and then the ARIMA (p, 1, q) model is expressed as:

$$\Delta y_t = \alpha + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \cdots + \beta_p \Delta y_{t-p} + \theta_1 \varepsilon_{t-1} + \theta_2 \varepsilon_{t-2} + \cdots + \theta_q \varepsilon_{t-q} + \varepsilon_t \qquad (4)$$

Where Δ y_t= y_t- y_(t-1), then d = 1, which implies a one-time differencing step. The model transforms into a random walk model, categorized as ARIMA (0.1,0), if p = q = 0.

Table 1
ARIMA (p, d, q) Model for d = 0, 1, 2

d	0	1	2
Model	$y_t = Y_t$	$y_t = Y_t - Y_{t-1}$	$y_t = (Y_t - Y_{t-1}) - (Y_{t-1} - Y_{t-2})$

5 Model Adequacy Measures

Before employing a model for predicting, diagnostic testing must be done on it. The residuals that remain after the model has been fitted are deemed sufficient if they are just white noise, and the residuals' ACF and PACF patterns may provide insight into how the model might be improved. Akaike (1973) developed a numerical score that can be used to identify the best model from among several candidate models for a specific data set. Akaike information criterion (AIC) results are helpful compared to other AIC scores for the same data set. A smaller AIC score indicates a better empirical fit. Estimated log-likelihood (L) is used to compute AIC as,

AIC = - 2(L + s) (5)

Such that s is the number of variables in the model plus the intercept term. Schwarz (1978) developed an alternative model comparison score known as Bayesian (Schwarz) information criterion BIC (or SIC) as an asymptotic approximation to the transformation of the Bayesian posterior probability of a candidate model expressed as,

BIC or SIC = - 2L + s log(n) (6)

L is the maximum likelihood of the model, s is the number of parameters in the model, and n is the sample size. Like AIC, BIC also balances the goodness of fit and model complexity. However, BIC places a higher penalty on model complexity compared to AIC because it includes a term that depends on the sample size (s log(n)). As with AIC, the goal is to minimize the BIC value to select the best model.

6 Forecasting

Box-Jenkin's time series model method applies only to stationary and invertible time series. Lidiema (2017), Dritsakis and Klazoglou (2019). Future value forecasting can begin once the requirements have been met through procedures like differencing. We can utilize the chosen ARIMA model to predict when it meets the requirements of a stationary univariate process. Further, diagnostic checking is done to verify the forecasting accuracy of the ARIMA model.

7 Forecasting Accuracy

We now present different measures listed to determine the accuracy of a prediction model.

(i) Mean Absolute Error

The mean absolute difference between a dataset's actual (observed) values and the model's predicted values is computed using the Mean Absolute Error (MAE) algorithm. The absolute rather than squared differences make MAE more robust to the outliers. The formula to calculate the MAE is,

$$M\ A\ E\ \ \frac{1}{n}\ \sigma^{n}_{=1} \text{ầ}y\ -\ y_i\ \text{à} \tag{7}$$

Where n is the total number of observations, y_(i)is the actual value of time series in data point i, and y _i denotes forecasted value of time series data point i.

(ii) Root Mean Square Error

Root Mean Square Error (RMSE) is a popular accuracy measure in regression analysis based on the difference between a dataset's actual (observed) values and the model's predicted values. Lower RMSE indicates the alignment of the model's predictions with the actual data. The formula to calculate the RMSE i-

$$RMSE = \sqrt{\frac{\sum_{i=1}^{N} \|y(i) - \hat{y}(i)\|^2}{N}}, \tag{8}$$

However, due to the squaring of deviations, RMSE gives underweight to the outliers and may not be suitable for all types of datasets. Depending on the specific problem and characteristics of the data, we can use metrics such as Mean Absolute Error (MAE) or R-squared (coefficient of determination) may also be used in conjunction with RMSE to gain a more comprehensive understanding of the model's performance.

(iii) Mean Absolute Percentage Error

Mean Absolute Percentage Error (MAPE) is used to measure the percentage variation between a dataset's actual (observed) values and the model's predicted values, and it is useful to understand the relative size of the errors compared to the actual values. The formula to calculate the MAPE is,

$$\text{MAPE} = \frac{1}{n} \sum_{i=1}^{n} \frac{|y_i - \hat{y}_i|}{y_i} \cdot 100\% \tag{9}$$

However, it needs to be more well-defined when the actual values are zero or near zero, which can result in non-sensical very large MAPE values.

(iv) Mean Percentage Error

Mean Percentage Error (MPE) is instead of taking the absolute percentage difference like in MADE consider the signed percentage difference. Therefore, accounting for both the (positive and negative) magnitude of the errc MPE is,

$$MPE = \frac{1}{n}\sum_{i=1}^{n}\left(\frac{y_i - \hat{y}_i}{y_i}\right)^2 \times 100 \quad (10)$$

Such that, lower values of MPE indicate better forecast accuracy. A value of zero MPE would imply that the forecasted values match the actual values perfectly. However, MPE can have some limitations, such as the potential for the errors to cancel each other out, leading to an artificially low MPE even if the model's performance is unsatisfactory.

(v) Mean Absolute Scaled Error

Mean Absolute Scaled Error (MASE) measures the performance of a model relative to the performance of a naive or benchmark model. The MASE provides a more interpretable measure of forecast accuracy than metrics like Mean Absolute Error (MAE), especially when dealing with time series data and comparing different forecasting models. It provides insights into whether a model provides meaningful i g approach. The formula to calculate the MASE is,

$$MASE = \frac{\frac{1}{J}\sum_{j=T+1}^{T+J}|y_i - \hat{y}_i|}{\frac{1}{T-1}\sum_{i=2}^{T}|y_i - y_{i-1}|} \quad (11)$$

where n is the length of the series and m is its frequency, i.e., m=1 for yearly data, m=4 for quarterly, m=12 for monthly, etc.

MASE measures how well the model performs relative to the naive model's forecast errors taken as a benchmark. A value of MASE less than 1 indicates that the model performs better than the naive model regarding absolute forecast errors, while a value greater than 1 shows worse performance than the naive model.

Data and Analysis

For modelling and forecasting non-seasonal time series data of the annual GDP of Nepal, we have obtained data from the website of World Bank for the period 1960 – 2022. This implies that we have 63 observations of GDP, based on this data, we have proposed the ARIMA (2, 2, 1) model to forecast the GDP of Nepal for the next fifteen years (2023 – 2037).

1. Model Identification for GDP

Progression of GDP per capita of Nepal is graphed in Figure 2. A steady long-term rise is observed during 1960 – 2022. Beyond 2010 the rate of upward trend increases sharply. The time series may be quickly and easily determined to be unstable because of the GDP of Nepal's clearly marked increasing trend. Autocorrelation Function (ACF) (Figure 3) and Partial Autocorrelation Function (PACF) (Figure 4) are studied further to understand genesis of data structure. It is evident from the PACF that a single prominence indicates the fictitious primary value of n=1 when it crosses the confidence intervals. Furthermore, at ACF 11 heights, the same issue occurs. According to the ACF plot, the autocorrelations in the observed series is very high, and positive. A slow decay in ACF suggests that there may be changes in both the mean and the variability over time for this series. The arithmetic mean may be moving upward, with rising variability. Variability can be managed by calculating the natural logarithm of the given data, and the mean trend can be eliminated by differencing once or twice as needed to achieve stationarity in the original observed series. An instantaneous nonlinear transformation applied to the optimal forecast of a variable may not produce the transformed variable's ideal forecast (Granger and Newbold, 1976). In particular, using the exponential function to forecasts for the original variable when excellent forecasts of the logs are available may not always be the best course of action. Therefore, we further employ the differencing process on the untransformed actual data series.

Flgure 2

The GDP Data During 1960 to 2021

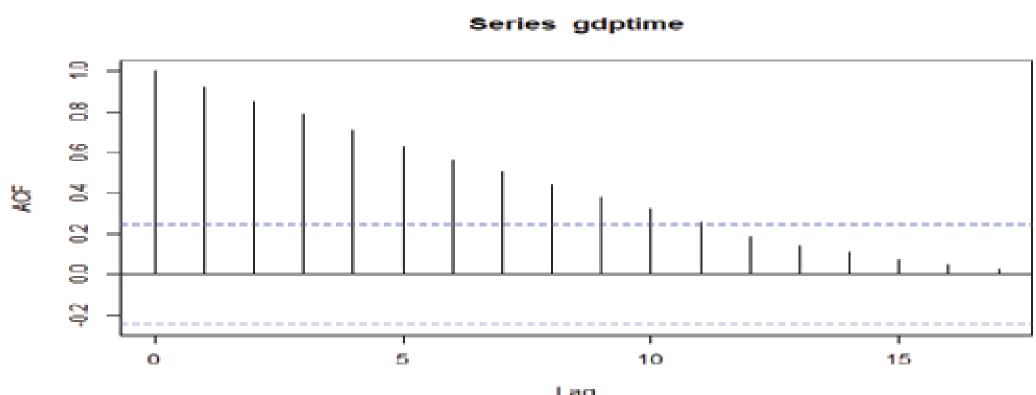


Figure 3

Autocorrelation function Graphs of the GDP Series

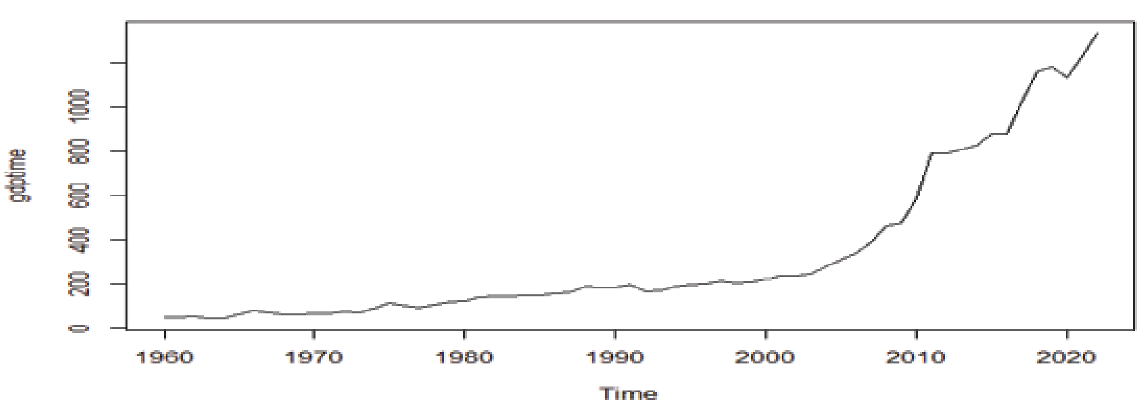
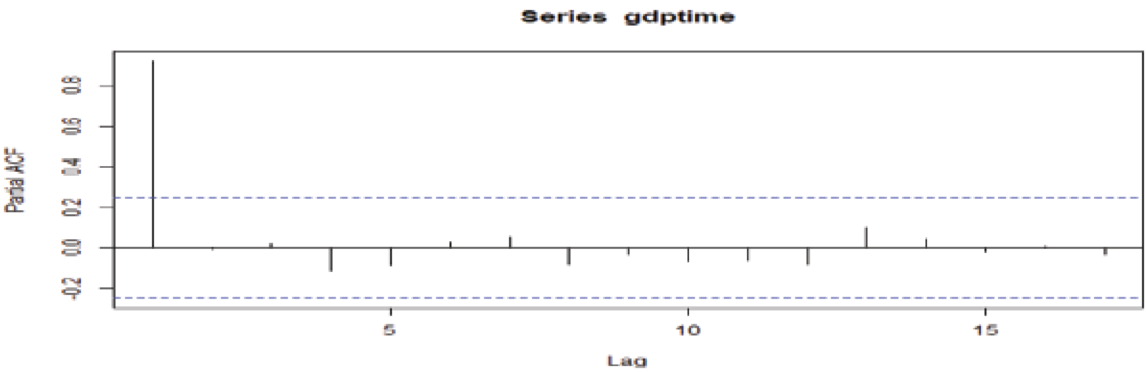


Figure 4

Partial Autocorrelation Function Graphs of the GDP Series



2. Diagnostics and Estimation for GDP

Based on GDP time chronological data for the period 1960 – 2022, we have considered ten tentative ARIMA (p, d, q) models (Table 2) and estimate the parameters using R interface. The model with minimum AIC is deemed to fit best and will be referred to as Model I, henceforth.

Table 2

Tentative ARIMA (p, d, q) Models of GDP for Nepal

(*p, d, q*)	Model-I	Model-II
(2,2,2)	620.3456	691.683
(0,2,0)	646.7677	724.934
(1,2,0)	644.8669	722.6668
(0,2,1)	624.1036	697.3245
(1,2,1)	625.2472	698.4418
(2,2,1)	**618.3642**	**689.7005**
(1,2,2)	624.3858	697.0097
(2,2,0)	629.1622	703.1548
(3,2,1)	620.3479	691.6844
(3,2,0)	624.4103	697.2054
(3,2,2)	621.3597	692.8173

d data for consistency. If a white noise sequence for residuals is obtained, then the model I is considered suitable for forecast. If not, then the model needs improving. In this research, the ACF graph (Figure 5) and PACF graph (Figure 6) of residual sequence are exhibit white noise process. Hence, ARIMA (2,2,1) well fits (Table 2) the considered time series GDP data from Nepal.

Figure 5

ocorrelation Function Graphs of the Residual Series.

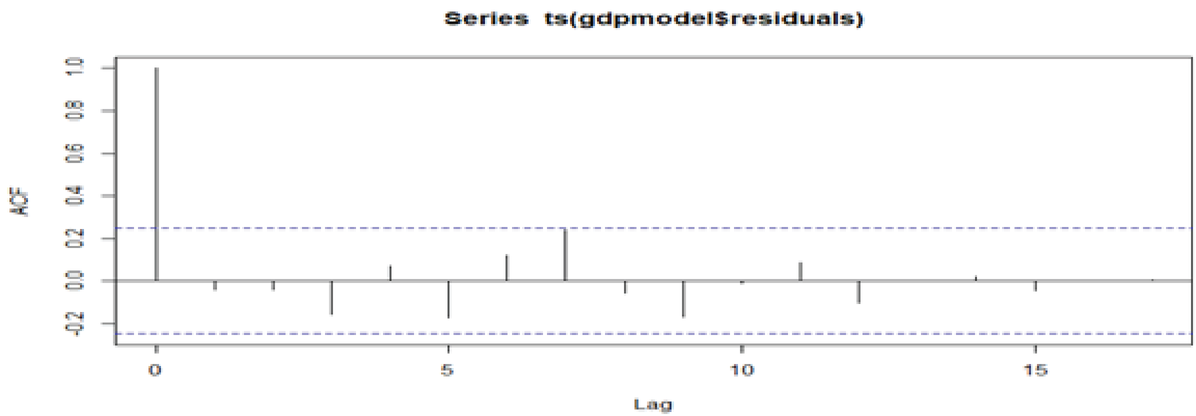


Figure 6

Partial Autocorrelation Function Graphs of the Residual Series.

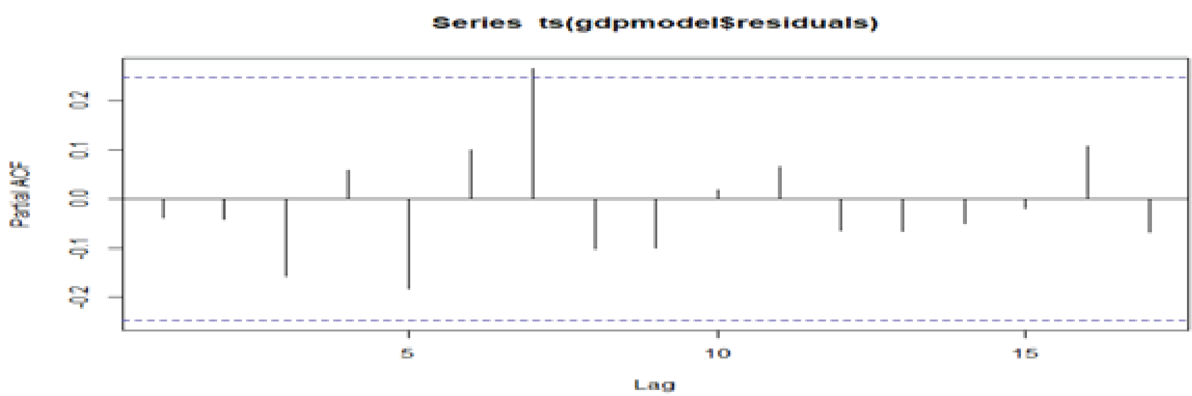


Figure 7

Q-Q Plot of the Residual Series.

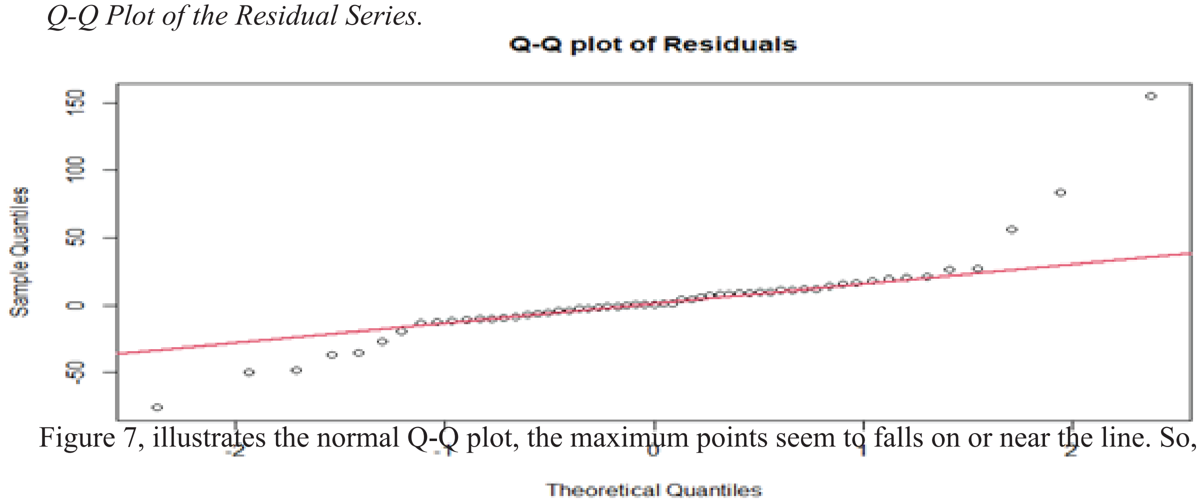


Figure 7, illustrates the normal Q-Q plot, the maximum points seem to falls on or near the line. So, it can be said that the model residuals are normally distributed which is one of the assumptions of linear regression.

Table 3

Estimated Coefficients and Model Adequacy Criterion

Model	I			II		
Process	AR_1	AR_2	MA_1	AR_1	AR_2	MA_1
Coefficients	0.0665	-0.4065	-0.7644	0.0664	-0.4081	-0.7655
Standard Error	0.1333	0.1264	0.0911	0.1216	0.1143	0.0842
AIC		618.36			689.70	
BIC		626.81			698.64	

Table 4

Model Comparison Measures

Model	RMSE	MAE	MPE	MAPE	MASE
I	34.98561	20.4341	1.276214	6.908845	0.8097521
II	32.95309	18.13002	1.138476	6.129198	0.6330358

Table 3 represents the estimated coefficients and model adequacy criterion for both Model I and Model II. Model II estimates have smaller standard errors (Table 3) with smaller RMSE, MAE, MPE, MAPE and MASE. Table 4 which indicate smaller associated residuals for model fit. However, from the viewpoint of sample-based information, of AIC and BIC, Model I is a better representative for the considered time series.

3. Forecasting of GDP for Nepal

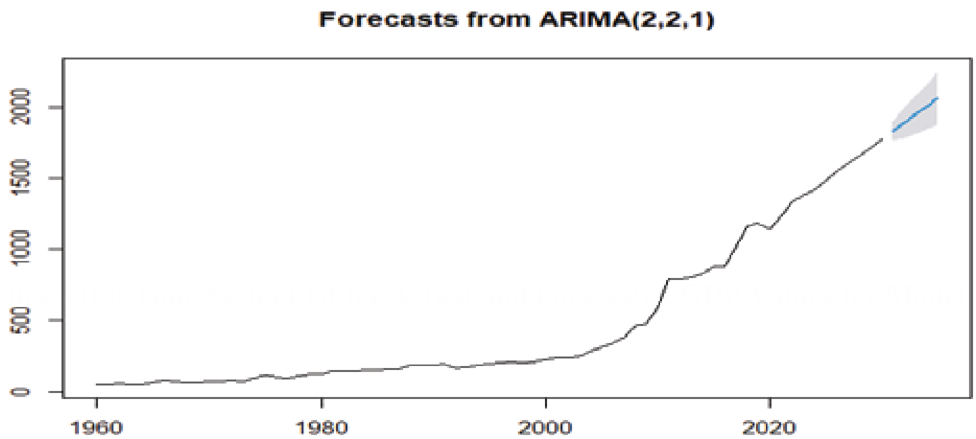
One use of a model is to anticipate the future values of a time series after the model has been discovered, its parameters determined, and its diagnostics examined. Table 5 provides the GDP projections for the time window 2023 – 2037. Figure 8 (a) and Figure 8 (b) shows the trend of the actual and forecasted GDP values with their 95% confidence limits for the years 1960 – 2022, as well as the GDP that would be predicted, based on these 63 years for the next 15 years forecasted values of GDP for the Model I and Model II respectively by using the proposed ARIMA (2, 2, 1) model. The Model I predicted values indicate that the Nepal GDP specific growth run continues. Since the national economy is a complex and dynamic system, and that the outcome is simply a predicted number, therefore in order to prevent the economy from suffering from strong fluctuations, the administrators we should maintain the stability and continuity of microeconomic regulation and control with special attention to the risk of adjustment in economic operation, (Wabomba et al. 2016). We should also adjust the corresponding target value in light of the current situation. Thus, to assess robustness of the model-based prediction we next include the first eight predicted values for the years

2023 – 2030 in the original time series data base. The same R program is now re-run for the composite period 1960 – 2030. Again ARIMA (2, 2, 1) emerges as the best fit model on the basis of AIC from among the eleven considered models. With the new compounded data model (Model II, henceforth). We predict the next seven annual GDP values for the period 2031 – 2037. 95% confidence interval for Model II are found to be shorter (Table 5) thus retrieving that Model II is more efficient for predictive purpose

Table 5
Forecasted of GDP for Nepal

Year	Forecasted GDP per capita		95% Confidence Interval			
	Model -I	Model-II	Model-I		Model-II	
			Lower limit	Upper limit	Lower limit	Upper limit
2023	1384.426		1312.961	1455.891		
2024	1421.475		1304.142	1538.808		
2025	1481.899		1338.590	1625.207		
2026	1548.280		1379.252	1717.308		
2027	1605.555		1403.154	1807.956		
2028	1659.803		1421.051	1898.554		
2029	1717.551		1442.946	1992.155		
2030	1776.762		1465.340	2088.185		
2031	1834.648	1834.645	1484.161	2185.135	1767.657	1901.634
2032	1891.851	1891.843	1500.546	2283.156	1781.928	2001.758
2033	1949.547	1949.538	1516.257	2382.838	1815.423	2083.653
2034	2007.554	2007.545	1531.025	2484.084	1849.483	2165.607
2035	2065.381	2065.370	1544.189	2586.573	1876.158	2254.582
2036	2123.070	2123.056	1555.862	2690.278	1899.910	2346.202
2037	2180.822	2180.806	1566.364	2795.281	1924.230	2437.382

Figure 8 (b)
Time Series Plot for Actual and Forecasted GDP Values for Model II.



Conclusion and Recommendations

Our study discovers that the proposed ARIMA models are useful for future GDP per capita of Nepal. For the development and assessment of different ARIMA models, we have used annual data from 1960 – 2022 and found that the ARIMA (2, 2, 1) model as the most appropriate one. Our findings are in line with earlier research, which discovered that ARIMA models as effective tools of forecasting economic indicators like GDP. Our present study makes a practical contribution by providing in-depth explanations of how ARIMA models might be used to predict Nepal's per-capita GDP. The best fitted ARIMA model has been used to obtain forecast values for next one and half decade. The finding shows that the forecast values of Nepal's GDP will be $1384.426 per capita in 2023 and $2180.822per capita in 2037. The results show that Nepal a growing GDP substantially, however, this growth is not sufficient. So, it is suggested to the policy maker to invest more on areas of infrastructure development, research and development, and facilitate to establishing more startups with focus on green investment and sustainability.

Model II reinforces that short- term prediction of GDP is more precise (Table 5). Model based prediction enable planners to address specific economic challenges such as resource allocation. A robust GDP prediction could guide the government about the expected revenue generation, and expenditure optimization. Business and governments could plan investment, inventory management and volume of production. Statistical prediction thus empowers a decision maker with scope for evidence informed decision- making. However, one must be always aware that any model is sustainable as long as the background conditions such as other influencing market forces remain at the same level.

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Liquidity Crunches in the Banking Industry of Nepal

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Abstract

Liquidity crunches in the Nepalese banking sector have been a critical issue for the last few years. This research aims to examine the causes, consequences, and improvement of liquidity crunches in the context of the Nepalese banking industry. This study is based on primary sources with explanatory and descriptive research design. The study population is all the bankers and experts involved in the banking sector - commercial banks, development banks, and regulatory authorities of Pokhara Metropolitan City, Kaski, Nepal. The five-point Likert scale questionnaires were developed to collect the data from the 213 banking professionals based on the non-probability sampling method. This study found a significant impact of government capital expenditure, bank lending policy, and monetary policy on liquidity crunches in the banking industry. The liquidity crunch hampers the growth of business and industry, and discourages entrepreneurs because they are not getting loanable funds as and when required. It creates instability in the financial system, deteriorates the investment environment, generates high inflation and unemployment rates , and affects economic growth rate in the country. The government should increase capital expenditure capacity . Bank lending policy should be directed towards a productive investment. Appropriate monetary policy should be designed to address the liquidity crunch problem in the banking sector. For this, the government and regulatory authority may promote an inclusive and sound financial system in the nation.

Keywords

Banking industry
Bank lending policy
Capital expenditure
Liquidity crunch
Monetary policy

TODAY, THERE IS a growing concern among regulatory authorities and policymakers about maintaining financial stability

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for sustained economic growth (Akalpler, 2023; Akyüz, 2006; Creel, Hubert, & Labondance, 2015). Liquidity crunches threaten the stability of the banking industry (Baglioni, 2012; Chen, Lee, & Shen, 2022). There has been a lack of loanable funds in the Nepalese banking industry in the last few years (Lamichhane, 2022). It is often seen as the primary cause of the banking sector's repeated liquidity crises (Khiaonarong et al., 2023). As per the Economic Survey 2022-23 of Nepal, overall capital expenditure in fiscal year 2022-23 was 57.2% of the capital budget. The capital expenditure in the fiscal year 2021-22 was 64.8% of the capital budget, and for the fiscal year 2020-21, it was hardly half (46.2%) of the capital budget at the federal level (MOF, 2023). Based on the above data, low capital expenditure has been a long-standing problem in the Nepalese economy.

A sound and stable financial system facilitates the economic growth of the nation (Levine, 1997; Paun et al., 2019). A strong financial institution promotes capital formation and encourages investment in productive businesses (Habibullah & Eng, 2006; Haini, 2020). The development of the financial sector has a significant impact on the economic growth of the nation through the mobilization of accumulated capital into productive sectors (Dhungana, 2014; Paun et al., 2019; Puatwoe & Piabuo, 2017). Economists have generally reached a consensus on the significant role of financial institutions in economic development (Alawi et al., 2022; Chinoda & Kapingura, 2023; Dhungana, 2014; Ustarz & Fanta, 2021). Schumpeter (1934) concluded that the financial sector is an engine of economic growth by funding productive investment.

A modern and healthy financial system is required for accelerated economic growth to pool and utilize financial resources, reduce costs and risks, expand and diversify opportunities, enhance the efficiency of resources, promote productivity, and facilitate economic growth (Dhungana, 2019; Hasan et al., 2009). Therefore, the financial system needs to be structured on the grounds of international norms and practices that help to develop a strong financial foundation in the country (Jeucken, 2001; Ozili, 2021). The financial and stable financial sector provides the foundations for economic stability and growth of the nation (Kuznyetsova et al., 2022; Shawtari et al., 2023). Liquidity issues are frequently caused by flaws in fund management or bad economic situations, which result in erratic liquidity withdrawals by depositors (Arif & Nauman Anees, 2012). Because banks issue liquid liabilities yet invest in illiquid assets, banks frequently discover liquidity mismatches between asset and liability sides that need to be balanced (Zhu, 2005). As a result, the bank's capacity to monitor and manage liquidity demand and supply is critical for maintaining banking operations (Bianchi & Bigio, 2022; Diamond & Rajan, 2005). If a bank fails to close the gap, it may face liquidity issues, as well as unwillingness exposures like high interest rate risk, large bank reserves or capital requirements, and a tarnished reputation (Davies, 2013; Ellis et al., 2022).

Commercial banks are the most significant institutions for mobilizing savings and allocating financial resources (Bernard Azolibe, 2022; Dhungana, 2011; Quartey, 2008). They become an important economic growth and development phenomenon because of their many responsibilities (Dhungana, 2014; Haapanen & Tapio, 2016). To do business securely, keep positive relationships with stakeholders, and prevent liquidity issues, banks—as financial institutions—should appropriately manage the supply and demand of liquidity. Unpredictable liquidity withdrawals by depositors due to adverse economic conditions or shortcomings in fund management are the usual causes of liquidity issues (DeYoung & Jang, 2016; Rani, 2017).

Banking sectors are facing these problems due to the low capital expenditure of the government, trade deficit, low deposit ratio, and other factors. Entrepreneurs or business organizations are not getting loanable funds from banking institutions efficiently and adequately due to the problem of liquidity crunch. This research aims to examine the causes, consequences, and improvement of liquidity crunches in the context of the Nepalese banking industry.

Review of Literature

Keynes developed the idea of liquidity preference from the standpoint of issues related to stores of value (Kregel, 1988; Wells, 1971). The price that balances the desire to hold wealth in the form of cash with the amount of accessible cash is first described as the rate of interest (Tobin, 1965). Following a brief explanation, he defines the "schedule of liquidity-preference" as a smooth curve that shows the interest rate falling as the quantity of money increases and introduces transactional, precautionary, and speculative reasons (Keynes, 2018). Thus, ‘managing money' and ‘managing expectations’ are the two facets of Keynes's policy (Rivot, 2013).
Regulatory and supervisory theory emphasizes the function of regulatory and supervisory organizations to prevent liquidity crises (VanHoose, 2007). It implies that sound regulation and supervision can assist in locating and reducing risks that cause liquidity issues in financial organizations (Brownbridge & Kirkpatrick, 2000; Ruozi & Ferrari, 2013). The key objectives of financial regulation are (1) to safeguard customers or investors; (2) to ensure the financial stability and solvency of financial institutions; (3) to promote fairness, efficiency, and transparency in the securities markets; and (4) to support a sound financial system. Consumer protection, financial system stability, and efficiency maximization are the three primary reasons financial institutions must be regulated (Botha & Makina, 2011; Buttigieg et al., 2020; Goodhart, 1989).
The microeconomic roots of bank runs must be explained. There are two main points of view. Diamond and Dybvig (1983), Cooper and Ross (1998), Chang and Velasco (2000, 2001), Park (1997), Jeitschko and Taylor (2001) are among the economists who believe that bank runs are self-fulfilling prophesies that are unrelated to the state of the real economy. The second point of view, as evidenced by empirical studies by Gorton (1988), Calomiris and Gorton (1991), Calomiris and Mason (2003), and recent theoretical work by Allen and Gale (1998), Zhu (2001), Goldstein and Pauzner (2005), sees bank runs as a phenomenon closely related to the state of the business cycle. The banking sector's liquidity problem results from certain banks' aggressive lending practices (Karim et al., 2021).

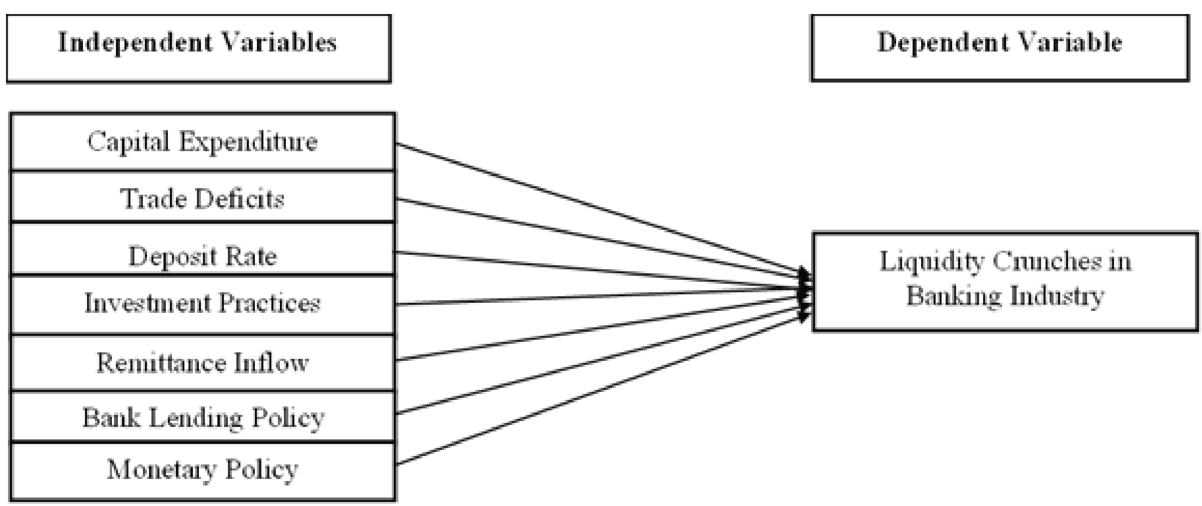
Because banks play such a critical role in the transmission of monetary policy, the availability of liquidity, and intermediation, structural, legal, and regulatory changes have an impact on bank operations, efficiency, and competitiveness (Wang, 2003). The banking sector is the backbone of the financial system and plays an essential financial intermediary role. Rajan and Zingales (1998), Levine (1998), and Levine and Zervos (1998), among others, suggest that the well-being of the banking sector is positively related to economic growth.

Many empirical findings reveal that liquidity, non-interest income, credit risk, and capitalization all positively and substantially influence bank performance (Abedifar et al., 2018; Mehzabin et al., 2022). Regarding the influence of macroeconomic indicators on bank profitability, the findings reveal that economic growth has a positive and considerable impact (Klein & Weill, 2022). Islamic banks are suffering from a liquidity problem, which is having a severe effect on their performance. While some banks are experiencing excess liquidity, others are experiencing a shortage, and in both cases, their profitability is significantly impacted (Islam & Amir, 2016).

Mainali (2022) highlighted the key factors contributing to the liquidity crunch in the context of Nepal: Low deposits, increased lending, decline in the forex reserve, people investing in commodities like gold and silver, low increasing rate of remittance, decrease in export, increase in imports, increased living standard of the people, which leads to excessive consumption of luxurious goods, investment in the unproductive sector, investment made in a foreign land, where people feel safe about their investment, illegal hundis of money to the foreign country, and political instability.

Figure 1

Conceptual Framework of Liquidity Crunches in the Banking Industry



There is limited study on liquidity crunches in the banking industry, and no study has been found in the context of Nepal. Liquidity crunch issue is common in developing countries like Nepal. Developed countries are not facing the problem of liquidity crunches. This research is novel and expected to provide new literature on liquidity crunches in the banking sector.

Methodology

This research is based on explanatory and descriptive research design to investigate the causes, consequences, and strategies for the improvement of liquidity crunches in the Nepalese banking industry with references to Pokhara Metropolitan City, Kaski, Nepal. The survey includes the opinion of the financial institutions, including commercial banks, development banks, and regulatory authorities. The population of the study is all the bankers/experts who have been involved in the banking sector for the last three or more years. Yamaro Yamane formula was used to calculate the sample size suggested by (Israel, 1992; Olayinka et al., 2013) and the desired sample size was found 231. However, seven forms were incomplete, and eleven respondents did not respond even if followed up for the response. As a result, the final sample size was 213 for this study. The non-probability sampling (convenience sampling) method was used. The primary data was collected through structured questionnaires from the banking professionals involved in the financial sectors for the last three or more years.

Results and Discussion

Demographic Profile of Respondents

The demographic profile of respondents includes gender, banking experience, involvement in banks, education level, designation, and specialization area of the respondents. The demographic profile of respondents has been presented in Table 1.

Table 1

Demographic profile

Demographic variables		No. of respondents	Percentage
Gender	Male	125	59.6
	Female	86	40.4
Banking experience	3 to 5 years	126	59.2
	5 to 10 years	69	32.4
	Above 10 years	18	8.4
Involvement	Commercial banks	166	77.9
	Development banks	35	16.5
	Regulatory authority	12	5.6
Education level	Intermediate	4	1.9
	Bachelors	68	31.9
	Masters	135	63.4
	Above masters	6	2.8
Designation	Director	12	5.6
	Branch Manager	22	10.3
	Officer	75	35.3
	Non-Officer	104	48.8
Specialization	Finance	143	67.1
	HRM	8	3.8
	Marketing	24	11.3
	Others	38	17.8
Total		**213**	**100**

Note: *Field survey 2023 and authors' calculation.*

able 1 shows that the majority of the respondents are male (59.6%), with banking experience elow five years (59.2%), master-level education (63.4%), and finance specialization (67.1%). In terms of involvement in financial institutions, most respondents are involved in commercial banks (77.9%), and more than half of the total respondents (51.2%) are officers and above level.

Capital Expenditure and Liquidity Crunch

One of the significant factors of the liquidity crunch is the capital expenditure of the government. Capital expenditure related causes for liquidity crunches have been presented in Table 2.

Table 2

Capital Expenditure Related Causes for Liquidity Crunch

Capital Expenditure Related Factors	**Descriptive Statistics**			
	N	**Mean**	**SD**	**Decision**
The low capital expenditure of the government is a highly responsible factor for liquidity crunches in the banking sector.	213	**3.88**	0.971	High perception
Liquidity crunch increases if the government does not spend its capital expenditure on time.		3.76	**1.058**	High perception
High capital expenditure ensures liquidity in the banking sector.		3.56	0.982	Low perception
An ineffective government monitoring system on capital spending increases the liquidity crunch in the economy.		**3.88**	1.016	High perception
Unnecessary hurdles in public procurement increase liquidity crunch in the economy.		3.58	**0.947**	Low perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 18.66/5 = 3.73

Table 2 shows that the majority of the respondents appeared to feel that the low capital expenditure of the government was a highly responsible factor for liquidity crunches in the banking sector. Likewise, most participants felt that liquidity crunch increased when the government did not spend its capital expenditure on time. They also perceived that an ineffective government monitoring system on capital spending increased the liquidity crunch in the economy. This study is consistent with increased bank panic when new loans for actual investments like working capital and capital exenditures decreased (Ivashina & Scharfstein, 2010). The performance of the borrowers is adversely affected by unfavorable capital shocks to banks. Businesses that mainly depended on banks for funding viewed a more significant reduction in capital spending (Chava &

Purnanandam, 2011).

Trade Deficit and Liquidity Crunch

The trade deficit is another factor that creates a liquidity crunch in the banking sector. Table 3 shows the trade deficit related causes for liquidity crunch.

Table 3

Trade Deficit Related Causes for Liquidity Crunch

Trade Deficit Related Factors	**Descriptive Statistics**			
	N	**Mean**	**SD**	**Decision**
A trade deficit is a highly responsible factor for liquidity crunches in the banking sector.		**3.97**	1.01	High perception
Liquidity crunch increases in the banking sector when the size of imports increases in the country.		3.93	**0.97**	High perception
Liquidity crunch increases in the banking sector when the size of exports decreases.	213	**3.62**	**1.11**	Low perception
Trade surplus ensures liquidity in the banking sector.		3.68	1.01	Low perception
The government's highly liberal policy (such as luxurious products and self-finance abroad study) has increased liquidity crunches.		3.75	1.02	Low perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 18.95/5 = 3.79

Table 3 shows that the majority of the respondents expressed their opinion that a trade deficit is a highly responsible factor for liquidity crunches in the banking sector. Likewise, most participants felt that the banking sector's liquidity crunch increases when the size of imports increases in the country. This study is consistent with the fact that the trade deficit has been considered a factor in the liquidity problem (Islam, 2020).

Deposit Rate and Liquidity Crunch

The deposit rate is a responsible factor in liquidity crunch. The deposit rate related causes for liquidity crunch have been presented in Table 4.

Table 4

Deposit Rate Related Causes for Liquidity Crunch

Deposit Rate Related Factors	**Descriptive Statistics**			
	N	**Mean**	**SD**	**Decision**
A low deposit ratio is a highly responsible factor for liquidity crunches in the banking sector.		3.66	**1.04**	High perception
Liquidity crunch increases in the banking sector when there is poor financial inclusion.		**3.77**	**0.93**	High perception
Poor financial literacy reduces the low deposit ratio and increases liquidity crunches.	213	3.66	0.99	High perception
A low saving rate decreases the deposit ratio and increases the liquidity crunches in the banking sector.		3.47	1.04	Low perception
Liquidity crunch increases when there is a more significant influence on the informal economy.		**3.42**	0.95	Low perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 17.98/5 = 3.60

Table 4 shows that the majority of the respondents appeared to feel that the liquidity crunch increases in the banking sector when there is poor financial inclusion. Likewise, a low deposit ratio is a highly responsible factor for liquidity crunches in the banking sector. They also perceived that poor financial literacy reduces the low deposit ratio and increases liquidity crunches. This study is consistent with financial stability, which may be influenced by high and growing levels of financial inclusion. When there is economic instability, credit busts are less noticeable in nations with more inclusive banking systems (Ahamed & Mallick, 2019; Neaime & Gaysset, 2018).

Investment Practices and Liquidity Crunch

Investment practice is another factor that affects liquidity crunch. Table 5 shows the investment related causes for liquidity crunch.

Table 5

Investment Related Causes for Liquidity Crunch

Investment Related Factors	**Descriptive Statistics**			
	N	**Mean**	**SD**	**Decision**
Unproductive investment is a highly responsible factor for liquidity crunches in the banking sector.		**4.09**	**0.91**	High perception
The excessive consumption of luxurious goods (such as gold and silver) increases liquidity crunches.		3.79	1.06	Low perception

Investment in real estate increases liquidity crunches in the banking sector.	213	**3.66**	**1.17**	Low perception
The country's lack of a good business environment is the reason behind the liquidity crunch.		3.88	1.07	High perception
Unstable government policy on investment increases liquidity crunches in the banking sector.		4.00	1.05	High perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 19.42/5 = 3.88

Table 5 shows that the majority of the respondents expressed their opinion that unproductive investment is a highly responsible factor for liquidity crunches in the banking sector. Likewise, most participants felt that unstable government policy on investment increases liquidity crunches in the banking sector. Also, they appeared to think that the country's lack of a good business environment is the reason behind the liquidity crunch. This study is consistent with a liquidity crunch leading to the collapse of asset prices, such as investment in real assets (Calvo, 2012).

Remittance Inflow and Liquidity Crunch

Remittance inflow is a responsible factor in the liquidity crunch. The remittance related causes for liquidity crunch have been presented in Table 6.

Table 6

Remittance Related Causes for Liquidity Crunch

Remittance Related Factors	Descriptive Statistics			
	N	Mean	SD	Decision
A low remittance rate is a highly responsible factor for liquidity crunches in the banking sector.		3.63	1.01	Low perception
Increased remittance in the economy ensures liquidity in the banking sector.		**3.92**	**0.98**	High perception
The informal way of sending remittances increases liquidity crunches in the banking sector.	213	**3.55**	**1.11**	Low perception
The liquidity crunch increases when remittances are used to import luxury goods or to invest in the unproductive sector.		3.76	1.02	High perception
Liquidity crunch increases when there is poor financial education for migrant workers regarding the effective utilization of remittance.		3.62	1.00	Low perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 18.48/5 = 3.70

Table 6 shows that the majority of the respondents appeared to feel that the increased remittance in the economy ensures liquidity in the banking sector. Likewise, most respondents felt that the liquidity crunch increases when remittances are used to import luxury goods or invest in the unproductive sector. This study is consistent with remittances from migrants helping the financial sector grow in both size and effectiveness (Odugbesan et al., 2021).

Bank Lending and Liquidity Crunch

Bank lending is another factor that affects the liquidity crunch. Table 7 shows the banking lending related causes for liquidity crunch.

Table 7

Bank Lending Related Causes for Liquidity Crunch

Bank Lending Related Factors	Descriptive Statistics			
	N	Mean	SD	Decision
Bank lending policy is a highly responsible factor for liquidity crunches in the banking sector.		**3.48**	**1.06**	Low perception
Excessive lending in unproductive sectors is a significant reason for the liquidity crunch.		**3.87**	0.97	High perception
Bank lending policy on the economy's priority and productive sectors helps minimize the liquidity crunches.	213	3.82	0.99	High perception
The main reason for the liquidity crunch is the lack of deposits compared to loans.		3.78	0.98	High perception
The liquidity problem increases when BFIs adopt an unstable and poor lending policy.		3.81	**0.94**	High perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 18.76/5 = 3.75

Table 7 shows that the majority of the respondents expressed their opinion that excessive lending in unproductive sectors is a major reason for the liquidity crunch. Likewise, most of the participants felt that bank lending policy on priority and productive sectors of the economy helps to minimize liquidity crunches. Also, they appeared to feel that the liquidity problem increases when BFIs adopt an unstable and poor lending policy. The majority of respondents perceived that the main reason for the liquidity crunch is the lack of deposits compared to loans. This study is consistent with the banking sector's liquidity problem as a result of aggressive lending practices (Karim et al., 2021). When making lending decisions, commercial banks should consider the nation's overall macroeconomic conditions, factors that impact GDP generally, and their liquidity ratio specifically (Timsina, 2014).

Monetary Policy and Liquidity Crunch

Monetary policy is a responsible factor in the liquidity crunch. Monetary policy related causes for liquidity crunch have been presented in Table 8.

Table 8
Monetary Policy Related Causes for Liquidity Crunch

Monetary Policy Related Factors	Descriptive Statistics			
	N	Mean	SD	Decision
Monetary policy is a highly responsible factor for liquidity crunches in the banking sector.		3.76	1.03	High perception
The poor monetary tools increase liquidity crunches.		**3.82**	**0.90**	High perception
A higher interest (lending) rate increases the liquidity crunches in the banking sector.	213	**3.31**	**1.08**	Low perception
The ineffective role of regulatory authority increases liquidity crunches.		3.77	0.96	High perception
The poor financial market increases liquidity crunches.		3.78	0.96	High perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 18.44/5 = 3.69

Table 8 shows that the majority of the respondents appeared to feel that the poor monetary tools increase liquidity crunches. Likewise, most of the respondents felt that the poor financial market increases liquidity crunches. Also, they perceived that the ineffective role of regulatory authority increases liquidity crunches. The majority of respondents felt that monetary policy is a highly responsible factor for liquidity crunches in the banking sector. This study is consistent with a decline in bank liquidity creation is strongly correlated with monetary policy tools (Monnet & Vari, 2023; Pham et al., 2021).

Consequences of Liquidity Crunch

The liquidity crunch affects the growth of business and industry, discourages investment and creates unemployment in the country. Table 9 shows the consequences of liquidity crunch.

Table 9
Consequences of Liquidity Crunch

	Descriptive Statistics			
Consequences Related Factors	N	Mean	SD	Decision
Hampers the growth of business and industry.		**4.16**	0.98	High perception
Discourages entrepreneurs because they are not getting loanable funds as and when required.		4.11	0.97	High perception
Loss of public confidence in the formal financial institutions.		3.85	0.92	Low perception

Poor utilization of factors of production		3.90	0.87	Low perception
The high unemployment rate in the country		3.92	0.95	High perception
Greater influence of the informal economy	213	3.77	0.87	Low perception
Increases high level of import and trade deficit.		3.74	1.00	Low perception
Instability in the financial system		4.08	**0.83**	High perception
Failure of the banks and regulatory institutions		**3.62**	**1.04**	Low perception
Higher inflation rate		3.95	0.93	High perception
Lack of investment environment.		4.04	0.94	High perception
A low economic growth rate exists in the country.		3.92	0.93	High perception

Note: *Field survey 2023 and authors' calculation.*

Weighted average: 47.06.44/5 = 3.92

Table 9 shows that the majority of the respondents perceived that the liquidity crunch hampers the growth of business and industry, discourages entrepreneurs because they are not getting loanable funds as and when required, creates instability in the financial system, deteriorates the investment environment, creates high inflation and unemployment rate in the country, and a low economic growth rate exists in the country. This study is consistent with investment declines significantly and persistently as a result of liquidity shock (Quint & Tristani, 2018).

Correlation among the Liquidity Crunch Variables

The correlation between a dependent variable (LC) and independent variables (CE, TD, DR, IP, RI, BLP, and MP) has been presented. The correlation among the liquidity crunch variables has been shown in Table 10.

Correlation among the Liquidity Crunch Variables

Variables	CE	TD	DR	IP	RE	BLP	MP	CLC
CE	1							
TD	0.543**	1						
DR	0.375**	0.528**	1					
IP	0.438**	0.619**	0.555**	1				
RI	0.369**	0.505**	0.451**	0.625**	1			
BLP	0.341**	0.472**	0.501**	0.617**	0.542**	1		
MP	0.366**	0.376**	0.462**	0.525**	0.508**	0.610**	1	
LC	0.495**	0.506**	0.514**	0.587**	0.524**	0.614**	0.694**	1

Note: *Field survey 2023 and authors' calculation.*

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

Table 10 shows that among the dependent and independent variables, there is a moderate level (0.40 to 0.69) of positive significant correlation between liquidity crunches (LC) and monetary policy (MP), bank lending policy (BLP), investment practices (IP), remittance inflow (RI), deposit rate (DR), trade deficit (TD), and capital expenditure (CE) respectively.

Regression Analysis for the Consequences of Liquidity Crunch

The multiple regression model was applied to determine the impact of independent variables such as capital expenditure, trade deficit, deposit rate, investment practices, remittance inflow, bank lending policy, and monetary policy on the dependent variable – the consequences of liquidity crunch. The regression analysis for the liquidity crunch has been presented in Table 11.

Table 11

Regression Analysis for the Liquidity Crunches

Variables	Beta	T-value	P-value	VIF	Decision
(Constant)	0.635	3.211	0.002	-	-
CE	0.155	3.219	**0.001**	1.496	Supported H_1
TD	0.054	1.076	0.283	2.071	Not supported H_2
DR	0.078	1.349	0.179	1.707	Not supported H_3
IP	0.074	1.304	0.194	2.455	Not supported H_4
RI	0.036	0.747	0.456	1.872	Not supported H_5
BLP	0.131	2.523	**0.012**	2.064	Supported H_6
MP	0.354	6.825	**0.000**	1.815	Supported H_7
R- Square	**Adjusted R-Square**	**df**	**F-value**	**P-value**	
0.610	0.596	7, 204	45.516	0	Good model

Note: *Field survey 2023 and authors' calculation.*

The study reveals an R square value of 0.610, indicating that 61% of the variation in the liquidity crunches is explained by the variation in all the independent variables. To assess the presence and degree of multicollinearity in the regression model, the tolerance and variance inflation factor (VIF) was calculated. All the assumptions of linearity and normality were checked and validated.
A multiple regression analysis was conducted to predict the liquidity crunch on capital expenditure, trade deficit, deposit rate, investment practices, remittance inflow, bank lending policy, and monetary policy. The following hypotheses show the outcome of regression:

H_1 : *Government capital expenditure significantly impacts liquidity crunches in the banking industry.*

The linear regression model shows a significant impact of government capital expenditure on liquidity crunches in the banking industry at a 0.01 level of significance. The study finds a significant impact of the liquidity shortage on the quality of capital investment decisions (Chava & Purnanandam, 2011; Hellowell & Vecchi, 2013).

H_2: *Trade deficits significantly affect liquidity crunches in the banking industry.*

The linear regression model shows no significant impact of trade deficit on liquidity crunches in the banking industry at a 0.01 level of significance. However, the trade deficit has been considered a factor in the liquidity problem (Islam, 2020).

H_3: *The deposit rate significantly impacts liquidity crunches in the banking industry.*

The linear regression model shows no significant impact of deposit rate on liquidity crunches in the banking industry at a 0.01 level of significance. But when there is financial instability, credit busts are less noticeable in nations with more inclusive banking systems (Ahamed & Mallick, 2019).

H_4: *Investment practices significantly affect the liquidity crunches in the banking industry.*

The linear regression model shows no significant impact of investment practices on liquidity crunches in the banking industry at a 0.01 level of significance. However, liquidity crunch leads to the collapse of asset prices, such as investment in real assets (Calvo, 2012).

H_5: *The remittance inflow significantly impacts liquidity crunches in the banking industry.*

The linear regression model shows no significant impact of remittance inflow on liquidity crunches in the banking industry at a 0.01 level of significance. But remittances from migrants help the financial sector grow in both size and effectiveness (Odugbesan et al., 2021).

H_6: *Bank lending policy significantly impacts liquidity crunches in the banking industry.*

The linear regression model shows a significant impact of bank lending policy on liquidity crunches in the banking industry at a 0.01 level of significance. This study is consistent with the banking sector's liquidity problem as a result of aggressive lending practices (Karim et al., 2021).

H_7: *Monetary policy significantly impacts liquidity crunches in the banking industry.*

The linear regression model shows a significant impact of monetary policy on liquidity crunches in the banking industry at a 0.01 level of significance. This study is consistent with a decline in bank liquidity creation, which is strongly correlated with monetary policy tools (Monnet & Vari, 2023; Pham et al., 2021).

Conclusion and Suggestions

There has been a significant liquidity problem in Nepal's banking sector for the past few years. This study found a significant impact of capital expenditure of government, bank lending policy, and monetary policy on liquidity crunches in the banking industry. But there is no impact of trade deficit, deposit rate, investment practices, and remittance inflow on liquidity crunches. The liquidity crunch hampers the growth of business and industry, discourages entrepreneurs because they are not getting loanable funds as required. It also creates instability in the financial system, deteriorates investment environment, generates a high unemployment rate in the country, and affects economic growth rate in the country.

A modern and sound financial system is necessary for faster economic growth of the country. For this, regulatory authory may focus on combining and leveraging financial resources, lowering costs and risks, broadening and diversifying opportunities, enhancing resource efficiency, increasing productivity, and enabling economic growth. The following suggestions are required for managing the liquidity crunches in Nepalese financial institutions: (i) The capacity of government's capital expenditure should increased. (ii) Bank lending policy should be directed towards a productive investment. (iii) Monetary policy should address the liquidity crunch problem in the banking sector. Government and regulatory authority may promote an inclusive and sound financial system in the nation. This study is based on the primary sources quantitative data confined to financial institutions located at Pokhara Metropolitan City, Kaski, Nepal. Further research can be conducted using mixed methods (quantitative and qualitative) representing different provinces of Nepal.
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An Insight on the Geometry of the Golden Ratio

[1]Iswar Mani Adhikari

Abstract

Mathematics has a strong logical interconnection with structural design and architecture. Ratios are good examples of their interconnectivity. Nature is attractive due to the proper ratios of various components in them and between others. In nature, trees, forests, leaves, flowers, fruits, Himalayas, hills, valleys, springs, rivers, lakes, etc. show a rhythmic balance and seem harmonic and aesthetically pleasing. The golden ratio is considered the most pleasing to human visual sensation not limited only to aesthetic beauty but also found prominently in the natural world and is a fascinating topic. It can be constructed in different ways depending on the geometrical structures preferred. In this paper, our focus is on the geometry of the golden ratio. .

THE GOLDEN RATIO has been used for centuries in design, architecture, structure, and construction. It has been used not only in ancient and classical structures but also in modern architecture, artwork, and photography. It is found in nature, the universe, and various aspects of mathematical sciences. The golden ratio is one of the fascinating topics. Mathematicians since Euclid have studied it. Mathematics theorem and the golden ratio have been given great importance in the history of Mathematics, as Johannes Kepler also said, Geometry has two great treasures: one is the theorem of Pythagoras, and the other is the division of a line into mean and extreme ratios. The first we may compare to a mass of gold, the second, we may call a precious jewel. For details, we refer to (Bell, 1940; Boyer, 1968; Herz-Fischler, 2000; and Pacioli, 1509).

Keywords
Golden ratio
Construction
Geometrical structures

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There has been a lot of work about its historical background and existence. However, its systematic overview from the geometrical beauty perspective, and construction design is somewhat lacking. This paper covers the state-of-the-art golden ratio based on its mathematical structures and their constructional properties instead of its mathematical properties. The rest of the paper is as follows. Section 2 is about the geometry of the golden ratio in plane geometry and Section 3 is in solid geometry. Finally, Section 4 concludes the paper.

The golden ratio in Plane Geometry

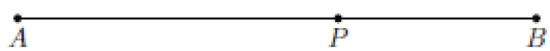
Here, we are presenting the golden ratio corresponding to plane geometry. For details, we refer to (Akhtaruzzaman & Shafie, 2011; Livio, 2002; and Markowsky, G. (1992).

1 The golden ratio corresponds to a line segment

A straight line is said to have been cut in extreme and mean ratio when, as the whole line is to the greater segment, so is the greater to the less, as illustrated in Figure 1.

Figure 1

The golden ratio in a line segment



Algorithm 1. Construction in a line segment

1. Consider line segment AB, Figure 1.
2. Consider a point P on the line AB such that AP=1 unit and $\frac{AB}{AP} = \frac{AP}{BP}$.
3. Let AB=c and form a quadratic equation from Step 2, i.e., $c^2 - c \quad 1 = 0$.
4. Solve the equation to get a real and positive root only, i.e., $c \quad \frac{1+\sqrt{5}}{2}$.
5. Such an irrational number in Step 4 is a golden ratio and is denoted by ϕ

Being an irrational number, it has non-repeating, non-terminating, and non-recurring decimal representation, like ϕ =1.6180339887498948482... This ratio is also known as the divine ratio or divine proportion. Here, we are using the term golden ratio

1.1 The golden ratio corresponds to internal division.

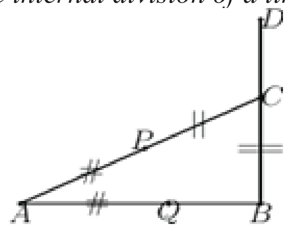
The golden ratio can be constructed corresponding to the internal division of a line segment.

Algorithm 2 Construction corresponds to the internal division in a line segment.

1. Draw a line segment AB, Figure 2.
2. Draw DB perpendicular to AB.
3. Take a point C on BD such that BC=$\frac{1}{2}$ AB.
4. Draw CB=CP and draw AP=AQ.
5. Golden ratio, $\phi \quad \frac{AQ}{BQ}$.

Figure 2

The golden ratio from the internal division of a line segment.



2 The golden ratio corresponds to exterior division.

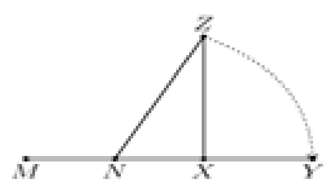
It can also be constructed in the form of the external division of a line segment.

Algorithm 3 Construction with exterior division of a line segment.

1. Draw a line segment MX, Figure 3.
2. Draw ZX perpendicular to MX with MX=ZX.
3. Take N as the midpoint of MX.
4. Draw a circle with center N and radius NZ which meets MX produced at Y.
5. Golden ratio, ϕ $\frac{MX}{XY}$.

Figure 3

The Golden Ratio corresponds to the external division of a line segment.



2 The golden ratio corresponds to different triangles.

It can also be defined as corresponding to an isosceles triangle and an equilateral triangle:

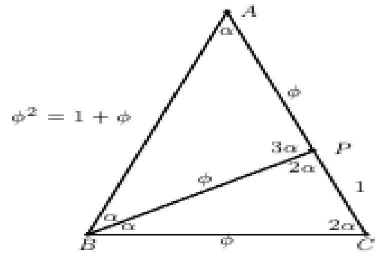
2.1 The golden ratio corresponds to isosceles triangles.

Algorithm 4. Construction corresponding to an isosceles triangle.

1. Draw an isosceles triangle ABC with $\angle ABC$ $\angle BCA$ $\frac{2\pi}{5}$, Figure 4.
2. Bisect $\angle ABC$ that meets AC at P.
3. Use geometry to calculate $\angle BPC$ $\frac{2\pi}{5}$.
4. $\Delta ABC \Delta BCP$ as their angles are $\frac{\pi}{5}$, $\frac{2\pi}{5}$, and $\frac{2\pi}{5}$, respectively.
5. Let CP=1, then BC= ϕ where, $\frac{AB}{BC} = \frac{BC}{CP} \Rightarrow AB \quad \phi$.
6. It gives golden triangle ΔABC having sides 1, ϕ and ϕ .

Figure 4

Construction of a golden cut, golden gnomon, and golden triangle.



Note that, such a cut BP in ΔABC is the golden cut where triangles ΔABP and ΔBCP are the golden gnomon and the golden triangle, respectively, Akhtaruzzaman & Shafie, 2011.

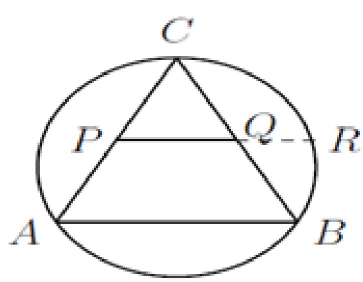
2.2 The golden ratio corresponds to an equilateral triangle.

Algorithm 5 Construction corresponding to an equilateral triangle.

1. Draw an equilateral triangle ABC, Figure 5.
2. Draw a circum-circle with the vertices of a triangle on its circumference.
3. Consider P and Q to be midpoints on AC and BC, respectively.
4. Let the PQ produced meet the circumference at R.
5. Then, the golden ratio, ϕ $\frac{PQ}{QR} = \frac{PR}{PQ}$.

Figure 5

Construction corresponding to an equilateral triangle.



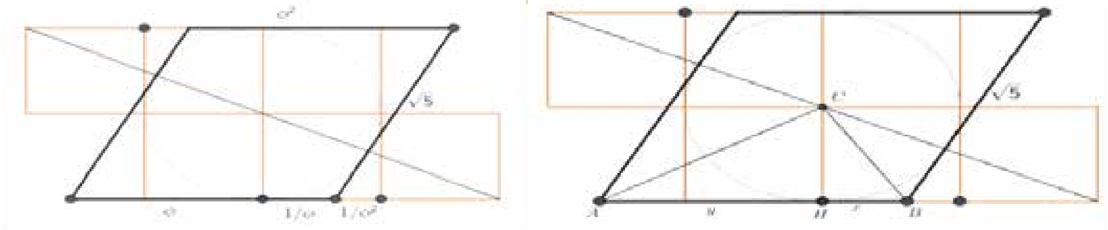
3 The golden ratio corresponds to different quadrilaterals.

Here, we are presenting its geometry corresponding to different variants of the quadrilaterals, Akhtaruzzaman & Shafie, 2011.

3.1 The golden ratio corresponds to a rhombus

Figure 6

Construction of golden ratio relative to rhombus



Algorithm 6 Construction corresponding to a rhombus.

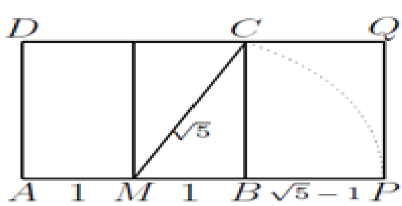
1. Put two 1×3 rectangles shifted one unit relative to each other, left part of Figure 6.
2. Draw the long diagonal of the resulting shape and the unit circle at its center.
3. Draw the tangents to the circle at the points where it meets the diagonal.
4. All sides of the obtained quadrilateral equal is $\sqrt{5}$, a rhombus.
5. Draw its (perpendicular) half-diagonals to obtain a right triangle ABC with the altitude CH, as in the right part of Figure 6.
6. Let AH=y and BH=x. Then xy=1, where $x \; \frac{\sqrt{5}-1}{2} = \frac{1}{\phi}$ and $y \; \frac{\sqrt{5}+1}{2} = \phi$
7. Finally, $\frac{AC}{} = \sqrt{\frac{y+1}{x+1}} = \sqrt{\frac{\phi+1}{\frac{1}{\phi}+1}} = \phi$
8. The ratio of the diagonals in such a rhombus is ϕ and is a golden rhombus.

3.2 The golden ratio corresponds to a rectangle.

The golden rectangle is considered the most visually pleasing of all rectangles. It can be found in the shape of playing cards, windows, book covers, file cards, canvases, etc. The canvas of the world-famous painting Monalisa was also in a golden rectangle. A distinctive feature of such a shape is that when a square section is removed from it, the remainder remains a golden rectangle, Meisner, 2018.

Figure 7

Construction of golden ratio relative to rectangle.



Algorithm 7 Construction corresponding to a rectangle.

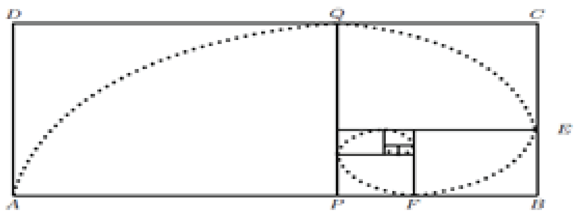
1. Construct a square ABCD on base AB, Figure 7.
2. Take a point M at AB such that AM=MB.
3. Draw a circle with center M and radius MC.
4. Produce MB to intersect the circle at P.
5. Draw a perpendicular at P which meets DC produced at Q.
6. Rectangle APQD is the golden rectangle. (BPQC is also a golden rectangle).

3.3 The golden ratio corresponds to a spiral (iterative rectangles).

A golden spiral can be constructed iteratively on golden rectangles. Removal of squares has another golden rectangle and can repeat it infinitely. Corresponding corners of the square form an infinite sequence of points on the unique logarithmic spiral called the golden spiral,

Figure 8.

Construction of golden spiral



Algorithm 8. Construction corresponding to a rectangle.

1. Construct a golden rectangle on base AB, i.e., AB=ϕ and AD=1, Figure 8.
2. Construct a square APQD by drawing a circle with a radius equals height of a rectangle.
3. Repeat Step 2 in BPQC, then QC= ϕ -1= 1/ϕ . Hence, BE=1/ϕ^2 , PF=1/ϕ^3 , and so on.
4. Inscribe quarter circles in each square to form spirals.
5. A golden spiral is shown with thick dotted lines in iterative golden rectangles.

4. The golden ratio corresponds to different pentagons.

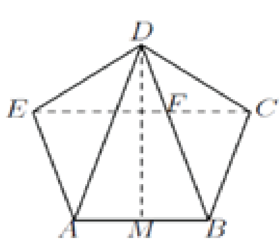
Here, we are presenting its geometry corresponding to the pentagon, Akhtaruzzaman & Shafie, 2011.

2.4.1 The golden ratio corresponds to a regular pentagon.

Geometrically, the ratio of the diagonal of a regular pentagon to its side is a golden ratio. Hence, a regular pentagon is a golden pentagon. If a pentagon is divided into diagonals from one vertex, the resulting triangles are golden. Among them, the middle one is the acute golden triangle. The other two are obtuse golden triangles.

Figure 9

A regular pentagon is a golden pentagon



Algorithm 9 Construction corresponding to a pentagon.

1. Construct a regular pentagon ABCDE on unit base AB, Figure 9.
2. Join its vertices to form diagonals, AD, BD, and BC.
3. Geometrically, DA=ϕ and DE=$\frac{1}{\phi}$

4.2 The golden ratio corresponds to a regular pentagram.

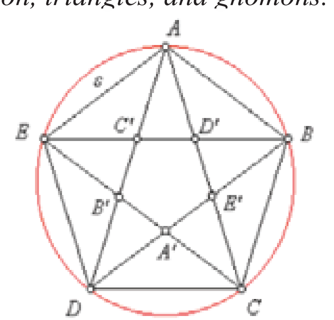
Diagonals of a regular pentagon form a regular pentagram. A regular pentagon is itself a golden pentagon. Such a pentagram is a golden pentagram. For details we refer to Meisner, 2018.

Algorithm 10. Construction corresponds to a pentagram.

1. Construct a regular pentagon ABCDE on base CD, Figure10.
2. Draw a circum-circle to this pentagon.
3. Draw all possible diagonals.
4. Geometrically, AC'EB'DA'CE'BD'A is a regular pentagram, and ithas a regular inner pentagon A'E'D'C'B' and ten isosceles triangles as:
   (i) Acute angled: ΔAC'D', ΔBD'E', ΔCE'A', ΔDA'B', and ΔEB'C'.
   (ii) Obtuse angled: ΔAC'E, ΔEB'D, ΔDA'C, ΔCE'B, and ΔBD'A.
5. In each, the ratio of the longer side to the shorter side is ϕ
6. Acute angled isosceles triangles are the golden triangles, and the obtuse angled isosceles triangles are golden gnomons.

Figure 10

A golden pentagram with golden polygon, triangles, and gnomons.



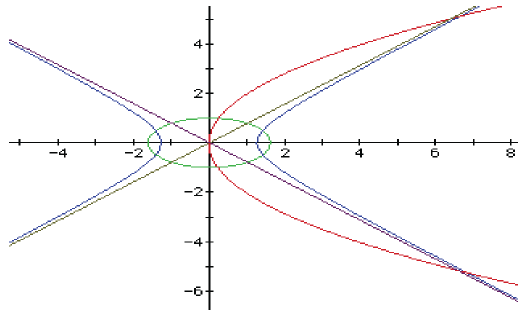
5. The golden ratio corresponds to different conics.

Conic sections are the locus of a point that moves so its distance from a fixed point (focus) is a constant ratio (eccentricity, e) to the distance from a fixed line (directrix). The shape of such a curve is determined by this ratio e, where for the parabola, e=1; for the ellipse, e<1; and for the hyperbola, e>1. Consider the eccentricities of the ellipse and hyperbola are the golden sections, a:b= ϕ Parabola: $y \;= 4x$ Ellipse: $\frac{x}{\phi} + \frac{y}{1} = 1$; and Hyperbola: $\frac{x}{\phi} - \frac{y}{1} = 1$.

1. The latus rectum of the parabola is the directrix of the hyperbola.
2. The directrix of the parabola is the image in the **y**-axis of the directrix of the hyperbola.
3. The hyperbola asymptotes intersect the parabola at the points (4ϕ 4$\sqrt{\phi}$; (-4ϕ $-4\sqrt{\phi}$

Figure 11

Graphs of golden conics



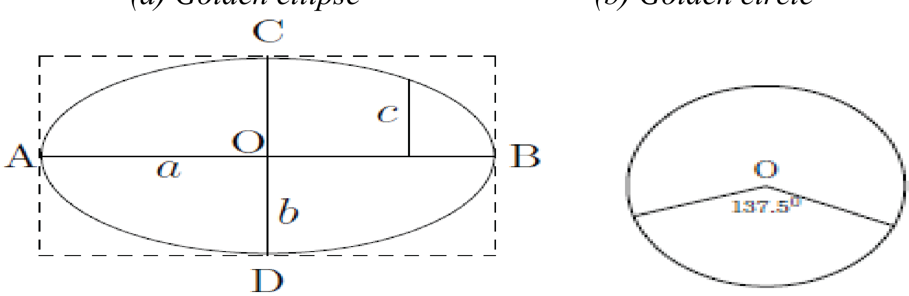
Algorithm 11 Construction of a golden ellipse.

1. Construct a golden rectangle with AB:CD= ϕ 2 (a).
2. Draw an ellipse with a and b as semi-major and semi-minor axis, as in
3. Such an ellipse is a golden ellipse $\frac{x}{a} + \frac{y}{b} = 1$, provided with a b ϕ
4. Let a, b, c, and e be the length of the semi-major axis, length of the semi-minor axis, the length of the semi-latus rectum, and the eccentricity, respectively of a golden ellipse, then its eccentricity, e $\frac{1}{\sqrt{\phi}}$ and a b c ϕ :ϕ 1.

Algorithm 12 Construction of a gold en circle.

Figure 12

(a) Golden ellipse *(b) Golden circle*



Algorithm 13 Construction of a golden circle.

1. Construct a circle in center O with an appropriate radius of users' choice.
2. Draw a central angle of $\frac{55\pi}{72}$ i.e., 137.5° at O as in Figure 12(b).
3. Geometrically, these two conjugate arcs are in proportion to the golden ratio and the angle $\frac{55\pi}{72}$ radian is called the golden angle in such a golden circle.

The Golden Ratio Corresponds to Solid Geometry.

The Golden ratio is a mystery and a matter of interest from ancient human civilization in different forms. It has a great connection in most of the beautiful solids . Here, we are presenting a few of such solids. For details, we refer to (Markowsky, 1992; and Pacioli, 1509).

3.1 The golden ratio in a golden pyramid

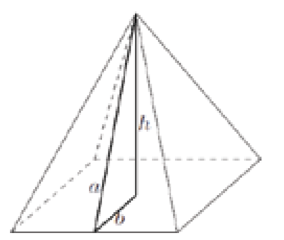
Algorithm 14. Construction algorithm of a golden pyramid.

1. Consider a square with base 2b, Figure 13.
2. Form a solid pyramid with vertical height a and slant height h such that $a \; b \quad \phi$
3. It becomes a golden pyramid where $b \; h{:}\,a \quad b \; b\sqrt{\phi} \; b\,\phi \quad 1{:}\,\sqrt{\phi} \; \phi$

Note that a golden pyramid combines two key mathematical concepts as the Pythagorean theorem and the golden ratio. If the perimeter of the regular square base of the pyramid be 2π times its vertical height, i.e. $8b \quad 2\pi$ then $b \; h{:}\,a \quad b \; \frac{4b}{}{:}\,a$ almost identical to golden pyramid with $a \; b \quad \phi$ Egyptian pyramids are very clos e to such pyramids. The Egyptian pyramid Giza, one of the seven wonders of the ancient world, is close to a golden pyramid.

Figure 13

A golden pyramid



2 The golden ratio in different structures

The golden ratio had been used in most of the famous ancient architects and sculptural structure like the great pyramid of Giza, Parthenon and even in the world-famous modern structures like the Eiffel Tower and the Taj Mahal, Figure 14 as in Livio, 2002; Meisner, 2018.

Figure 14

Pyramid of Giza, Parthenon, the Eiffel Tower, and the Taj Mahal.

3.2 The golden ratio in different modern design

The golden sections create a feeling of satisfaction, pleasure, and harmony within an image and are used extensively in modern designs and arts. For example, the Twitter logo, Apple iCloud logo, the Pepsi logo, Toyota's logo, etc. Moreover, an attractive design of a guitar, a rest chair, and a Toyota car, respectively, Figure 15 and 16. For details, Meisner, 2018.

Figure 15

The Twitter, Toyota lo0go, Pepsi Llogo and the Apple iCloud logo

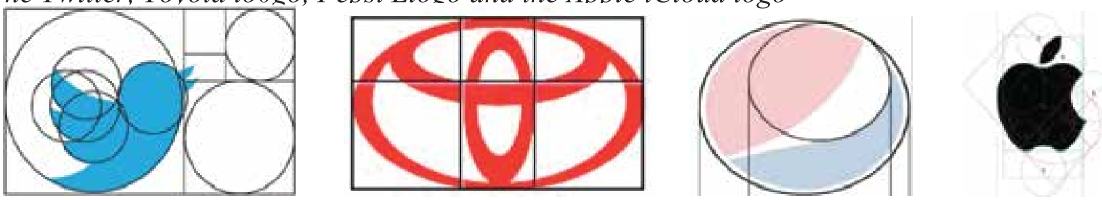


Figure 16

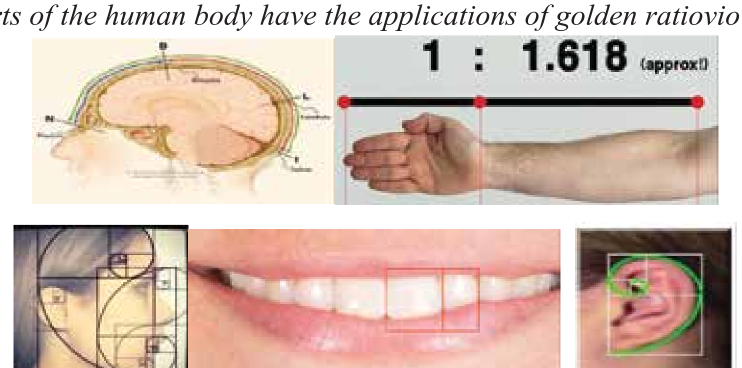
A violin, a Chaise Long and a Toyota Car

3.4 Natural construction of the golden ratio by God.

Various parts of a human body like the total height of a body and the distance between head to fingertips; distance between head to naval and naval to hill; the bones of fingers in hand related to each other; forearm and upper arm; hand and forearm, in most of the parts of skull, heart, lungs, liver, human face including ears, eyes, mouth, and nose have the applications of golden ratio in different forms, Figure 17. For details we refer to (Heneir, et al. , 2011; Tamargo, & Pindrik, 2013).

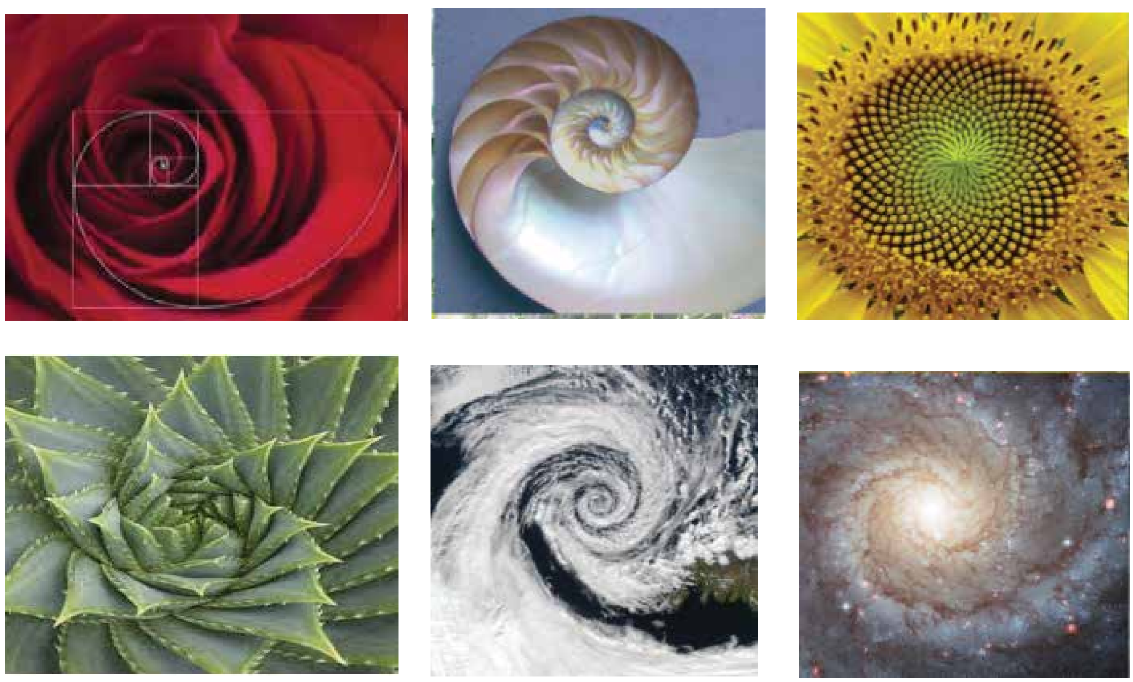
Figure 17

Different parts of the human body have the applications of golden ratiovio



Nature itself follows the Golden ratio in various flowers, seeds, fine leaves, seashells, honeycombs, etc. Certain planets of our solar system are closely related to the golden ratio. Not only these, the Galaxy, hurricane structure, spiral aloe leaves, and a nautilus shell in order from the spirals made by golden rectangles. Nature itself is a great mathematician to design the golden ratio.

Figure 14
Nature the great mathematicians to play with golden ratios



Conclusions

The golden ratio is one of the world-famous wondering and surprising numbers. It adds style and appeal to the marketing and advertisement of everyday consumer products to add beauty, balance, and harmony to the design. Such a property plays an enigmatic role everywhere in nature. This paper represents a qualitative overview of the golden ratio from ancient times to the modern age and covers the state-of-art on it fundamentally about their mathematical structures and construction algorithms in a lucid manner for the first time. It can be constructed corresponding to different geometrical shapes. It provides the mystery of various geometrical patterns, their topological structures, and their construction algorithms and their interconnections to nature.

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Assessing the Engagement of Textile Design Graduates in Textile Entrepreneurship

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Abstract

This research investigated the trend of textile design graduates venturing into entrepreneurship, exploring the motivating factors and strategies employed by these entrepreneurs. The study adopts survey research design using a questionnaire as the data gathering tool. The population of the study are textile graduates in selected schools in Southwest Nigeria comprising of federal universities, state universities and polytechnics. One hundred and four (104) graduates were sampled using snowball sampling techniques. The data collected were analyzed quantitatively through descriptive analysis using frequency, percentage and mean score. The result of the research reveals that they are increasingly involved in textile entrepreneurship. It was discovered that fashion design is the most subscribed entrepreneurial area by textile design graduates closely followed by Adire production. It was also revealed that textile design graduates engage in entrepreneurial areas outside the textile design field such as banking, real estate and web development among others. It is recommended that tertiary institutions should encourage students to participate in entrepreneurial competitions, both within and outside the institution to enlighten them more about textile entrepreneurship. It is also recommended that tertiary institution should update their curricula to ensure that they have adequate theoretical and practical content to produce graduates well-prepared for the competitive textile market.

Keywords
Textile Design,
Graduate
Entrepreneurship
Engagement
Nigeria

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ENTREPRENEURSHIP IS BECOMING an essential aspect of higher education globally, as there is a growing interest in entrepreneurship education to address the unemployment challenge, especially in developing countries like Nigeria. The textile industry is a vital sector in Nigeria, which has the potential to create employment opportunities for individuals with skills in textile design (Akinnibosun, 2024). Textile entrepreneurship reflects the synergy of creativity and commerce. It serves as a source of income for persons endowed with artistic skills and a profound business intelligence. Textile design is not just about fabrics, patterns, and colours, it is a field that encompasses innovation, craftsmanship and entrepreneurship to shape trends, lifestyles, and economies (Fnae, Adeniji and Adu, 2008). In recent years, there has been a notable surge in the number of graduates venturing into textile entrepreneurship, harnessing their creative skills to establish businesses that cater to diverse textile markets. Traditionally, textile design graduates seek employment in established industries or pursue further academic qualifications but in recent times, the textile industry has witnessed a transformation, driven by the rise of e-commerce, sustainable fashion movements, and changing consumer preferences. This has increased the entrepreneurial initiatives in the field of textile design, opening avenues for graduates to express their creativity and also have a source of income (Okafor, 2011). Advancement in technology and change in consumer preferences has opened up more opportunities for entrepreneurship in the textile industry.

Entrepreneurship has been defined by different authors in different ways. According to Santos, Pache, and Birkholz (2020), entrepreneurship refers to the process of creating, managing, and developing a new business venture to make a profit or social impact. Entrepreneurship is a vital component of economic growth, as it creates new jobs, products, and services that drive innovation and improve the standard of living. Textile design is intertwined with entrepreneurship, being a field that combines creativity and business expertise. There is a paradigm shift among textile design graduates who are increasingly embracing entrepreneurial pursuits. According to (Emidun, Akinnibosun & Adeloye, 2023), this shift is marked by a change in the conventional perception of textile designers as sole creators of aesthetically pleasing patterns and fabrics to proactive business thinkers shaping the textile industry to conform to the 21st century needs.

Education plays a pivotal role in textile entrepreneurship, as design programs increasingly emphasize the development of a holistic skill set that includes both creative prowess and entrepreneurial acumen. Graduates are equipped with the technical skills to bring their design visions to life and also with the strategic thinking and business knowledge necessary to navigate the competitive landscape. This integration of education and entrepreneurship ensures that emerging designers are well-prepared to translate their creative talents into sustainable and viable businesses, fostering a new generation of textile entrepreneurs (Akinnibosun, 2024). The integration of entrepreneurship in textile design education helps to produce balanced graduates that are creative and also self-reliant.

Understanding the engagement of textile design graduates in entrepreneurship sheds lighTt on the evolving dynamics of the textile industry. It also provides valuable information for educational institutions and policymakers on curriculum development and the organisation of programs that nurture entrepreneurial skills among textile design students. The objectives of this study are to identify the different areas textile graduates engage in entrepreneurship and also assess their level of engagement in in entrepreneurship.

Literature Review

Theoretical Background

The engagement of textile design graduates in textile entrepreneurship has become a subject of increasing interest within the academic and industry spheres. The shift towards entrepreneurship in the textile design field is influenced by the dynamic nature of the industry, with graduates seeking to leverage their creative skills and business knowledge. Recent studies emphasize the need for comprehensive assessments to understand the factors that contribute to the successful engagement of textile design graduates in entrepreneurship. For instance, Mittel and Raghuvaran (2021) explored the role of education and mentorship programs in shaping the entrepreneurial mindset of textile design graduates, finding that targeted educational interventions significantly enhanced their readiness for entrepreneurial endeavours. This highlights the importance of academic institutions and industry stakeholders in fostering an entrepreneurial ecosystem that supports the transition of textile design graduates into successful entrepreneurs.

The digital transformation of the textile industry has opened new avenues for entrepreneurial ventures, as highlighted by Sankas and Ceviz (2021). Their study demonstrated how graduates who embrace technological advancements and digital platforms are better positioned to navigate the challenges of entrepreneurship in the textile sector. This emphasizes the need for educational programs to integrate digital literacy and business acumen into the curriculum to prepare graduates for the evolving landscape of textile entrepreneurship. Collectively, these recent findings emphasize the multidimensional nature of assessing the engagement of textile design graduates in entrepreneurship, pointing towards the significance of educational interventions and technological proficiency in shaping successful entrepreneurial ventures in the textile industry.

Textile Entrepreneurship

Textile entrepreneurship is a multifaceted concept that combines textile design, business innovation, and creative enterprise. Textile entrepreneurship refers to the process of initiating, developing, and managing innovative business ventures within the textile industry (Godfrey & Pourmojib, 2017). These ventures can range from fashion startups, traditional resist dyeing, sustainable textile initiatives and cottage textile weaving. Textile entrepreneurs leverage their creativity, technical knowledge, and market insights to create products and services that meet consumer demands and also contribute to the growth and sustainability of the textile sector (Gartner, 1990). Textile entrepreneurship covers a wide range of activities, including textile design, manufacturing, marketing, and retail, all approached with an entrepreneurial mindset. It involves identifying market gaps, envisioning unique textile products, and employing strategic business practices to bring these ideas to fruition. Entrepreneurs in this field often integrate elements of sustainability, ethical practices, and innovation into their business models, aligning with the evolving demands of conscious consumers (Okafor, 2011). Textile entrepreneurs promote ethical practices and innovations in textile design.

Textile entrepreneurship plays a major role in economic development through job creation and revenue generation. Small and medium-sized textile enterprises contribute significantly to employment rates, especially in developing economies, providing livelihoods for a vast workforce (Adebayo, 1999). Gartner (1990) noted that entrepreneurs in the textile industry invest in research and development which leads to the discovery of novel materials, sustainable production methods, and new technologies that enhance the industry's competitiveness. Textile entrepreneurs are increasingly championing sustainable and eco-friendly approaches by embracing the use of recycled materials and environmentally conscious production methods to mitigate the ecological impact of the industry. Textile entrepreneurship often involves the preservation of traditional crafts and cultural heritage. Entrepreneurs collaborate with artisans and local communities, ensuring the survival of indigenous textile techniques by infusing them with contemporary designs to preserve cultural diversity (Kizner, 1997). Entrepreneurs with a keen understanding of global trends and consumer preferences facilitate the industry's penetration into international markets through e-commerce platforms and digital marketing strategies.

Factors Influencing Entrepreneurial Engagement among Textile Design Graduates

There are several factors influencing the engagement of graduates in textile entrepreneurship.According to Ogunduyile, Kayode and Ojo (2008), one of the primary factors influencing entrepreneurial engagement among textile design graduates is their educational background. Graduates equipped with a comprehensive education in textile design, encompassing both creative and business-related courses, are better positioned to identify entrepreneurial opportunities within the industry. Skill development programs that focus on business, marketing strategies, and financial management provide graduates with the necessary toolkit to navigate the complexities of entrepreneurship. Entrepreneurial engagement is profoundly influenced by the graduates' ability to innovate creatively. Entrepreneurs who can conceptualize unique designs, experiment with unconventional materials, and incorporate innovative techniques into their work gain a competitive edge. Textile design graduates often bring fresh perspectives and unconventional ideas to the market, attracting consumers seeking distinctive and trendsetting products (Amubode & Goriola, 2015). Successful textile entrepreneurs invest time and effort in understanding market trends and consumer preferences. Graduates who engage in thorough market research can identify niche markets, emerging trends, and gaps in the industry. Textile entrepreneurs align their designs with consumer demands to create products that meet the needs of the target audience which in turn leads to increased sales and brand loyalty.

In the digital age, technological proficiency is crucial for entrepreneurial success. Textile design graduates who are proficient at using design software, e-commerce platforms, and social media marketing tools can showcase their work to a wider audience. Establishing a strong digital presence through websites, social media, and online marketplaces enhances visibility and accessibility, enabling entrepreneurs to reach global markets and connect with potential customers. Entrepreneurial engagement is often sustained by networking and collaborations within the industry. Textile design graduates who actively participate in industry events, collaborate with other designers, artisans, or manufacturers, and build professional relationships with suppliers and retailers can access valuable resources and opportunities. Networking provides entrepreneurs with insights, mentorship, potential partnerships and support for the business (Akinyemi, Ofem & Ikuenomore, 2012). Engagement in textile entrepreneurship fosters networking in the textile industry which provides textile design graduates opportunities for mentoring and partnership.

Financial intelligence and access to funding significantly impact entrepreneurial engagement. Graduates who possess knowledge of budgeting, pricing strategies, and financial planning can manage their businesses effectively (Okafor, 2011). Access to funding through grants, loans, or investors also provides the necessary capital for product development, marketing, and expansion, enabling entrepreneurs to scale their ventures and explore new market avenues.

Challenges Facing Textile Entrepreneurship

The textile industry is characterized by creativity and innovation. It is a fertile ground for entrepreneurial engagements (Adeloye, Ogunduyile & Akinbogun, 2022). However, aspiring textile entrepreneurs face several challenges that negatively affect their ability to establish and maintain successful business ventures (Diogu, Nwigwe, Anne & Diogu, 2014). The textile market is often saturated with established brands and businesses, making it challenging for newcomers to gain a foothold. Intense competition demands exceptional creativity and unique value propositions. Entrepreneurs must navigate through market saturation by developing distinctive designs, exploring niche markets, and employing effective marketing strategies to differentiate their products and services. Textile entrepreneurship has unique supply chains, from sourcing raw materials to manufacturing processes and distribution to retailers and end users. Most textile entrepreneurs struggle with supply chain complexities, including quality control, logistics, and vendor management. Disruptions in the supply chain, such as raw material shortages, inferior materials and transportation issues adversely affect production and profitability (Granger & Sterling, 2012).

Technological advancements in textile manufacturing, digital design, and e-commerce platforms are double-edged swords for entrepreneurs. These innovations offer opportunities for efficiency and market reach, for entrepreneurs but entrepreneurs must continually invest in technology to remain competitive. Keeping pace with evolving technologies and integrating them into business operations poses a challenge, especially for small-scale entrepreneurs with limited resources (Okafor, 2011). Consumers increasingly demand sustainable and ethically produced textiles. Entrepreneurs face challenges in sourcing eco-friendly materials, adopting environmentally conscious production practices, and ensuring fair labour conditions. Meeting these ethical standards and also trying to maintain affordability and quality is quite challenging for entrepreneurs. This requires innovative solutions and a deep understanding of sustainable practices. Protecting intellectual property, including unique designs and innovative processes, is a significant concern in the textile industry (Adeloye, 2021). Entrepreneurs face challenges related to copyright infringement, counterfeiting, and imitation. Legal processes to protect intellectual property can be time-consuming and costly, especially for startups making it essential for entrepreneurs to navigate intellectual property challenges effectively (Adeloye, Akinbogun & Ogunduyile, 2023). Textile entrepreneurship is closely tied to fashion trends and consumer preferences. Entrepreneurs must anticipate and adapt to rapidly changing styles, colors, and materials demanded by consumers. Failure to align with these trends can result in unsold inventory and financial losses, emphasizing the importance of market research and trend forecasting.

Methodology

A survey research design was adopted for the research. The study was conducted between August and September 2023. The population for this research are textile design graduates from selected tertiary institutions in Southwest Nigeria. Snowball sampling technique was used since the population is infinite, without an official record list and geographically dispersed. The sample size for textile design graduates is 104, based on the number of samples through referral. This study used structured questionnaires to get the relevant data required for the actualization of the research objectives. The questionnaire was administered online using Google form and all the forms sent to the respondents were submitted giving a response rate of 100%. A modified Likert scale which ranges from “strongly agree” to “strongly disagree” (5=’Strongly Agree’, 4=’Agree’, 3= ‘Neutral’,2= ‘Disagree’ and 1=Strongly Disagree) was used to reflect the opinion of the respondents using questionnaires. The data collected was analyzed quantitatively through descriptive analysis by using SPSS to calculate frequency, percentage and mean score. Cronbach alpha was calculated to ascertain the reliability of the research instrument. Cronbach alpha’s value equals 0.765. Since this value is greater than 0.7, this suggests a good level of reliability for the questionnaire items, indicating that the items are sufficiently consistent to indicate the measure is reliable. Table 1 shows the Cronbach alpha’s calculation.

Table 1

Cronbach Alpha’s Calculation

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items
.765	.773	8

Data Analysis

Two sets of data were collected from textile design graduates in the selected schools. The first was to highlight their current area of practice while the second examined their level of engagement in entrepreneurship. Table 2 shows the different areas of practice of textile design graduates. The table shows that most graduates specialize in fashion design, followed by adire, teaching, branding, banking, sales, web development, real estate, Ankara and leather craft and illustration. This suggests that fashion design and adire production are lucrative entrepreneurial areas of textile design. The analysis also revealed that textile design graduates also diversify in other areas such as banking, web development and real estate among others.

Table 2
Current area of practice

Current Area of Practice	Frequency	Percent	Valid Percent
Fashion Design	37	35.6	36.3
Adire	31	29.8	30.4
Teaching	15	14.4	14.7
Branding	7	6.7	6.9
Banking	3	2.9	2.9
Sales	2	1.9	2.0
Web Development	2	1.9	2.0
Real estate	2	1.9	2.0
Ankara and leather craft	2	1.9	2.0
Illustration	1	1.0	1.0
Total	102	98.1	100.0
Missing System	2	1.9	
Total	104	100.0	

(Researcher's Fieldwork, 2023)

In Table 3, Variable 1 (V1) assessed the extent of job satisfaction enjoyed by textile entrepreneurs. Sixty-three (60.6%) respondents strongly agreed that they enjoy practising textile design as entrepreneurs, 18 (17.3%) agreed, 21 (20.2%) were neutral and 2 (1.9%) disagreed. None of the respondents strongly disagreed. The mean score for this variable is 4.37. This analysis suggests that not all textile design graduates enjoy entrepreneurial practice but most of them do. Variable 2 (V2) addressed the willingness of textile design graduates to venture into textile entrepreneurship. Only 2 (1.9%) strongly agreed that they were into textile entrepreneurship because they had no better option, 10 (9.6%) agreed, 26 (25.0%) were neutral, 47 (45.2%) disagreed and 19 (18.3%) strongly disagreed. The mean score for this is 2.32. This suggests that only a few textile design graduates venture into textile entrepreneurship as a last resort. Textile design graduates averagely venture into textile entrepreneurship willingly and not circumstantially. Variable 3 (V3) addressed how financially rewarding textile entrepreneurship is. Twenty-six (25.0%) strongly agreed that they earn enough money to meet their needs from the textile business, 28 (26.9%) agreed, 34 (32.7%) were neutral, 14 (13.5%) disagreed and 2 (1.9%) strongly disagreed. The mean score for this variable is 3.60. This analysis suggests that average, textile entrepreneurship is financially rewarding. Variable 4 (V4) also addressed the level of job satisfaction of graduate textile entrepreneurs. Twenty-seven (26.0%) strongly agreed that they have job satisfaction as textile entrepreneurs, 40 (38.5%) agreed, 23 (22.1%) were neutral, 12 (11.5%) disagreed and 2 (1.9%) strongly disagreed. The mean score for this variable is 3.75. This also suggests that average, graduate textile entrepreneurs have job satisfaction.

Variable 5 (V5) assessed competition between graduate textile entrepreneurs and unschooled textile entrepreneurs. Twenty-six (25.0%) respondents strongly agreed that they compete favourably with their field-trained counterparts, 39 (37.5%) agreed, 33 (31.7%) were neutral and 6 (5.8%) disagreed. None of the respondents strongly disagreed. The mean score of this variable is 3.82. This analysis suggests that graduate textile entrepreneurs compete relatively favourably with their field-trained counterparts. Variable 6 (V6) addressed the relevance of the entrepreneurial training received in school to textile business start-ups. Twenty-four (23.1%) strongly agreed that the training received in school was sufficient to help them start up their businesses, 16 (15.4%) agreed, 22 (21.2%) were neutral, 32 (30.6%) disagreed and 10 (9.6%) strongly disagreed. The mean score for this variable is 3.12. This analysis suggests that the entrepreneurial training received in the classrooms alone may not be sufficient to adequately guide a textile graduate in setting up a business. Variable 7 (V7) also assessed the sufficiency of training gotten in school to start up a textile business. Sixteen (15.4%) respondents strongly agreed that they registered for more training before they started their textile businesses, 49 (47.1%) agreed, 15 (14.4%) were neutral, 18 (17.3%) disagreed and 6 (5.8%) strongly disagreed. The mean score for this variable is 3.50. This suggests that some respondents were able to start up their textile business with the training received in school while most graduates got additional on-field training before practicing. Variable 8 (V8) addressed the benefit of the training received in school. Twenty-five (24.0%) strongly agreed that the training received in school gave them an edge over their competitors, 51 (49.0%) agreed, 20 (19.2%) were neutral, 8 (7.7%) disagreed and none strongly disagreed. The mean score for this variable is 3.90. This analysis suggests that entrepreneurial training in school gives textile design graduates a relative advantage in the market.

Table 3

Level of engagement in entrepreneureship

Variables	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean Score	Remarks
V1	63 (60.6)	18 (17.3)	21 (20.2)	2 (1.9)	-	4.37	SA
V2	2 (1.9)	10 (9.6)	26 (25.0)	47 (45.2)	19 (18.3)	2.32	D
V3	26 (25.0)	28 (26.9)	34 (32.7)	14 (13.5)	2 (1.9)	3.60	A
V4	27 (26.0)	40 (38.5)	23 (22.1)	12 (11.5)	2 (1.9)	3.75	A
V5	26 (25.0)	39 (37.5)	33 (31.7)	6 (5.8)	-	3.82	A
V6	24 (23.1)	16 (15.4)	22 (21.2)	32 (30.8)	10 (9.6)	3.12	N
V7	16 (15.4)	49 (47.1)	15 (14.4)	18 (17.3)	6 (5.8)	3.50	A
V8	25 (24.0)	51 (49.0)	20 (19.2)	8 (7.7)	-	3.90	A

(Researcher's Fieldwork, 2023)

KEYS: SD= Strongly Agree; A = Agree; N = Neutral; D= Disagree; SD = Strongly Disagree
Mean score rating Key: 1.00 – 1.80 (SD); 1.81 - 2.60 (D); 2.61 - 3.40 (N); 3.41 – 4.20 (A); 4.21 – 5.00 (SA)

V1 I enjoy practising Textile Design as an entrepreneur
V2 I am practising textile design because I do not have a better option
V3 I earn enough money to meet my needs from textile design business
V4 I have job satisfaction as a textile design entrepreneur.
V5 I compete favourably well with my unschooled competitors
V6 The training I got from school was sufficient for my business startup
V7 I registered for extra training on the field before I started practising
V8 The training I got in school gave me an edge over my competitors.

Discussion

The data presented in Table 2 provide valuable insights into the diverse areas of practice pursued by textile design graduates, shedding light on their entrepreneurial endeavours beyond the traditional realms of textile design. The data highlight that a significant number of graduates specialize in fashion design, which aligns with the conventional path in textile design. Moreover, adire production, a traditional textile art form, also stands out as a popular choice. This emphasizes the cultural significance and commercial viability of traditional textile practices. The dominance of fashion design and adire production suggests these areas are perceived as highly lucrative entrepreneurial avenues within the textile design industry. This corroborates the findings of Adelabu and Akinmoye (2020) that fashion is a major entrepreneurial area that students venture into. Graduates, recognizing the market demand for fashionable clothing and culturally rich textiles, are capitalizing on these niches to establish their entrepreneurial ventures. This aligns with the earlier findings regarding students' and graduates' awareness of the practical and business aspects of textile design. The research also identified branding and textile merchandizing (sales) as entrepreneurial areas ventured into by textile design graduates. This is in line with the submission of Ibeto and Ogunduyile (2015) that textile mechanizing is a thriving area in textile entrepreneurship. Beyond the traditional domains, graduates are diversifying their skills and knowledge into diverse sectors such as banking, web development, real estate, and illustration. This diversification indicates the adaptability and versatility of textile design graduates. The presence of teaching in the list also signifies a trend where graduates are not only entrepreneurs but also educators. This supports the submission of Akinnibosun (2024) that textile students are trained to be able to train others. Their expertise is not limited to commercial ventures; they are also contributing to the education and skill development of future generations.

Eight variables were used to address this objective. The first variable addressed the extent to which textile graduates enjoy textile entrepreneurship. The mean score of 4.37 indicates a high level of job satisfaction among a significant majority of graduates. While not unanimous, the data suggests that a substantial portion of textile design graduates find fulfilment in their entrepreneurial endeavours. The second variable addressed graduates' lack of willingness to venture into textile entrepreneurship. The data shows that only a small fraction of graduates (1.9%) ventured into textile entrepreneurship because they had no better option. The mean score of 2.32 underscores that most textile design graduates willingly venture into entrepreneurship, indicating a proactive choice rather than a last resort. This willingness is indicative of their confidence in the industry and their preparedness for entrepreneurial challenges. This corroborates the submission of Emidun et al, (2023) that textile design education instils entrepreneurial confidence in students. The third variable addressed how financially rewarding textile entrepreneurship is. The mean score of 3.60 suggests that, on average, textile entrepreneurship provides a satisfactory level of financial reward. While not everyone strongly agrees, the majority find textile entrepreneurship financially viable for their financial needs. The fourth variable addressed the level of job satisfaction derived from textile entrepreneurship. The mean score of 3.75 suggests an overall average level of job satisfaction. While not exceptionally high, the majority of textile design entrepreneurs find their work satisfying. This could indicate a balance between the challenges of entrepreneurship and the fulfilment derived from creative and business autonomy.
The fifth variable addressed competition with field-trained entrepreneurs: The mean score of 3.82 indicates that textile design graduates tend to compete relatively well with field-trained entrepreneurs. This suggests that the education received in school equips graduates with practical skills and knowledge, enabling them to compete in the market effectively. The sixth variable addressed the relevance of the entrepreneurial training received in school. The data reveals a mixed response regarding the relevance of entrepreneurial training received in school for starting a textile business. The mean score of 3.12 suggests that there is room for improvement in the curriculum or teaching methodology to better prepare graduates for the challenges of entrepreneurship. The seventh variable addressed the need for additional training after graduation before venturing into textile entrepreneurship. The mean score of 3.50 implies that a significant portion of graduates sought additional training before venturing into entrepreneurship, indicating the need for supplementary practical knowledge beyond academic learning. The eighth variable assessed the benefits of school training in entrepreneurial practice. Most of the respondents agreed that the training received in school gave them an edge over their competitors. The mean score of 3.90 suggests that classroom education provided textile design graduates with a relative advantage in the market. This implies that while there might be gaps in the curriculum, the education received in school does confer valuable skills and knowledge, giving graduates an edge in their entrepreneurial

pursuits. This is in line with the submission of Akinnibosun (2024) that there is a need to improve the textile design curricula used in Nigerian tertiary institutions to increase their entrepreneurial content.

Conclusion

This research assessed textile design graduates' engagement in textile entrepreneurship and provided insights into their diverse entrepreneurial pursuits beyond traditional textile design. A significant number of graduates specialize in fashion design and adire production, indicating the perceived lucrative nature of these avenues. Graduates are capitalizing on market demand for fashionable clothing and culturally rich textiles. The research also revealed that textile design graduates venture into branding, textile merchandizing, and diversification into sectors like banking, web development, real estate, and teaching. The research revealed that graduates generally exhibit high job satisfaction in textile entrepreneurship with most willingly choosing this path. Textile entrepreneurship offers a satisfactory financial reward for many. Graduates tend to compete effectively with field-trained entrepreneurs though there is room for improvement in entrepreneurial training in schools. Many graduates seek additional training before venturing into entrepreneurship, highlighting the need for practical knowledge beyond academic learning. Despite curriculum gaps, school education provides graduates with valuable skills, giving them a relative advantage in the market. The study's exploration of graduates' entrepreneurial pursuits unveiled a diverse and dynamic landscape. Graduates are not confined to traditional paths but are venturing into various domains, including fashion, traditional textile production, branding, textile merchandizing and even sectors like banking and web development. Their high job satisfaction and willingness to seek additional training showcase their proactive approach to entrepreneurship, emphasizing the importance of continuous learning in the ever-evolving business landscape. The study highlighted the importance of education despite existing curriculum gaps. While improvements are needed, the education provided in schools equips graduates with valuable skills, offering them a relative advantage in the competitive market.

Recommendation

Based on the findings of the study, the following recommendations are made:

1. Institutions should continuously evaluate and update their curriculum to ensure a balance between theoretical knowledge and practical skills.
2. Collaborate with industry professionals and entrepreneurs to create modules that reflect real-world challenges and opportunities, ensuring graduates are well-prepared for the competitive market.
3. Encourage students to participate in entrepreneurial competitions, both within and outside the institution.

Scope for Future Research

This research can be improved by conducting further studies in the following areas.

1. Teaching methodology of textile design curriculum.
2. Factors negating entrepreneurial practice by textile design graduates.

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Empowerment of Women through Entrepreneurship in Gorkha District, Nepal

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Abstract

This research investigated the trend of textile design graduates venturing into entrepreneurship, exploring the motivating factors and strategies employed by these entrepreneurs. The study adopts survey research design using a questionnaire as the data gathering tool. The population of the study are textile graduates in selected schools in Southwest Nigeria comprising of federal universities, state universities and polytechnics. One hundred and four (104) graduates were sampled using snowball sampling techniques. The data collected were analyzed quantitatively through descriptive analysis using frequency, percentage and mean score. The result of the research reveals that they are increasingly involved in textile entrepreneurship. It was discovered that fashion design is the most subscribed entrepreneurial area by textile design graduates closely followed by Adire production. It was also revealed that textile design graduates engage in entrepreneurial areas outside the textile design field such as banking, real estate and web development among others. It is recommended that tertiary institutions should encourage students to participate in entrepreneurial competitions, both within and outside the institution to enlighten them more about textile entrepreneurship. It is also recommended that tertiary institution should update their curricula to ensure that they have adequate theoretical and practical content to produce graduates well-prepared for the competitive textile market.

Keywords

Women's empowerment,
Entrepreneurship Nepal
Change in income level
Employment creation
Decision-making role

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EMPOWERMENT OF WOMEN is an important issue for the development of the family and society. The sustainable development of the nation remains incomplete, keeping aside women in economic activities as they make up half of the total population. In the past, Nepalese women were confined to household activities including cooking, washing, cleaning, and caring the children. Gradually, they are stepping up to establish and run the enterprise which leads to their economic empowerment (Khan et al., 2017).

Third-world feminist and women's organizations raised the issue of women's empower in 1070s. The main goal of the movement was the equality of women through structural change in the social and political systems (United Nations, 2001). Different scholars defined women's empowerment differently. However, the common notation of empowerment was established as competency development for making strategic choices and achieving the goal, whatever they attempt to succeed (Reddy, 2002).

Empowering women economically is essential for their overall development. Entrepreneurship is the best way to achieve economic independence. Encouraging entrepreneurship and income-generating activities presents practical solutions for women's empowerment. Women gain the advantages of awareness-raising, education, knowledge, self-confidence, and technology-friendly by engaging in income-generating activities through entrepreneurship (Sharma & Varma, 2008). Women's entrepreneurship was viewed as a key vehicle for granting decision-making power, self-dependency, and leadership opportunities (UNIFEM, 2000).

Economic empowerment indicates equal participation in the existing market, access to decent work, controlling the productive resource, deciding the economic issues at all levels, from household to international forum, putting voice confidently, managing the time properly, and maintaining control over the bodies and meaningful participation in the economic decisions. Women's economic empowerment and the reduction of the gender gap are crucial factors for the 2030 agenda, and sustainable development (UN, 2020).

In most societies, there exists a significant power disparity between men and women, with women having less control over resources and often receiving lower wages for their work. As a result, women's contributions to society often go unnoticed and undervalued, rendering them an "invisible" workforce. Unfortunately, these circumstances inevitably hinder women's ability to fully explore their potential, pursue growth and development, and achieve exceptional accomplishments (Sharma & Varma, 2008).

Gorkha is one of the developing districts situated in rural areas of Nepal, mostly with male dominance, which has systematically excluded women from equal participation in social activities. They were often marginalized and disadvantaged due to cultural norms, discriminatory practices, dependency on males, and lack of access to education, resources, and decision-making authority. Despite these challenges, there is a growing interest in entrepreneurship among women. Post-earthquake, over 30 organizations have been working to support women's entrepreneurship and empower them to overcome gender-based discrimination and gain economic independence. Through these efforts, rural women are moving towards greater empowerment and breaking down barriers to success (Womens, 2016). In this context, the primary aim of the study is to examine the effect of women's entrepreneurship on their empowerment in terms of decision-making authority, reduced dependency on males, increased income level, change in social perception, and employment generation in the Gorkha District, Nepal.

Literature Review

Research has highlighted the importance of women's empowerment as the driving element for economic growth. It is also argued that increasing women's participation in entrepreneurship activities is crucial for developing countries to transform into developed countries. Such participation would help to utilize the human resources properly and generate income leading to improved quality of life as well (Singh & Gupta, 2013). Women's entrepreneurship journey is viewed as a technique for getting rid of poverty and marching to equality. To bring Nepalese women into the main stream of the business sector, women's empowerment is essential by providing leadership opportunities and participating in entrepreneurial networking systems (Bushell, 2008).

Women's entrepreneurship is now recognized as an essential driver of economic growth, innovation, and job creation. In addition, society has come to appreciate the unique perspective and innovative solutions that women entrepreneurs bring to the table were overlooked in the past and systematically denied the recognition they deserve (Sharma & Varma, 2008). Women entrepreneurs are those women who are innovative, risk-takers, enjoy independence, seeking opportunities for economic gain, and do not hesitate to take organizational and management responsibilities (Timmons & Spinelli, 2009). Entrepreneurs can transform their ventures into new technologies, products, and markets. Independence and risk-taking qualities are essential for sustaining their enterprise from start-up to growth and expansion internationally (Chong & Teoh, 2007).

Awareness is also increased about the significant barriers and challenges that women face in entrepreneurship, such as access to funding, mentorship, and networks. As a result, there is now more support and resources available for women entrepreneurs, including business incubators, accelerators, and grants. Previously, entrepreneurship was viewed as a male-dominated field, and women who entered the field faced numerous challenges and biases. However, with the increment of women entrepreneurs' numbers and their success rate in business, social perception has shifted to a more positive and inclusive one (Ilie et al., 2021).

The Landscape Study on Women Entrepreneurship found that women have achieved an improved status in their family after becoming financially independent. The study also revealed that most women tend to reinvest about 90% of their income into their families, i.e., into providing adequate nourishment for their families and educating their children, thereby contributing to better outcomes for their children and for future generations (EdelGive Foundation, 2020).

After engaging in entrepreneurial ventures, it gives women both increased decision-making authority and power. Women entrepreneurs can exercise more power in household decisions (Haugh & Talwar, 2016). Women-owned small enterprises have provided better distribution of resources and economic stability. They are playing an important role in creating employment opportunities and introducing innovation. They are also sources of inspiration for others. Small entrepreneurs are assumed as the means of entrepreneurship, economic development, and job creation (Taiwo et al., 2016)

Women's entrepreneurship contributes significantly to the social and economic well-being of the country. Banks and cooperatives provide financial support to women entrepreneurs, and their families encourage them in their business activities. Nepal has implemented policies to develop entrepreneurial skills among women, and vocational education and training programs have been launched to empower them (Khatri, 2022). Women's status in Nepalese society has changed from time to time. Women have been regarded as a symbol of strength, knowledge, and wealth. Women's economic empowerment and inclusive economic growth are fueled by girls' and women's educational attainment (Rijal, 2018).

The Nepal government has taken some steps to encourage women's entrepreneurship, such as providing an easier procedure with a lower fee for registration. The Women's Entrepreneurship Development Fund has been serving with financial assistance and technical support to them. In addition to government services, several other organizations also provide support and resources to women entrepreneurs, such as training and networking opportunities, business development services, mentorship, and other services for their aspirations. By promoting women's entrepreneurship in Gorkha, women empowered economically and became contributing members of the society to more inclusive economic growth in the region (Sapkota, 2020).

Over time and because of the changes going on in the Gorkha district, young women are beginning increasingly involved in entrepreneurial activities and have started to be self-dependent. Women entrepreneurs' contribution has increased to their immediate family budget and to the prosperity of the community. Women entrepreneurs are regarded as the most significant representatives of the financial growth of the country (Tambunan, 2009). Their role has been changed to the producers, owners, decision-makers, risk-takers, sellers, and innovators from households serving women. They also create employment opportunities and contribute to advancing the living standards of families. Nowadays, women use their potential and skills to supplement their family income. Women in Nepal, therefore, no longer need to wait for employment outside the home. They are capable starting their own venture and earning and improving their livelihood successfully (Thapa Karki & Xheneti, 2018).

The awareness of policymakers and planners has increased significantly towards women's contribution to income generation and the effective performance of women's activities. Nepali women are increasingly taking up entrepreneurial ventures, particularly in sectors such as agriculture, tourism, and handicrafts (Rijal, 2018).

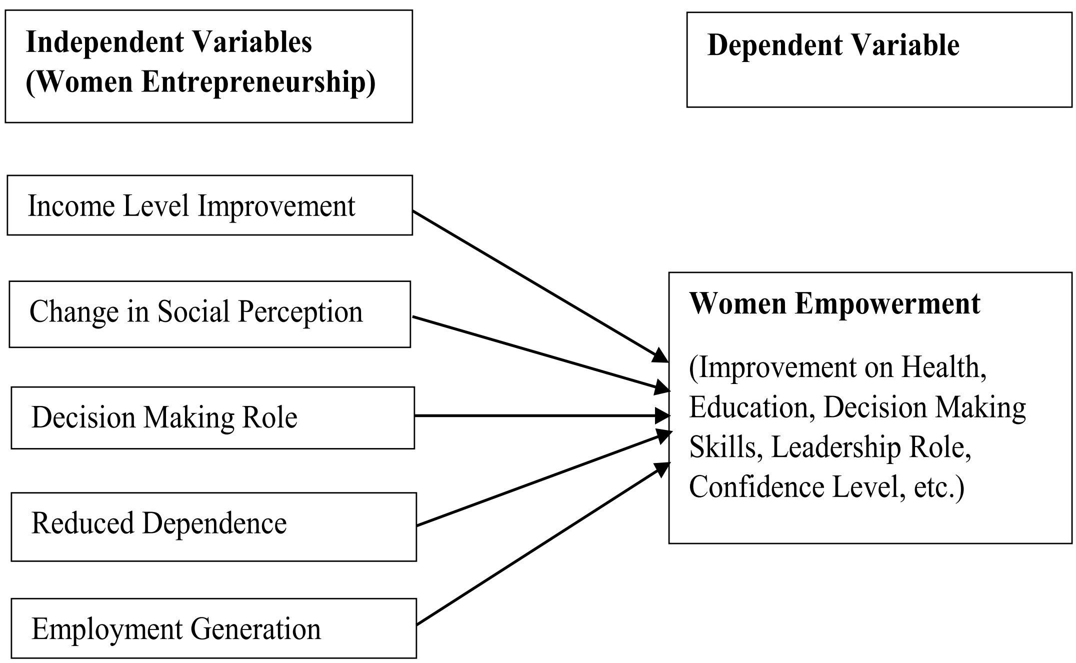
The past evidence from the different countries shows that women's entrepreneurship is the means of women's empowerment in terms of social status improvement, wider networking, better education, and a better future (Khatri, 2022; Ilie et al., 2021; EdelGive Foundation, 2020; Rijal, 2018; Sharma & Varma, 2008), and the emergence of women in self-employment and income generation through the establishment of their own enterprises is increasing (Womens, 2016).

However, there is a lack of sufficient studies to verify the situation in the rural communities of Nepal. Therefore, the study on women's empowerment through entrepreneurship in Gorkha District is essential.

The study variables are based on the literature review. The dependent variable is women’s empowerment (accessibility of better health service, education opportunity, getting chance of leadership role and improvement on the confidence level). The independent variable is women empowerment that comprises the increase in income level of women, a change in social perception, reduction independency on male, employment generation, decision-making authority. The following framework shows the how independent variables affect the successful utilization of entrepreneurship development.

Figure 1

Conceptual framework



Based on the objectives of the study, theoretical and empirical literature review of the study following hypothesis are developed.

H_01: There is significant relationship between increase in income level of women and women empowerment.

H_02: There is significant relationship between change in social perception and women empowerment.

H_03: There is significant relationship between reduced women dependency and women empowerment.

H_04: There is significant relationship between self-employment and women empowerment.

H_05: There is significant relationship between increase in decision making role and women empowerment.

Methods

The research was descriptive and explanatory in nature. It was conducted in Gorkha district, Nepal, mainly in Gorkha Bazaar, Dandidana, 12 Kilo, Chatturkhola, Palungtaar, Chepetar, Vachhek Bazaar, and Aarughaat. The study was based on the women empowerment through entrepreneurship in Gorkha. So, 150 women entrepreneurs were purposively selected as a sample respondent. This research was based on the primary survey. The data was collected by formulating a set of research-administered questionnaires that were distributed to women entrepreneurs in the study area. The questionnaire includes Section A with demographic information about the respondents like age, marital status, income level, education, etc. and section B with a five-point Likert scale (Strongly Disagree-1, Disagree-2, Neutral-3, Agree-4, Strongly Agree-5) with statements related to independent and dependent variables. The researchers used both descriptive as well as inferential statistics for data analysis. Descriptive statistics such as frequency percentage distribution were used to measure the characteristics of the respondents; exploratory factor analysis (EFA) was used to extract specific items from the dataset that are associated with each construct and partial least squares structural equation modeling (PLS-SEM) was used to measure the relationship between independent variables and dependent variables.

Results and Discussion

1 Demographic Status of Women Entrepreneurship

Age, eduction, marital status, family structure and income level of respondents is analyzed as shown in **Table 1.**

Variables	Categories	Frequency	Percent
Age group	Below 20	3	2
	21-30	58	38.7
	31-40	60	40
	41-above	29	19.3
Education	High school or below	59	39.3
	10+2	70	46.7
	Graduate	19	12.7
	Others	2	1.3
Marital status	Married	119	79.3
	Unmarried	25	16.7
	Divorced	2	1.3
	Widow	4	2.7
Family Structure	Nuclear	110	73.3
	Joint	40	26.7
Monthly family income	Below 10000	2	1.3
	10000-20000	10	6.7
	20000-30000	44	29.3
	30000-40000	23	15.3
	40000-50000	31	20.7
	50000-above	40	26.7
Total		**150**	**100**

Table 1 gives the insights into the demographic characteristics of the study population. The age group category illustrates a diverse age distribution, with the majority falling within the 21-30 and 31-40 age ranges, representing 38.7% and 40% of the sample, respectively. In terms of education, the data reveals a relatively high level of education, with 46.7% having completed their 10+2 and 12.7% being graduates. However, a notable portion (39.3%) has a high school education or lower. Marital status shows that a substantial majority (79.3%) are married, while family structure highlights a prevalence of nuclear families (73.3%). Monthly family income demonstrates a wide range, with the largest group earning between 20000-30000 (29.3%) and a significant proportion (26.7%) earning above 50000.

2 Exploratory Factor Analysis (EFA)

In this study, total 28 items were used to measure the independent and dependent variables. Income level includes four items – IL1, IL2, IL3, and IL4, social perception includes five items – SP1, SP2, SP3, SP4, and SP5, reduced dependency includes four items – RD1, RD2, RD3, and RD4, employment gereration includes four items – EG1, EG2, EG3, and EG4, decision making includes five items – DM1, DM2, DM3, DM4, and DM5 and women empowerment includes six items – WE1, WE2, WE3, WE4, WE5, and WE6. EFA was run independently for each construct. The results of EFA is given in Table 2.

Table 2.

Summary of Results of EFA

Constructs	KMO	Bartlett's Test		Items	% of variance explained
		Chi-Square	Sig.		
Income Level	.713	87.879	.000	IL1, IL2, IL3, IL4	51.04
Change in Social Perception	.566	55.068	.000	SP1, SP2, SP3	56.00
Reduced Dependency	.626	54.845	.000	RD1, RD2, RD3	57.33
Employment Generation	.613	71.809	.000	EG1, EG3, EG4	60.15
Decision Making	.686	99.400	.000	DM1, DM2, DM3, DM4	51.79
Women Empowerment	.601	93.631	.000	WE3, WE5, WE6	62.23

Table 2 shows the summary of result of EFA for all six constructs used in this study. The KMO value assesses the suitability of data for factor analysis. In your analysis, all KMO values are above 0.5, which suggests that your data is suitable for EFA. Similarly, Bartlett's Test assesses whether the correlations among the variables are significantly different from an identity matrix. As per the analysis result, all p-values are very close to 0, which indicates that the data is appropriate for EFA. Furthermore, the items column indicates which specific items from the dataset are associated with each construct after EFA and % of variance explained shows the variance in the data explained by the underlying factor. Income Level includes four items (IL1, IL2, IL3, and IL4) and it explains 51.03 % of variance. Likewise, change in social perception includes three items

(SP1, SP2, and SP3) and explains 56 % of variance, reduced dependency includes three items (RD1, RD2, and RD3) and explains 57.33 % of variance, employment generation includes three items (EG1, EG2, and EG4) and explains 60.15 % of variance, decision making includes four items (DM1, DM2, DM3, and DM4) and explains 51.79 % of variance, and women empowerment includes three items (WE3, WE5, and WE6) and explains 62.23 % of variance.

4.3 Structural Equation Modeling

After EFA, the researchers used partial least square – structural equation modeling (PLS-SEM) to see the relationship between independent variables and dependent variable. This includes two model – Measurement Model and Structural Model. In measurement model, it was checked the reliability and the validity of the construct. After assessing the reliability and validity of the contruct, structural model was run.

3.1 Assessment of Constructs' Reliability and Validity

Reliabilty was checked using Cronbach's alpha and composite reliability, convergent validity was assessed using Average Variance Extracted (AVE) and discriminant validity was assessed using Fornell and Lacker's criteria and HTMT ratio.

Table 3

Construct Reliability and Validity

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Change in Social Perception	0.601	0.791	0.560
Decision Making	0.689	0.806	0.511
Employment Generation	0.713	0.840	0.636
Income Level	0.679	0.798	0.500
Reduced Dependency	0.654	0.790	0.487
Women Empowerment	0.688	0.826	0.613

Table 3 presents the result of construct reliability and convergent validity. Here Cronbach's Alpha and Composite Reliability are used to measure the construct reliability and AVE is used to assess the convergent validity. Table reveals that all the Cronbach's alpha values are above 0.60 and range between 0.601 and 0.713. Similarly, all composite reliability values are above 0.70 and ranging from 0.790 to 0.840. This indicates that the constructs are highly reliable. Furthermore, AVE values in the range of 0.487 to 0.636 also affirm the convergent validity.

Table 4

Discriminant Validity: Fornell and Lacker's Criteria

Variables	SP	DM	EG	IL	RD	WE
SP	0.748					
DM	0.313	0.715				
EG	0.211	0.456	0.797			
IL	0.352	0.337	0.456	0.707		
RD	0.259	0.355	0.285	0.512	0.698	
WE	0.33	0.492	0.548	0.53	0.357	0.783

Table 4 presents the result of Fornell and Larcker's criteria used to assess discriminant validity. The diagonal values represent the square root of the Average Variance Extracted (AVE) and other values represent the correlation coefficeint between the constructs. Here, the square root of the AVE for SP is 0.748, DM is 0.715, EG is 0.797, IL is 0.707, RD is 0.698, and WE is 0.783, which are greater than its correlations with other constructs, it satisfies the criteria for discriminant validity.

Table 5

Discriminant Validity - HTMT Ratio

Variables	SP	DM	EG	IL	RD	WE
SP						
DM	0.515					
EG	0.388	0.615				
IL	0.546	0.438	0.593			
RD	0.427	0.486	0.383	0.774		
WE	0.506	0.665	0.754	0.724	0.513	

Table 5 presents the result of Heterotrait-Monotrait (HTMT) ratios, used to measure discriminant validity. Here all the values are less than 0.85, which suggests that these constructs (SP, DM, EG, IL, RD, WE) exhibit satisfactory discriminant validity.

3.2 Structural Model

After confirmation

2 depicts the path

Figure 2

Path Diagram

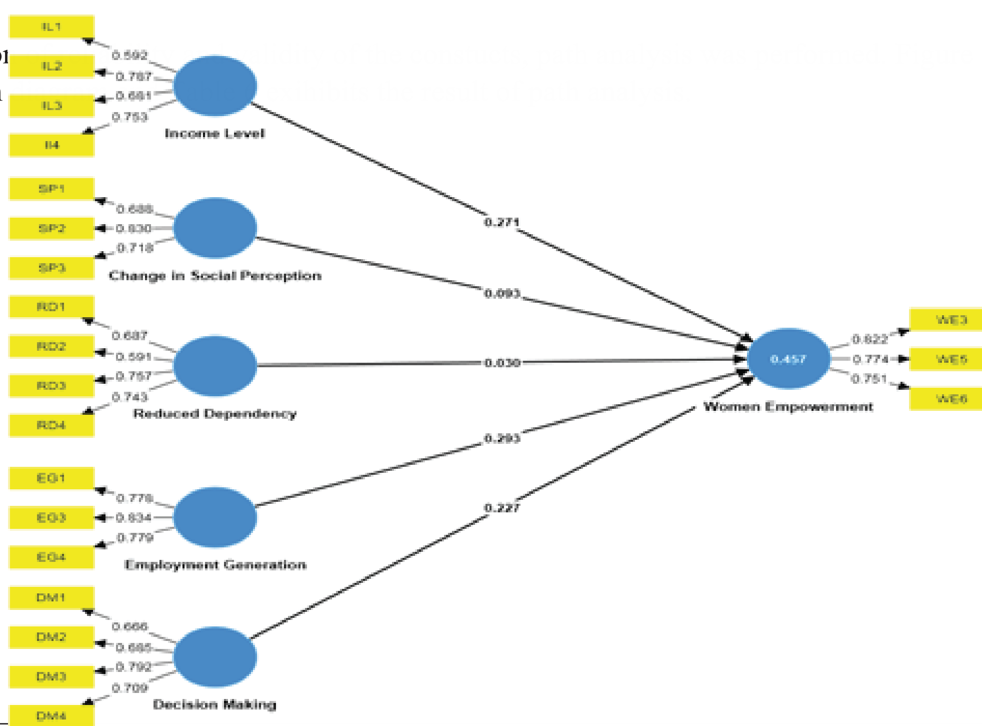


Table 6
Result of Path Analysis

Relationship	Beta Coefficient	T statistics	P values
Change in Social Perception -> Women Empowerment	0.093	1.396	0.163
Decision Making -> Women Empowerment	0.227	3.011	0.003
Employment Generation -> Women Empowerment	0.293	3.299	0.001
Income Level -> Women Empowerment	0.271	2.472	0.013
Reduced Dependency -> Women Empowerment	0.03	0.391	0.696

Table 6 shows the results of the path analysis that show the relationships between various independent variables (Change in Social Perception, Decision Making, Employment Generation, Income Level, Reduced Dependency) and their impact on the dependent variable Women Empowerment. In this analysis, decision making (beta = 0.227, t-stat = 3.011 and p-value = 0.003), employment generation (beta = 0.293, t-stat = 3.299 and p-value = 0.001), and income level (beta = 0.271, t-stat = 2.472 and p-value = 0.013) have statistically significant and positive effects on women empowerment. This suggests that improvements in Decision Making, Employment Generation, and Income Level are associated with increased Women Empowerment. However, change in social perception and reduced dependency is not statistically significant and does not appear to influence Women Empowerment significantly.

Conclusion

This study provides insights into which factors have a substantial impact on Women Empowerment through entrepreneurship in Gorkha district, Nepal. The study considered women's empowerment as the dependent variable, while income level, social perception, reduced dependency on male, employment creation, and decision-making authority were used as independent variables. Based on the study's results, it can be concluded that women entrepreneurship through change in income level, employment creation, and improvement in decision-making has a positive and significant impact on women's empowerment. This indicates that increased income, self-employment, and decision-making power contribute to women's empowerment in society. While change in social perception and reduced dependency on male have no significant association with women empowerment. This research not only provides valuable insights for policymakers and practitioners but also reinforces the requirement of supporting women's entrepreneurship to promote women’s empowerment.

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BOARD DIVERSITY AND FIRM VALUE: EVIDENCE FROM NEPALESE FINANCIAL INSTITUTIONS

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Abstract

The purpose of this paper is to provide empirical evidence on the relationship of board diversity of corporate board with the value of financial institutions in Nepal. The sample comprises 38 financial institutions listed in NEPSE with 380 firm-years observation for the period 2011/12 to 2020/21. Balance panel datasets were employed to investigate using multiple regression models to examine the relationship between board diversity (female and minority directors) and firm value measured by Tobin's Q and MBR. The result shows a significant positive relationship between firm value and the presence of both female and minority directors. Moreover, the evidence supports that the presence of female directors in the boardroom effect more in the firm market value than as compare to the minority directors. Furthermore, the study concludes that control variables like board size, presence of independent director and firm size have positive significant effect on firm value, but leverage has significant but negative relation with the firm market value of financial intuitions in Nepal. The study result has the practical implication for government, policy makers and regulating authorities in formation of diverse board that can increase the firm value and performance. It also provides additional insight to the corporate governance literature and helps to fill the gap on board diversity and firm value in Nepalese financial institutions.

Keywords
Board diversity
Female director
Minority director
corporate governance
Firm value
Tobin's Q

BOARD COMPOSITION IS a topic of vital importance within corporate governance studies, especially in the context of global financial crisis and

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scandals because it affects the efficiency of the board, how the board accomplishes its roles, and, subsequently, firm financial performance (Abatecola et al., 2013; 2014). Traditionally, research has focused on the proportion of insiders on boards (Agrawal & Knoeber, 1996), the tenure of directors and managers (Hermalin & Weisbach, 1991), the stock ownership of board members (Weisbach, 1988), and board size (Kini et al., 1995), and the type of reward system used(Rose, 2007). However, in recent years, studies such as Campbell & Mínguez-Vera (2008), Mensi-Klarbach, 2014; & Ntim, (2015) have initiated to discover whether board diversity improves board competence and subsequently firm market value and financial performance.

Among board characteristics, board demographic diversity has become an important research issue within corporate governance (Roa & Tilt, 2015). "Board diversity’ may be defined as the variety inherent in a board’s composition." This variation can be measured on several dimensions, such as gender, age, ethnicity, nationality, academic background, business skill, and organizational membership (Campbell & Mínguez-Vera, 2008). While attention is increasingly paid to the caste and ethnicity of corporate directors in the US, nationality seems to have become an important dimension of board diversity in Europe (Oxelheim & Randoy, 2003) According to Struggles (2011), almost one in four directors on European boards is foreign, reflecting the demand for international skills. Researchers studying diverse groups have found that diversity improves decision-making. Diverse boards increase creativity, consider a wider range of options, and make companies more innovative (Miller & Triana, 2009; Nielsen & Huse, 2010).

The role of women on boards as director is also receiving increasing attention. Previous research on gender differences suggests that although there are no overall differences in effectiveness between women and men, there are gender differences in behaviors and skills in some situations (Yukl, 2002). These differences in leadership styles can have important implications for board effectiveness (Nielsen & Huse, 2010). Gender and ethnic diversity are active policy-making topics in many countries, while some national governments have set quotas or simply provided diversity guidelines. However, it is not clear how or whether these measures will achieve the desired results. Theory from the fields of economics, organizational behavior, and social psychology provides some understanding of the nature of the relationship between board diversity and financial performance (Carter et al., 2010).

The board of directors plays a key role in setting the vision, mission, values, and setting strategy that improves organizational performance (Carroll & Buchholtz, 2014; Liao et al., 2015). These roles are influenced by board demographics such as gender, tenure, age, and education (Johnson et al., 2013; & Post & Byron, 2015). Therefore, it is important to investigate how demographic diversity in the boardroom affects corporate performance. Additionally, in recent years, several countries, including Nepal, have enacted policies and mandatory laws to improve board diversity. This has sparked a debate about demographic diversity among practitioners, regulators, and academics (Hillman, 2015; & Mahadeo et al., 2012).

There have been intense research studies in board diversity as an important dimension of corporate governance to measure the impact on the firm's value and performance in developed markets in the US, Europe and other developed Asian continent and their findings are very interesting and contradicting. However, there is a lack of comprehensive literature in analyzing the relationship

between board structure i.e., in terms of board diversity and firm value in the Nepalese context. Most of the studies in the Nepalese context are only concerned with corporate governance dimensions like board size, board activity, independent directors, and so on.
Therefore, this study adds further insights to the corporate governance literature and provides more insight into the extent to which the participation of women and minority directors on boards affects the value of companies in the financial sector. The rest of the paper is organized as follows. The second section provides an overview of the literature and hypothesis development, the third section describes the methodology and model, the fourth section presents the results and discussion, and the final section concludes the paper with implications and limitations.

LITERATURE REVIEW AND HYPOTHESES

Resource dependence theory suggests that diversity has the potential to improve the information that boards provide to management because different directors have unique information. Differences in gender and nationality may provide a unique set of information that executives can use to make better decisions (Carter et al., 2010). On the contrary, social psychological theory suggests that decision-making may be slower and conflict more intense among diverse leaders. Therefore, many researchers view diversity as a "double-edged sword" (Milliken & Martins, 1996). In particular, while diversity can improve group processes for some tasks and lead to high-quality solutions, it also often reduces cohesion. In this regard, academic research has failed to demonstrate a clear relationship between board diversity and effective board performance, especially in banks (Caprio et al., 2007).

Empirical studies such as (Carter et al., 2003; Adler, 2010; Ntim, 2013; Nguyen et al.,2015; & Perryman et al., 2016) have been carried out to examine the relationship between board diversity and firm value and performance in developed countries like the US, Canada, France, Germany, UK and in emerging countries like India, China, Indonesia, South Africa, Brazil, Korea etc. These studies have resulted in repeated mysteries regarding the connection between Board diversity and financial performance and firm value. The results of some studies are inconclusive and interesting. (Ntim, 2013; Agyemang-Mintah, & Schadewitz 2019).

Gyapong et al. (2016) reported that both board gender and ethnic diversity have a positive and significant impact on firm value. The study argued that having three or more female directors on a board is expected to increase shareholder value and that Tobin's Q serves as a measure of financial performance. Another study by Nguyen et al. (2015) used Tobin's Q to show that board gender diversity appears to have a positive impact on firm performance. Similarly, Campbell and Minguez-Vera (2008) in Spain and Hutchinson et al. (2014) in Australia highlight the positive impact of female directors on financial performance and highlight a positive relationship. Similarly, Erhardt et al. (2003) study in the USA revealed that the presence of female and minority directors in board rooms has a statistically significant and positive relationship with firm value.
Ntim's (2013) study on the South African stock market found that board diversity was statistically significant and positively related to firm value (Tobin's Q). Perryman et al. (2016) show that companies with greater gender diversity in leadership take fewer risks and achieve higher performance. Similarly, a study by Faff et al. (2011) argued that companies balance risk tolerance by

having a combination of female and male members on the board of directors when making decisions. Similarly, Garcia-Meca et al. (2014) argued that while gender diversity improves bank performance, national diversity hinders it. The study found that board diversity has a smaller impact on bank performance as regulations and investor protections weaken.

In contrast, other studies (Shrader et al. 1997; Smith et al. 2006; Adams and Ferreira 2009 & Darmadi, 2011) have found that board diversity and reported that there is a negative relationship with financial performance. A study by Darmadi (2011) showed that the presence of women in the boardroom hurts company performance measured by Tobin Q. Shrader et al. (1997) showed that there is a negative relationship between the proportion of women on the board of directors and the financial value of the firm. Adams and Ferreira's (2009) study found that the average effect of gender diversity on firm performance is negative because firms are less resilient to takeovers. Similarly, Ahern and Dittmar (2012) study over the period from 2001 to 2009 Norwegian firms reported proportion of females in board rooms leads to a substantial decline in the firm value. Board diversity and firm performance also showed a non-significant relationship in some other studies. For example, a study by Marimuthu and Kolandaisamy (2009) showed that there is no significant relationship between gender diversity and firm performance. Similarly, Rose (2007) found no significant relationship between corporate value and women's representation on the boards of Danish-listed organizations. Similarly, Zahra and Stanton (1988) report no significant relationship between board diversity and firm value. Another study by Carter et al. (2010) failed to demonstrate a significant relationship between corporate board gender and ethnic diversity and financial performance using data from the S&P 500 index. Similarly, Zahra and Stanton (1998) used a sample of 95 publicly traded US organizations and found no significant relationship between board diversity and firm market value.

In the context of Nepal, the study by Rijal and GC (2010) found a positive association between the number of executive directors on the board and debt level but insignificant in the case of board size and CEO tenure. Similarly, Pradhan (2015) reports that there is a significant relationship between corporate governance and ROA and ROE of commercial banks. A study by Acharya (2016) found that there is no significant relationship between corporate governance index and firm value and governance only has a positive impact on financial performance. Bartaula (2009) documented that corporate governance variables are found significantly associated with both Tobin's Q and market share per value. Rajbahak et al. (2014) reported that board size, firm size, and firm growth have a positive and significant impact on return on assets but an insignificant impact on return on equity.

There are several theoretical arguments regarding the relationship between female board representation and firm performance. However, based on mixed and sometimes contradictory findings in the literature to date, there is still no consensus on the relationship between women's presence in the boardroom and corporate performance. These mixed results are not unexpected, as the relationship between board diversity and firm financial performance is theoretically and empirically complex (Carter et al., 2008). Although, prior studies suggest a positive link between different measures of board diversity and firm value, most have been unable to conclusively indicate that board diversity impacts positively on firm value.

Despite the growing discussion on board diversity as an important aspect of corporate governance, to the best of the authors' knowledge, the impact of board diversity (i.e. the presence of women and minority groups) on corporate valuations is limited. No studies have been conducted to investigate the impact in Nepal's financial sector. Because of this, this study examines the extent to which board diversity within the board rooms of the Nepalese financial institutions contributes to the firm values. Specifically, this study hypothesizes that:

H_1: There is a positive relationship between board members' diversity and firm value based on both minority and gender.

Board size and firm value

Similarly, Garcia-Meca et al. (2014) study finds that board size has a positive relationship with the firm market value. Coles et al. (2008) indeed find evidence that larger and diversified firms that rely more on debt financing, derive greater firm value from having larger boards. Charles et. al (2018) study examined BGD and firm performance by using a quantile regression approach and reported that board size has a positive impact firm's performance. Based on the above evidence, the study develops the following sub-hypothesis:

H_1a: Board size has a positive relation relationship with firm value.

Independent director and firm value

Terjesen et al. (2015) study reported board interdependence structure has a positive and statistically significant effect on firm's value, but no significant evidence regarding the relationship between the use of debt and firm's value. Similarly, Kuzey (2016) study examined the effect of board gender diversity on firm performance and reported that the percentage of independent board directors has a positive impact on firm performance. Based on the above finding, the study develops the following sub-hypothesis:

H_1b: Independent directors have a positive relationship with firm value.

Firm size and firm value

Rancati (2017) investigated the relationship between gender diversity and firm performance using of 918 companies listed in Italian stock Exchange for the period 2011-2014. The study argued firm size has a positive and significant effect on Tobin's Q. Likewise, Gyapong et.al (2016) study of sample 245 South African listed firms for 2008 to 2013 reported firm size has a positive effect on firm value. Based on it, the study formulates the following sub-hypothesis:

H_1c: Firm size has a significant positive relationship with firm value.

Leverage and firm value

Leverage also has a significant effect on firm value. Conyon and He (2017) reported that leverage has a negative and statistically significant impact on firm value. Similarly, Kuzey (2016) study examined the effect of board gender diversity on firm performance using a sample of 149 nonfinancial firms reported that leverage has a negative impact on firm performance. So, based on the above evidences, the study sets the following sub-hypothesis:

H_1d: Leverage has a significant negative relationship with firm value.

ROA and firm value

Empirical evidence suggested by ROA also has a significant impact on the firm value. Carter et al. (2003) study implies that ROA has a positive and significant effect on the firm value measured by Tobin's Q. Jubilee et al. (2018) study of ten banking institutions listed in Bursa Malaysia with data observation from 2007 to 2016 documented ROA has a positive and statistically significant impact on Tobin's Q. Based on above findings, the study sets the following sub-hypothesis:

H_1e: ROA has a significant positive relationship with firm value.

METHODOLOGY

To investigate the potential effect of board diversity on firm value the study has adopted a causal research design. The study mainly relies on secondary data. The data for firm-specific variables is obtained from financial reports published by NRB, NEPSE, and the websites of sample financial institutions. The study covers a range from the year 2011/12 to 2020/21. Balance panel data set from the 38 financial institutions were extracted for 10 years with 380 firm-years observations. First raw data are collected and then processed to make them usable in the process of analysis. First, all the listed financial institutions in NEPSE were stratified into subgroups as commercial banks, development banks, finance companies, microfinance companies & insurance companies as per the size, capital employed, and financial services. Financial institutions from each stratum were selected using disproportionate stratified sampling from each stratum. Sample firms selected include 11 commercial banks, 10 insurance companies, 6 development banks, 6 finance companies, and 5 from micro finance companies with a total of 38 sample firms. SPSS version 20 was used for data analysis where descriptive statistics, correlation analysis, and multiple regression analysis were used to estimate the relation between board diversity and firm value. Concerning our estimation procedure, the study regresses a measure of firm value against measures of the board diversity along with control variables as follows:

$$\textbf{Firm Value} = \alpha_0 + \beta_1 \textbf{ Board Diversity}_{it} + \sigma^{n}_{=1} \beta i \textit{ Control}_{it} + \varepsilon_{it}$$

The study uses Tobin's Q and market-to-book ratio (MBR) as the outcome variables that represent the measure of firm value. To reduce the influence of outlier firms with very high Tobin's Q and MBR, the study uses the natural logarithm of Tobin's Q (ln Q) and MBR (ln MBR) as dependent variables (Ararat et al., 2016). Board Diversity which includes gender and minority is the main independent variable. The study uses both a dummy variable indicating the presence of women and minorities on the board and the percentage of women and minorities on the board as measures of the board of director diversity. The study also includes several control variables that have been previously studied. Here, control refers to the variables that include board size (natural logarithm of the number of directors), presence of independent directors, firm size (e.g., natural logarithm of total assets), return on assets (ROA), and leverage. In light of the above main model, further models for the estimation of independent variables with control variables are presented below.

$$lnQ_{it} = \alpha + \beta_1 \, Female_{it} + \beta_2 \, ln \, Bsize_{it} + \beta_3 \, ID_{it} + \beta_4 \, Lev_{it} + \beta_5 \, ln \, size_{it} + \beta_6 \, ROA_{it} + \varepsilon_{it} \text{ --------- } (1)$$

$$lnQ_{it} = \alpha + \beta_1 \, Minority_{it} + \beta_2 \, ln \, Bsize_{it} + \beta_3 \, ID_{it} + \beta_4 \, Lev_{it} + \beta_5 \, ln \, size_{it} + \beta_6 \, ROA_{it} + \varepsilon_{it} \text{ ------------} (2)$$

$$lnQ_{it} = \alpha + \beta_1 \, Female_{it} + \beta_2 \, Minority_{it} + \beta_3 \, ln \, Bsize_{it} + \beta_4 \, ID_{it} + \beta_5 \, Lev_{it} + \beta_6 \, lnsize_{it} + \beta_7 \, ROA_{it} + \varepsilon_{it} \text{ -------------} (3)$$

$$lnMBR_{it} = \alpha + \beta_1 \, Female_{it} + \beta_2 \, ln \, Bsize_{it} + \beta_3 \, ID_{it} + \beta_4 \, Lev_{it} + \beta_5 \, ln \, size_{it} + \beta_6 \, ROA_{it} + \varepsilon_{it} \text{ --------- } (4)$$

$$lnMBR_{it} = \alpha + \beta_1 \, Minority_{it} + \beta_2 \, ln \, Bsize_{it} + \beta_3 \, ID_{it} + \beta_4 \, Lev_{it} + \beta_5 \, ln \, size_{it} + \beta_6 \, ROA_{it} + \varepsilon_{it} \text{ --------- } (5)$$

$$lnMBR_{it} = \alpha + \beta_1 \, Female_{it} + \beta_2 \, Minority_{it} + \beta_3 \, lnBsize_{it} + \beta_4 \, ID_{it} + \beta_5 \, Lev_{it} + \beta_6 \, lnsize_{it} + \beta_7 \, ROA_{it} + \varepsilon_{it} \text{ ------------} (6)$$

The study focuses on analyzing the impact of board diversity with control variables on the firm value. Board diversity as the main independent variable and firm value as the dependent variable. The operational definition of these variables with their proxies is given in Table 1.

Table 1 *Definition of variables.*

Dependent variable	
Tobin's Q	Tobin's Q is the sum of the market value of equity and the book value of debt divided by its total assets. The natural logarithm of Tobin's Q (lnQ) is used as the outcome variable.
MBR	MBR is the ratio of market capitalization to net book value. The natural logarithm of MBR (lnMBR) is used as the outcome variable.
Independent Variables	
Female	Both the percentage of women in the boardroom and the dummy variable indicating the presence of women on the board equals 1 otherwise 0.
Minority	Minority director is another independent variable that incorporates adibas i-janjati, Madhesi, Dalit and Foreigner. Both the percentage of minorities in the boardroom and the dummy variable indicates the presence of minorities on the board which equals 1 otherwise 0.
Control variables	
Size	Total asset is the proxy of firm size. Here, a natural logarithm of total book value of Assets (ln size) is used in the study.
Board size	Board size is the total number of directors on corporate board. Here, a natural log of Board size (ln Bsize) is used in the study.
Ind D	In D refers to the presence of outsiders in the boardroom which is the ratio of independent directors/outsiders to total board size.
Leverage	Leverage is the ratio of Total liabilities to Total Assets.
ROA	ROA is the ratio of Net Profit After Tax to Total Assets.

RESULT AND DISCUSSION

Table 2 *Descriptive statistics*

This table shows descriptive statistics-mean, median, standard deviation, minimum and maximum values- of the 38 sample firms for the period 2011/12 through 2020/21. TQ is the sum of the market value of firm's stock and the book value of debt divided by the book value of its total assets, MBR refers to the ratio of market capitalization to net book value, Minority and Female refers to the minority and female directors in the boardroom, Minority% and Female% represent the percentage of minority and female directors to total board size, B size refers to the number of directors present in the boardroom, T. asset(m) refers to the total asset of firm used as the proxy of firm size, IND refers the number of independent directors present in the boardroom, ROA is the ratio of net profit after tax to total book value of assets and LEV represent to the leverage which is the ratio of total debt to total assets

Variables	*Minimum*	*Maximum*	*Mean*	*S. D*
TQ	0.8557	6.6906	1.5778	0.8424
MBR	1.0000	27.0000	4.7000	4.5890
Minority	0.0000	6.0000	1.6776	1.6233
Female	0.0000	3.0000	0.4046	0.6325
Minority (%)	0.0000	0.8333	0.2396	0.2315
Female (%)	0.0000	0.4000	0.0585	0.0915
BSize	4.0000	10.0000	6.9276	1.1524
T Asset (in M)	437.52	201138.82	29413.12	40771.67
IND	0.0000	1.0000	0.5428	0.4990
ROA	-0.2082	0.1918	0.0290	0.0337
LEV	0.3143	0.9590	0.8267	0.1317

Table 2 reveals that Tobin's Q ranges from 0.8557 to 6.6906 with a mean value and standard deviation of 1.5778 and 0.8428 respectively. In terms of MBR, the value ranges from 1 to 27 with an average of 4.7 percent. This wide range of values of MBR indicates that firms included in the sample vary significantly in terms of their Market value. Similarly, female directors range from 0 to a maximum 3 directors with an average of 5.85% of the total board size whereas, minority directors range from 0 to 6 persons with a mean of 23.9% of the total board size. The firms also differ in terms of their Total Assets, ROA, and Leverage. Total assets fall within the range of minimum Rs 437.52m to maximum Rs 201,138.83m, ROA within -20.82% to 19.18% and Leverage within 31.43% to 95.9% with a mean value of Rs 29,413.12, 2.9% and 82.27% respectively.

Relationship among variables

Table 3 *Correlation Results*
This table shows the bivariate Pearson Correlation Coefficients between different pairs of variables used in the study. ln Q and ln MBR are as defined in the Table 3. Here natural logarithm of both variables is used. MIN refers to the percentage of Minority directors in the boardroom,

*FEM refers to the percentage of female directors in the boardroom, IND represent the percentage of independent directors present in board room, ROA represent the ratio of net profit after tax to total book value of assets, LEV refers to the ratio of total debt to total book value of assets, lnBS represent the natural logarithm of total board size, ln SIZE refers to the proxy of firm size which is the natural logarithm of Total assets. The data are from 38 sample firms for the period 2011/12 through 2020/21. Asterisk'***' '**' & '*' indicates that correlation is significant at 1 percent, 5 percent and 10 percent respectively.*

	lnQ	*lnMBR*	*MIN*	*FEM*	*IND*	*ROA*	*LEV*	*lnBS*	*lnSIZE*
lnQ	1								
lnMBR	.772***	1							
MIN	.097*	.216***	1						
FEM	.117**	.144**	-.002	1					
IND	.305***	.278***	.141**	-.001	1				
ROA	.455***	.125**	.009	-.061	.187***	1			
LEV	-.486***	.054	.100	.033	-.163***	-.701***	1		
lnBS	.174***	.109*	-.006	-.104	.162***	.128**	-.069	1	
lnSIZE	.114**	.279***	.217***	.060	.180***	.357***	.569***	-.134**	1

As Table 3 shows, the correlations among different pairs of explanatory variables are also relatively lower and many of them are statistically significant. All the explanatory variables are significantly correlated with ln Q at 1 percent significant level except lnsize at 5 percent level, whereas, the minority has positive and statistically significant at 10 percent level. Similarly, the presence of female directors, independent directors, and ROA is positive and statistically significant at 1 percent level which reveals that an increase in female directors, independent directors, and ROA leads to an increase in firm market value and vice-versa.

Whereas, leverage is negative and statistically significant at 1 level with dependent variable ln Q as a proxy of firm value that shows that a rise in leverage leads to a decline in the firm value and vice-versa. Similarly, lnMBR has a positive relationship with all the explanatory variables which specifies that an increase in all the explanatory variables leads to also increase in lnMBR as a proxy of firm value. Among them, minority directors, independent directors, and firm size have positive and statistically significant at 1 percent level whereas female directors and ROA also have positive & statistically significant at 5 percent level and lnBsize significant at 10 percent level. However, leverage has a positive relationship with lnMBR but is not statistically significant.

Table 4 Regression result of Board diversity on Firm Value measured by Tobin's Q
The results are based on balanced panel data of 38 firms with 380 firm-years observation for the period 2011/12 to 2020/21 by using linear regression model. Dependent variable is firm value measured by Tobin's Q denoted by lnQit, and independent variables are the presence of female and minority directors in boardroom as dummy variable denoted by 1 otherwise 0 (model 1a, 2a, & 3a) and the proportion of female and minority directors(model 1b, 2b, & 3b), along with board size (lnBsizeit), presence of independent directors (IDit), leverage (levit), firm size (lnSizeit) and

Return on assets (ROAit) Figures in parentheses are t-values and asterisk, (***), (**) & (*) indicates that the results are significant at 1, 5 & 10 percent respectively. Also reported are the F-statistics, coefficient of determination (R2), and standard error of estimates (SSE).

Explanatory variables	Dependent variable *ln Q*					
	Model					
	1a	1b	2a	2b	3a.	3b.
Female (1/0)	0.119*** (3.102)	-	-	-	0.121*** (2.123)	-
Female%	-	0.618*** (3.114)	-	-		0.621*** (3.143)
Minority (1/0)	-	-	0.082** (2.020)	-	0.085** (3.168)	-
Minority%	-	-	-	0.142* (1.742)	-	0.144* (1.799)
lnBsize	0.269*** (2.655)	0.286*** (2.813)	0.230** (2.239)	0.258** (2.523)	0.242** (2.382)	0.287*** (2.837)
IND	0.114*** (2.856)	0.113*** (2.849)	0114*** (2.857)	0.108*** (2.671)	0.114*** (2.877)	0.107*** (2.678)
LEV	-1.30*** (-5.776)	-1.283*** (-5.696)	-1.367*** (-5.957)	-1.327*** (-5.819)	-1.367*** (-6.049)	-1.308*** (-5.818)
lnSize	0.046** (3.061)	0.044*** (2.955)	0.045*** (2.984)	0.042*** (2.753)	0.045*** (3.015)	0.04*** (2.672)
ROA	2.007*** (2.639)	2.051*** (1.162)	1.795** (2.329)	1.818** (2.356)	1.854** (2.442)	1.925** (2.529)
Constant	0.339 (1.284)	0.308 (1.162)	0.462 (0.731)	0.429 (1.612)	0.4 (1.515)	0.334 (1.267)
R^2	0.358	0.358	0.346	0.343	0.367	0.365
SEE	0.3138	0.3138	0.3167	0.317	0.312	0.312
F	27.552***	27.571***	26.161***	25.898***	24.540***	24.273***

Table 4 depict regression results of presence of female and minority directors in boardroom along with control variables on firm value measured by ln Q. To capture the relationship between the presence of female directors and minority directors, the study used two variables: a dummy variable coded as 1 if there is at least one female director and minority director [model 1a, 2a & 3a] and zero otherwise, and the percentage of female and minority directors on the board size [1b, 2b, & 3b]. The estimated coefficients for several models on the dependent variables in *ln Q* are satistically significant.

The estimated beta coefficients of *lnBsize* are positive and statistically significant at 1 percent level [1a, 1b &3b] and 5 percent level for remaining models for board size which specifies that larger the board size, larger will be the firm's value. So, the H1a hypothesis i.e., Board size have statistically positive relation relationship with firm value is supported by this result. Similarly, this result is consistent with Charles et al. (2018), Chauhan & Dey (2017), & Garcia-Meca et al. (2014),) findings but inconsistent with Carter et al. (2003), Gyapong et al. (2015) and Yermack (1996) findings.

Similarly, beta coefficients IND are positive and statistically significant at 1 percent level which reports that a higher presence of independent director leads to higher firm value and vice-versa. This result also supports H1b hypothesis of the study i.e., independent directors have a statistically positive relationship with firm value. This result contradicts Conyon & He (2017), Fuzi et al. (2016), and Kuzey(2016) study but supports Abdullah and Ismail (2013)), Leung et al. (2014), and Terjesen et al. (2015) study. The estimated beta coefficients of leverage have an inverse relationship with firm value and are statistically significant at 1 percent in all the applied models. As expected, the result supports the H1d. This finding is consistent with Charles et al. (2018), Conyon & He (2017), and Khosa (2017) study but inconsistent with Dezso and Ross (2012) & Kagzi and Guha (2018) study.

Likewise, the beta coefficient of firm size is positive, and statistically significant at 1 percent which indicates the higher the firm size higher will be the firm value which supports the finding of Gyapong et al. (2016), Jubilee et al. (2018), Rancati (2017) & but contradict with Agyemang-Mintah and Schadewitz (2019)), Charles et al. (2018) & Chauhan & Dey (2017) study. As expected, this result also supports the hypothesis H1c i.e., Firm size has a significant positive relationship with firm value. Similarly, the beta coefficient of ROA is positive and statistically significant in 5 percent level that supports the hypothesis H1e.i.e., ROE has significant positive relationship with firm value. These finding are consistent with Carter et al. (2010), Eberhart (2012) & Jubilee et al. (2018) study. Profitability gives investors important signals about expected future performance and company value. Therefore, improved profitability can be interpreted as an indicator for investors to formulate their investment strategies and contributes to increasing the market value of companies (Alghifari et al. 2013).

The estimates for the relationship between firm value and presence of female directors in board-room in model 1a &1b both has positive and statistically significant at 1 percent that indicates that the presence of female in boardroom increases the firm value. This result is consistent with Agyemang-Mintah & Schadewitz (2019), Carter et al. (2003), Gyapong et al. (2016) and Jubilee et al. (2018) study but inconsistent with Abdullah and Ismail (2013), Ahern and Dittmar (2012) & Darmadi (2011) study. These results provide strong evidence of a relationship between firm value and the presence of female directors.

Similarly, the estimate for the relationship between firm value and the presence of minority directors in the board in models 2a & 2b also indicate positive and statistically significant at 5 percent and 10 percent respectively which indicate the increase in minority directors in the board-room helps to increase in the firm value and the result is consistent with the Carter et al. (2003) and Ntim (2013) study. So, this result also provides strong evidence of the positive relationship between firm value and the presence of minority directors. The study also measures the combined effects of the presence of both female and minority directors in boardroom with firm value (model 3a &3b). The coefficient of both female and minority are positive and statistically significant which supports that the presence of both female and minority directors contributes to the market value of the firm. Further, the value of the beta coefficient clearly indicates that the presence of female directors in the boardroom contributes more than minority directors to the market value of the firm though the presence of a lower number of females in the boardroom as compared to the minority directors (see table 2). This finding supports the Erhardt et al. (2003) and Ntim (2013) study but fails to support Carter et al. (2010) study. Hence, the result of the combined effect of female and minority directors in the boardroom supports the main hypothesis of the study (H1). This means an increase in female and minority directors can increase in firm value when they are allowed to work with their male counterparts, it will significantly influence on the firm value.

Table 5 Regression result of Board diversity on Firm Value measured by MBR

The results are based on balanced panel data of 38 firms with 380 firm-years observation for the period 2011/12 to 2020/21 by using a linear regression model. Dependent variable is firm value measured by Market to Book ratio denoted by ln MBRit, and independent variables are the presence of female and minority directors in the boardroom as dummy variable denoted by 1 otherwise 0 (models 41, 5a, & 6a) and proportion of female and minority directors(model 4b, 5b, & 6b), along with board size (lnBsizeit), presence of independent directors (IDit), leverage (levit), firm size (lnSizeit) and Return on assets (ROAit) Figures in parentheses are t-values and asterisk, (***), (**) & (*) indicates that the results are significant at 1, 5 & 10 percent respectively. Also reported are the F-statistics, coefficient of determination (R2) and standard error of estimates (SSE).

Explanatory variables	**Dependent variable *In MBR***					
	Model					
	4a	**4b**	**5a**	**5b**	**6a.**	**6b.**
Female (1/0)	0.259** (2.796)	-	-	-	0.263*** (2.857)	-
Female%	-	1.38*** (2.882)	-	-		1.391*** (2.926)
Minority (1/0)	-	-	0.192* (1.965)	-	0.198** (2.053)	-
Minority%	-	-	-	0.446** (2.281)	-	0.451** (2.338)
InBsize	0.447* (1.829)	0.486** (1.981)	0.359 (1.449)	0.425* (1.731)	0.384 (1.565)	0.490** (2.014)
IND	0.30*** (3.124)	0.30*** (3.119)	0.203*** (3.128)	0.281*** (2.902)	0.30*** (3.145)	0.279** (2.908)

LEV	0.671 (1.233)	0.710 (1.306)	0.515 (0.932)	0.589 (1.077)	0.514 (0.942)	0.631 (1.168)
lnSize	0.154*** (4.256)	0.15*** (2.955)	0.152*** (4.179)	0.142*** (3.871)	0.151*** (4.217)	0.138*** (3.806)
ROA	6.545*** (3.564)	6.649*** (3.620)	6.059*** (3.264)	6.014*** (3.248)	6.190*** (3.373)	6.254*** (3.417)
Constant	-2.090 (-3.280)	-2.163 (-3.386)	-1.811 (-2.815)	-1.811 (-1.866)	-1.947 (-3.054)	-2.078 (-3.273)
R^2	0.20	0.201	0.19	0.193	0.211	0.216
SEE	0.7579	0.7574	0.7629	0.7613	0.7539	0.7517
F	12.379***	12.478***	11.575***	11.848***	11.327***	11.637***

Table 5 exhibits result of presence of female directors, minority directors along with control variables on firm value measured by market to book ratio *(lnMBR).* To capture the relationship between the presence of female directors and minority directors, the study used two variables: a dummy variable coded as 1 if there is at least one female director and minority director [model 4a, 5a & 6a] and zero otherwise, and the percentage of female and minority directors on the board-room [4b, 5b, & 6b]. The estimated coefficients for several models on the dependent variable ln *MBR* are statistically significant except in leverage.

The regression coefficients of board size are positive and statistically significant in all models except models 5a & 6a. This finding indicates that a greater number of directors in the board leads to higher firm market valuation which supports the findings of Charles et al. (2018), Coles et al. (2008), and Nguyen et al. (2014) but contradicts Andres and Vallelado (2008), Carter et al. (2003) and Gyapong et al. (2015) study. Whereas, the beta coefficient of independent directors is positive and statistically significant in 1 percent of level in all most all the models. These results indicate that the presence of independent directors in boardroom increase the value of the firm and vice-versa. Hence, these results also support the hypothesis H1a and H1b. Similarly, the estimated regression result shows the beta coefficients of leverage have a positive relationship with firm value but not statistically significant in any models. Surprisingly, this result does not support the expected hypothesis (H_1d).

Whereas, the regression coefficient of firm size has a positive relationship with firm value measured by MBR and is statistically significant at 1 percent in all the models. This finding indicates the greater the firm size higher the market value of firm that supports the finding of Gyapong et al. (2016) and Rancati (2017) study but contradicts Ararat et al. (2015), Dezso and Ross (2012) study. Similarly, the regression coefficient of ROA also observed positive and statistically significant at 1 percent level with the market valuation of the firms in all the models indicating that higher the ROA leads to higher value of firm and vice-versa. The result is consistent with Carter et al.

(2003), Eberhart (2012) & Jubilee et al. (2018) study but inconsistent with Gupta et al. (2009) result. Hence both the results support hypothesis ($H_{1}c$ & $H_{1}e$).

The regression estimates for the relationship between firm value and the presence of female directors in the boardroom in model [4a & 4b] both have positive and statistically significance at 5 percent level which indicates that the presence of female directors in the boardroom leads an increase in the firm value. Similarly, the coefficient for the minority directors and firm value in both models [5a. & 5b] are positive and statistically significant at 10 percent level. Likewise, the regression results of combined effects of female and minority directors in the boardroom with firm value in model [6a. & 6b.] indicate positive and statistically significant at 1 percent and 5 percent respectively which also provides strong evidence that presence of female and minority directors in the boardrooms lead to increase the market value of firm. Hence, hypothesis H1 i.e., there is a significant relationship between board diversity and firm value based on of both gender and minority is accepted and the finding is consistent with Ararat et al. (2015) & Ntim (2013) study but inconsistent with Carter et al. (2010).

CONCLUSION, IMPLICATION AND RESEARCH LIMITATIONS

In recent years, many corporate scandals and failures have occurred due to the lack of effective corporate governance mechanisms. Therefore, board diversity has received significant attention from policymakers, regulators, governments, and shareholders because of its implications for good corporate governance. Previous research has shown inconclusive and contradictory results regarding whether board diversity (particularly the presence of women on boards) has an economic impact on firm value. So, this study purpose to inspect the relationship between board diversity and the firm value of financial institutions of Nepal. It examines the presence of female and minority directors along with instrumental variables like board size, independent directors, Leverage, firm size, and ROA on firm market value.

The study is based on balance panel data of 38 financial institutions from 2012 to 2021. The study concludes that there is a positive significant effect of board diversity in terms of female and minority directors on the firm value. This result revealed that more presence of female and minority directors in the board room helps to increase the firm value in Nepalese financial institutions. Hence, these findings are consistent with agency and resources dependency theories which suggest a diverse board members improve board oversight and bring more diverse ideas, new perspectives, experience, and business knowledge to the board's decision-making process, ultimately improving the company's financial performance and value (Agyemang-Mintah, & Schadewitz, 2019). Moreover, the evidence supports that the presence of female directors in the boardroom affects more in the firm market value than as compared to the minority directors. Similarly, the study also concludes that board size, independent directors, firm size and, ROA have a positive impact on the firm value whereas Leverage has a negative and significant impact on the firm value.

Board diversity is a major concern in the corporate world. The government of Nepal has introduced a requirement for at least one woman and one independent director for every seven board members in the banking sector. This study provided empirical evidence on business practices and implications for policymakers. Not only does such a policy make sense from a societal perspective, investing in board diversity appears to be an effective business strategy with promising and sustainable returns in the form of increased shareholder value. It also looks like the appointment of women to corporate boards should not be done symbolically, but with the motive that their presence increases the value of the company. The presence of female and minority directors on a company's board of directors should not be seen as a mere token; the focus should be on how they can contribute to the board's performance. Another practical implication of this study is to help developing countries like Nepal which is considering as pursuing board gender diversity reforms. Just like any other study, this one also has its limitations. This study first focuses on board diversity as the presence of women and minority directors in the boardroom, which represents one aspect of board diversity. Therefore, future researchers can investigate the impact of other board diversity characteristics, such as director age, academic qualification, experience (tenure), language, and cultural diversity, on firm performance and value. Second, future researchers can conduct cross-country studies and compare their results, especially in emerging economies. And third different methodological dimensions such as case studies, surveys or experimental studies may be helpful for detailed understanding of the issues related to board diversity with financial performance and firm value.

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Remittance Dynamics: Unraveling Socio-Economic Impact on Households in Pokhara

Mohan Bhandari

Abstract

This research investigated the trend of textile design graduates venturing into entrepreneurship, exploring the motivating factors and strategies employed by these entrepreneurs. The study adopts survey research design using a questionnaire as the data gathering tool. The population of the study are textile graduates in selected schools in Southwest Nigeria comprising of federal universities, state universities and polytechnics. One hundred and four (104) graduates were sampled using snowball sampling techniques. The data collected were analyzed quantitatively through descriptive analysis using frequency, percentage and mean score. The result of the research reveals that they are increasingly involved in textile entrepreneurship. It was discovered that fashion design is the most subscribed entrepreneurial area by textile design graduates closely followed by Adire production. It was also revealed that textile design graduates engage in entrepreneurial areas outside the textile design field such as banking, real estate and web development among others. It is recommended that tertiary institutions should encourage students to participate in entrepreneurial competitions, both within and outside the institution to enlighten them more about textile entrepreneurship. It is also recommended that tertiary institution should update their curricula to ensure that they have adequate theoretical and practical content to produce graduates well-prepared for the competitive textile market.

Keywords
Households,
Human capital,
Living standard,
Pokhara,
Remittance

THE CONTEMPORARY ERA of globalization witnesses a significant expansion in migration, facilitating the flow of human

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capital among nations (Czaika & De Haas, 2014). This phenomenon, driven by remittances from migrant labour, transforms the global economy and socio-cultural interdependence. Notably, migration from South Asia to developed countries has surged, a trend projected to endure. In Nepal, where the labour force comprises, 79.60 percent aged 15 to 64 (CEIC, 2021), 56 percent of households have the opportunity to receive remittances (NLSS-III, 2011), contributing almost 30 percent to the country's GDP (WBG, 2021). Remittance revenue is vital for Nepal's economic health, with receipts growing from 44.16 million US dollars in 1996 to 7795.56 million US dollars in 2020 (WBG, 2021). Remittances, essential for developing nations, influence GDP expansion, impacting individual income, healthcare, and education (Alishani & Nushi, 2012). Migration-driven remittances fueling economic growth, shaping socio-cultural ties, and enhancing individual welfare underscore the indispensable role of global migration in contemporary economies.

Remittances, typically defined as a portion of a migrant's earnings sent to their country of origin, predominantly encompass financial transactions, although non-cash products are also considered (Pant, 2004). This term commonly denotes transfers made by migrant workers, yet it's crucial to recognize that refugees and migrants without the same legal status also contribute to remittances. The increasing flow of remittances from migrants addresses challenges in developing nations such as low employment, income rates, rising poverty, and unequal income distribution (Dhungana & Pandit, 2016). These financial inflows serve as a vital source of household income, alleviating poverty, elevating social standing, and facilitating economic stability. Remittances have evolved into a significant government funding source and a poverty eradication strategy, with substantial investments in trade and business, alongside conspicuous spending and durable goods (Edwards & Ureta; Acosta, 2011). Remittances, encompassing financial transactions from migrants, refugees, and those without legal status, play a pivotal role in alleviating poverty and fostering economic stability in developing nations.

Globally, remittances totaled $605 billion, projected to rise by 4.2 percent to $630 billion by 2022 (WBG, 2021). Nepal, ranking top in South Asia and sixth globally, heavily relies on remittances, constituting 25 percent of its GDP (WBG, 2021). In the latest fiscal year, Nepal received NPR 699 billion (USD 6.56 billion) in remittances, representing over 25 percent of the country's GDP, marking the fourth-highest share worldwide (ADB, 2021). While remittances buoy the economy and elevate purchasing power, they also pose risks, such as the exodus of educated professionals seeking employment abroad, potentially resulting in a loss of valuable human resources developed with public investment.

A growing number of Nepalese workers are departing the country in pursuit of employment abroad, driven by diminished job opportunities at home (Government of Nepal, 2022). The quantum of remittances is contingent on the country's conditions and the migrant count within a household, creating a reciprocal relationship between overseas job seekers and remittance inflow (Byanjanakar & Shakha, 2021). Economic stability prompts Nepalese labourers to seek opportunities abroad, prompted by recent violent conflicts and limited prospects domestically (Dahal, 2004). Migration and remittance patterns are prevalent in regions marked by political unrest, civil wars, economic downturns, low entrepreneurial investment, and economic slumps worldwide (Sirkeci et al., 2012). Remittance transfers to Nepal employ specific channels like SWIFT or demand drafts, with various established remittance providers such as International Money Express (IME), Western Union, City Express, Himal Remit, Prabhu Remit, and Samsara Remit (WBG, 2021). The traditional "Hundi" practice of informal money transfers persists in Nepalese society. The global economic impact of the Covid-19 outbreak has disproportionately affected Nepalese migrant workers, especially those in tourism, hospitality, and construction, leading to financial crises for many (Study et al., n.d.). The post-pandemic repercussions continue to impact Nepal's economy.

Pokhara, the second-largest valley in Nepal's hilly region, situated in the Western part and part of the Gandaki Province, boasts cultural diversity with Gurungs, Brahmins & Kshetris, Newars, Thakalis, Magar, and other occupational castes. Gurungs dominate the city, particularly in-migrant communities, making Pokhara the leading remittance recipient (WBG, 2021). Many Pokhara residents migrate globally for employment, notably to Hong Kong, Malaysia, Australia, America, Japan, Korea, Canada, Saudi, Dubai, Qatar, and India. The impact of remittance flows in Pokhara sparks a longstanding debate, with studies suggesting both positive effects on livelihoods and negative consequences on agriculture. Given Nepal's significant remittance reception, studies on its social and economic implications, especially on migrant households, are imperative. This study proposes to scrutinize remittance-receiving and non-receiving families in Pokhara, comparing their consumption patterns, human capital investments, and agricultural involvement. The research objectives of this study are to analyze the social and economic consequences of remittance on households in Pokhara Valley by accessing and comparing the level of investment for human capital improvement between remittance-receiving and remittance-non-receiving households and to identify if Labour migration in remittance recipient households has led to a lack of Labour, which has led to a decline in family's involvement in farming and agriculture?

Hypotheses

The following hypotheses have been used to validate the test.

H_1 : There is a significant difference in investment level for human capital improvement between remittance recipients and non-recipient households.

H_2: Labour migration in remittance recipient households has led to a lack of Labour, which has led to a decline in family's involvement in farming and agriculture.

Literature Review

As per the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6), remittances establish an economic link between migrants and their families in their country of origin (Study et al., n.d.). The movement of individuals to other countries, whether temporary or permanent, facilitates the generation of income that is wholly or partially transferred back to the home economies through formal channels like recordable electronic systems or informal means, such as trusted friends carrying cash (Mashayekhi et al., 2013). Remittance categories include compensations of employees, workers' remittances, and migrants' transfers as defined by the balance of payment manual.

Regarding the impact of remittances on the economic development of recipient countries, three influential theories need consideration. The Developmental Optimistic School, predominant in the

1950s and 1960s, posits that migration leads to North-South transfers of investment capital and exposure to liberal, rational, and democratic ideas, fostering development in recipient nations (Adenutsi, 2010). In contrast, the Developmental Pessimistic School emerged in the late 1960s, suggesting that migration and remittances may not lead to sustainable development. This perspective argues that the brain drain from developing countries results in a loss of human capital not compensated by remittance benefits (Beine et al., 2001; Acosta, 2011). Additionally, it contends that remittances may not be invested productively, potentially causing inflation, loss of competitiveness, and increased imports, challenging the recipient's decisions and creating the possibility of the Dutch disease (Taylor, 1999; Chami et al., 2008; Imai et al., 2014).

Furthermore, heightened openness is likely to foster greater integration between the remittance-receiving country and the global community, thereby amplifying imports (De Haas, 2007). This integration may contribute to a cycle of growing dependency, as argued by De Haas (2007). The pessimistic school contends that remittances may lead to a decline in labour supply, with individuals substituting work-associated earnings for remittance income, potentially reducing the labour force (Chami et al., 2008). This substitution effect could result in individuals choosing leisure and alternative non-work-related activities over employment (Barajas et al., 2011; Imai et al., 2014). Another concern is the potential increase in corruption associated with remittances, as the influx of remittance income may make corrupt practices less costly for the government, leading to a rise in corruption levels (Abdih et al., 2008). In this perspective, remittances act as a buffer between the populace and the government, exacerbating issues related to moral hazards (Anaynwu & Erhijakpor, 2010). A third viewpoint, inspired by the Remittances Development Pluralists, offers a stance by acknowledging the limitations of both optimistic and pessimistic views. Developed in the 1980s and 1990s, the Developmental Pluralistic View rejects the idea that remittances strictly yield positive or negative outcomes in receiving countries, recognizing the complexity of the relationship between migration and development (De Haas, 2007; Adenutsi, 2010). This pluralistic perspective highlights the need for new theories that consider various ways in which remittances may affect recipient economies, emphasizing the intricate nature of the migration-development nexus (Taylor, 1999). Unlike overarching theories, the pluralistic view asserts that the impact of remittances is context-dependent, and no single theory can universally explain all outcomes.

Stark's (1985) delineated four distinct motivations for the transfer of remittances: pure altruism, pure self-interest, investment, and tempered altruism. The concept of pure altruism encapsulates the migrants' selfless concern for the well-being of their families, particularly in times of financial decline (Acharya, 2021). The researcher postulated that remittances under the auspices of pure altruism escalate during periods of familial destitution. Conversely, self-interest as a motivation entails migrants perceiving remittances as investments, thereby envisaging future returns upon their repatriation. The insurance motivation posits remittances as financial safety nets for both migrants and their families, effectively mitigating risks in both host and home countries (Lubambu, 2014). Investment theory posits that families dispatch migrants as a means to augment their overall income, thus considering remittances as dividends on their investment in the migrant, leading to an upsurge in remittances during periods of economic upturn. Brown (1997) highlights the propensity of migrants to amalgamate self-interest and altruism, primarily propelled by investment and asset accumulation motives, thereby illustrating a convoluted interplay of motivations in the realm of remittance behavior.

Smith (1776) defined human capital as skills gained through experience, education, and training, which contribute to societal value. Valdero Gil (1970) found that remittances have a significant positive effect on health outcomes in Mexico, particularly for households without health insurance. Anten (2010) discovered that remittances have a substantial beneficial effect on the nutritional status of Ecuadorian children. Edwards and Ureta (2003) observed that remittances improve school retention in El Salvador more than other sources of income. Mansuri (2006) concluded that remittances positively affect human capital development and reduce gender-based education disparities in rural Pakistan. Acosta (2011) found that remittances decrease child labour and increase girls' school attendance in El Salvador. Hanushek (2013) argued that human capital is crucial for economic growth in developing nations. Koska et al. (2013) and Acharya and Gonzalez (2014) established significant correlations between remittances and human capital development in Egyptian and Nepalese children. Headey and Hoddinott (2015) attributed reduced childhood malnutrition in Nepal to migrant remittances. Bouoiyour et al. (2016) found that Moroccan households receiving remittances have increased school attendance. Binci and Giannelli (2018) concluded that remittances improve children's access to education and reduce child labour in Vietnam. These studies collectively highlight the important role of remittances in enhancing human capital and contributing to societal development.

Agriculture is the main source of income in many developing countries, and low labour productivity is a major factor in the pervasive rural poverty (Geffersa, 2023). Lucas (1987) identified both the short- and long-term socioeconomic effects of migration and remittances, pointing out that remittance spending and investment eventually had beneficial results despite early negative effects on labour availability. Studies on migration to South Africa's mines found that although migration short-term decreased grain yields, remittance-driven investments eventually increased productivity and cattle accumulation, leading to greater salaries at home. Maharjan et al. (2013) discovered that migration reduced family labour at farms in Nepal's Western hills, but remittances alleviated capital constraints without affecting necessary farming inputs. On the other hand, Huy and Nonneman (2015) investigated how migration affected Vietnam's agricultural output and came to the conclusion that remittances made up for the loss of workers, encouraging greater investment and output in the sector. This demonstrates the complex ways that migration and remittances affect the dynamics of agriculture in developing nations. Limited research exists on the impact of remittances on household spending patterns in Nepal, particularly in Pokhara Metropolitan. Despite numerous studies on remittance effects globally, little attention has been given to Nepalese spending habits. Addressing gaps in the literature, it seeks to shed light on the consequences of remittances on spending patterns, providing insights into micro and macroeconomic impacts not extensively covered in existing research.

Methods and Materials

This study focuses on examining the social and economic consequences of remittance on house holds in Pokhara Metropolitan City. It analyzes the spending patterns of remittance-receiving and non-receiving families in various household activities. The study uses a descriptive cum comparative research design and collects data from respondents through questionnaires. It also employs a comparative research methodology to compare the spending pattern of remittance-receiving and non-receiving families. The core data for the study come from respondents' questionnaire responses. The study population consists of families in ward number 14 of the Pokhara Metropolitan city. A pilot survey was conducted to determine the sample size, with 15 percent of households receiving remittance and 85 percent not receiving remittance. The sample size for the study was determined using the formula for an infinite population sampling technique. A sample size of 200 houses was chosen for the multivariate analysis, with 100 samples from each group. Convenience and snowball sampling methods were used for sample selection. The study uses quantitative nature of data, from primary sources through structured questionnaire. Both descriptive and inferential analysis have been used as analytical techniques. Descriptive analysis helps in summarizing data points to identify patterns. It is a crucial step in statistical data analysis. Inferential analysis generalizes sample results to the population. Descriptive statistical tools used in the study include frequency, percentage, mean, median, and standard deviation. Mean difference was used to analyze income and consumption data. Inferential statistical tools used are the chi-square test and independent samples t-test.

Research Framework and Definition of Variables

The following framework has been developed for conducting the research's core theme. It demonstrates how the various variables are related to one another.

Figure 1

Research Framework

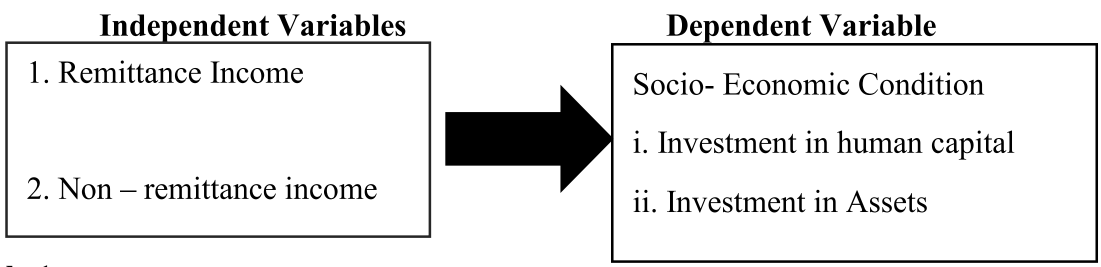

Table 1

Definition and description of variables

Variable	Description
A. Independent -variables	
1. Remittance Income	The money and other assets sent to the households of migrants are referred to as remittance income.
1.1 Number of family members as foreign employment workers	The number of family members who work overseas determines how much money a home receives in remittances. The number of family members who work overseas also supports the independent variable remittance.
1.2 Remittance Amount	The remittance amount establishes the income of households that consistently receive remittance revenue, which serves as the primary funding source for household expenses. Remittance frequency also assesses how much money households regularly get in remittances. Remittance frequency as a percentage

1.3 Frequency of sending remittance	of annual household income indicates how much money a house hold has to cover expenses.
2 Non- Remittance income	Non-remittance income is the amount of money people earn domestically or through businesses they run within a nation. Income of non- remittance receiving families depends on number of domestic employment workers within a country.
2.1 Number of domestic employment workers	Heirlooms and family business generate income other then employment and remittance for the family.

Dependent Variables

2.2 Heirlooms and family business	

Dependent Variables	
1. Investment in Human capital	It refers to investment in children's education and health facilities for family members for better access. It hugely depends on the income of the family.
1.1 Educational expenses	It includes each family's yearly expenditure on their children's educational activities. Types of schools (Private/ Government or Public) also depend on the family status and income.
1.2 Health Expenses	It includes the yearly expenditure of each family they pay for access to better health facilities.
2. Investment in Assets	Investments are assets bought or invested in increasing wealth and preserving hard-earned cash or appreciating assets. This study has considered investments in land and buildings and investments in businesses, shares and bonds.
2.1 Land and building (Beyond heirlooms)	The present market value of land and buildings the different families possess beyond heirlooms has been considered in this study as their investment value (Amount in Rupees).
2.2 Share, Bond and Debenture	Investment in financial market instruments have been included in this study made by different families and households.

Results

In particular, analysis of the data has been carried out per specific objectives, where patterns have been examined, evaluated, and conclusions are derived from them. Results have been chiefly presented as demographic data from study participants, descriptive statistics analysis, independent samples t-test results, and chi-square test findings that examined the influence of independent variables on dependent variables.

Table 2
Demographic profile of respondents

Nature of Households	Gender of Head of family		Mean age	Total
	Male	Female		
Remittance receiving	42	58	48	100
Remittance non- receiving	82	18	50	100

Source: Field Survey, 2022

Table 2 shows the genders of the heads of the two research categories households that get remittances and those that do not. As per the data, more women-headed households with a mean age of 48 in families that received remittances, whereas more men-headed households with a mean age of 50 in families that did not get remittances. Due to male family members moving overseas for employment and other possibilities, there were more female household heads among the households who get remittances.

Table 3
Independent Samples T-Test Between Remittance Receiving and Remittance Non- Receiving Households on Human Capital

Investment sector	Household Types	N	Mean (Rs.)	Std. Deviation	Mean Difference (Rs.)	T	df	Sig(2-tailed)
Annual investment on health	Remittance receiving	100	39,625.00	20267.95	30,500.00	14.01	198	0.000
	Remittance non-receiving	100	9,125.00	7943.42				
Annual investment on education	Remittance receiving	88	93136.36	42920.72	37,652.49	6.52	179	0.001
	Remittance non-receiving	93	55,483.87	34474.82				

Source: Field Survey, 2022 & SPSS output.

The amount of money spent on human capital by families receiving remittances and those not receiving remittances were compared using independent samples t-tests. The test on health investment revealed variations in the scores that were statistically significant (t(df= 198)=14.01> critical value(1.96), p-value(0.000)< level of significance(0.05), with the mean score for remittance-receiving families being higher (M=39,625, SD=20,267.949) than for remittance-non-receiving households (M=9,125, SD=7,943.42). The magnitude of the difference in the means (mean difference= 30,500.00) was significant. Similarly, the test for comparison of investment in education amongst the households showed significant differences (t (df= 179) =6.52, p=0.001) in the scores with the mean score for remittance-receiving families (M=93,136.36, SD= 42,920.72) which was higher than of remittance non receiving households (M= 55,483.87, SD= 34,474.82). The mean difference= 37,652.49 was significant as calculated t- value 6.52 > critical value (1.96) and p-value is less than level of significance i.e. (0.001<0.05). Hence, H1 is accepted, and the conclusion is drawn that the amount that both households invest in human capital through health and education differs significantly.

Table 4

Remittance Receiving and Remittance Non- Receiving Households Involvement in Agriculture Cross Tabulation, Chi-Square Test for Association Between Nature of Households and Involvement in Agriculture*

Family Type	Particulars	Involvement in agriculture: Yes	No	Total
Remittance receiving	Frequency	16	84	100
	Expected Frequency	41.5	58.5	100.0
	% of Total	16%	84%	100%
Remittance non-receiving	Frequency	67	33	100
	Expected Frequency	41.5	58.5	100.0
	% of Total	67%	33%	100%

Particulars	Value	Df	Asymptotic Significance
Pearson Chi-Square	53.568[a]	1	.002

Note: *a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.50.*
b. Computed only for a 2x2 table
*c. *If P value (asymptotic significance) < 0.05, Correlation is significant.*
Source: Field Survey, 2022 and SPSS output

Table 4 shows that only 16 percent of the households receiving remittances are engaged in agriculture or farming, while 84% is not. Meanwhile, 67% of families that did not receive remittances are engaged in farming and agriculture. A conclusion can be drawn that a higher proportion of households not getting remittances are engaged in farming and agriculture.

To test any association between the nature of households and involvement in agriculture and farming, a chi-square test was conducted which resulted in a significant association at a 5% significance level between the nature of households and involvement in agriculture and farming; [$\chi 2(1,200)$= 53.568, p-value 0.002<0.05] which supports second alternative hypothesis (H2) i.e. Labour migration for remittances has led to a lack of Labour, which has led to a decline in family's involvement in farming and agriculture.

Discussion

The primary objective of the study was to examine the socio-economic repercussions of remittances on households residing in Pokhara valley. To accomplish the overall purpose of the study, this main aim was further divided into two sub-aims. The initial objective of the study aimed to evaluate and compare the levels of investment in human capital, specifically in terms of health and education, between two categories of households: those receiving remittances and those not receiving remittances. To address the second objective and respond to the second research question, Hypothesis 2 (H2) was formulated.

The first hypothesis asserts that there is a significant difference in the investment levels in health and education between the two types of households. The independent samples t-test indicates that households receiving remittances allocate a considerably higher amount of resources towards the healthcare and education of their family members compared to households that do not receive remittances. Moreover, a majority of remittance-receiving households opt for private hospitals for superior healthcare services and private schools for better education. On the other hand, households not receiving remittances rely on government or public hospitals for healthcare and send their children to government or public schools. The findings of this study align with numerous previous studies conducted on the same subject. Many studies emphasize the substantial variation in investment levels in human capital, with remittance-receiving families allocating higher expenditures towards the health and education of their family members compared to remittance-non-receiving families (Adams, 2006; Castaldo). Similarly, Mansuri (2006) showcased a significant positive impact of remittances on the accumulation of human capital in Pakistan.

Likewise, the second objective of this study was to investigate whether labour migration for remittances has resulted in a shortage of labour, subsequently leading to a decline in family engagement in farming and agriculture. The second hypothesis argues that there is indeed an association between the nature of households and their involvement in agriculture and farming, suggesting that labour migration for remittances has resulted in a decrease in labour availability and consequently reduced family participation in farming and agriculture. The chi-square test reveals the existence of an association between the nature of households (remittance receiving and remittance non-receiving) and their involvement in agriculture and farming. The NLSS-III (2011) study yielded similar findings to those of another study, indicating that emigration leading to a lack of workforce results in uncultivated land, decreased agricultural output, and the need to import food grains. Similarly, Maharjan et al. (2012) argue that the migration of a family member has resulted in a reduction in family labour input on farms in the Western hills of Nepal. However, Huy and Nonneman (2015) arrived at a contrasting conclusion in their survey, asserting that the migration of male family members actually led to a decrease in available male labour on the farm. This, in turn, led to an increase in female participation in farming and the potential utilization of remittances to address issues of food insecurity.

Conclusion and Implications

The research's analyses and findings demonstrate that remittances from overseas have positive socio-economic ramifications on immigrant households. It can be inferred that remittance income has bolstered the purchasing power of recipient households, leading to an increase in their expenditure capacity. By this investigation, families receiving remittances allocate a greater portion of their resources to health and education services, which are regarded as investments in human capital in comparison to families not receiving remittances. The enhancement of the socio-economic status of recipient households has a significant positive impact. Nevertheless, the migration for the purpose of remittance has resulted in a decreased labour supply and increased reliance on remaining family members, negatively affecting involvement in agricultural activities. The study's narrow focus suggests that recipient households allocate more resources to household consumption and investment in human capital compared to families not receiving remittances. Further research is undoubtedly necessary to comprehensively examine and understand the socio-economic consequences of remittances on households, as the current analysis does not accurately portray the overall situation for the entire nation. Additionally, it was challenging to locate research on the motivation behind remittances during the investigation. Therefore, the motivation behind remittances may be a subject for further study and research.

This investigation holds various implications for practitioners, academics, and policymakers. It can be discussed as a basis for recommendations and areas of future research. As a developing country, Nepal heavily relies on remittances and subsistence farming. Due to the persistent underdevelopment of the industrial and production sectors, there has been an increase in imports and a decrease in exports. Despite the study asserting that remittances serve as a significant source of foreign exchange and are expanding in the national context, their primary use is to stabilize the balance of payments deficit rather than support capital development. Consequently, policymakers should formulate measures that can encourage remittance investments in the development of the domestic economy and national output, ultimately reducing import trends and balancing payment deficits shortly. Similar to how remittance income benefits society by elevating individual income and social status, it has had a profound impact on agricultural output. To utilize remittance funds to increase agricultural productivity and expand the industrial sector, the government should implement initiatives that support agricultural production, small domestic industries, and the creation of a robust market.

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Adaptation of Migrated Upper Mustangi People in Pokhara, Nepal

[1] Bhim Prasad Neupane

Abstract

The adaptation process of migrant people from the Upper Mustang to Pokhara found a social issue. The trend of permanent and seasonal shifting was prominently observed in this study. The individual and community-level adaptation process of the in-migrants in Pokhara, and multi-ethnic societal adjustment were considerable. This research concentrated on specific ethnics of the Himalaya region of Mustang district who migrated to Pokhara and adapted in hilly ecology. The study was trying to seek the pattern of migration from the Upper Mustang their circumstance and their adaptation in Pokhara. The study area of this research was covered the migrant population in Pokhara from Lomanthang and Lo Ghekar Damodar Kunda Rural Municipalities of Upper Mustang. This study was based on a qualitative research design with interpretative research paradigm. Six informants residing in Pokhara seasonally or permanently both rural municipalities were selected representatively. For the qualitative information in-depth interview was taken with the help of a semi-structured questionnaire. Due to the climatic vulnerability, people from Upper Mustang were shifting in Pokhara permanently or seasonally for survival. The extreme cold, occasional summer rainfall, soil erosion and glacier outburst are major threats of the life security of migrants. Whereas, the common destination of migrants found Pokhara becaue favorable climate, life survival opportunities and historical legacy of socio-economic connection.

Keywords

Climate change
Cultural adaptation
Hawker
Vulnerability
Migration

OVER THE LAST few decades, the mountain people have been migrating to Pokhara city permanently and temporarily. The

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continuity of the mountain culture in Pokhara city is a challenging issue due to the distinct socio-cultural and environmental contexts of the destination. Pokhara is itself a multi-cultural, multi-religious city with the opportunities and challenges of diverse economic life. The mountain people are culturally, religiously, and linguistically homogeneous, and their assimilation process in the heterogeneous cultural setting, including in Pokhara city, is a challenging issue for adaptation (Chettri, 2008). Similarly, the mountain people in the place of origin have adopted agro-pastoralism for their livelihood which is not suitable to continue in migrated area. They are forced to adapt new adaptions like business and tourism.

Moreover, language is not merely a means of communication but also a means of adaption in a mixed community. Many mountain people are not comfortable to speak the Nepali language properly, while it is the main language of everyday communication in their migrated area Pokhara. It is also challenging to them to community with new people in the city as well as the survival of their mother tongue. Hence, adaption of the Mustangi people after shifting in Pokhara is both an opportunity and challenging. The survival of their tangible and non-tangible culture and social relation in new environment is challenging. The transitional migrants who recently shifted to Pokhara are supported by previously migrated neighbors or relatives. However, they have faced many adaptational challenges in communication, food culture and hazy environment of city area.

Pokhara, one of biggest metropolitan city the of Nepal on the base of geography, is one of the best destinations for the people of Upper Mustang. The population of the Upper Mustang is 3422 and remarkable population seasonally migrates during the winter season to escape from the sever climatic condition (CBS, 2021). Hemja, Prithvi Chowk, Chorepatan, and Bijayapur are the major destination for their migration in Pokhara. Various literature has shown that the internal migration of Himalaya to the hilly and major city of Nepal which were seasonal circulatory to the southern part for their livelihood. The study focuses on the adaptation of people of Upper Mustang in Pokhara. Adaptation is examined through linking with different setup variables such as occupation, social adaptation, and family life.

Literature Review

The livelihood of almost the population of Nepal depends upon their inhabitant ecosystem. The change in climatic vulnerability total ecosystem services should identify for adopting measures to maintain the ecosystem integrity along with their survival. There is a close relationship between human well-being and the eco-system, however, it is very complex to adjustment (Dixit et al., 2015). An adaptation process and environmental mitigation strategy are equally important for the response in the sustainable adjustment of any community in their native and host place. Human activities and the natural environment are co-related, mitigation strategies of environmental protection mean control over the man-made environmental degradation process which is not control of a single community or society. Similarly, the adaptation process refers to adjusting the lifestyle of individuals and society along with the changing environmental condition. It forces them to adopt the new pattern of livelihood to increase the flexibility of the societies (Munasinghe, 2019). The Himali ethnic is depending on seasonal trade, pastoralism, and agriculture as their occupation but it is gradually declining their activities due to the climatic vulnerabilities. The salt and wool trade between India and Tibet has replaced by transportation system and they were forced to choose an alternative occupation and in the different ecological area (Scholz et al., 1981). As a result, the vulnerable livelihood of Upper Himali remote areas is the adverse situation of the environment, socioeconomic position shifting towards the new destination (Mishra et al., 2019). Hence, the trend of seasonal trade in different areas has replaced by modern trade facilities in recent time.The harder livelihood with the adverse climatic condition of the Himalayan region have forced them to search alternative destination to the excess area for survival.

Pokhara is the nearest city destination from Upper Mustang which is connected with Kathmandu and linking with Siddhartha Highway and Prithvi Highway and the interior part of Nepal. It is a stopover point of Himali traders to come down from their origin to move towards Gagangauda, Damauli, Highway's hotel points, Kathmandu, Butwal-Bhairahawa, and India (Chhetri, 1986). He further opined that Pokhara is found the best trade center and resettlement area for people of Upper Mustang. People there are residing for a long and they have adjusted with the Pokhareli community and being participated in socio-cultural, political, and economical institutions. They have established various Samaj (community organizations) as Pokhara Thakali Sudhar Samaj, Marpha Thakali Samaj, Dhikur Samuha, etc for community adaptation.

Economically sound migrants run hotels, clothing stores permanently. Similarly, after running the business in Pokhara, they are associated with the trade association, chambers of commerce, local community members. Further, the social and cultural adaptation process become more stronger due to marriatal relationship of Mustangi people with the local people specially, those Mustangi who were grown up and educated in Pokhara (Khattri, 2020). In another hand the seasonal traders around Pokhara and other areas are visited for selling Himali herbs Jimbu, Yarcha Gumba, Hing, Birenun, etc. for their livelihood.

The farmers with the subsistence farming of the Himalayas travel to lower hilly regions mostly in Pokhara with the small trade supporting their basic needs. The earning is directly beneficial on food nonfood materials and services. The impact of modernization and reach in the market area their daily life has influenced to consume the modern industrial product. Traditional food security gradually declining and people becoming habitual to migrate towards modernized cities. The challenges of their primitive life model shifting to modern life of the city within the diverse subtropical climatic region is a concerned issue in this study (Fan et al, 2013). However, the food scarcity of the Upper Mustang and rapid climatic changes has pushed the people to migrate seasonally and permanently to the new destination (Khattri & Pandey, 2021). The destination of Mustangi people have chosen due to socio economic connection in Pokhara.

Theoretical Framework

The cultural adaptation of diverse environmental settings of society are influenced by community where they interact. It is concern with language background, culture, and livelihood activities. Community based adoption theory posit that the knowledge developed by communities are the major principles of the livelihood of the people. Huq & Reid (2007) opine in their community-based adaptation approach that a process of adjustment of vulnerability of climatic change which affect the local environment and capacity of community for livelihood. Individuals are explicit the role of culture which is necessarily interconnection for strength of community adaptation. Every community wants to be improved revised safe and easier livelihood in their residential setting or even in a new destination. Community based capability can affect by climatic change, community itself poses its assets and capabilities collectively for the new strategy of survival and adoption.

Culture and adoption process are simultaneously developed in community. The community-based adoption is possible with the fuller understanding of need of individual and responsibility of the community. This study analyzes the interplay between culture, security and adoption and multiple chances of opportunities through social forms.

Statement of the Problem

The climatically vulnerable people from Mustang are shifting to Pokhara in search of new settlement. The Himalayan region of Nepal lies in the northern part which consists of the main part of the Himalaya Mountain portion about 15% of the total area of Nepal. The climate of this Himalayan region is severe cold in winter and dry rest of the year. Steeply land, low temperatures, seasonal snow falling resulting very low agricultural productivity and harder livelihood. The Upper Mustangi people are engaging in animal husbandry rather than cultivation because of availability of pastoral land. Tourism, mountaineering, pottering, running hotels are alternative livelihood sources in this region (Chhetri, 2014). Similarly, medicinal herbs, local handicrafts, and wool production are also engaging part of the people of the Himalayan region in recent years (Shrestha, 2019). However, the soil and land composition of this region are fragile, less productive, and vulnerable to erosion because of the fewer people engaged on land (Wester et al., 2019). Further, the trend of shifting seasonal and permanent settlement is prominently observed in this region (Singh et al., 2011). Hence, the accessibility of transporatation and in search of possible opportunities for their adaptation they migrated in Pokhara.

Upper Mustang, administratively known as the “forbidden Kingdom of the Himalaya” is located at an altitude ranging from 2950m to 3900m above sea level (Peissel 1992). Similarly, climate change directly affects the livelihood of the people existing in their place of origin. It also reverses the developmental activities on the socioeconomic arena of the Himalayan region particularly in developing countries (UNDP, 2010). The inherent knowledge capacity and skill of the indigenous Himalayan communities in response to adopting changing environmental hardship are more responsible to sustain the Upper Mustang. The changing climatic condition of the research study area basically on rainfall and snowfall variability which is the most challenging on livelihood pattern, food productivity, water resources availability, livelihood opportunities, and so on are closely associated with seasonal and outgoing migration (Gautam, 2017). This research is concentrated on specific ethnicities of the Himalaya region Mustang district who are migrated to Pokhara Metropolitan city and adapted to hilly ecological areas.

Research Questions

The study aims to explore the climatic adaption strategies of people in the new ecological region from the Upper Mustang to the Pokhara. The following research questions are looking for the answer.

1. What are the patterns of migration of the people from the Upper Mustang to Pokhara?
2. How individuals and communities are adapted in Pokhara?
3. What are the major circumstances of migrants in Pokhara?

Data and Methods

The study area of this research is covered the migrant population in Pokhara from Lo Manthang and Lo Ghekar Damodarkunda Rural Municipalities of Upper Mustang. This study was based on a qualitative research design based on an interpretative research paradigm. The informants were selected proportionally residing in Pokhara seasonally or permanently. This study was based on in-depth interviews with four informants. The open-ended semi-structured checklists were prepared before the interview. The leading questions along with the probing questions were used to get more qualitative information during the interview.

The total population of Lomanthang and Lo Ghekar Damodar Kunda rural municipalities are 1430 and 1292 respectively. Almost 90% of these population migrates seasonally out of Mustang and about 50% of out migrants shifted to Pokhara (Lo Ghekar Rural Municipality, 2018; Lo Manthang Rural Municipality, 2018). According the data, 1512 people are the universe of this study. This study is concern with shifting people in Pokhara from two rural municipalities of Upper Mustang.

There were six informants in total, for three informants from Lo Ghakar Damodar Kunda and three from Lo Manthang representatively and purposively. The major settlement areas of informants in Pokhara Shivalaya Chok, Prithivi Chok, Mustamg Chok, Lakeside, Gagan Gauda Deep, Hemja and Bagar were visited and observed. Their time was scheduled for an interview in their convenience. The interviews were recorded with their permission and transcribed and a re-interview was taken for authentication of their version before the final writing. The process of coding and decoding had finalized for analysis and interpretation to qualify the audience for credibility. To make rigorous and trustworthy qualitative research, the researcher has to consider "transcription", "triangulation", "member checking," coding and decoding systematically (Gunawan, 2015). The secondary data were collected from the population monograph of Nepal, the website of the Lomanthang and Lo Ghekar DamodarKunda Municipalities of Mustang district in Gandaki province. The published research articles were cited related to the research topic.

Result and Discussion

The adaptation process of Upper Mustangi people in Pokhara was analyzed in two thematical areas. Individual and community-based livelihood pattern were digging out to get clear glance of the study.

Livelihood Adaptation

Livelihood refers to a set of human activities that are necessary to do in everyday life for survival. To full fill, the basic requirements for life security such as food, shelter, clothing, medicine, education and so on individuals use their efforts while the term adaptation means adjustment to the various pattern of social settings (Selvaraju et al., 2006). Individuals of severely cold ecology migrate to hilly ecology where temperature and rainfall are drastically different in this study the people of Upper Mustang having about -20oC and another ecology of Pokhara which experiences about 10oC in winter. Normal life is not possible in Upper Mustang during the winter season and they migrated to lower hills with the hawking. The youth people travel city areas Beni, Baglung, Pokhara, Damauli, Syangja, Butwal Bhairahawa, and Kathmandu to sell winter goods. This is all for their livelihood adaptation during the winter season. The school students are also shifted to the Pokhara from Kartik to Falgun every year in rotating schools. One of the informants 'A' (age 17) studying in class 10 in Upper Mustang who is now in Bijayapur Pokhara stated that:

> This year I am attempting my SEE examination. We came to Pokhara every year in Kartik because of the extreme cold in Chhoser. We will back to our village after Falgun / Chai tra. Our school is sometimes covered by snow and it is very terrible to read and live there in winter. So, we all have been shifted. Here we are feeling comfortable weather…..,teach ing-learning is also going easily. In holiday time we can visit Pokhara Bazar. MoMo, Chowmin are very tasty here and the clothes are also available for buying.

The young student of Chhoser, Upper Mustang who is experiencing coming to Pokhara for winter school has been adapted to the hilly ecology and feels safe and progressive in her academic career. New food taste of the city, the better alternative of fashionable clothes and the modern city environment is attracting her. The healthy environment and excess of transportation service in city area made to visit their relatives residing in Pokhara during school holidays. However, informant 'B' (a hawker age of 63) opines that:

> In our previous year, I used to sell medical herbs, Jimbu, birenun, hing, silajit, nail-cutter, khip, Kankarno, shocks, etc. but nowadays people of city area do not give the value of these goods. Nowadays it is very difficult to sell these goods and becoming harder to survive in Pokhara. I cannot walk long to the village area but in the city, all goods are available in shops. Time is changed, our expenditure is high, and children are reading in Pokhara. They do not like to go back to the Chooser but my earning is decreasing….and difficult to run my Chhoser house in Upper Mustang and rented house in Pokhara… now a days, 'Samajghar organizes Lhosar. They invite all of us which makes close with the villagers and also supports us through the community members during the crisis.

The modern market system of Pokhara has developed the choices of the people in the local area and they do not believe in the traditional hawkers. It shows very challenges to the seasonal migrant people depending on their occupation to survive in the lower market area. On the other hand, the younger generation is interestingly adapted in warm ecological areas and their perception as well. The modern lifestyle of community changes directly or indirectly influences by various ecological changes and they are multiple processes to change their thought and livelihood activities (Huntington, 1968 as cited in Tipps 2012). Modern life style, comparatively easy livelihood, and suitable climatic condition were found common influencing factors for the migration of Mustangi people towards the Pokhara.

The climatic condition of Upper Mustang has been changing and it has seen direct impact to the day-to-day life pattern of the people. Uncertainty of snow falling, melting of glacier, increasement of rainfall making hardship to run traditional agriculture and small hotel-based tourist services. The climatic pattern rapidly threatening to poor people for management of alternative residential settlement (Devkota, 2013). Due to such unsecured livelihood people have shifting in search secure area. In this regard, one of the informant 'C' from Loghakar stated that,

> I am 33 years old, running small hotel at Prithvi Chowk in Pokhara, for seven years. My family used to run small restaurant for thirty years in Loghakar. The trekkers were the major costumers of our restaurants. Due to the connectivity of road, tourist chosen vehicle to travel there and our restaurant become far from the tourist approach. Which lead to migrate us from Loghaker to Pokhara.
>
> In the beginning days of my business start-up in Pokhara was very difficult. It was hard to communicate with people, food culture, dress style and so on. Gradually, we started our small hotel with the support of our community running Dhukuti here. Now, our Dhukuti is running with paying turn regularly. … our hotel is running well. We have updated our services according to time. Hence, we adapted here.

In this regard, Huq & Reid focused in their community-based adaptation approach that the vulnerable people are migrated in search of their community people in new destination for their livelihood and cultural adaptation. The basic foundation of working pattern, occupational selection and cultural sharing found supportive to survive. Moreover, migrants in Pokhara are chosen their specific locality and with similar types of occupation. The informant 'C' had chosen hotel service in Prithvi chowk because of the connection their community people who were running business in Prithvi chowk and also Dhikuti circulation. This traditional Dhikuti system supporting cultural practice in Pokhara and making their social adoption easier as well.

Cultural Adaptation

Cultural adaptation is a process of assimilation and acculturation of people from one culture to another new form of culture. More or less the migrant population needs to make integration for their survival in their new destination. They cannot isolate themselves from the migrated society and need to adopt the same kind of social-economic cultural setting. The people of Upper Mustang are establishing their community houses to run their cultural practices. The Sakya Sadan in Pokhara Nadipur, Thakali samajsewa Matepani, Thakali Sewa Samiti Dulegauda, etc. are example of the institutional setting of people Mustang to cultural circulation in Pokhara. The people of Upper Mustang most of Loba, Lama, and Himali, Gurungs of Loghakar Damotherkunda and Lomanthang has established their Hemja Samajghar in 2064 BS. These community houses are the center for performing their rituals. It is supporting the new migrants with their community and similar cultural people in the new ecological area. One of the informant's 'D' who is the secretory of Hemja Samajghar, Pokhara 27, stated that

> This community house is the center for the cultural identities of Upper Mustange people. it is one of the latest community houses of two municipalities of Upper Mustang. All to gather 51 household are members of this Samaghghar. There are majority of people of Lomanthang. We started to celebrate Sonam Lhosar from 2080 BS. Similarly, we perform our Buddhist religion-based activities such as celebrating Lhosar, organizing feasts and festivals and so on. The death ritual was practice with Lama astrologist on the base of Buddhist calendar. The death body used to take out from home touching with the 'horn' of the Yak and 'hoof' of the horse. The lama leads the funeral with three four death body cutting to the open big stone area. The Lama calls the vulture to feed the death body. No family members are allowed to go in funeral procession. However, the death rituals are modified in Pokhara. Started to make assess by burn with fire at the bank of Seti Gandaki. People recently migrating to Pokhara wants to take membership of the Samajghar to adopt in Pokhara for easy connection of natives to continue their culture. We set up such community houses to prevent and preserve our culture from the modern cultural encroachment. However, the marriage ceremonies are not practiced in Hemja Samajghar so far. We have practiced to marriage in summer at own village. Our lifestyle socio-cul tural, and economic activities are gradually influenced by Hindu culture in the city.

The cultural practices of the people of Upper Mustang are found relatively similar to the Tibetan culture. However, their scattered population not supporting to continue their emic culture. Seasonal migrants during the winter time makes their larger population in Pokhara but they return back in their own village. The permanent dwellers in Pokhara are practising their birth and death rituals with the help of Lama of Gumba but the marriage ceremonies of youths are not found in the Samajghar. They prefer marriage in their native village.

The young generations who are migrated with their parents are found easily adopted in Pokhara. However, the senior citizens are found more attachment with their village. In this regard informant, 'E' (age 55) quoted that

> I am residing at Hemja, Pokhara for 25 years. I am a fancy owner of Chiple Dhunga. My two children are recently graduated. My parents seasonally come to Hamja but this year they are not going back there because the roof of our house was damaged by summer rain and it needs to make alternative roof either cemented or tin instead of muddy roof. It was not experienced rainfall there but we used to be happy by snow falling. I struggled to adjust and finally setup my permanent livelihood. My children are well adjusted here because they have their school and college friends' network but my parents requesting me to renovate the house of Nemdo to adjust with the weather-friendly house but it is expensive.

The informants who participated in this study have mixed types of reflection. The natural setting and resources of the Upper Mustang became the major cause of their migrant pattern during the wintertime. Socio-ecological system developed the livelihood pattern based on extreme weather conditions of a vulnerable population (Osbahr et al., 2008). The modernization process has influenced each corner of the global society in response to the Upper Mustangi people mostly the younger generation who are seasonally migrated in Pokhara are considerably adapted easily to the influence of modern facilities. However, the senior population who spend a long time in their native land are worried about the weather change and the necessary to modify their native accommodation system.

The life in Pokhara is easier now-a-days in comparison with Lo Ghaker. However, they missed their relatives, festivals and old houses. The people above sixty years have rural intimacy even though residing Pokhara. They feel happy during the winter because of the arrival of their village people as seasonal migrants. Another informant 'F' (age 65) of Lo Ghaker Rural Municipality ward number 5 residing in Shiva Chowk, Pokhara argued that,

> I am a Tibetan Ex-Army residing here for 20 years. Now, my son and daughters are abroad. We are not going now going our village LoGhaker, for 3 years. Transpiration service is very expensive. The normal jeep from Pokhara to Lomanthang takes charge as fair five thousand per person. It is not controlled by CDO, Police officer, and local government. The climate of our village become severe cold during Ashoj to Falgun. People migrates to warm areas mostly in Pokhara and other cities during this period. Some people visit to the rural area to collect cereals by exchanging Jimbu, black salt, Silajit and so on. …. our son and daughter who are in abroad force us to stay in Pokhara. They further worried about harder life of village, food unviability, and health issue. I was member of Hemja Samaj at Hemja Pokhara but now, I should not go in Samaj because people of above sixty years are not going. The practice to be the member of Samajghar is eighteen to sixty years in our village because only active member can help to samaj. Here in Pokhara, we can allow to visit the Samajghar but not given any responsibility. which is known as 'Dharchyang'. I have survival income from my own house rent and sometimes my son and daughter send money as well. Our villagers used to come during winter and we stay here as in our village.

The cultural practices of Upper Mustang living in Pokhara are found acculturated with hilly culture.The 'Dharchyang' system is very strong among them due to the labour participation in society. However, this system has faded in Pokhara because of their different livelihood practice. which does not active labour participation. The farmers and hawkers are changing their way of life by running trekking service, tea shops, handcraft shop, and other medical herb trade. Youths of economically strong family are in foreign employment and their parents are residing in Pokhara. Huq & Reid urge the adoption process of people supported by cultural traits are strong in community. The understanding level of the individual and their livelihood assimilate with community. Community itself embrace the people for cultural development. The cultural practices of Upper Mustang living in Pokhara are found connected each other for their similar understanding of livelihood. Similarly, people chose specific locality to reside and common types of occupation for community adoption in new destination.

Conclusion

Socio-cultural Adaption of Himali people of Upper Mustang in Hilly ecological region of

Pokhara is qualitatively analyzed on the perspectives of Community-based adaptation by H. Reid, and S. Huq (2007). The seasonal and permanent migration trend is experienced for a long due to the connection of Mustang district to other major cities. Adverse climatic conditions experienced hardship to survival in Upper Mustang during November to March (Upadhyaya 2020). Hence, people seasonally migrated in nearer and safe climatic hilly regions Pokhara. The practice of adaptation an individual basis as hawking, and community supportive adaptation by developing different community-based institutions had been found. Comparatively, youth were found easily adapted in Pokhara because of the availability of facilities. However, the senior citizens are found interested to back their children for marriage in their native land. Similarly, they desired to live in village in their old age because they feel the life will be emancipated with the Lama's mantra during the death rituals. Individual and cultural adaptation was strong through Community houses where they preform cultural and ritual practices. However, their families who are adopted in Pokhara could not manage to reside their parents in village.

The changing climatic pattern is another challenge to reside in village. The summer rainfall becoming a major challenge to reside there. It damages the muddy roof of the houses and results in leakage water in houses (Bhadra et al., 2021). The lifestyle of the Upper Mustangi people forcefully changing, they are shifting and adapting gradually in hilly ecological zone mostly in Pokhara. due to favorable climate, life survival opportunities and historical legacy of socio-economic connection.

The ethnicity of the Upper Mustang is shifting in Pokhara for various purposes. The major causes of shifting Pokhara can be considered as a nearer trade destination where their traditional seasonal trade changed into the permanent mode (Thakali, 2012). Tours and travel business, hotel and tourism, trekking and mountaineering, traditional handicrafts, medicinal herbs, and so on are their major engaging occupations in Pokhara. Their major livelihood of them is a non-agricultural sector in Pokhara because of their ecological changed environment as compared to the Himalayas. The recent trends of moving towards the lower areas of this region are modern transportation systems which made them easy to migrate city area and another cause to migrate is the development of road transportation which has removed the traditional trekker's oriented small hotels services that were running since the long period as an alternative of agriculture.

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Green Banking Initiatives: Policy and Practices in Commercial Banks of N epal

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Abstract

Environmental and social (E&S) risk management has grown in key aspects of sustainability in banks and other financial institutions these days. A socially inclusive, climate-friendly and green banking system is only possible with the effective management of E&S risk in their business transactions. This study assesses the present implementation status of sustainability within commercial banks in Nepal, by examining their adherence to the environment and social risk (ESRM) guidelines issued by Nepal Rastra Bank (NRB). Using a descriptive research design, the study utilizes ESRM reports published by NRB in 2078/79 and 2079/80. The study examines the present state of ESRM guideline implementation across three key aspects of policy formation, training and development activities for bank employees, and incorporation of environmental and social risks within the core strategies of commercial banks. The result found a satisfactory level of implementation of ESRM guidelines. The policy formulation and governance indicators are almost realized and other indicators have satisfactory and progressive levels of operation in the banks. Effective implementation of sustainable guidelines and initiatives will be accomplished innovative financial instruments that incentivize green investments and support climate-resilient practices can further expedite the transition to a sustainable banking landscape. Overall, this study offers valuable insights into the current state of ESRM in Nepal's commercial banks, shedding light on the progress that can pave the way for a more sustainable and green financial system in Nepal.

Keywords
Environmental and social risk
Green finance
Sustainable banking
Sustainable development

BANKS AND FINANCIAL institutions (BFI) are the key mediators that can play a significant role in the achievement

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of sustainable development goals (SDGs) (Zimmermann, 2019). Financial services, because of their intermediary role, have the power to encourage businesses, and individuals from engaging in unsustainable behaviors (Louche et al., 2019). Due to their substantial influence, impact, and effects on both the social and environmental aspects, these financial institutions are required to address various social and environmental challenges, while actively and extensively participating in a multitude of sustainable practices (Zimmermann, 2019). Sustainable banks are those financial institutions that give high priorities to social development, environmental management, financial inclusion, financial literacy, and energy efficiency in their core business operations (Kumar & Prakash, 2019). Sustainable organizations also promote and encourage their employees to utilize public transportation means, facilitating and ensuring access to individuals with disabilities, and deliberately selecting and opting for suppliers and partners who adhere to and comply with stringent environmental and social principles and standards (Weber, 2005). Thus, sustainable banking is an emerging banking approach stands as value generator for their stakeholders with full consideration of environmental and social issues into their activities and operations.

The main objectives of green banking are to safeguard the environment and natural resources, as well as to provide financial services and address social concerns in the nation which can reduce environmental pollution and support to achieve sustainable development goals in the country (X. Zhang et al., 2022). Such practices should have goal to minimize credit risk, legal risk and reputational risk by excluding investments in environmentally threat project (Hoque et al., 2019). The term “green banking” refers to a variety of financial products, such as green bonds, green financing, and other financial instruments, that encourage investments in sustainable agricultural growth, renewable energy and climate friendly infrastructure. To create sustainable green finance, legal and policy frameworks must be in place. By encouraging investments in green technologies, renewable energy, and environmentally friendly farming practices, green finance may play a significant role in supporting sustainable development and environmental conservation in the nation (Soundarrajan & Vivek, 2016). Incorporating green banking practices positively affects environmental performance with creating a link between sustainable banking and environmental outcomes. Environmental-friendly products and services significantly contribute to sustainable development (Rehman et al., 2021). Therefore, social well-being, environmental preservation, and the nation's overall sustainable development are all impacted by the sustainability practices of banks and other financial organizations. Do not end your paragraph in citation. It is not the part of academic writing.

Low-income countries have significant gap in their comprehension of basic financial concepts, as well as the advantages and hazards connected with specific financial decisions (Leora et al., 2020). People have difficulty learning about new innovative financial products and services, as well as the consequences of violating the rules and regulations related to financing, social and environmental aspects, due to a lack of fundamental knowledge, regulation of government and law enforcement agencies (Roy et al., 2015). As a result, sustainable and ethical banking implies a compelling alternative to traditional banks and establishes a valuable precedent for achieving a new approach to sustainable finance. Moreover, this type of banking provides not only economic benefits to stakeholders, but also social and environmental value to shareholders, clients, employees, investors, and society as a whole (del Carmen Valls Martínez et al., 2020). In the banking sector, it is crucial for risk assessment to detect and manage social and environmental risks.

Regulation, voluntary actions, and sustainable finance all support responsible banking practices. To include sustainability considerations in the basic activities of the financial sectors, cooperation between banks, regulators, and stakeholders is required. The importance of good risk assessment, sustainable finance, and regulatory framework in accomplishing sustainable aims is enhanced by sustainable and responsible banking (Oyegunle & Weber, 2015). The application of green banking practices has been considerably aided by the adoption of international standards and the implementation of regulatory rules and guidelines. Transparent and motivating regulations and standards are necessary for the financial sector to act consistently. The use of technology has made it feasible to offer eco-friendly products and services. Therefore, encouraging green banking practices and achieving environmental goals may need the use of technology (Asim et al., 2020). The Equator Principles (Eps) is one of the self-regulatory mechanisms in promoting sustainable finance (Contreras et al., 2019). The banks and financial institutions have international business with higher profitability and stronger corporate governance are highly motivated to adopt Eps. It can promote sustainable finance and responsible banking practice (Herbert Smith Freehills, 2013). Banks and Financial Institutions (BFIs) can help the private sector adapt to environmental and social sustainability by increasing green financing and inclusive lending. BFIs are also addressing environmental and social risks in their own operations and reducing their carbon footprint. They are concerned about being at a competitive disadvantage if they implement E&S risk management procedures (NRB, 2019). The main aim of the ESRM guideline is for BFIs to incorporate environmental & social risk management into the credit risk management process to fully inform the credit authority of E&S risks before making financing decisions (Nepal Rastra Bank, 2018). ESRM guideline focuses on environmental, social, and climatic risks related to the BFI's client's business activities, which are increasingly important for Nepal. It intended to develop and implement an environmental and social management system (ESMS) in accordance with local and international standards. Additionally, it provides E & S risk management tools and templates, and explain various applicability in various types of financing.

Global scenario of green banking guidelines

Nepal is becoming increasingly susceptible to the effects of climate change; it is crucial to acknowledge the rising costs associated with such changes and the necessity of implementing measures aimed at minimizing carbon emissions. In light of this, Nepal is faced with the urgent task of establishing a green financial system that can effectively internalize externalities related to the environment, while simultaneously working towards reducing risk perceptions. (UNDP, 2021). According to the IFC country progress report (2022), it is essential to develop and implement a sustainable finance roadmap to highlight the need and opportunities of green finance in Nepal. Some of the green baking policy and initiative in the global scenario are as follows:

Country	Sustainable and green banking policies in different countries	Implementation types
Bangladesh	Policy guidelines for green banking/ mandatory environmental risk management guidelines	Mandatory
India	Green banking best practices	Mandatory
Nepal	Environmental and social risk management	Mandatory
Sri-Lanka	Sustainable banking initiatives and sustainable banking principles Sustainable finance roadmap	Mandatory
France	Disclosure of climate-related financial risk	Mandatory
Japan	Green central bank financing	Mandatory
China	Mandatory green credit guidelines /green credit statistics system	Mandatory
Brazil	Voluntary green protocol	Mandatory
Indonesia	Roadmap for sustainable finance in Indonesia	Mandatory
Kenya	Green bond guidelines	Mandatory
Mexico	Green bond guidelines	Mandatory
Morocco	Guidelines for issuance of green bonds	Mandatory
Nigeria	Green bond guidelines / Nigerian sustainable banking principles	Mandatory
USA	Green bank act	Mandatory
Vietnam	Directive on promoting green credit growth	Mandatory
Lebanon	Green prudential regulation policy	Mandatory
Belgium	Disclosure of climate-related financial risk	Voluntary
Sweden	Disclosure of climate-related financial risk	Voluntary
UK	Disclosure of climate-related financial risk	Voluntary
Pakistan	Green banking guidelines	Voluntary
Maldives	Sustainable finance framework	Voluntary
Mongolia	Mongolian sustainable finance principles and sector guidelines	Voluntary
Colombia	Green credit guidelines	Voluntary
The Netherland	Consideration of ESG factors in assets eligibility criteria	Voluntary
Norway	Consideration of ESG factors in assets eligibility criteria	Voluntary

Source: (Park & Kim, 2020), (Asim et al., 2020), (SBN Country Report 2022)

Environmental and social risk management guidelines is mandatory policy and procedure circulated by Nepal Rastra Bank as a green and sustainable banking guideline. There is a different code of conduct for the implementation of such initiatives in the world. Some of the countries like Colombia, Magnolia, Pakistan, Belgium, Sweden, the UK, Norway, and the Netherlands follow the voluntary compliance of green banking guidelines. But many other countries like Nepal, India, China, Japan, France, Vietnam, Magnolia, Nigeria, Lebanon, Indonesia, and Bangladesh implemented mandatorily green baking initiatives(Park & Kim, 2020).

Green Investment Opportunities in Nepal

As the nation with the least advanced development, Nepal faces the challenge of effectively managing the necessary funds to undertake intricate development interventions aimed at mitigating risks and fostering a resilient society (Lohani, 2023). In its pursuit of this objective, Nepal is endeavoring to incorporate catastrophic risk reduction and management into the entirety of its development process.   In this particular, there is an urgent need to address trade-offs between the growth of transportation and energy infrastructure and conservation goals through multi-sectoral collaboration and agreements (Adhikari et al., 2023). In Nepal, various financing practices have been introduced. However, these practices are currently in a state of evolution. In order to establish sustainable financing mechanisms, it is imperative to establish clear operational guidelines that align with the existing legislations. (Basnyat et al., 2014). Sustainable banking and finance techniques are used to achieve the Sustainable Development Goals (SDGs). Banks and financing institutions can support to achieve SDGs by financing for projects that promote sustainability in the nation, such as infrastructure, renewable energy and sustainable agriculture (Feridun & Talay, 2023). However, the sustainability performance of those financing institutions can measure with the consideration of environmental, social and governance (ESG) issues of project financing (Rosalina et al., 2023).

Green finance stands out as a crucial element among the many sub-platforms supporting the five theme sustainable development goals that the UNDP has adopted. Moreover, banks and financial institutions (BFIs) are enhancing their ambition by collaborating with international organizations and creating green finance mechanisms. The National Determined Contribution (NDC) to the Paris Agreement, the "Guidelines on Environmental and Social Risk Management for Banks and Financial Institutions (ESRM)" circulated by Nepal Rastra Bank (NRB) in 2018, and subsequent directives for implementation serve as the major guiding frameworks for assessing green finance. These frameworks form the basis of Nepal's regulatory-driven approach towards the subject matter (Banks et al., 2018). In Nepal green finance opportunity has the potential to unlock a $46.1 billion climate-smart investment opportunity by 2030 (Mahat et al., 2019). National Determined Contribution (NDC) has also encouraged green energy, sustainable transport, climate-friendly agriculture products, and a low-carbon economic development strategy, this may stand as the landmark for shifting traditional finance to green and sustainable finance in banking sector. As of mid-July 2022, the allocation of credit by commercial banks to the sectors of agriculture, energy, and small/cottage industry accounted for 12.28%, 5.51%, and 9.85% respectively, in relation to their overall investment. By mid-July 2025, the corresponding percentages of total credit extended by commercial banks to these sectors are required to rise to 15%, 10%, and 15% (NRB, 2022). In an effort to promote and stimulate the adoption of Green Financing, a preliminary version of the Green Taxonomy is set to be compiled, encompassing a broad range of pertinent subjects, including but not limited to the issuance of green bonds, the disclosure and assessment of climate-related risks, as well as the identification of capital requirements. The submission of the preliminary report, which represents a significant milestone in the ongoing process of formulating the aforementioned draft, has been met with approval (NRB, 2023).

Green banking and financing are the recently growing practices in Nepal to promote eco-friendly projects and initiatives, contributing to sustainable development. Policies and provisions are intended to promote fundings in renewable energy, agriculture, transportation waste management, and more aiming to reduces carbon footprint, mitigates climate change, and protects natural resources. Additionally, to enhances the reputation of financial institutions by attracting socially conscious customers, investors and other stakeholder moving towards the sustainable development, environmental protection, and a resilient economy for the future green financing is utmost necessary in Nepal. Considering the significance, this study aims to identify the current policy provisions and practices of green and sustainable banking guidelines in adherence to environmental and social risk management of the commercial banks in Nepal.

Methodology

The research is descriptive in nature and based on the secondary source of data. The implementation status of Environmental and Social Risk Management (ESRM) guidelines in commercial banks, as well as other policies, provisions, and priorities for the growth of green finance, were evaluated. The study's purview is restricted to the financial industry, and data analysis from financial institutions other than commercial banks was also disregarded. Data and statistics for the analysis are taken from the Nepal Rastra Bank's ESRM report for the fiscal years 2078/79 and 2079/80 and policy provisions regarding the same. The reports include the data from the BFI reporting templates found in ESRM guidelines Annex 11 of the NRB. The study examines the current status of policy formation and governance, employee training and capacity building for ESRM, and the integration of environmental and social risk into core risk management of the commercial banks. The study also revies the policy, provisions and opportunities to develop sustainable and green banking practices in Nepal.

Results and Discussion

Policy provisions to support sustainable and green banking in Nepal

The major policy and guideline about green banking and sustainable banking practices in Nepal is ESRM for banks and financial institutions in Nepal. Climate Change Financing Framework (2017), Climate Change Policy (2011), Forest Investment Program: Investment Plan for Nepal (2017). Industrial Enterprises Act (2020) and Agriculture Development Strategy (2015-2035) were also supported for sustainable banking, sustainable finance and green banking practices in Nepal. The ESRM guidelines have been formulated with the intention of assisting banks and other financial institutions (BFIs) in the management of environmental and social risks that are associated with their operation (Nepal Rastra Bank, 2018). This is achieved through the provision of exemplary practices and tools for risk management, while also promoting the adoption of low-tech and environmentally conscious while financing decision. Climate change financing framework (2017), content pertain to various aspects of Nepal's sustainable development and the mitigation of climate change through banking activities and services. The Industrial Policy enacted in 2011 has been designed with the intention of fostering the growth of reliable and long-lasting industrial entrepreneurship. This policy actively advocates for the adoption of environmentally conscious technologies by companies, thereby encouraging sustainable practices and minimizing the negative impact on the environment. Moreover, one of the core objectives of this policy is to facilitate the transformation of existing sectors into models that are not only devoid of pollution but also free from carbon emissions. By emphasizing the importance of these transformative measures, the Industrial Policy of 2011 aims to pave the way for a greener and more sustainable industrial landscape. The acknowledgment of the importance of sustainable agriculture, encompassing organic farming, clean technology, animal welfare, and the preservation of biodiversity, is a fundamental aspect of the Agriculture Development Strategy 2015-2035. The Climate Change Policy (2019) places great importance on the establishment of climate-resilient infrastructure, the promotion of climate-resilient socioeconomic development, and the adaptation of natural resource management strategies to accommodate the impacts of climate change. In order to effectively tackle the challenges posed by climate change, this policy also establishes a dedicated fund to address climate change-related concerns. Nepal's Second Nationally Determined Contribution (NDC) under the Paris Agreement delineates its dedication to the advancement of low-GHG emission development, sustainable energy production, the implementation of e-vehicles, biogas infrastructure, and the attainment of carbon neutrality in renowned tourist areas. The National Adaptation Plan endeavors to mitigate the adverse effects of climate change and enhance Nepal's departure from the classification of least developed countries by means of enhanced strategic planning and synchronization with sustainable development goals, with the ultimate aim of reducing damage and losses inflicted by climate change impacts (NPC, 2017).

Following are the sustainable and green banking initiative and guidelines in Nepal:

Timeline	Initiatives
2014	Sustainable Banking Finance Network member.
2014-2016	Government of Nepal, Ministry of Population and Environment sets Nepal 's intended nationally determined contributions and National Planning Commission publishes Sustainable Development Goals Preliminary Report: 2016-2030).
2017	Government of Nepal, National Planning Commission publishes National Review of SDGs, SDGs Baseline Report and issues SDGs Status and Roadmap: 2016-2030.
2018	Nepal Rastra Bank (NRB) issues guidelines on Environmental and Social Risk Management (ESRM) for banks and financial institutions (BFIs), Environmental and Social Due Diligence (ESDD) Checklist and E&S Risk Rating tools and Annual Report Template
2019	Government of Nepal passes the Environmental Protection Act,2019 which creates the Environmental Protection Fund and NRB conducted a survey on awareness of sustainable banking practices among BFIs in October

2020	NRB issued unified directive mandates all BFIs to follow the guideline on Environmental and Social Risk Management (ESRM), Government of Nepal issues Environmental Protection Rules 2020
2022	NRB updates the Guideline on Environmental and Social Risk Management (ESRM) for BFIs to include consideration of climate risks

Source: IFC Country Progress Report (2022)

The Environmental and Social Risk Management (ESRM) guidelines of the Nepal Rastra Bank establish a requirement for banks to evaluate and mitigate the environmental and social impacts of their operations. Furthermore, the baseline report on Sustainable Development Goals by the National Planning Commission provides a strategic direction for aligning financial products and services with the nation's sustainability objectives. Moreover, the 2019 Environmental Protection Rules offer additional guidance by setting forth environmental safeguards for various sectors. Financial professionals equipped with the requisite knowledge and skills engage in Environmental and Social Due Diligence (ESDD) measures to effectively assess and manage environmental and social risks. This comprehensive approach, incorporating regulatory frameworks, national objectives, and environmental safeguards, paves the way for a more sustainable and responsible banking landscape in Nepal (Report, 2022).

Green banking practices by Implementation of ESRM Guidelines

After the introduction of mandatory guidelines on Environment Social Risk Management (ESRM) by Nepal Rastra Bank, there has been significant progress observed in the implementation of ESRM guidelines by the commercial in Nepal. The majority of commercial banks have formulated policies and procedures pertaining to ESRM and have demonstrated their commitment to human resource development through training and participation in relevant programs. However, it is of utmost importance for these banks to integrate environmental and risk management considerations into their core strategies, as this serves as a crucial indicator of policy implementation. The results show that banks are not adhering to the rules when it comes to rejecting loans from the exclusion list, and none of them have rejected any transactions related to E&S risk management. It suggests that instead of actively participating in risk analysis and rating in their business operations, regulators should exercise caution regarding the potential danger posed by banks and concentrate instead on completing compliance obligations. Provided below is an overview of the compliance status of commercial banks in Nepal in relation to the ESRM guidelines.

Table 1

Policy formulation and governance

Fiscal Year	2078/79		2079/80	
Indicators	n	%	n	%
Formulation and Board Approval of ESRM Policy	23	88%	20	100%
Formulation of Board Approval of an ESRM Procedure	23	88%	20	100%
Nomination of an E&S Officer	18	69%	18	90%
Total commercial banks (N)	26		20	

Source:(ESRM Report of Commercial Bank of Nepal- Fiscal Year 2078 / 79; 2079/80)

Table, 1 depicts the result of policy formulation and governance of ESRM guidelines. Result shows that the ESRM policy and procedure formulation and board approval in year I and II have 88 percent and 100 percent commercial banks respectively. Only 69 percent commercial banks were nominated environmental and social (E &S) risk officer in 2078/79 but this result increased in 2079/80 by 90 percent commercial banks. All of the commercial banks formulated environmental and social risk management policy and procedure then approved from their board. However, Himalayan Bank Limited and Nabil bank limited did not appointed E & S officer under even though mandatory circular made by Nepal Rastra Bank till the study period.

Table 2

Employees training and capacity building

Indicators	2078/79	2079/80
Allocation of Funds in the budget for ESRM Training Programs	14	13
ESRM Training Program conducted	22	16
ESRM Training Programs participated (Attended)	22	16
Total commercial banks	26	20

Source:(ESRM Report of Commercial Bank of Nepal- Fiscal Year 2078 / 79; 2079/80.)

Tables 2 show the data and statistics, providing a quantitative overview of the ESRM trainings budget allocation, programs conducted and participated in training workshop and seminars of commercial banks. In this specific case, 14 commercial banks were allocated budget to ESRM training programs in 2078/79 which is 54% of the total banks, whereas only 13 commercial banks were allocated in 2079/80. Similarly, 22 banks were planned ESRM training programs and participated in the same in 2078/79. There is no more progress in 2079/80 for the training and capacity building for ESRM, Agriculture Development Bank, Laxmi Sunrise Bank, Rastriya Banijya Bank, and Standard Chartered Bank were not conducted such programs during the period.

Table:3 Incorporation of environmental and social risk in core risk management

Indicators	2078/79	2079/80
Rejection of loan due to the exclusion list	0	1
Transactions performed subject to E & S Due Diligence (ESDD)	18	16
Total loan value subject to ESDD in the total disbursed Loan portfolio	11	15
Transactions disbursed by E&S Risk Rating	21	18
Transactions performed with specific E&S Action Plan	10	10
Transactions rejected on the E&S risk management	0	0
Incorporation of E&S Risk in Core Risk Management/ beneficial to E&S improvement	13	10
Total commercial banks (N)	26	20

Source:(ESRM Report of Commercial Bank of Nepal- Fiscal Year 2078 / 79, n.d.)

Table 3 presents the particulars concerning the incorporation of environmental and social risk into the fundamental risk management practices of banks in accordance with the implementation of

ESRM guidelines. In 2078/79, there were none of banks were rejected loan on the basis of the exclusion list criteria, in 2079/80, only one bank (Nepal Bank Limited) follows this indicator of the guideline. The Environmental and Social (E&S) Due Diligence (ESDD) was conducted by 18 banks in 2078/79, and this figure increased to 80% or 16 banks out of 20 commercial banks in 2079/80. The proportion of the total disbursed loan portfolio subjected to ESDD in first year was only 11 banks, which experienced a significant rise to 75% or 15 out of total in next year. The E&S Risk Rating indicator, the percentage of transactions that were disbursed based on the Environmental and Social (E&S) Risk Rating in 2022, 81% of banks practiced disbursing loans based on this rating, a figure that further increased to 90% in 2023. The specific Environmental and Social (E&S) Action Plan was employed for 38% of transactions in 2022, and this percentage increased to 50% in 2023. Notably, no transactions were rejected for E&S risk management in both years. The indicator measuring the proportion to which E&S Risk is integrated into the core risk management practices of commercial banks remained constant in both years. Overall result of the implementation of guidelines reflects there is significant progress made for incorporation of environmental and social risk management into their core business strategies and beneficial to the E &S improvement for the commercial banks in Nepal. Some of the commercial banks such as Agriculture Development Bank, Himalayan Bank, NICAsia Bank, and Rastriya Banijya Bank need to improve their implementation status of given indicators.

Discussion:

The green banking guidelines and Environmental and Social Risk Management (ESRM) policies, has been observed in several South Asian nations including Bangladesh, China, India, and Pakistan (Y. Q. Zhang, 2023), (Li, 2023). These nations have established comprehensive frameworks to encourage banks to adopt environmentally sustainable practices in their operations and investments. The application of such green banking practices has resulted in a reduction in commercial CO_2 emissions while contributing to the attainment of green economic recovery and sustainable development. Green Finance is an investment or lending program that incorporates environmental impact into risk evaluation and uses environmental incentives to influence business decisions, to enhance human well-being, social equity, and ecological integrity while decreasing environmental risks (Soundarrajan & Vivek, 2016). The prior research found that the implementation of environmentally friendly banking practices is significantly impacted by policy, day-to-day operations, and investments (Rehman et al., 2021). Empirical result of green banking activities and effective implementation of such guidelines found to reduce long-term cost, boost the banking industries effectiveness and promote sustainable economic development of the nation in Bangladesh (X. Zhang et al., 2022). Green financing and implementation of policies related to green banking have positive impact of environmental performance, daily operation and customers related performance of the banks and financial institutions (Chen et al., 2022). The interconnection between sustainable development and financial sector stability is evident as various factors such as climate change, wealth distribution, energy use, competition for water resources, and emerging countries' roles will significantly influence the financial sector, necessitating a strategy shift to ensure investments in sustainable development and the ability of the financial sector to handle sustainability risks (Weber, 2015). The collaborative efforts of banking institutions in promoting green recovery have been acknowledged as essential, particularly in emerging economies. In addition to this, central banks and financial authorities have actively participated in the formulation of sustainable banking frameworks and regulations to bolster green finance initiatives. The implementation of the green banking concept in emerging economies will enable banks and firms to efficiently utilize their limited resources, address the global challenge of sustainability, and protect the natural environment, through financing green technology and pollution-reducing projects, as part of a broader green initiative (Jaydatta & Nitin, 2017).

South Asian countries have made notable advancements in the implementation of green banking guidelines and policies to tackle environmental challenges and foster sustainable growth (Y. Q. Zhang, 2023). The significance of environmental and social risk management guidelines for the banking sector is steadily increasing. Banks must integrate environmental, social, and governance (ESG) risk into their risk management systems, adapt their business and risk strategies, and ensure transparency. Efforts are being made to establish environmental regulations and voluntary initiatives that establish benchmarks for the measurement and management of environmental risk in banks (Bruno & Lagasio, 2021). The importance of climate risks and the necessity for banks to allocate credit and investment to more sustainable sectors have been emphasized by climate change and the 2030 Agenda for Sustainable Development. Driven by political pressure and concerns about reputation, banks and project companies employ E&S standards for sustainability and risk management purposes (Mertens et al., 2023). Environmental risk has an impact on the operational and strategic activities of banks, and central banks face distinct challenges in addressing this risk. In general, there is a growing recognition of the requirement for guidelines and regulations to manage environmental and social risks within the banking sector. The exploration of sustainable finance implementation within the financial services industry, particularly in the banking sector, has been undertaken, revealing the necessity for improved execution and emphasis on environmental sustainability (Mozib Lalon, 2015). The regulatory authorities or central bank have important role for greening the financial system and implementation of different policies and guidelines in the country (Khairunnessa et al., 2021). Prior research of green banking performance in Nepal found that the environmental training of the employees will positively contributed for environmental performance of the banks (Risal et al., 2018). The efficient application of the regulations, guidelines, and circulars of the regulatory authorities in the banks and financial institutions has favorably influenced the development of a sustainable path, as indicated by the varied findings of the empirical studies.

Conclusion, Implications, and Future Research Directions

Financial entities in Nepal have been encouraged to incorporate social, environmental, and governance considerations into their strategies and choices as per NRB guidelines. The guidelines and various circular issued by the NRB are intended to encourage responsible lending, minimize risks and promote investment. Nepal Rastra Bank has encouraged BFIs to increase their credit in green investment. To promote green financing preliminary draft of the Green Taxonomy has been drafted and approved by Nepal Rastra Bank. This study analyzes the implementation status of ESRM guideline circulated by Nepal Rastra bank to promote sustainable banking through environmental and social risk management in bank transactions. Commercial banks are mostly implemented the policy formulation and governance indicators of the guidelines. The significant progression is not found in training and capacity building of their human resource in the banks regarding environmental and social risk management. Regarding the incorporating environmental and social risk in core risk management found a significant progression of the commercial banks in different indicators issued by the Nepal Rastra Bank. However, the banks are not adhering to the rules when it comes to rejecting loans from the exclusion list, and none of them have rejected any transactions related to E&S risk management. It suggests that instead of actively participating in risk analysis and rating in their business operations, regulators should exercise caution regarding the potential danger posed by banks and concentrate instead on completing compliance obligations.

Nepalese banking sectors are beginning to adopt the sustainability practices and they are effectively implementing the guidelines and various circular issued by the Nepal Rastra Bank. The implication of the sustainable banking practices and green banking guidelines have potential to drive positive changes in financial industry. It promotes reputation and brand values, environmental sustainability, social responsibility, investment opportunity and long-term economic growth in the country. The integration of ESG consideration into core business strategies and decision-making process will helps to minimize overall risk of the banking industry.

The study usages only the secondary data of ESRM report published by NRB. Further research should examine the overall green banking and environmental performance of the commercial banks by collecting and analyzing qualitative and quantitative data compromising individual performance of the banks. Further study can evaluate the financial performance and overall sustainability status of commercial banks with align from the compliance of ESRM guidelines in Nepal. Additionally, the research may be conducted the investment of banks in accordance to the guidelines of green finance projects and overall mitigated environmental harmful activities and such environmental risk of financing projects.

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Appendix: I ESRM Report I

ESRM Report of Commercial Bank of Nepal- Fiscal Year 2078/79

		Policy Formulation and Governance			Employee trainings and capacity building			Incorporation of Environmental & Social Risk in Core Risks Management							
S.N	Bank Name	Formulation and Board approval of an ESRM Policy (or similar policy document)	Formulation and Board approval of an ESRM Procedure (Manual)	Nomination of an E&S Officer	Allocation of Fund in the budget for ESRM Training Programs/Seminars/Workshops (in NRs)	No. of ESRM Training Programs/Seminars/Workshops conducted	No. of attendees of the ESRM Training Programs/Seminars/Workshops conducted	No. of loan requests rejected due to the Exclusion List	No. of transactions subject to Environmental & Social Due Diligence (ESDD)	Share (% total loan value) of the transactions subject to ESDD in the total disbursed commercial (business purpose) loan portfolio	Total No. of disbursed transactions by E&S Risk Rating	Total amount in disbursed transactions by E&S Risk Rating (NRs Billion.)	No. of transactions with specific E&S Action Plan	No. of transactions rejected on the E&S risk management grounds	Incorporation of Environmental & Social Risk in Core Risks Management
1	Agriculture Development Bank Ltd.	No	No	No	500,000	1	28	-	-	-	-	-	-	-	-
2	Bank of Kathmandu Ltd.	Yes	Yes	Yes	-	-	-	-	5,997	-	5,997	112	-	-	435
3	Century Commercial Bank Ltd.	Yes	Yes	Yes	181,200	2	40	-	-	-	2,356	89	-	-	-
4	Citizens Bank International Ltd.	Yes	Yes	Yes	-	1	1	-	170	38	162	132	14	-	1
5	Civil Bank Ltd.	Yes	Yes	Yes	18,080	3	6	-	1,070	92	128	12	-	-	8
6	Everest Bank Ltd.	Yes	Yes	No	16,000	2	4	-	78	5	78	15	-	-	-
7	Global IME Bank Ltd.	Yes	Yes	Yes	-	2	8	-	4,763	51	9,526	181	-	-	141
8	Himalayan Bank Ltd.	Yes	Yes	No	-	3	132	-	-	-	676	133	-	-	-
9	Kumari Bank Ltd.	Yes	Yes	Yes	9,040	1	1	-	-	-	36	9	-	-	4
10	Laxmi Bank Ltd.	Yes	Yes	Yes	26,500	2	3	-	27,510	37	27,510	85	329	-	1
11	Machhapuchhre Bank Ltd.	Yes	Yes	No	-	3	36	-	113	26	113	24	5	-	7
12	Mega Bank Nepal Ltd.	Yes	Yes	Yes	-	2	8	-	120	-	120	19	3	-	3
13	Nabil Bank Ltd.	Yes	Yes	No	-	4	19	-	23	-	103	4	23	-	4
14	Nepal Bank Ltd.	Yes	Yes	No	200,000	1	2	-	-	-	-	-	-	-	-
15	Nepal Credit and Commerce Bank Ltd.	Yes	Yes	Yes	15,006	1	2	-	-	-	-	-	-	-	-
16	Nepal Investment Bank Ltd.	Yes	Yes	Yes	500,000	3	194	-	317	-	314	18	-	-	-
17	Nepal SBI Bank Ltd.	Yes	Yes	Yes	42,239	3	[illegible]	-	109	-	80	16	14	-	-
18	NIC Asia Bank Ltd	Yes	Yes	Yes	-	-	-	-	-	-	-	-	-	-	-
19	NMB Bank Ltd.	Yes	Yes	yes	249,289	16	670	-	101	22	52	13	10	-	9
20	Prabhu Bank Ltd.	Yes	Yes	Yes	-	2	4	-	7,192	86	7,192	67	-	-	-
21	Prime Commercial Bank Ltd.	Yes	Yes	Yes	110,019	7	63	-	29	-	29	6	-	-	-
22	Rastriya Banijya Bank Ltd.	No	No	No	-	-	-	-	-	-	-	-	-	-	22
23	Sanima Bank Ltd.	Yes	Yes	Yes	2,097,238	7	248	-	5,799	51	6,535	73	19	-	35
24	Siddharth Bank Ltd.	Yes	Yes	Yes	48,794	3	151	-	178	42	178	10	22	-	18
25	Standard Chartered Bank Ltd.	No	No	No	-	-	-	-	869	-	869	123	-	-	-
26	Sunrise Bank Ltd.	Yes	Yes	Yes	-	3	8	-	388	11	388	5	29	-	2

Appendix II: ESRM Report II

ESRM Report of Commercial Bank of Nepal- Fiscal Year 2079/80

		Policy formulation and governance			Employee trainings and capacity building			Incorporation of Environmental & Social Risk in Core Risks Management							
S.N	Bank Name	Formulation and Board approval of an ESRM Policy (or similar policy document)	Formulation and Board approval of an ESRM Procedure (Manual)	Nomination of an E&S Officer	Allocation of Fund in the budget for ESRM Training Programs/Seminars/Workshops (in NRs)	No. of ESRM Training Programs/Seminars/Workshops conducted	No. of attendees of the ESRM Training Programs/Seminars/Workshops conducted	No. of loan requests rejected due to the Exclusion List	No. of transactions subject to Environmental & Social Due Diligence (ESDD)	Share (% total loan value) of the transactions subject to ESDD in the total disbursed commercial (business purpose) loan portfolio	Total No. of disbursed transactions by E&S Risk Rating	Total amount in disbursed transactions by E&S Risk Rating (NRs Billion.)	No. of transactions with specific E&S Action Plan	No. of transactions rejected on the E&S risk management grounds	No. of transactions beneficial to E&S improvement
1	Agriculture Development Bank Ltd.	Yes	Yes In Progress	Yes	650,000	-	-	-	-	-	-	-	-	-	-
2	Citizens Bank International Ltd.	Yes	Yes	Yes	449,500	2	50	-	209	10.89	199	40.88	8	-	25
3	Everest Bank Ltd.	Yes	Yes	Yes	220,000	2	11	-	274	5.91	274	46.36	-	-	-
4	Global IME Bank Ltd.	Yes	Yes	Yes	480,000	16	726	-	1,610	40.40	1,610	112.60	-	-	226
5	Himalayan Bank Ltd.	Yes	Yes	No	-	2	140	-	-	-	572	95.50	-	-	-
6	Kumari Bank Ltd.	Yes	Yes	Yes	-	4	80	-	458	5.98	458	68.01	40	-	40
7	Laxmi Sunrise Bank Ltd.	Yes	Yes	Yes	-	-	-	-	25,362	36.12	25,362	91.52	196	-	-
8	Machhapuchchhre Bank Ltd.	Yes	Yes	Yes	4,398,000	1	2	-	782	11.46	782	42.92	17	-	10
9	Nabil Bank Ltd.	Yes	Yes	No	-	6	301	-	89	0.24	185	5.78	-	-	60
10	Nepal Bank Ltd.	Yes	Yes	Yes	465,560	2	38	1	21	1.09	21	1.32	6	-	2
11	Nepal Investment Mega Bank Ltd.	Yes	Yes	Yes	400,000	1	3	-	1,322	4.72	1,316	58.67	-	-	46
12	Nepal SBI Bank Ltd.	Yes	Yes	Yes	33,900	1	4	-	82	4.95	111	5.99	2	-	-
13	NIC Asia Bank Ltd	Yes	Yes	Yes	30,000	2	286	-	-	-	-	-	-	-	-
14	NMB Bank Ltd.	Yes	Yes	Yes	4,038,420	13	193	-	383	14.65	369	8.51	201	-	35
15	Prabhu Bank Ltd.	Yes	Yes	Yes	-	3	99	-	12,355	84.40	12,355	146.00	-	-	-
16	Prime Commercial Bank Ltd.	Yes	Yes	Yes	408,361	10	231	-	51	-	51	-	-	-	-
17	Rastriya Banijya Bank Ltd.	Yes	Yes	Yes	-	-	-	-	-	-	377		-	-	-
18	Sanima Bank Ltd.	Yes	Yes	Yes	459,402	7	344	-	7,238	16.98	7,880	103.43	98	-	173
19	Siddharth Bank Ltd.	Yes	Yes	Yes	178,157	2	53	-	146	6.91	146	2.16	16	-	3
20	Standard Chartered Bank Ltd.	Yes	Yes	Yes	-	-	-	-	923	25.00	923	102.36	-	-	-

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Bank Specific Factors, Macroeconomic Variables and Market value of Nepalese Commercial Banks

[1] Ramesh Poudel

Abstract

The present research has been carried out to identify the relationship and impact of bank specific factors, macroeconomic variables on the market value of Nepalese commercial banks. This research is based on descriptive cum causal research design with quantitative data from secondary sources. The study adopts panel regression to capture both cross sectional and longitudinal data characteristics and employs ordinary least square model with 120 observations of 20 commercial banks as entire population from the period of 2016/17 to 2021/22. The study reveals that banks with higher loan growth and size tend to maintain efficient market value, yet careful lending areas selection are crucial to mitigate no performing loan risk, which can decrease profitability and increase market risk. Higher non-interest income to non-interest expenses, operating revenue to operating expenses are major dimension to increase the market value. Book value per share and dividend payout ratio reflecting investor confidence in the bank's net worth and consistence return. The banks might adopt the strategy of diversifying lending portfolio, introduce non-interest income generation program along with increases the size and operation of the activities. The bank could follow the policy of increasing cash and stock dividend through higher profit. The study focuses on selected bank specific and macroeconomic factors without considering fixed/random and structural model. Future studies aim to employ in identifying causal link between bank factors, service quality and market value with different panel data model.

Keywords

Market value per share
Price earnings ratio
Dividend yield ratio
Return on assets
Return on equity

BANKS AND FINANCIAL institutions play an important role in mobilizing saving and channeling them in productive invest-

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ment for economic growth and sustainability. To perform these activities efficient market value is prerequisite for banks in economy. Nepalese banking system and their market value have substantial changed after restoration of democracy from 2046 B.S. due to liberalization, deregulation, prudential reregulation, technology advance and globalization. Nepalese stock market is in early stage and lack of stability and sophistication compared to more established market which shows nonrandom price change. Investors show speculative behavior because they make decision on the basis of guesses rather than solid analysis. Brokers and financial institutions are unable to provide symmetric information to the investors for minimizing unpredictable fluctuations in stock price. The listed companies of NEPSE do not focus on minimizing the fluctuation of stock price by using the tool of operating efficiency. Pradhan and Adhikari (2004) revealed that Nepalese banks give first priority on profitability, secondly on cash flow, thirdly on dividend and fourth priority in stock price. But, efficient market value of stock is essential for smooth functioning the bank, financial market and achieving the economic growth. Efficient market value is that where current stock price is determined on the basis of profitability, credit strength, liquidity position, operating efficiency, risk management, investor confidence, regularity scrutiny, strategic decision making and future return expectation.

A bank creates value to its shareholders when the return on invested capital is greater than its opportunity cost (Marshall, 1890). Market value of commercial bank is a key indicator to make decision for the investors and other stakeholders. Market capitalization is identified by multiplying the current market price per share and total number of share outstanding. It is determined by investor perceptions, market demand and financial performance of relevant bank and financial institutions. There are various proxies are used to measure the bank value among them Tobin's Q and Market to book ratio (M/B) are popular measures (Calomiris & Nissim, 2014; Sarin & Summers, 2016; Chousakos & Gorton, 2017; Minton et al., 2017). Tobin's Q is the ratio between market value of equity plus book value of liabilities and total assets. M/B is the ratio between market value of equity to book value of equity and represents an appropriate measure of value creation. This study uses market price per share, price earnings ratio and dividend yield ratio as proxy of market value (Herath, 2020). The stock price refers to the valuation of individual share of company which represent single unit of ownership (Hunjra et al. 2014). O'Hara (2000) states that the price of share correlates directly with the earning generated and dividend distributed by the company. Fama and French (2001) examined the attributes of bank specific factors like size profitability and growth prospects on dividend yield ratio and identify the positive relationship on dividend yield during the period of financial crisis. Price earnings ratio is the relationship between a company's stock price and earning per share. It helps to identify either the stock price is overvalued or undervalued to compare with market. Dividend yield ratio shows the relationship between dividend and market price of the share. It helps to ascertain either firm provides enough dividend to compare its market price or not.

Macroeconomic variables such as Inflation rate, Gross domestic product, Money supply, Unemployment rate, Government debt, Government deficit significantly impact the market value of stock. Continuous and sustained increasing price of all commodities and services within the economy is known as inflation. The total market value of all final goods and services that are produced within the territory of particular country is known as GDP. There is negative relationship between inflation rate and market value of share but GDP has positive relationship to the market price of share.

Pradhan and Parajuli (2017) reveals that the determinants of market value of banking sectors in Nepal because few individuals are involved to manipulate the price of securities and engage in undesirable practices. This study seeks to employ the most widely accepted and analytical approach in study of market value in Nepal by incorporating operating efficiency, profitability and macroeconomic variables. The study main objective is to examine how managerial decision regarding operating efficiency and profitability influence the share market value. The specific objectives of the study is to measure the bank specific factors, macroeconomic variables, and market value of commercial banks. It examines the relationship and influence of bank specific factors and macroeconomic variables on the profitability of Nepalese commercial banks. So, this research might be fruitful for taking managerial decisions to banks for maintaining efficient market price.

REVIEW OF LITERATURE

There are many well established and growing literature that focuses on various factors that affect the value of the banks. The development of economy depends upon the investment of capital amount into productive area. Investment is major factor of capital formation and investors always analyze the profitability, capital gain, cash dividend, stock dividend and risk. The collection of deposit amount of banks depend upon the market value of share. A major strategic objective of bank is to identify the factors that largely influence the market value of the bank. There is positive relationship of profit, dividend and operating efficiency on value of bank. Profitability of bank is associated with collecting lower cost deposit and invest that amount into diversified portfolio with lower risk. Inefficient and ineffective utilization of fund receive from public may decrease profitability and market value which influences the sustainability of a bank. Boyd and Runkle (1993) examined the relationship between size and bank value, and found that size has a negative effect on M/B for the period 1981 to 1990, while the size effect is positive but statistically insignificant for the period 1971 to 1980. Conversely, De Nicolo (2001) assessed the effect of diversification on market value, showing that M/B decreases with increase in size for large US and international banks. But, M/B increases with the increase in size for small banks in the US. However, Avramidis et al. (2018) stated that bank size on M/B has positive effect for banks with transparent assets. Further, the effect of bank size on M/B is negative for banks with higher earnings. Ayako and Wamalwa (2015) have conducted study on determinants of firms value in commercial banks of Kenya and found that the size of assets, capital structure, cash flow, dividend ratios have no statistically significant individual effect on the firm value of the listed commercial banks of Kenya.

Creating value is a challenging job in case of bank because it faces higher level risk when gathering funds from the public and channeling those funds towards deficit units such as business, individual and government. There is no guarantee of return fund from borrowers as per the agreement due to change in global, economic and firm specific variable. But, the bank and financial institutions are liable to return the deposit amount to the deposit holders as per their requirement.

Consequently effective fund management, cost control and optimum resource allocation is essential to minimize risk and enhance the value of firm. Tui et al. (2017) found that bank size and profitability significant positive but loan to deposit ratio and nonperforming loan have negative significant impact on value of the bank. Gautam (2017) reveals that return on assets and bank deposit have positive effect on bank value whereas loan and credit ratio has negative influence on bank value of Nepalese commercial bank. This study suggests that if the bank and financial institution invest deposit into risky portfolio which increase the provision amount and reduce the profitability. The investors will not be assure that the bank continuously provide return which decrease the market value of the share.

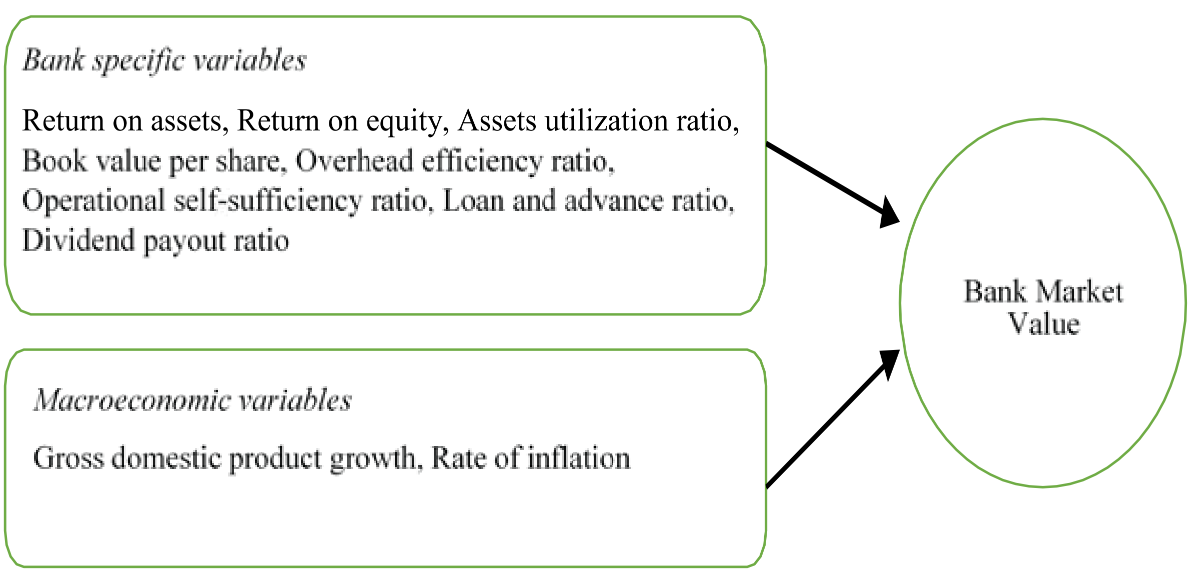
Avramidis et al. (2018) revealed that an inverse u shape relationship between size and bank's market to book value of assets using a sample of US bank holding companies and there is negative influence of bank size on market to book value with higher earning management activities. Nirmala et al. (2011) conducted study major determinants of share price in health care, auto and public sector in India over the period of 2000 to 2009 and found that dividend payout ratio, price earnings ratio and leverage are the major variables which influence the market value of share. Oladele (2014) found that dividend policy and profitability highly influence the market value of share than other financial variables in Pakistan. Almumani (2018) found that the return on equity and dividend payout ratio have positive significant influence on market capitalization of the listed commercial banks in Jordan. If the bank increase the profitability in terms of investment and paid higher amount of dividend which ultimately increase the value of bank.

Samuel et al (2019) found that the regulatory capital, credit exposure, bank funding, bank size and corporate governance are major determinants of financial stability. Bank size, regulatory capital, bank funding and corporate governance have positive and statistically significance influence on financial stability but credit exposure has negative significant influence on market capitalization in commercial banks of Kenya. Olawaseyi et al. (2021) identified that capital adequacy, assets quality, liquid assets and deposit ratios have significant positive influence on market value but efficiency ratio has negative significant impact on value of bank in Southeast Asian countries. The study also shows that diversification, growth rate of GDP and inflation rate have no any significant influence on market value of the bank.

Sugianto et al. (2020) found that non-performing loan has significant positive influence on value of firm but return on assets, corporate growth, capital adequacy ratio, operating expenses ratio have no significant impact on value of bank in banking sector of Indonesia. Joshi and Giri (2015) found that long run co integrality of sectorial GDP, inflation rate and T-bills with stock indices in India. Various studies indicates that the bank and financial institutions increase their value through careful investment of loan to the deficit unit and optimizing expenditures on employee salary, rent, depreciation and other operating expenses. Bukit (2018) found that price to book value, dividend payout ratio, earning per share have positive significant influence on stock return. But return on equity has positive insignificant influence on market index in Indonesia. Menike (2006) found that strong negative relationship between stock price and inflation rate in Sri Lanka. But, the study shows that positive influence of money supply on stock price index due to higher money supply helps to increase the expand of money and people get lower cost fund which ultimately increase the demand of share. Higher inflation rate reduces the saving and demand of share in market. Pradhan and Shrestha (2017) ascertained that return on assets, firm size, tax payable, earning per share, dividend per share have positive significant influence on market price per share. However, price earnings ratio has negative insignificant influence on market value. This study suggests that the profitability and market value have positive linear relationship. Gwachha (2019) found that asset size and deposit to total assets have positive and significant influence on bank profitability and value. But, loan amount has negative significant influence on value of firm which suggests that increase in loan amount causes risk and reduce the value of market price in Nepal. Gautam (2021) found that positive influence of leverage, dividend payout and dividend yield with stock return but there is negative influence of book to market value, growth of assets and earning price ratio with stock return in Nepalese commercial bank.

Most of the prior studies base on profitability, dividend, risk, liquidity, psychological contact theory and social exchange theory as determinants of market value of bank. The large numbers of research are conducted focusing on dividend payout ratio and profitability as major determinants of market value in Nepal. Previous studies do not provide managerial insight in term of managing operating efficiency for maintaining efficient market price of share. However, this research focuses on dimension like operating efficiency, macroeconomic variables, profitability and market value of bank which is new for study. Similarly, research on operating efficiency, profitability, macroeconomic variables and market value of bank by using entire population of twenty commercial banks is new in Nepalese context. So, this research helps to fulfill the gap in the existing literature too. On the basis of above literature the following model is developed for analysis;

Figure 1
Model of the Bank market value



RESEARCH METHODOLOGY

This study uses the bank market value proxies as market price per share, price earnings ratio, dividend yield ratio which are depended variables of the study. Return on assets, Return on equity, Overhead efficiency ratio, Operational self-sufficiency ratio, Book value per share, Loan and advance ratio, Dividend payout ratio, Assets Utilization ratio, Gross domestic product growth and the rate of Inflation are taken as independent variables. It uses quantitative data from secondary sources to analyze the effect of bank specific factors, macroeconomics variables on market value of banks. The data are collected through annual reports of commercial banks, quarterly bulleting of Nepal Rastra Bank and economic survey of ministry of finance for the periods of 20016/17 to 2021/22 with the observation of 120.The researcher uses whole population for the study as samples to increase the reliability of findings. The study uses whole population to remove the random effect model in panel data. Banks are regulated by the central bank and there is mandatory to maintain the capital amount, provision amount and risk. So, it assumes that there is lower fixed effect on data due to similar nature of operation.

Descriptive research design is used to identify the status of bank specific factors, macro-economic variables and market value of banks. Descriptive statistics like mean, median, mode, maxima and minima are used to measure the status of variables. The causal comparative research design has been utilizes to measure relationship and influence of bank specific factors, macroeconomic variable on market value. Inferential statistics like Pearson correlation and ordinary least square models are used to assess the relationship and impact of independent variable on dependent variable. For this purpose, to check whether or not the multi-collinearity issue arises, it was done in two ways: correlation coefficients and variance inflation factor (VIF) values. The following regression models are used;

$MPSi = \alpha + \beta1ROAit + \beta2ROEit + \beta3BVPSRit + \beta4OERit + \beta5OSRit + \beta6LARit + \beta7DPRit + \beta8AURit + \beta9GDPit + \beta10IFit + \varepsilon it$

$P/Ei = \alpha + \beta1ROAit + \beta2ROEit + \beta3BVPSRit + \beta4OERit + \beta5OSRit + \beta6LARit + \beta7DPRit + \beta 8AURit + \beta9GDPit + \beta10IFit + \varepsilon it$

$D/Yi = \alpha + \beta1ROAit + \beta2ROEit + \beta3BVPSRit + \beta4OERit + \beta5OSRit + \beta6LARit + \beta7DPRit + \beta 8AURit + \beta9GDPit + \beta10IFit + \varepsilon it$

The operational definition of these variable is given in table 1

Table 1

List of the Variables with their Definitions

Variables	Symbol	Description
Dependent variables:		
Market price Per share	MPS	Market Price of Share in Rs
Price Earnings Ratio	P/E	Market price per share to Earnings per share
Dividend Yield Ratio	D/Y	Dividend to price per share

Independent Variables;		
Return on assets	ROA	Percentage ratio of net income to total assets
Return on Equity	ROE	Percentage ratio of net profit to shareholders equity
Overhead efficiency ratio	OER	Noninterest income to Noninterest expenses
Operational self-sufficiency ratio	OSR	Operating Revenue to total of Operating Expenses, Financial Costs and Impairment Losses on Loans
Assets Utilization ratio	AUR	Total operating revenue to Total assets
Gross Domestic Product	GDP	It measures the size of an economy,
Inflation	IF	It reflects the buying power of the currency is deteriorating
Book Value Per Share	BVPS	Book value of a Bank
Loan and Advance Ratio	LAT	Total loan and advance to Total Assets
Dividend Payout ratio	DPR	Dividend to Net income

RESULTS AND DISCUSSION

Result section shows the descriptive and inferential statistical output from the input of quantitative data obtain from Nepalese commercial banks. It shows the major finding of the study. The researcher discuss and analyze the major finding with previous studies and identify the similarities and contradiction in discussion section.

Results

Descriptive Summary

Table 2

Descriptive Statistics of the Variables

	Mean	Std. Deviation	Minimum	Maximum
MPS	446.1232	295.0525	147	2295
P/E Ratio	18.55704	8.688861	4.277561	64.67
D/Y Ratio	5.102168	2.904241	0	16.45871
ROA	0.015115	0.004778	0.006456	0.027654
ROE	0.132077	0.039193	0.055337	0.26122
BVPS	178.7225	41.43063	112.2743	298.4496
OER	15.41993	27.37057	2.918626	240.9009
OSR	1.232226	0.710575	0.448477	6.909417
LAT	0.772283	0.134194	0.00578	0.892665
DPR	21.11121	15.64746	0	110.52
AU	0.021258	0.006385	0.009396	0.037368
GDP	3901609	568651.2	3077145	4851625
IF	4.75	0.8437	3.6	6.2

Table 2 shows that average market price per share is Rs 446.1232 with standard deviation of Rs 295.0525. Maximum stock price is Rs 2295 and minimum stock price is Rs 147 during the period of study. Price earnings ratio and average dividend yield ratios are 18.55704 and 5.102168 respectively. The average return on assets and return equity are 1.5115 and 13.2077 percent with standard deviation of 0.4778 and 3.9113 percent respectively. The average operating efficiency ratio, self-sufficiency ratio, loan to total assets ratio are 15.41, 1.2322 and 0.7722 times respectively during the period of study. The higher amount of book value per share is Rs 298.4496 and the lower amount is Rs 112.2743. The average assets utilization ratio is 2.12 percent with standard deviation of 0.6385. The inflation rate reach to 6.2 percent during the period of study. The average inflation rate is 4.75 percent.

Relationship between Variables

Bivariate correlation coefficients is used to identify the degree of the relationship between the dependent and independent variables which are presented in Table 3.

Table 3

	OER	AUR	ROE	ROA	BVPS	LAT	GDP	IF	MPS	PER	DYR	OSR	DPR
OER	1												
AUR	.332**	1											
ROE	0.029	.687**	1										
ROA	.360**	.959**	.710**	1									
BVPS	0.060	.219*	0.060	.196*	1								
LAT	-0.050	-.233*	-.247**	-.252**	-0.012	1							
GDP	-0.171	-.515**	-.396**	-.527**	0.052	.350**	1						
IF	-0.029	-.244**	-0.170	-.231*	-0.020	0.030	.219*	1					
MPS	0.030	.247**	.274**	.244**	.270**	.284**	-.244**	-.201*	1				
PER	-0.120	-.206*	-.195*	-.200*	-0.013	-0.063	-0.016	-.200*	.757**	1			
DYR	0.041	0.097	-0.057	0.121	-0.068	0.071	0.082	0.168	-.192*	-.264**	1		
OSR	0.016	.579**	.365**	.486**	0.089	-0.146	-.332**	-0.167	.184*	-0.054	-0.003	1	
DPR	0.073	.365**	.223*	.383**	.212*	-0.177	-.198*	-0.067	.669**	.399**	.510**	.193*	1

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

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

Table 3 shows the relationship between dependent and independent variables during the period of the study. Assets utilization ratio has positive relationship with market value per share at 1 percent level of significant. But it has negative relationship with price earnings ratio at 5 percent level of significant. Return on equity has positive relationship with market value per share but negative relationship with price earnings ratio and dividend yield ratio. Return on assets and book value per share have positive relationship with market value per share at significant level of 1 percent. But, the growth rate of gross domestic product and inflation rate have negative relationship to the market value per share. There is negative relationship between assets utilization ratio, return on equity, return on assets and inflation rate with price earnings ratio at 1 percent level of significance.

Overhead efficiency ratio has positive relationship with market price per share and dividend yield ratio but it has negative relationship with price earnings ratio. The result indicates that the increase in non-interest income to non-interest expenses helps to increase market value. Operational self-sufficiency ratio has negative relationship with market price per share and dividend yield ratio which is against the theoretical finding.

Influence of Bank specific factors, Macroeconomic Variables on Value of Banks

The regression analysis has been conducted to identify the influence of return on assets, return on equity, book value per share, overhead efficiency ratio, operational self-sufficiency ratio, assets utilization ratio, loan and advance ratio, dividend payout ratio on market value per share, price earnings ratio and dividend yield ratio.

Table 4

Regression Result of Market Value per share

	Unstandardized Coefficients		Standardized coefficients	t	Sig.	Co-linearity statistics	
	β	std. error	beta			Tolerance	VIF
(Constant)	749.931	244.321		3.069	0.003		
OER	0.099	0.072	0.099	1.366	0.175	0.722	1.386
OSR	0.071	0.081	0.071	0.871	0.386	0.571	1.751
AUR	0.045	0.249	-0.045	-0.182	0.856	0.061	16.371
ROE	0.315	0.095	0.315	3.314	0.001	0.419	2.384
ROA	0.438	0.246	-0.438	-1.779	0.078	0.063	15.981
DPR	0.659	0.068	0.659	9.651	0.000	0.813	1.230
BVPS	0.196	0.066	0.196	2.987	0.003	0.878	1.139
LAT	0.144	0.067	-0.144	-2.154	0.033	0.849	1.178
GDP	-0.126	0.077	-0.126	-1.626	0.107	0.633	1.579
IF	-0.165	0.064	-0.165	-2.579	0.011	0.921	1.086
R2 =0.583, AdjR2=0.544; F = 199.139; P value=0.000							

Table 4 shows the regression result of overhead efficiency ratio, overhead self-sufficiency ratio, assets utilization ration, return on equity, return on assets, dividend payout ratio, book value per share, loan to total assets ratio, gross domestic product and inflation rate on market value per share of commercial banks.

The beta coefficient of return on assets, return on equity, book value per share and dividend payout ratios are positive at significant level of 5 percent which indicates that these variable positively influence the market value per share. The beta coefficient of GDP and Inflation rate is negative at significant level of 10 percent which indicates that growth rate of GDP and inflation

rate have negative influence on market price per share. The overhead efficiency and self-sufficiency ratio have positive insignificant influence on market price per share.
Overall, the model has R-squared (R2) value of 0.583, indicating that it explains a large portion of the variance in the dependent variable. The adjusted R-squared (AdjR2) is also 0.544, suggesting that the model is a good fit. The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

Table 5

Regression Result of Return on Price Earnings Ratio

	Unstandardized Coefficients		Standardized coefficients	t	Sig.	Co-linearity statistics	
	β	std. error	beta			Tolerance	VIF
(Constant)	51.393	8.628		5.956	0		
OER	-0.004	0.087	-0.004	-0.041	0.967	0.722	1.386
OSR	0.068	0.098	0.068	0.694	0.489	0.571	1.751
AUR	-0.316	0.299	-0.316	-1.059	0.292	0.061	16.371
ROE	-0.072	0.114	-0.072	-0.629	0.531	0.419	2.384
ROA	-0.222	0.295	-0.222	-0.753	0.453	0.063	15.981
DPR	0.556	0.082	0.556	6.799	0.000	0.813	1.230
BVPS	-0.019	0.079	-0.019	-0.244	0.808	0.878	1.139
LAT	-0.055	0.080	-0.055	-0.691	0.491	0.849	1.178
GDP	-0.113	0.093	-0.113	-1.221	0.225	0.633	1.579
IF	-0.266	0.077	-0.266	-3.461	0.001	0.921	1.086
R2 =0.4, AdjR2=0.345; F = 7.264; P value=0.000							

Table 5 shows that the dividend payout ratio has positive influence on price earnings ratio at 1 percent level of significance. Inflation rate has negative influence on price earnings ratio at 1 percent level of significant. However, there is negative influence of assets utilization ratio, return on equity, return on assets, book value per share, loan to total assets and growth rate of GDP at insignificant level. Overhead efficiency ratio has negative beta value which indicate that this ratio negatively influence on price earnings ratio at insignificant level. Overhead self-sufficiency ratio has positive beta with insignificant level which indicates that this ratio positively influence the price earnings ratio. The loan to total assets ratio, growth rate of gross domestic product, and inflation rate have negative beta which indicate that increase in these ratio decrease the price earnings ratio.

The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

Table 6

Regression Result of Dividend Yield Ratio

	Unstandardized Coefficients		Standardized coefficients	t	Sig.	Co-linearity statistics	
	β	std. error	beta			Tolerance	VIF
(Constant)	-2.267	2.854		-0.794	0.429		
OER	-0.068	0.086	-0.068	-0.792	0.430	0.722	1.386
OSR	-0.066	0.096	-0.066	-0.688	0.493	0.571	1.751
AUR	0.029	0.295	0.029	0.097	0.923	0.061	16.371
ROE	-0.276	0.112	-0.276	-2.451	0.016	0.419	2.384
ROA	0.342	0.291	0.342	1.176	0.242	0.063	15.981
DPR	0.566	0.081	0.566	7.011	0.000	0.813	1.230
BVPS	0.239	0.078	-0.239	-3.079	0.003	0.878	1.139
LAT	0.112	0.079	0.112	1.415	0.160	0.849	1.178
GDP	0.179	0.092	0.179	1.960	0.053	0.633	1.579
IF	0.185	0.076	0.185	2.440	0.016	0.921	1.086

R2 = 0.41
AdjR2=0.352;
F = 7.646;
P value=0.000

Table 6 shows that the return on assets, dividend payout ratio, book value per share, growth rate of gross domestic product, inflation rate have positive beta coefficient with less than 5 percent level of significance which indicates that these variables positively influence the dividend yield ratio in Nepalese commercial banks. Increase in book value, profitability and optimum use of assets positively influence the dividend yield ratio. However, the return on equity has negative beta coefficient and its impact is insignificant on dividend yield ratio. The overhead efficiency ratio and overhead self-sufficiency ratio have negative beta which indicate that these variables negatively influence dividend yield ratio. Loan to total assets ratio has positive beta which indicate that expanding loan positively influence on dividend yield ratio.

The F-test is highly significant with a p-value of 0.000, indicating that the overall model is statistically significant. Additionally, multi-collanearity is a concern for some variables, as indicated by low tolerance and high VIF values.

Discussion

This study identifies the relationship and influence of bank specific factors and macro-economic variables on market value by using the secondary data of Nepalese commercial banks from the period of 2016/17 to 2021/22. The average market value, return on assets, return on equity and earning per share of Nepalese commercial bank is higher than Croatian banks (Pavkovic et al. 2018) which indicates that the Nepalese commercial banks are more cost efficient. The positive profitability indicates that Nepalese commercial banks are more efficient which helps to maintain efficient market price in a market.

There is positive significant influence of loan to total assets on market price per share but insignificant influence on dividend yield ratio. This result is similar with the finding of (Menicucci & Paolucci, 2016; Sufian, 2012). This results suggests that if the bank invest large amount of deposit on diversified portfolio loan which increase the interest income, profitability and the market value of share. However, this result is against with finding of Sinha and Sharma (2016) because if the management invest loan into risk portfolio increases the amount of provision for loan losses which ultimately decrease the profitability and market value of the firm. It reduces the confidence of investors to invest into share of bank.

The operating efficiency ratios has positive influence on market value per share but negative influence on dividend yield ratio. This finding is similar with Dijalilov and Piesse (2016), and Trujillo- Ponce (2013). This result suggests that if the bank reduces the operating cost which ultimately increase the profitability and market value per share. If the bank enlarge the non interest earning activities which positively influence on market value. The result suggests that banks that focus and control operating costs would naturally reduce the operating expenses ratio, resulting in higher firm value.

Return on assets and assets utilization ratio have a significant positive impact on market price per share and dividend yield ratio. This result is similar with finding of Gwachha (2019) and Samuel et al (2019) which indicates that optimum utilization of assets and increase the size of banks and transactions help to increase the market price per share. If the bank increase profit with lower amount of loan used which increase the market value. Effective loan distribution decision to deficit units also increase the profitability market price. The higher concentration of bank provide higher level of profit and increase the value of bank.

The growth rate of domestic product and inflation rate have negative influence on market value per share which is against theoretical assumption. But, these macroeconomic variables have positive influence on dividend yield ratio. This result is consistent with Fama (1981, 1982), Gallagher and Taylor (2002) Geske and Roll (1983), Apergis and El, (2002), Omran and Poton (2001), Crosby (2001), Fama & Schwert (1977), Gjerde et al. (1999) in developed country studies as well as emerging country studies. Higher inflation rate decrease the saving and demand of share in market. However, this finding is against of Fisher hypothesis and this result is against with the finding of Samarakoon (1996), Firth (1981) and Bilson et al. (2001).

Dividend payout ratio has positive significant relation with stock prices. This result is same with Myer and Bacon (2004), Nishat and Irfan (2003), Asghar et al. (2011). This positive relation shows that shareholders prefer those banks who has high DPR because when companies pay dividend they will retain this will positively affect the stock price. The results of this study support the results of research by Dewangga and Sudaryanto (2016), Devi, Mardani, and Salim (2017) which state that the Dividend Payout Ratio (DPR) variable has a positive and significant effect on stock prices.

Return on equity has significant positive relationship with stock prices. Habib et al. (2012), Liu and Hu (2005) and Raballe and Hedensted (2008) also found positive relation of ROE with stock prices. This positive relation between ROE and stock prices shows that when management are performing efficiently and utilizing the resource powerfully which gives good returns on investment it will affect stock price positively otherwise it has negative effect on stock price. However, Ahmed (2014) found that negative influence of return on equity on stock price. If the bank do not provide dividend to the shareholders even in case of higher earnings which negatively influence on market value. Book value per share has significant influence on market price per share which indicates that the investor prefer to invest their amount which has higher amount of book value. The result is consistent with the finding of (Menicucci & Paolucci, 2016; Sufian, 2012). Investors want cash and stock dividend from their investment in Nepalese banking sector because dividend payout ratio is positively influence on market price per share. This result is against with dividend irrelevance theory.

CONCLUSION

The objective of the study is to explore the relationship and influence of bank specific factors, macro- economic variables on market value of Nepalese commercial banks. The research concludes that dividend payout ratio, operating efficiency ratio, return on equity, return on asset, book value per share and loan to total assets ratios are most influencing factors contributing to market value per share. It is also concluded that dividend payout ratio, book value per share, gross domestic product, inflation rate and loan to total assets are the most influencing factors to dividend yield ratio of Nepalese commercial banks. Dividend payout ratio and inflation rate have positive significant influence on price earnings ratio.

The research indicates that banks with higher loan growth and increase in size help to maintain efficient market value. However, careful selection of lending areas are essential because non-performing loan increase the provision amount, reduce profitability and increase market risk. Higher non-interest income to non-interest expenses, operating revenue to operating expenses are major dimension to increase the market value. Book value per share and dividend payout ratio indicates that the investors are serious with net worth of bank and regular return from the investment. Cash and stock dividend are major determinants of stock price. The empirical evidence shows that optimal use of assets, increasing the operating income and economic use of resources which enhances the market value of the bank.

The managerial insights of the study might be that the bank could increase value of share through mix of operating efficiency, cost reduction, service quality and appropriate dividend policy. The strategy might be the bank to increase operating efficiency through careful selection of lending, increase net interest income and operate the activities which increase the non-interest income also.

Nepalese commercial bank could provide attractive cash and stock dividend to the investors for increasing market price per share.

The study uses only some dimension of bank specific factors and macro-economic variables but there are also others quantitative and qualitative dimensions which influence the market value. So, there is a lot of room for future studies to include more variable for improving the study's limitations. Fixed effect model, random effect model, error component model, random parameters model, dynamic panel model, robust panel model and structural equation model are not used during the period of panel data analysis. Future studies attempts to identify the causal linkages between bank specific factors, service quality and value of the banks using a structural equation modelling (SEM) framework.

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Male Involvement in Sexual and Reproductive Health and Rights

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Abstract

Sexual and reproductive health and rights focus on advocating, supporting, and participating in various aspects of male involvement in sexual and reproductive health and rights. Family planning, safe abortion, HIV and RTIS/STI prevention and treatment, and maternal health care pursue male involvement. The article employs a review of relevant contemporary literature from various resources. Men have three specific sexual roles as clients, supportive partners, and agents of change to their spouses as well as societies. More specifically, men's involvement accelerates the effectiveness of family planning programmes, promotes mitigating gender-based violence, promotes women empowerment, enhances adolescent reproductive health, maternity care, and knowledge and behavior change on HIV/AIDS, STIs, and RTIs. However, there are more significant challenges to male involvement in sexual and reproductive health and rights. Despite the need for men's involvement in SRHR, there are barriers in various forms, such as social stigma, cultural determinants, and financial restrictions. Government policies can address the barriers to providing equitable services to needy people.

Keywords

Male involvement, Sexual health, Reproductive health, Equity, Policies

SEXUAL AND REPRODUCTIVE health and rights (SRHR) are crucial in promoting gender equality and ensuring comprehensive access to essential services. It encompasses the active engagement of

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men in advocating for, supporting, and participating in various aspects of Male involvement in SRHR, including family planning, safe abortion, HIV and RTIS/STI prevention and treatment, and maternal health care. By actively involving men in these efforts, we can foster an environment where both men and women share joint responsibility for their sexual and reproductive health (Hempel, 1994).

Male involvement takes on various forms, including encouraging partners to seek medical care, advocating for policy changes that enhance access to SRHR services, and taking responsibility for their own sexual and reproductive well-being. By becoming equal partners in public and private life, men can improve health outcomes for women and children and ensure everyone has the necessary information and services to make informed decisions about their reproductive health (Chandra-Mouli et al., 2019).

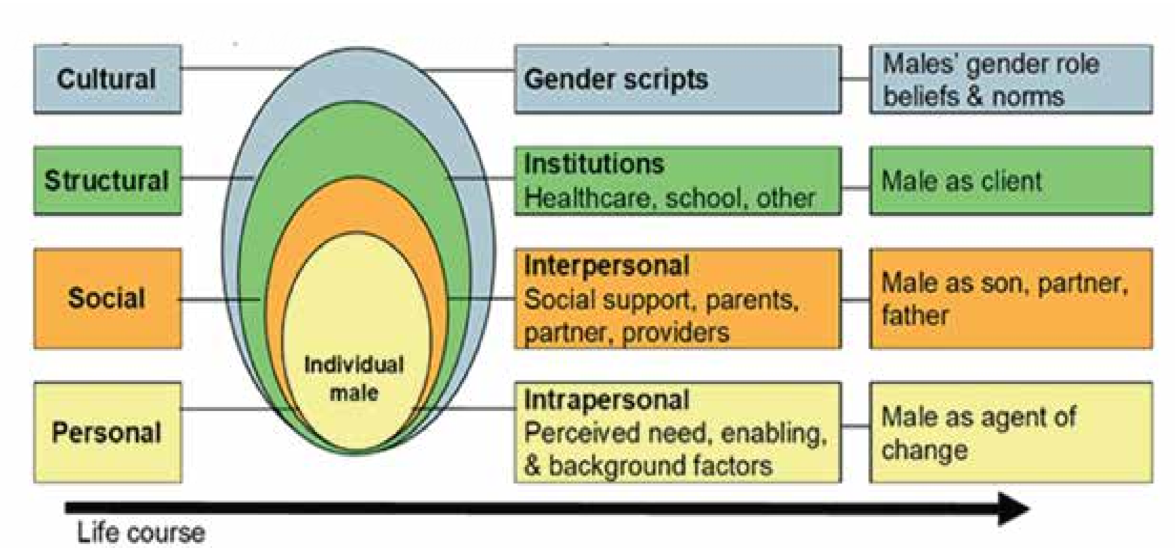
Khan and Patel (1997) studied the behavioral (knowledge, attitudes) patterns of males in Uttar Pradesh, India, on their wives' sexual and reproductive health. The results revealed that males are partners in sexuality and reproduction. Men have a crucial role in bringing about gender equity since, in most societies, where men exercise predominant power. In such societies, men are the primary decision-makers in the family for reproduction, family size, and contraceptive use (Khan & Patel, 1997).

The Cairo International Conference on Population and Development (ICPD) Programme of Action (1994) urged the need for special efforts to emphasize men's shared responsibility and promote their active involvement in responsible parenthood, sexual and reproductive behavior, including family planning, prenatal, maternal child health; prevention of sexually transmitted diseases, including HIV; prevention of unwanted and high-risk pregnancies; shared control and contribution to family income, children's education, health and nutrition; recognition and promotion of the equal value of children of both sexes. Children's education from the earliest ages must include male responsibilities in family life (United Nations, 1994). Men have domination over women in physical, social, and sexual relationships, and women may create the risk of unwanted sexual encounters, pregnancy, and infection (Raju & Leonard, 2000). Such risks imply a particular emphasis on the behavioral and social relationships that may affect women's ability to exercise choice and receive positive outcomes in terms of sexual and reproductive health.

Men's involvement in sexual and reproductive health has proven to bring numerous benefits to maternal and child health outcomes. Despite the recognition of the importance of involving men in reproductive, maternal, and child health programs globally, there are significant challenges in engaging fathers, including socio-cultural norms, limited involvement before the first pregnancy, and the attitudes and workload of traditional gender roles often limit men's involvement in reproductive health (Davis et al., 2016). By increasing access to services and interventions for women and children, men's active participation can have a positive impact.

Male involvement in reproductive health is crucial in different activities like reproductive health problems, programs, reproductive rights, and reproductive behavior. The need for gender equity in relation, responsible sexual behavior, and active involvement of men in reproductive and women can fulfill their reproductive health requirements. Men's involvement in reproductive health decisions to achieve small family norms, observation of same-sex, contraceptive use, provide support to women in the period of antenatal and postnatal period, legally manage abortion, prevent STD/AIDS, Gynecological and other reproductive health-related complications (Davis et al., 2016). The central role of men in sharing responsibilities, promoting responsible parenthood, and generating an equitable family environment helps develop and promote equilibrium of sexual and reproductive health rights by gender dimensions as well.

Figure 1



"Involving Men in Reproductive Health" goes beyond individual-level interventions and addresses the importance of engaging men at the community and societal levels. It explores strategies for partnership-building among healthcare providers, policymakers, and grassroots organizations to create supportive environments that encourage male involvement. The authors emphasize the need for culturally sensitive approaches that recognize and address power dynamics, social norms, and gender inequalities (Greene et al., 2006). However, there are some barriers to men's participation in reproductive health care, such as social norms, dominant culture, social stigma, lack of services in low-income countries, and financial restrictions, among others (Roudsari et al., 2023).

Men as clients: Men in SRHR are to encourage the use of the services for themselves and to recognize that they, too, have sexual and reproductive health issues and needs. For example, in terms of family, some programs focus on getting men to take an active involvement through getting vasectomy, while in terms of HIV, the focus may be on getting tested for HIV and use of condoms (Greene et al., 2006). Similarly, couples discussing family planning are likelier to make plans about the family in time (Sharan & Valente, 2002).

Men as supportive partners: Men are not involved in decision-making processes, the supportive aspects of SRHR, or family planning issues. As supportive partners, men see the positive influence they can have on women's SRHR. Men can play a significant role in making decisions, planning, and allocating resources needed for women's health issues (Greene et al., 2006) and advocating for women's access to reproductive health services (Hook et al., 2021). Programs using this approach target men to influence them to become supportive partners in a variety of areas, including maternal health, family planning, neonatal care, and HIV.

Men as Agents of Change: The emphasis needs to address the norms that place women and men at risk (e.g., norms around multiple sexual partners, non-use of contraception, abuse of alcohol, and violence). An implicit assumption about these programs is that more progressive norms around masculinity and gender will improve SRHR outcomes (Greene et al., 2006). Men should always be done in consultation with women and ideally in conjunction with programming with women.

Evolution of Male Involvement in Sexual and Reproductive Health and Rights

Traditionally, reproductive health is predominantly viewed as a women's issue. However, in recent years, there has been a significant shift in recognizing the importance of male involvement in sexual and reproductive health. This evolution can be attributed to various factors, including changes in societal norms, increased access to information, and a growing body of research highlighting the role of men in reproductive health and rights (Hempel, 1994). The International Conference on Population and Development (ICPD) Program of Action and the Beijing Declaration and Platform for Action adopted at the Fourth World Conference on Women have played pivotal roles in emphasizing the significance of male involvement in SRHR (Beijing Declaration, 1995). Additionally, conferences such as the USAID Conference on Men and Sexual and Reproductive Health Initiative (Beijing Declaration, 1995), Expert Meeting on Involving Men and Boys in Achieving Gender Equality (Peacock & Barker, 2014), and Global Symposium on Engaging Men and Boys in Gender Equality (Peacock & Barker, 2014) have further propelled the discourse on male involvement in SRHR.

These declarations and advocacy efforts have had several profound effects. First, there has been an increased recognition of sexual and reproductive rights for women and girls, providing a clear mandate for addressing men's SRH within a human rights framework. Secondly, novel strategies and evidence have emerged, demonstrating practical ways to engage men and boys in advancing SRHR. Lastly, these efforts have shed light on the issue of gender-based violence, with studies indicating that 10-20 percent of women worldwide report their first sexual experience as non-consensual (WHO, 2022).

The evolution of male involvement in SRHR signifies a significant step towards achieving comprehensive and equitable SRHR outcomes. By recognizing the importance of engaging men, we can work towards dismantling gender inequalities and creating a supportive environment where both men and women have equal access to sexual and reproductive health services and rights.
The International Conference on Population and Development (ICPD) in 1994 successfully raised concerns about sexual and reproductive health (SRH) as an essential aspect of development, policy-making, and academic discussions. The ICPD emphasized the need for accessible and friendly health services for adolescents due to the inadequacy of existing services in addressing their reproductive health needs (WHO, 2022). As a co-signatory to the ICPD's Plan of Action in 1994, Nepal committed to enhancing its population's reproductive health status across the country. The ICPD recognized that adolescents and youth have specific health requirements that differ

significantly from those of adults. Therefore, their SRHR is one of the most important as it plays a crucial role in shaping our demographic future in Nepal; male involvement in SRHR has been recognized as a priority area (Pathak & Pokharel, 2012).

Material and Methods

The article discusses male involvement in SRHR based on the secondary information obtained from the existing body of literature. The authors employed a literature search, utilizing keywords relevant to the topic, such as 'Sexual and Reproductive Health and Rights.' The authors searched prominent search engines such as Google Scholar, Science Direct, and PubMed to find the relevant literature. The collected information incorporates inclusion and exclusion criteria from reputable scientific websites and databases and secondary data from authentic sources. The articles are then reviewed and discussed in the appropriate sections as per the structure of the paper.

Results

Male Involvement in Sexual and Reproductive Health and Rights: National Scenario

Male involvement in SRHR has been recognized as a priority area in Nepal. The government has taken several steps to engage men in reproductive health, including developing policies and programs focused on male involvement and expanding access to healthcare services for men (NDHS, 2016). However, many challenges necessitate overcoming for effective results. Limited access to healthcare services in rural areas and cultural norms that discourage men from being involved in reproductive health pose barriers to progress. There is a need for more outstanding education and awareness-raising campaigns to encourage men to take an active role in the reproductive health sector (NDHS, 2016). Some critical issues related to men's involvement in SRHR for equitable and gender-sensitive outcomes are discussed as follows.

Family Planning

The prevalence rate of modern contraceptive use in Nepal is 43 percent, with female sterilization being the most common method (14.6%), followed by male sterilization (1.8%) (NDHS, 2016). Male condom use remains relatively low at 4.8 percent compared to other methods, such as implants and injectables (NDHS, 2016). The unmet need for family planning stands at 21 percent, and unwanted births account for seven percent of pregnancies (NDHS, 2016). While 57 percent of married women use any method of family planning, there is still room for improvement in promoting modern methods and addressing traditional practices (NDHS, 2022). The present clinic-based system is ineffective for providing family planning services in urban areas of Nepal.

Gender-Based Violence and Gender Norms

Gender norms and gender-based violence pose challenges to male involvement in SRHR. Men are often socialized to be self-reliant and not seek help, including healthcare services, in times of need. However, socialization also reinforces the use of violence as a means to display masculinity, perpetuating gender-based violence against women and men (NDHS, 2016). Looking at the global scenario, 30-50 percent of women report experiencing some form of gender-based violence, and 10-20 percent of women state that their first sexual experience was coerced (WHO, 2022). Meanwhile, attitudes towards wife beating also persist, with 19 percent of women and 17 percent of men believing it is justified in certain circumstances (NDHS, 2022).

Women Empowerment

Women's participation in decision-making regarding their health remains limited, with 28 percent of women not being involved in such decisions (NDHS, 2016). However, research shows that women's participation in decision-making is positively associated with reproductive health-seeking behavior related to antenatal and postnatal care (NDHS, 2016). Gender-based violence is also prevalent, with 22 percent of women in Nepal experiencing physical violence since age 15 and six percent reporting spousal violence (NDHS, 2016).

Adolescent Reproductive Health

Adolescent reproductive health is another essential aspect to consider in male involvement. In Nepal, women marry at a younger age (17.9 years) compared to men (21.7 years), leading to higher rates of teenage pregnancy (14%) (NDHS, 2016). This situation has been attributed to limited access to adolescent-friendly healthcare services, further hampering young people's ability to access necessary reproductive health services.

Maternity Care

Maternal health indicators show progress in Nepal, with 81 percent of women having at least four antenatal care visits and 80 percent delivering with skilled birth attendants (NDHS, 2016). However, postnatal care has room for improvement, as only 70 percent of women receive a postnatal check within two days after delivery (NDHS, 2016).

HIV/AIDS/RTI/STI-Related Knowledge and Behavior

Nepal Demographic and Health Survey, 2016 revealed that comprehensive knowledge about HIV is insufficient among both women (20%) and men (28%) in Nepal. Knowledge about the prevention of mother-to-child transmission of HIV is also relatively low, with 47 per cent of women and 51 per cent of men aware of the transmission risks during pregnancy, delivery, and breastfeeding (NDHS, 2016). Testing for HIV remains relatively low, with only 34 per cent of women and 58 per cent of men reporting knowledge of HIV testing and a smaller percentage having been tested (NDHS, 2016). Moreover, 15 per cent of women and two per cent of men who had sexual intercourse reported having had a sexually transmitted infection (STI) or STI symptoms in the past year (NDHS, 2016).

In Nepal, young people face a significant lack of comprehensive and accurate knowledge about HIV/AIDS. This comprehensive knowledge is crucial for the successful implementation of HIV/AIDS prevention programs and the promotion of healthy sexual behavior. The (NDHS, 2016) data shows that only 26 percent of females and 34 percent of males (15-24) have detailed knowledge, knowledge of the mode of transmission, ways of prevention, and appropriate attitudes toward HIV/AIDS-infected persons (Pathak & Pokharel, 2012).

Global Situation

Globally, male involvement in SRHR has seen significant improvements in recent years. Many countries have recognized the importance of engaging men in reproductive health and have implemented research and programs focused on male involvement (WHO, 2022). However, challenges remain, including cultural and social norms that discourage male involvement, limited access to healthcare services and education in certain regions, and criminalization of same-sex sexual activities in some countries (WHO, 2022).

Male involvement in SRHR is critical to achieving comprehensive and equitable SRHR outcomes. In Nepal, while there are various efforts to engage men in reproductive health, there are still challenges to overcome, such as limited access to healthcare services, cultural norms, and gender-based violence. Addressing these challenges requires a comprehensive approach, including education and awareness campaigns, policy changes, and promoting gender equality. By actively involving men in SRHR, we can strive towards a society where both men and women have equal access to and responsibility for their sexual and reproductive health. In the United States, the National Violence Against Women Survey estimated that one out of five (22.1%) women are physically assaulted in their lifetime, and one in 13 (7.7%) by an intimate partner (Russo & Pirlott, 2006).

Components of male involvement in sexual reproduction health and rights

Social sectors

Male involvement in SRHR can encompass various social components. Men can actively participate in societal awareness campaigns (Greene et al., 2006). Likewise, they can actively participate in educational programs to promote sexual and reproductive health and the rights of both men and women. The activities may include disseminating information about contraception, family planning, safe sexual practices, and the prevention of sexually transmitted infections (STIs) (Meena et al., 2015; Shand & Marcell, 2021). Men can engage in workshops, community outreach initiatives, and media campaigns to raise awareness.

Moreover, men can challenge gender norms and actively support women's empowerment. This support promotes women's education, economic opportunities, and decision-making power in sexual and reproductive health (Ehrhardt et al., 2009; Greene et al., 2006). Men can advocate for policies that support SRHR (Hook et al., 2021). They can join or support organizations working in this field, engage in advocacy campaigns, and participate in policy dialogues to drive positive change.

Family management

Men can take responsibility for contraception by using condoms or considering vasectomy. They can support their partners in accessing and utilizing effective contraceptive methods and engage in discussions about family planning (Hardee et al., 2016). As part of responsible fatherhood (Miller, 2010), men can actively participate in caregiving and nurturing activities for their children (Li, 2020; Maříková, 2008). Such participation includes emotional support, sharing parental responsibilities, and providing financial support to ensure the well-being of their children (Saaka et al., 2023). Men can also support access to safe, legal, and affordable abortion services permitted by law to protect the health and rights of women and girls and reduce the risks associated with unsafe abortions (Crane & Hord Smith, 2006).

Maternal health care and preventing STIs

During antenatal and postnatal care, men can accompany their partners to check-ups, actively participate in childbirth preparations, and participate in decision-making activities for childbirth and postnatal care (Daniele, 2021). This involvement includes emotional support and shared decision-making. Men can engage in safe sexual practices, such as consistent condom use, and seek regular testing for STIs (Graham et al., 2005). If diagnosed, they can undergo appropriate treatment and promote awareness about STIs within their communities.

Maternal health care is another vital component of men's participation in SRHR. Men support adequate prenatal, childbirth, and postnatal care to ensure safe and healthy pregnancies (Kaye et al., 2014). The support includes encouraging skilled attendance during childbirth, access to emergency obstetric care (Atuahene et al., 2017), and postpartum care for mothers and infants (Starrs et al., 2018).

Existing Nepalese Government Policies of Male Involvement in Sexual and Reproductive Health and Rights

The newly promulgated constitution of Nepal in 2015 has provisioned the right to abortion as a fundamental right for every woman. Likewise, the Safe Motherhood and Reproductive Health Rights (SMRHR) Act 2018, as per the mandate of the constitution of Nepal 2015, has made necessary provisions for safe, quality, affordable, and accessible maternal and reproductive health services to every woman. The SMRHR act has prioritized the legal provision for the right to reproductive health, safe motherhood and newborn, safe abortion, and reproductive health morbidity as significant issues of safe motherhood and reproductive health rights. This act has also taken steps to promote male involvement in caregiving by providing parental leave. Male employees receive 15 days of leave, while female employees receive 90 days of maternal and child care. The Nepalese government acknowledges the significance of male involvement in SRHR and has implemented various policies to encourage their active participation. In 2019, the Nepalese government launched the National Health Policy 2019 to promote men's health and well-being by adopting healthy lifestyles and disease prevention. This policy recognizes the importance of men's involvement in SRHR and emphasizes providing male-friendly services (Ministry of Health and Population/Government of Nepal, 2019).

These policies reflect the Nepalese government's recognition of the significance of male involvement in SRHR. However, further targeted efforts and continuous evaluation of their implementation are necessary to ensure effective male engagement. By fostering an enabling environment and strengthening male-friendly services, the government aims to encourage men's active participation in reproductive health and rights, ultimately contributing to improved SRHR outcomes for all individuals.

Discussion

Male involvement in SRHR has evolved, with increasing recognition of the importance of men's participation in SRHR. This overview provides a glimpse into the past and recent trends of male involvement in SRHR globally and specifically in Nepal. Male involvement in SRHR is a concept that has gained significance in recent years (Angusubalakshmi et al., 2023; Machinda, 2021; Rahayu et al., 2023). While measuring male involvement can be challenging, several standard measures are used.

Men play a crucial role in various aspects of SRHR, including family planning and contraceptive use, neonatal care, postnatal care, maternal health care, child health care, safe abortion, and addressing gender-based violence, HIV/AIDS, and STIs/RTIs (Aventin et al., 2023; Okafor et al., 2023). Men can act as clients, supportive partners (Rahayu et al., 2023), and agents of change within their families and communities. The benefits of male involvement are numerous, including promoting gender equality, improving health outcomes for women and children (Levy et al., 2020), enhancing the uptake of SRHR services, and improving the overall health of men themselves (Daniele, 2021).

Global and local data on sexual and reproductive health rights cases indicate that men have been involved actively in maternal health care (de Fouw et al., 2023; Rothstein et al., 2023), child health care services (Bataille & Hyland, 2023; Darroch et al., 2023; Li, 2020; Saaka et al., 2023), and other SRHR-related programs (Nowshin et al., 2022). Several factors influence male involvement, such as men's education, attitudes, knowledge, awareness, socio-cultural and psychological factors, and the health system policies. Understanding healthcare professionals' perspectives is crucial in promoting male involvement in SRHR (Gopal et al., 2020). Findings suggested that community-level counseling, awareness campaigns, and research programs are needed to address this issue. These activities help encourage men to prioritize their health practices, enhance individual capacities, and develop effective strategies in a positive environment are essential (Daniele, 2021; Kaye et al., 2014). Governments and related agencies need to frame sufficient policies and establish proper service delivery systems to promote male involvement in sexual and reproductive health and rights.

Conclusion

Male involvement in sexual and reproductive health services (SRHS) is essential for promoting family planning, contraceptive use, child health care, maternal health care, and addressing reproductive health-related issues. Men play multiple roles as clients, supportive partners, and agents of change in SRHS. In the context of Nepal, regulation of policies is necessary to support sexual and reproductive health and rights, especially for women who suffer from various sexual and reproductive health problems, including social and domestic violence, abuse, risks of unwanted pregnancies, infections, and sexually transmitted diseases.

To address these issues, the government needs to prioritize and create policies for male involvement in sexual and reproductive health and rights. Supportive partnerships can be fostered by promoting open communication, mutual respect, and shared decision-making regarding contraception, family planning, and sexual health. Advocacy for the provision of quality SRHR services, including safe abortion, prenatal and postnatal care, and comprehensive sexual healthcare, is necessary.

Men have to engage in joint decisions with their spouses in family management, promote safe and responsible sexual behavior, and actively participate in discussions on gender equality. Moreover, participation in parenting and caregiving responsibilities, addressing violence and coercion by challenging harmful attitudes, and promoting healthy and respectful relationships are essential. Advocacy and policy engagement is vital for men to advocate for SRHR, help engage in policy discussions, and support initiatives promoting gender equality and comprehensive SRHR services. By implementing these measures, male involvement in SRHS can improve, leading to improved sexual and reproductive health outcomes for both men and women.

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