



Academic Journal of Sukuna

AJoS

A Peer-reviewed Interdisciplinary Journal



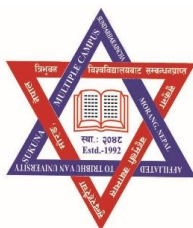
**Research Management Cell
(RMC - Sukuna)**

Sukuna Multiple Campus

Sundarharaincha, Morang
Koshi Province, Nepal

Academic Journal of Sukuna – AJoS

A Peer Reviewed Interdisciplinary Journal



Research Management Cell



Sukuna Multiple Campus

Sundarharaincha, Morang

Koshi Province, Nepal

Web site: www.sukuna.edu.np

Email: info@sukuna.edu.np

sukunamc2048@gmail.com

rmcsukuna1@gmail.com

ajos.editorial@gmail.com

Academic Journal of Sukuna – AJoS

A Peer Reviewed Interdisciplinary Journal



Copyright ©: Research Management Cell (RMC-Sukuna)

Sukuna Multiple Campus, Sundarhaincha, Morang, Koshi Province, Nepal

Publisher: RMC-Sukuna

Year of Publication: July 2026 AD/ 2083 BS

Specialization Category: Interdisciplinary

Language: English and Nepali

ISSN: 2594-3138 (Print)

Periodicity of publication: Annual

Website: www.sukun.edu.np

Email: info@sukuna.edu.np, sukunamc2048@gmail.com,

rmcsukuna1@gmail.com, ajos.editorial@gmail.com

Phone No.: 021-547617

021-547717

9852045617

Copies: 100 pieces

Price: NRC 550/- (4 USD) for individual

NRC. 750/- (5 USD) for institutional

.....
Disclaimer: Facts and opinions in articles published in this journal are solely the personal statements of respective author/s. Author/s are fully responsible for all contents in their article including accuracy of facts, statements, citations and references.

Academic Journal of Sukuna – AJoS

A Peer Reviewed Interdisciplinary Journal

Patron

Arjun Raj Adhikari (Campus Chief), Sukuna Multiple Campus, Sundarharaincha,

Advisor

Bala Ram Pokharel (Assistant Campus Chief), Sukuna Multiple Campus,

Editors

Chief Editor: Associate Professor, Ganesh Prasad Dahal, Sukuna Multiple Campus

Editor: Associate Professor, Binita Kumari Paudel PhD, School of Health Sciences,
Purbanchal University, Gothgaun, Morang

Editor: Associate Professor, Madan Raj Baral, Janata Multiple Campus, Itahari, Sunsari

Editor: Assistance Professor, Diwakar Regmi, PhD, Pindeshwar Vidyapeeth, Dharan

Editor: Assistance Professor, Bandana Jain PhD, Degree Campus, Biratnagar, Morang

Editor: Teaching Assistant, Dibya Raj Dahal PhD, Sukuna Multiple Campus

Team of Reviewers

Prof. Bidya Nath Koirala, Faculty of Education, Central Department, Kirtipur

Prof. Bhaiya Khanal PhD, Natural History Museum, Kathmandu

Prof. Ramesh Ghimire PhD, Pindeshwar Vidyapeeth, Dharan, Sunsari

Prof. Arjun Kumar Baral PhD, TU, CEDA) Kirtipur, Kathmandu

Prof. Hiranya Prasad Gautam PhD, Degree Campus Biratnagar, Morang

Prof. Tilak Prasad Gautam PhD, Mahendra Morang Adarsha Campus, Biratnagar

Prof. Keshab Gadtaula PhD, Degree Campus Biratnagar, Morang

Associate Prof. Krishna Prasad Bhandari PhD, Pindeshwar Vidyapeeth, Dharan, Sunsari

Assistant Prof. Rom Kanta Pandey, Faculty of Education, Central Department, Kirtipur

Assistant Prof. Apar Kumar Lamsal PhD, Degree Campus Biratnagar, Morang

Assistant Prof. Krishna Gopal Adhikari PhD, Pindeshwar Vidyapeeth, Dharan, Sunsari

Assistant Prof. Nirmal Kumar Mishra PhD, Mahendra Morang Adarsha Campus

Format of the Paper

Introduction with literature review, Methodology, Results and Discussion with conclusions, (Shortly named as **IMRAD**).

Title of the Paper (Centered)

Word limit: The title should summarize the main idea of the paper simply and, if possible, in a way that is engaging for readers. For research papers, it should be a concise statement of the main topic of the research and should identify the variables or theoretical issues under investigation and the relationship between them.

Name of the Author/s

Affiliation of the Author/s

Email of Principal Author:

Abstract (Centered)

It should contain 250 words or not more than 250 words.

Keywords: It should contain 3 to 6 terms.

(Indent and italicized the terms 'keywords'.)

Introduction (Centered)

The author should include background, problems, objectives, literature review, and hypothesis (if any). It should contain 1200-1700 words.

Methods and Materials (Centered)

The author should include brief description of how the research was conducted and the paper (article) prepared. For example: design, population, sample, sources etc. It should contain 500-800 words.

Result and Discussion (Centered)

The result should include presentation and analysis through table, picture, graphs, diagrams, images and text. It should contain 800-1200 words. If the section has sub-headings, place the sub-headings accordance with level of heading mentioned by APA 7th edition.

The discussion should include the interpretation of results and findings. It should contain 1200 - 1800 words. If the section has sub-headings, place the sub-headings accordance with level of heading mentioned by APA 7th edition.

Conclusions

The author should conclude his/her result and discussion. This section should contain 300-500 words.

Acknowledgement (If any)

References (Centered)

It should be arranged accordance with APA 7th edition.

Appendices (If any)

Journal Publication Process

The following publication process was adopted by the 'Research Management Cell (RMC - Sukuna) and Editorial Board of Journal Publication.

1. Based on the action plan, RMC - Sukuna announced 'Call' for articles along with the given publication guidelines for journal publication.
2. RMC -Sukuna formed an editorial board from the pool of experts from the country and aboard.
3. RMC -Sukuna collected the articles as per the guideline procedures.
4. RMC -Sukuna handed over the articles to the editorial board.
5. The editorial board provided preliminary feedback to the authors.
6. Incorporating the feedback, the authors submitted the article/s to the editorial board.
7. The editorial board formed a list of experts for review and sent requests them to be the reviewers then received consent from them.
8. The editorial board also developed an evaluation form for the evaluation of the article/s.
9. The board sent the article/s to the reviewers with the review form without disclosing the author's identity (coded copies) for evaluation.
10. Having received the reviewed articles from the reviewers, the rejected articles were sent back to the authors mentioning/including the reasons of rejection, and then excluded the rejected articles from the list, however, the remaining articles were sent to the respective authors along with the feedback without disclosing the identity of the reviewers.
11. The authors were asked to modify the articles and submit to the address of the editorial board based on the feedback given to them within the given time (in the case of modification required).
12. RMC - Sukuna examined 'plagiarism' and provided its result report to the editorial board.
13. The editorial board meeting made decision of final acceptance/rejection of each individual article for publication.
14. Having made the final decision of accepted articles and the design of the manuscript, the editorial board submitted the manuscript to the RMC -Sukuna authority for publication.
15. The RMC, with the consent of campus authority made the decision for publication of the journal.

Editorial Notes

This sixth volume and issue one of 'Academic Journal of Sukuna' - AJoS, has been an outcome of the continuity of the previous academic publications in the form of 'Interdisciplinary journal. The volume principally serves the campus roadmap of encouraging teaching faculties and non-teaching staff for the publication of their research work along with the genuine inclusion of the articles invited from other institutions. It has, thus, been a treasured integrated piece, a meaningful contribution to the academic audience.

We had a collection of 24 articles in the beginning but having reviewed the articles, the number high-pitched reduced to 13 scholarly finalized papers of multiple disciplines. The outcome of the review has been the best combination of multiple disciplines and mediums in which the authors opted to disseminate the information to the readers. Each article has perspectives on the issues and spirit of embracing multidisciplinary information of five broader disciplinary areas such as (a) Digital technology with the articles on "Negotiating Digital Learning and Educational Struggles: Experiences of Dalit Girls in the Faculty of Education", "Teaching and Learning Experiences Through ICT", "Negotiating Digital Learning and Educational Struggles: Experiences of Dalit Girls in the Faculty of Education" and "E-learning Tools and Methodology adopted by Students" ; (b) Science on "Enumeration of Freshwater Algae in Rasa Tal", "Butterfly Diversity in Sukuna Community Forest"; (c) Education on "Navigating Double Alienation: A Narrative Inquiry into Educational Resilience and Identity Negotiations among Dhimal Students" and "Representation and Participation of the Community in Community Colleges, and "; (d) Economics and indigenous practices on " , " Impact of Agricultural Aid on Agricultural Growth in Nepal" , "Role of Cooperatives in Women's Economic Empowerment" and "Fermenting Livelihoods: Exploring the Role of Millet Liquor Production in Rural Household Economies"; (e) Management on , "Assessment of Customer Attitudes Toward Local Grocery Stores" and "Supply Chain Assessment of Banana Production and Marketing"; and (f) Philosophy on "पूर्वीय षड्दर्शन दर्शनमा तत्त्वमीमांसा".

Academic Journal of Sukuna - AJoS, 6(1), 2026 July (2083), ISSN: 2594-3138 (Print)

As always, we encourage the readers read to empower your academic strength and the writers to submit the articles following our guidelines. We hope you enjoy reading the journal articles.

The editorial team has obeyed the fundamental principles of editing with the canonical guidelines of the APA Manual (7th) along with the subordinate guidelines of RMC - Sukuna. The team hopes that the current edition will inspire other campus faculties, new generation in the pipelines and the readers of the wider community to contribute for the global and local agenda issues ahead.

Team of Editors

Academic Journal of Sukuna – AJoS

Vol. 6 (Issue 1)

2026 July (2083)

Table of Contents

Impact of Agricultural Aid on Agricultural Growth in Nepal Bal Kumar Kalakheti and Kushum Shakya	1
Negotiating Digital Learning and Educational Struggles: Experiences of Dalit Girls in the Faculty of Education at Mahendra Multiple Campus, Dharan Bishal Karki	20
Teaching and Learning Experiences Through ICT: A Case Study of Sukuna Multiple Campus Dharma Kumari Kalakheti	37
Enumeration of Freshwater Algae in Rasa Tal, Sunsari, Nepal Dilli Ram Rai and Shiva Kumar Rai	59
Fermenting Livelihoods: Exploring the Role of Millet Liquor Production in Rural Household Economies Hom Bahadur Magar	81
Representation and Participation of the Community in Community Colleges Nara Prasad Bhandari	111
Butterfly Diversity in Sukuna Community Forest, Morang, Nepal Pramisha Poudel and Kishor Dahal	136
The Role of Cooperatives in Women's Economic Empowerment: A Study of Sundarharaincha, Morang Rojina Luitel,, Tulashi Rimal and Khagendraraj Dahal	153
E-learning Tools and Methodology adopted by Students: A Case Study of Sukuna Multiple Campus Er. Santosh Dahal	172
Navigating Double Alienation: A Narrative Inquiry into Educational Resilience and Identity Negotiations among Dhimal Students in Eastern Nepal Tika Prasad Subedi	208
An Assessment of Customer Attitudes Toward Local Grocery Stores: Evidence from Sundarharaincha Municipality, Morang Tulashi Rimal and Binita Subedi	225
Supply Chain Assessment of Banana Production and Marketing in Morang Umesh Upreti	237
पूर्वीय षड्दर्शन दर्शनमा तत्त्वमीमांसा दीपकप्रसाद न्यौपाने, पिण्डि	259

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 1 – 19 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Impact of Agricultural Aid on Agricultural Growth in Nepal

Doi: <https://doi.org/10.3126/ajos.v6i1.98097>

Bal Kumar Kalakheti^{1*} and Kushum Shakya PhD²

¹ Sukuna Multiple Campus, Sundarharaincha, Morang, Nepal

² Central Department of Economics, Tribhuvan University, Kirtipur, Nepal

* kalakheti.bk@gmail.com

Abstract

Nepal has been receiving agricultural sector foreign aid since 1950/51. Agricultural output growth has remained relatively low despite continuous aid inflows in agricultural inputs. This study examines the trend of foreign aid in agriculture and its impact to agricultural growth in Nepal. The study used a quantitative research design using annual data from 1975 to 2020. Simple linear regression was used to examine the impact of agricultural sector foreign aid on agricultural GDP. Besides, the study used irrigated land, imported chemical fertilizers, agricultural sector credit, government expenditure in agriculture, and the economically active population engaged in agriculture as independent variables. The findings revealed that foreign aid, irrigated land, imported chemical fertilizers, government expenditure in agriculture, and the economically active population and agricultural sector credit had positive and statistically significant effect on agricultural GDP. The results show that both external financial assistance and complementary agricultural inputs play important roles in promoting agricultural production in Nepal. The study concludes that maintaining and expanding agricultural inputs by utilizing foreign aid is essential for achieving higher agricultural growth.

Keywords: foreign aid, agriculture credit, government expenditure, economically active population

Introduction

Foreign aid is an important source of development financing for developing countries. Foreign aid refers to assistance provided by a country or an international organization to another in the form of grants, concessional loans, technical assistance, or aid in kind, with objectives of humanitarian relief, economic development, or strategic interests (Pearce, 1996; Thirlwall, 2006). According to Rodan (1961), foreign aid comprises of capital inflows including long-term loans, grants, soft loans, and technical assistance. The main theme of foreign aid is the provision of external resources for acceleration of economic growth and development in the recipient country.

Foreign aid plays a crucial role in bridging the gap between investment and domestic savings. Rapid population growth, low-income levels, weak revenue-generating capacity, and rising development expenditures force developing nations to rely on external assistance. So, foreign aid has become an integral part of development financing. However, the role of foreign aid in achieving sustained economic growth has become a debate in development economics, with mixed empirical evidence across countries (Burnside & Dollar, 2000; Easterly, 2003). Aid aligned with climate adaptation strategies have stronger effects on productivity growth (Trentinaglia et al., 2023).

Agricultural sector foreign aid constitutes investments in agricultural research, irrigation, rural infrastructure, agricultural education and integrated rural development programs. Although it is difficult to distinguish between agricultural and non-agricultural aid due to sectoral interlinkages, government budgetary classifications allow for the identification of aid allocations to agriculture. Such sector-specific aid is specifically relevant in agrarian economies. Empirical evidence indicates that agricultural aid can enhance productivity when effectively implemented. However, its effectiveness varies with country-specific conditions and investments (Trentinaglia et al., 2023; Bhandari, 2024).

Kalakhetti & Shakya (2026). Impact of Agricultural . . .

Nepal is also an aid-dependent agrarian economy. Agriculture dominates the Nepalese economy which provides livelihoods for the majority of the population. Agriculture sector has received high priority in national development strategies since the very first periodic planning. Agricultural Perspective Plan emphasized in commercialization, diversification, productivity enhancement and poverty reduction through enhanced agricultural production in Nepal (NPC, 2002). However, it requires substantial financial resources which are not available from domestic savings alone. Hence, foreign aid has become necessary in Nepal. Development programs such as the Resilient High-Value Agricultural Program illustrated how targeted external financing aims to improve agricultural productivity and commercialization among smallholder farmers (IFAD, 2024). In spite of increasing aid inflows in Nepal, there remains challenges of absorptive capacity, implementation inefficiencies, governance, and the translation of aid into sustained sectoral productivity gains.

Several studies reported a positive impact of foreign aid to GDP. Bhattarai (2009) showed that the long-run elasticity of aid ranged from 0.010 to 0.297 depending policy and political variables. Sharma and Bhattarai (2013) showed that the long-run coefficient of foreign aid ranged from 0.040 to 0.074 across different model specifications. This implies that a one-unit increase in the aid-to-GDP ratio increase economic growth by 0.04 to 0.07 percentage in the long run. Similarly, Poudel et al. (2021) and Yogi et al. (2025) emphasized agriculture as main driver of economic growth and poverty reduction in Nepal. However, empirical evidence on the effectiveness of agriculture-specific aid is limited. Most studies focus on aggregate foreign aid and overall economic growth. However, it is important to examine the direct impact of agriculture sector foreign aid on agricultural sector GDP. This is an important research gap.

Despite a considerable share of foreign aid in agriculture, there is scanty of evidence whether aid has significantly contributed to agricultural growth. Despite of Kalakheti & Shakya (2026). Impact of Agricultural . . .

aid-financed development interventions, agricultural output growth in Nepal has remained relatively low and unstable. This situation raises an important research question whether foreign aid allocated to agriculture has effectively enhanced agricultural sector output in Nepal. So, this study examines the impact of agricultural sector foreign aid and agricultural growth in Nepal. The objectives of the study are to analyze the trends of agricultural sector foreign aid and agricultural sector output and to examine the impact of agricultural foreign aid on agricultural sector output in Nepal.

The study is important from both policy and academic perspectives. From a policy perspective, it provides empirical evidence on the effectiveness of agricultural foreign aid and identifies key factors influencing agricultural growth. From an academic perspective, the study contributes to the literature on sectoral aid effectiveness by focusing on agricultural aid rather than aggregate foreign aid. The findings reveal the role of foreign aid in enhancing sustainable agricultural development in Nepal.

Yogi et al. (2025) analyzed that agriculture sector of Nepal is constrained by low productivity, traditional farming systems, limited access to modern technology, and growing vulnerability to climate change. Mechanization, infrastructure expansion, value-addition, and the empowerment of women and youth are needed to achieve inclusive and sustainable agricultural growth.

Bhandari (2024) found that total aid inflows increased over the recent period. But the share of aid to agriculture decreased to 1.1% in FY 2076/77 BS. Agriculture contributed for 25.12% of GDP in the same year with only marginal improvements in cereal production. The study showed a positive association between aid inflows and agricultural development but emphasized persistent inefficiencies in sectoral utilization. Maruta et al. (2019) showed that agricultural aid is more effective in countries with better institutional quality. Barkat and Alsamara (2019) found a small but positive impact of agricultural aid. McArthur and Sachs (2018) showed that well-targeted

agricultural aid generates long-term productivity gains, structural transformation, and welfare improvements without adverse macroeconomic effects.

Verter (2017) observed that agricultural aid positively influenced output when complemented by fertilizer use, access to credit, and technological improvements. In contrast, Ighodaro and Nwaogwugwu (2013) reported that agricultural foreign aid had no effect on agricultural output in the short as well as long run. Kaya et al. (2013) found positive effects of agricultural aid on output growth in developing economies.

Feeny and Ouattara (2009) reported that agricultural aid had a positive impact on agricultural output, while Feeny (2007) found no significant effect of foreign aid on agricultural growth in Melanesian countries. Dewbre et al. (2007) argued that agricultural aid reduces local commodity prices which offsets production gains and weakens agricultural GDP.

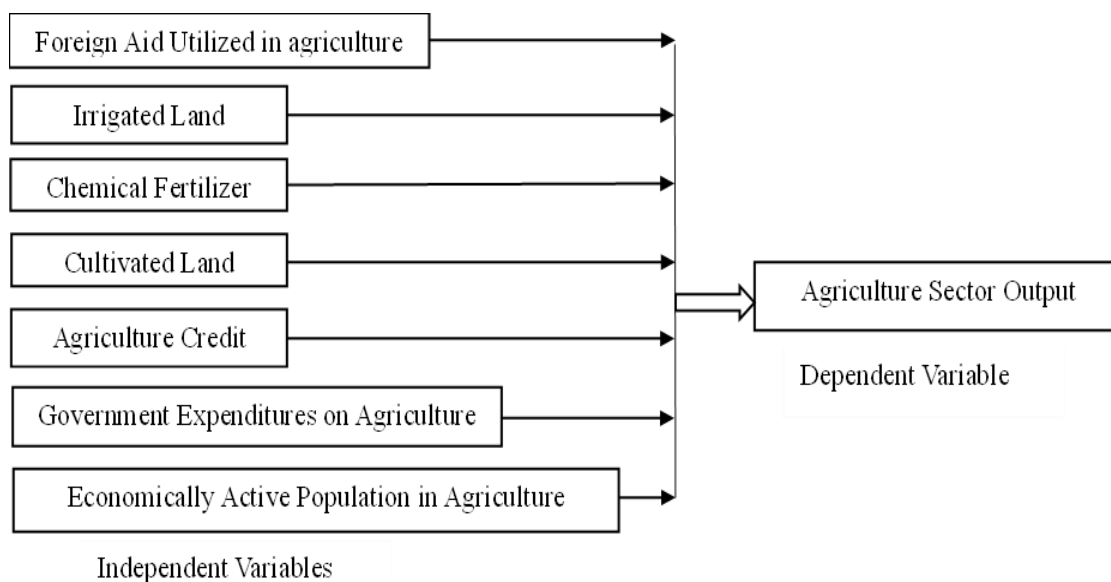
Akpokodje and Omojinite (2008) and Alabi (2014) reported that foreign agricultural aid positively affected agricultural GDP, although its effectiveness differed across bilateral and multilateral sources. Aboagyea and Gunjal (2000) emphasized that aid effectiveness depended on positive economic reforms. Norton et al. (1992) found that the effect of foreign aid on agricultural productivity varied widely across regions, being negative in economies facing large fiscal deficits and high external debt. Kherallah et al (1994) reported that foreign aid has positive impact on agricultural growth across 56 developing countries.

The literature suggests that foreign aid can contribute to agricultural growth, but its effectiveness is highly dependent on institutional quality, policy frameworks, and sector-specific implementation. Despite agriculture absorbing a substantial share of foreign aid in Nepal, empirical evidence on the direct impact of agricultural aid on agricultural output remains limited, which justifies the present study. Nepal has been facing a persistent resource gap, in which domestic savings are insufficient to finance the level of investment required to accelerate economic and agricultural growth. In this Kalakheti & Shakya (2026). Impact of Agricultural . . .

context, foreign aid used in the agriculture sector is conceptualized as an external capital inflow that fills this resource gap, thereby enabling the expansion of productive investment in agriculture. This, in turn, is expected to increase real agricultural sector output in Nepal.

Figure 1

Conceptual Framework



The framework specifies real gross agricultural sector output as the dependent variable. The independent variable is gross agriculture sector foreign aid. The study includes other control variables that effect agricultural output such as irrigated land, quantity of imported chemical fertilizer, cultivated land area, agricultural sector credit, government capital expenditure on agriculture, and the economically active population employed in agriculture. The relationship between agricultural foreign aid and gross agricultural sector GDP is estimated using least square regression method.

Methods and Materials

This study adopted a causal-comparative research design, in which foreign aid in the agricultural sector was taken as the independent variable and real gross agricultural sector output as the dependent variable. The analysis is based on secondary time-series data published by Nepal Rastra Bank (NRB,2022), the Ministry of Finance (MOF, 2022), and the National Statistics Office (NSO, 2022). All raw data were compiled and processed using Microsoft Excel prior to empirical analysis. The data were converted into real form by dividing the nominal data by the GDP deflator. The obtained data were then transformed into logarithmic form. For further analysis, EViews 10 was used to test for unit roots, cointegration, and to perform OLS regression. The time period of the analysis is 1974/75 to 2019/20, as the data on annual additional irrigated land are only available up to 2020. Real gross agricultural sector output (RGASO) was taken as the dependent variable. Gross foreign aid utilized in the agriculture sector (GFAUAS) was taken as the independent variable.

Following previous empirical studies (Kherallah et al., 1994; Dewbre et al., 2007; Kaya et al., 2013; Alabi, 2014; Feeny, 2007; Ighodaro & Nwaogwugwu, 2013; Verter, 2017; Barkat & Alsamara, 2019), the multiple regression model was specified for estimation.

$$RGASO_t = \alpha_0 + \alpha_1 GFAUAS_t + \alpha_2 IRL_t + \alpha_3 ICF_t + \alpha_4 GCL_t + \alpha_5 ASC_t + \alpha_6 GEXPAS_t + \alpha_7 EAPEAS_t + \varepsilon_t$$

Where,

$RGASO_t$: real gross agricultural sector output (Rs. million)

$GFAUAS_t$: gross foreign aid utilized in the agricultural sector (Rs. million)

IRL_t : additional irrigated land (hectares)

ICF_t : imported chemical fertilizer (thousand metric tons)

GCL_t : gross cultivated land under major cereal and cash crops (thousand hectares)

ASC_t : agricultural sector credit (Rs. million)

$GEXPAS_t$: annual government expenditure in the agricultural sector (Rs. million)

$EAPAS_t$: economically active population employed in agriculture (million),
interpolated from census years.

It was hypothesized that an increase in agricultural foreign aid positively influence agricultural output. Irrigated land was expected to have a positive effect as irrigation expands cultivable areas and reduces production risks of rainfall variability. Imported chemical fertilizer was also expected to increase agricultural output by enhancing land productivity. An expansion in cultivated land was expected to increase agricultural output by increasing more land area for cropping. Agricultural credit increases financial access of farmers to invest in inputs, technology, and equipment, which has positive effect. Government expenditure on agriculture increases investments in rural infrastructure, subsidies, extension services, and support programs which positively increases agricultural GDP. Finally, increase in economically active population in agriculture was expected to have a positive effect on agricultural GDP.

Results and Discussion

Results

Unit Root Tests

To avoid spurious results, unit root test has been conducted. For this, Augmented Dickey-Fuller (ADF) unit root test was used developed by Dickey and Fuller (1979, 1981). The test was conducted in both level and first-difference forms, first with an intercept, then with an intercept and trend. The ADF test results based on the log-level data are reported in Table 1.

Table 1

ADF Unit Root Results at Log Level Form

Variables	Intercept		Intercept & Trend	
	- statistics	p-value	- statistics	p-value
LNRASO	0.7583	0.9922	-2.7238	0.2322
LNGFAUAS	-1.8598	0.3477	-2.7026	0.2406
LNIRL	-2.1483	0.3421	-2.8740	0.1215
LNICF	-2.6532	0.1902	-2.7022	0.2407
LNGCL	-2.5863	0.1032	-2.6888	0.1925
LNASC	-0.0122	0.9523	-2.0445	0.1142
LNGEXPAS	-0.8938	0.7812	-2.0821	0.5414
LNEAPEAS	-0.8970	0.7800	-1.9212	0.6266

The unit root test results revealed that all variables exhibited non-stationarity at the level form under. The corresponding p-values showed the presence of unit roots in the log-level series. Consequently, the ADF test was reapplied to the first-differenced series, and the results are presented in Table 2.

Table 2

ADF Unit Root Results at First Difference

Variables	Intercept		Intercept and Trend	
	- statistics	p-value	- statistics	p-value
Δ LNRASO	-7.5557	0.0000	-7.6567	0.0000
Δ LNGFAUAS	-9.1900	0.0000	-9.2465	0.0000
Δ LNIRL	-8.3485	0.0000	-8.7344	0.0000
Δ LNICF	-8.3336	0.0000	-8.2527	0.0000
Δ LNGCL	-10.1043	0.0000	-10.1120	0.0000
Δ LNASC	-6.0664	0.0000	-6.1378	0.0000
Δ LNGEXPAS	-7.4895	0.0000	-7.3955	0.0000
Δ LNEAPEAS	-6.6289	0.0000	-7.6057	0.0000

The findings indicated that all variables became stationary after first differencing under both intercept and intercept-and-trend specifications, confirming the absence of unit roots in the transformed series. Hence, all variables were integrated of order one, $I(1)$. The log first-differenced series were therefore considered suitable for the empirical analysis.

After examining the stationarity of the variables, the study used the Johansen cointegration technique. The test was conducted using the log-level data. Based on the Akaike Information Criterion (AIC), EViews 10 automatically selected a lag length of seven. The results of the test are shown in Table 3.

Table 3

Cointegration test results of the rank test of (trace)

Unrestricted Cointegration Rank Test (Maximum Eigenvalues) Hypothesized	Unrestricted Cointegration Rank Test (Maximum Eigenvalues) Eigenvalue	Unrestricted Cointegration Rank Test (Maximum Eigenvalues) Trace	Unrestricted Cointegration Rank Test (Maximum Eigenvalues) 0.05	Unrestricted Cointegration Rank Test (Maximum Eigenvalues) Prob.

No. of CE(s)		Statistic	Critical Value	
None *	0.8516	255.7406	159.5297	0.0000
At most 1 *	0.7583	171.7921	125.6154	0.0000
At most 2 *	0.5791	109.3168	95.7537	0.0042
At most 3 *	0.4644	71.2413	69.8189	0.0383
At most 4	0.3287	43.7691	47.8561	0.1149
At most 5	0.2967	26.2314	29.7971	0.1219
At most 6	0.2069	10.7435	15.4947	0.2277
At most 7	0.0123	0.5444	3.8415	0.4606

Trace test indicates 4 cointegrating equation(s) at the 0.05 level.

An asterisk (*) denotes rejection of the hypothesis below at the 0.05 level.

The table shows the results of the Johansen cointegration rank test based on the trace statistics. The null hypothesis of no cointegration is rejected as p-value is less than 0.05. Likewise, the null hypotheses of at most one, two, and three cointegrating vectors are also rejected because their respective p-value is less than 0.05. However, the null hypothesis of at most four cointegrating relations cannot be rejected, as the p-value is 0.1149 which is greater than 0.05. Therefore, the results indicate that there is the existence of atmost four cointegrating equations which implies there is a long-run relationship among the variables. This confirms that the variables move together in the long run.

Ordinary Least Square Regression Results

The empirical examination of the relationship between agricultural sector GDP and the agricultural foreign aid in Nepal (both differenced in 1st order) is presented in Table 4.

Table 4*Regression results RASO as the dependent variable*

Variables	Coefficients	Standard Errors of Coefficients	t-statistics	P-value
Δ LNGFAUAS	0.1645	0.0225	7.3238	(0.0000)
Δ LNIRL	0.1153	0.0140	8.2555	(0.0006)
Δ LNICF	0.1391	0.0139	10.0077	(0.0030)
Δ LNASC	0.1039	0.0133	7.8314	(0.0000)
Δ LNGCL	0.1685	0.1107	1.5225	(0.1162)
Δ LNGEXPAS	0.1279	0.0161	7.9558	(0.0001)
Δ LNEAPEAS	0.5650	0.1565	3.6093	(0.0009)
Constant	8.6339	0.8238	10.4809	(0.0000)
$R^2 = 0.89$		DW = 1.98		
Adjusted $R^2 = 0.88$		F = 1506.93		
		Probability of F statistics = 0.0000		

The results indicate that GFAUAS, IRL, ICF, ASC, GEXPAS and EAPEAS are statistically significant at the 1 percent level. The GCL is significant at the 15 percent level. The adjusted coefficient of determination is 0.88, which means that 88 percent of the variation in agricultural sector output is explained by the independent variables. The F-statistic is also significant at the 1 percent level, which reflects the overall goodness of fit. The Durbin–Watson statistic is 1.98 which suggests the absence of serious autocorrelation.

Table 5*Breusch-Pagan-Godfrey Serial Correlation LM Test*

Lags	Chi2 value	DF	Prob Chi2
-------------	-------------------	-----------	------------------

1	7.8953	1	0.4978
2	11.5843	1	0.7136

The p-value of both lags are greater than 0.05 which indicate that the null hypothesis of no serial correlation at both lags cannot be rejected. This confirms the absence of serial correlation in the residuals.

The variance inflation factor (VIF) test was conducted to detect multicollinearity.

Table 6

Multicollinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
Δ LNIRL	0.0002	405.9251	1.9509
Δ LNICF	0.0002	426.3240	2.3123
Δ LNEXPAS	0.0003	350.0300	3.8934
Δ LNGL	0.0123	16814.1900	4.0232
Δ LNPEAS	0.0246	2098.6870	3.3526
Δ LNASC	0.0005	848.7248	3.7848

The centered VIF values for all explanatory variables are less than 5, which indicates the model does not suffer from multicollinearity.

Discussions

The coefficient of FAUAS is 0.16, which indicates that a 1 percent increase in agriculture sector foreign aid to 0.16 percent increase in real agricultural sector output. This confirms that agriculture foreign aid contributes to increasing real agricultural

output in Nepal. Similarly, the coefficient on IRL is 0.12 which indicates that 1 percent increase in irrigated land increases the real agricultural output by 0.12 percent. This suggests that expansion of irrigation facilities enhances agricultural productivity. The coefficient of ICF is 0.14, which indicated that 1 percent increase in imported chemical fertilizers increases real agricultural output by 0.14 percent. This shows the importance of fertilizers in improving crop yields.

The ASC coefficient is 0.14 which indicates that 1 percent increase in credit provision leads to 0.14 percent increase in agricultural output. This shows the importance of agricultural finance in facilitating access to inputs, equipment and other resources. The coefficient of GCL is 0.17, which indicates that 1 percent increase in cultivated land contributes to a 0.17 percent increase in agricultural output.

GEXPAS has a coefficient of 0.13 which indicates that 1 percent increase in government spending on agriculture raises real agricultural output by 0.13 percent. This demonstrates the positive effect of public investment. The coefficient on EAPEAS is 0.57 which indicates that 1 percent increase in agricultural labor results in 0.57 percent increase in output. This shows that labor is important in the Nepalese agricultural sector.

These findings are consistent with previous studies (Kherallah, Beghin, Peterson & Ruppel, 1994; Dewbre, Thompson & Dewbre, 2007; Kaya, Kaya & Gunter, 2013; Alabi, 2014; Verter, 2017). This indicates that agricultural aid provides foreign exchange for imports and technical assistance in agriculture. This strengthens agricultural productivity, infrastructure, and human capacity. Additionally, the results confirm that irrigated land, chemical fertilizers, agriculture sector credit, cultivated land, government expenditure, and agricultural labor have positive and significant effects on real agricultural output.

Conclusion

Nepal is an agricultural country that faces resource deficits in agriculture. So it need aids in the agriculture. However, the contribution of foreign aid to agricultural
Kalakheti & Shakya (2026). Impact of Agricultural . . .

output is unknown. This study analyzes the effect of agricultural aid on agricultural GDP. The study finds that agriculture foreign aid to the agricultural sector has a positive effect on agricultural output. Specifically, increases in irrigated land, imported chemical fertilizers, agriculture sector credit, gross cultivated land, government expenditure in agriculture, and agricultural labor contribute to higher agricultural output. Therefore, it can be concluded that foreign aid plays a significant role in supporting the domestic economy when it is effectively utilized with essential agricultural inputs.

Conflict of Interest

The author declares no conflict of interest.

References

- Aboagye, A. Q. & Gunjal, K. (2000). An analysis of short-run response of export and domestic agriculture in sub-Saharan Africa. *Agricultural Economics*, 23(1), 41-53. <https://doi.org/10.1111/j.1574-0862.2000.tb00082.x>
- Akpokodje, G., & Omojimite, B. U. (2008). The effect of aid flows on Nigeria's agricultural growth. *Pakistan Journal of Social Sciences*, 5(6), 514-520. <https://makhillpublications.co/public/files/published-files/mak-pjss/2008/6-514-520.pdf>
- Alabi, R. A. (2014). Impact of Agricultural Foreign Aid on Agricultural Growth in Sub-Saharan Africa: A Dynamic Specification. *African Growth and Development Policy (AGRODEP) Working Paper*, 0006. http://www.iwim.uni-bremen.de/files/dateien/1685_agrodepwp.pdf
- Barkat, K., & Alsamara, M. (2019). The impact of foreign agricultural aid and total foreign aid on agricultural output in African countries: New evidence from panel data analysis. *South African Journal of Economics*, 1-22. <https://doi.org/10.1111/saje.12224>

- Bhattarai, B. P. (2009). Foreign aid and growth in Nepal: An empirical analysis. *The Journal of Developing Areas*, 42(2), 283–302. <https://doi.org/10.1353/jda.0.0026>
- Bhandari, B. B. (2024). Foreign aid and agricultural development in Nepal. *NCWA Annual Journal*, 55(1), 119-124. <https://doi.org/10.3126/ncwaj.v55i01.63059>
- Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *American Economic Review*, 90(4), 847–868. <https://doi.org/10.1257/aer.90.4.847>
- Central Bureau of Statistics (CBS) (2020). *Statistical pocket book*. National Planning Commission Secretariat, MOF, Kathmandu, Nepal.
- Dewbre, J., Thompson, W. & Dewbre, J. (2007). Consistency or conflict in OECD agricultural trade and aid policies. *American Journal of Agricultural Economics*, 89(5), 1161-1167. <https://doi.org/10.1111/j.1467-8276.2007.01077.x>
- Dickey, D., & Fuller, W. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74, 427-431. <https://doi.org/10.1080/01621459.1979.10482531>
- Dickey, D., & Fuller, W. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49, 1057-1072. <https://doi.org/10.2307/1912517>
- Easterly, W. (2003). *The elusive quest for growth*. MIT Press.
- Feeny, S. (2007). Impacts of foreign aid to Melanesia. *Journal of the Asia Pacific Economy*, 12(1), 34-60. <https://doi.org/10.1080/13547860601083603>
- Feeny, S., & Ouattara, B. (2009). What type of economic growth does foreign aid support? *Applied Economics Letters*, 16(7), 727-730. <https://doi.org/10.1080/13504850701221832>
- IFAD. (2024, December 11). *IFAD, Nepal launch US\$120 million programme to help over 250,000 people improve rural food production*. International Fund for Agricultural Development.

- Ighodaro, C. A. & Nwaogwugwu, I. C. (2013). Effectiveness of foreign aid on the growth of the agricultural sector in Nigeria. *Ethiopian Journal of Economics*, XXII(2), 133-146. <https://www.ajol.info/index.php/eje/article/view/121882/111345>
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12, 231–254. [https://doi.org/10.1016/0165-1889\(88\)90041-3](https://doi.org/10.1016/0165-1889(88)90041-3)
- Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59(6), 1551-1580. <https://doi.org/10.2307/2938278>
- Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration-with applications to the demand for money. 52(2), *Oxford Bulletin of Economics and Statistics*, 52(2), 169–210. <https://doi.org/10.1111/j.1468-0084.1990.mp52002003.x>
- Kaya, O., Kaya, I., & Gunter, L. (2013). Foreign aid and the quest for poverty reduction: Is aid to agriculture effective? *Journal of Agricultural Economics*, 64(3), 583-596. <https://doi.org/10.1111/1477-9552.12023>
- Kherallah, M. W., Beghin, J. C., Peterson, E. W. F. & Ruppel, F. J. (1994). Impacts of official development assistance on agricultural growth, savings and agricultural imports. *Agricultural Economics*, 11(2–3), 99-110. <https://doi.org/10.1111/j.1574-0862.1994.tb00325.x>
- Maruta, A., Banerjee, R., & Cavoli, T. (2019). Foreign aid, institutional quality and economic growth: Evidence from the developing world. *Economic Modelling*, 89, 444-463. <https://doi.org/10.1016/j.econmod.2019.11.008>
- McArthur, J. W. & Sachs, J. D. (2018). Agriculture, aid and economic growth in Africa. *Policy Research Working Paper, No. 8447*, the World Bank. <https://doi.org/10.1596/1813-9450-8447>
- Kalakhetti & Shakya (2026). Impact of Agricultural . . .

Ministry of Finance (MOF). (2022). *Economic survey, 2021*. MOF, Government of Nepal.

National Planning Commission (NPC). (2002). *Agricultural Perspective Plan*. Government of Nepal.

National Planning Commission (NPC). (2002). *The tenth plan, 2002-2007*. NPC, Government of Nepal.

Norton, G. W., Ortiz, J. & Pardey, P. G. (1992). The impact of foreign assistance on agricultural growth. *Economic Development and Cultural Change*, 40(4), 775-786. <https://doi.org/10.1086/451976>

Pearce, D. W. (1996). *Macmillan dictionary of economics*. London, United Kingdom: MacMillan Education Ltd.

Poudel, O., Kharel, K.R., & Upadhyay, Y.M. (2021). Assessing the contribution of agriculture for boosting Nepalese economy. *BMC Journal of Scientific Research*, 4, 31-41.

Rodan, R. P. (1961). International aid for underdevelopment countries. *Review of economics and Statistics*, 43(2), 107-138. <https://doi.org/10.2307/1928662>

Sharma, K., & Bhattarai, B. (2013). Aid, policy, and growth: The case of Nepal. *Journal of Economic Issues*, 47(4), 895-910. <https://doi.org/10.2753/JEI0021-3624470405>

Thirlwall, A. P. (2006). *Growth and development with special references to developing economies*. Palgrave: Macmillan.

Trentinaglia, M. T., Baldi, L., & Peri, M. (2023). *Supporting agriculture in developing countries: New insights on the impact of official development assistance using a climate perspective*. *Agricultural and Food Economics*, 11, Article 39. <https://doi.org/10.1186/s40100-023-00282-7>

Verter, N. (2017). The impact of agricultural foreign aid on agriculture in Nigeria. *Bulgarian Journal of Agricultural Science*, 23(5), 689-697.

<https://agrojournal.org/23/05-01.pdf>

Yogi, L.N., Thalal, T., & Bhandari, S. (2024). The role of agriculture in Nepal's economic development: Challenges, opportunities, and pathways for modernization. *Heliyon*, 11(2), e41860.

<https://doi.org/10.1016/j.heliyon.2025.e41860>

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 20 – 36 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

**Negotiating Digital Learning and Educational Struggles: Experiences of Dalit Girls
in the Faculty of Education at Mahendra Multiple Campus, Dharan**

<https://doi.org/10.3126/ajos.v6i1.98099>

Bishal Karki

*Assistant Professor, Department of English Education,
Mahendra Multiple Campus, Dharan,
Tribhuvan University, Nepal*

bishal.karki@temc.tu.edu.np

ORCID: <https://orcid.org/0009-0000-6371-4754>

Abstract

Digital learning is very common in higher education in Nepal. This paper examines the experiences of Dalit girls in digital learning at Mahendra Multiple Campus, Dharan. The objective of the study was to explore what challenges Dalit girls face during digital learning. The study applies a generic qualitative research design; two Dalit girls studying at the B.Ed. and M.Ed. levels were selected purposively. Data were collected through in-depth interviews. The interviews were recorded, transcribed, coded, and analyzed using thematic analysis. The findings of the study show that digital learning helped students to be confident and independent learners. Students used various search engines, social platforms, and AI tools to learn lessons and complete assignments. Digital learning helped them in many ways, however, they also faced different challenges. Their long screen time caused eye problems and headaches. Load shedding, slow internet, and poor digital infrastructure of the campus created problems in learning.

Karki (2026). Negotiating Digital Learning . . .

Students experienced that their teachers helped them less and their peers more. The paper concludes that digital learning supports Dalit girls from different perspectives, but strong institutional support is necessary.

Keywords: Digital Learning, Dalit Girls, Higher Education, Educational Challenges, Digital Learning Experiences

Introduction

Digital learning has become an integral part of students' learning experiences in higher education. Using online learning platforms, the internet, mobile phones, computers, and digital tools to support their learning activities is related to 'digital learning'. Digital learning (d-learning) is used in a complementary way to mean technological learning (Basak et al., 2018). Many Universities and colleges around the world now use online classes through digital resources and learning applications to improve learning experiences. Digital learning mainly allows students to get information quickly and learn it at their own pace and place, and study beyond the classroom (Means et al., 2010). Because of these benefits, digital learning is often seen as productive, flexible, and learner friendly.

In recent years, the concept and use of digital learning have been growing rapidly in developing countries like Nepal. During and after the COVID-19 crisis, use of digital learning increased because educational institutions were forced to shift to online classes. Different online platforms such as Microsoft Teams, Zoom, Google Meet, and Google Classroom became common in higher education of Nepal. Teachers as well as students began using their mobile phones and laptops for Google search, YouTube videos, and artificial intelligence (AI) tools like ChatGPT to support their studies. However, not all teachers and students can equally benefit from digital learning. When access to devices, internet facilities, electricity, and digital skills remains uneven,

or in other words, access to quality internet and devices hinders students' participation in digital learning (Van Dijk, 2020). Because of this, some learners face serious challenges while using digital tools for education.

In Nepal, Dalit students come from socially marginalized communities. Many Dalit girls face multiple forms of disadvantage due to caste, gender, poverty, and limited educational support. According to Dash (2025) "Dalit women face both caste-based and gender-based discrimination in our country." At the bachelor level, in their learning journey, Dalit girls struggle with academic pressure, lack of resources, and low confidence. When digital learning is also involved, the challenges may increase rather than decrease. Although digital learning promises flexibility and independence, it also demands digital devices, digital skills, stable internet, and supportive institutional systems.

There were some previous studies about girls, Dalit girls, and how they use digital technologies in learning. They show that students from disadvantaged backgrounds often experience a digital divide (Dash, 2025). Most of them live in rural and geographically remote areas. Such students may not have fast internet, smartphones, laptops and proper guidance from teachers. If they find smartphones, they don't have an idea about how they can use phones in their learning, and they only use them for Facebook, TikTok, etc. In addition to this, heavy usage of mobile devices may reduce social interaction and increase isolation (Baecker et al., 2014). Despite these different research works, there is limited research focusing specifically on Dalit girls' experiences of digital learning in Nepali higher education. Their voices are often missing in academic discussions. So, this study focuses on that gap with some suggestions.

This study focuses on Dalit girls studying at Mahendra Multiple Campus (MMC), Dharan. They are currently studying at the B.Ed. and M.Ed. levels. The objective of the study is to explore their experiences with digital learning and the Karki (2026). *Negotiating Digital Learning . . .*

challenges they face. The study also concerns how institutional factors such as teachers' feedback and guidance, peer support, digital infrastructure, etc., determine their learning experiences. By finding out their different experiences, this study aims to present a clear picture of digital learning from the findings of the research and from the perspective of Dalit girls. These findings may be important for improving digital learning practices in higher education institutions in Nepal. The study is guided by the research questions: How do Dalit girls describe (un)pleasant experiences with digital learning? And how do institutional circumstances such as classroom support, digital infrastructure, and teacher guidance shape their digital learning experiences?

Methods and Materials

This study follows a basic or generic qualitative research design (Merriam & Tisdell, 2016). I chose a generic qualitative research design for this study because it aims to explore personal experiences, feelings, and perceptions of Dalit girls related to digital learning. Qualitative research helps researchers to understand how people make meaning of their experiences in real-life contexts (Creswell & Poth, 2018). Since this study focuses on learning experiences and institutional support, qualitative inquiry is suitable. My study adopts a phenomenological approach, which focuses on understanding the lived experiences of individuals related to a specific phenomenon (Moustakas, 1994). In this study, the phenomenon is digital learning and struggle. In this research, I attempt to explore how Dalit girls experience digital learning in their academic life, i.e., in their day-to-day learning.

I selected two Dalit girls as the participants of the study who were studying in the B.Ed. and M.Ed. at Mahendra Multiple Campus, Dharan. The campus is a constituent campus of Tribhuvan University. I selected the campus and these participants purposively. This purposive sampling helped me to select those students who had direct experience with digital learning and belonged to Dalit communities. The Karki (2026). *Negotiating Digital Learning . . .*

participants had experience of using digital devices such as mobile phones, laptops, the internet, Zoom, Google search, YouTube, and AI tools like ChatGPT and DeepSeek, etc. Participants had also attended online classes during the COVID-19 period.

For this research, I collected data through in-depth interviews with selected students. Interviews allowed participants to express their experiences freely and share their personal experiences. Both of the students (respondents) were my students of major English, and I informed them about my research. They easily agreed to an interview. Then I arranged the interview in their leisure period, about 60 minutes for each student separately. As my regular students, there was no difficulty in rapport building, and they expressed their experiences openly. The interviews were conducted in a comfortable environment at the corner of the campus ground. Participants were allowed to use Nepali during the interview. I recorded both of the interviews with participants' consent, and later they were transcribed and coded for analysis. Open-ended and free questions were used to encourage detailed responses. Participants were asked about their use of digital tools, learning benefits, challenges, health issues, state of internet access, teacher support, peer support in digital learning, and teacher guidance.

After taking interviews, I transcribed those recordings, playing them at a slow speed. Then I read transcripts again and again to generate codes. Numerous codes were generated from meaningful and key statements related to their digital learning experiences. The formed similar codes were grouped into themes. It suggests that the collected data through interviews were analysed using thematic analysis (Braun & Clarke, 2019). The prepared similar codes were grouped into themes. Two themes were developed for each research question. For Research Question 1, the themes were: 'Flexibility and Self-directed Learning', and 'Health, Dependency, and Being Unsocial'. Similarly, for Research Question 2, the themes were: 'Inadequate Digital Infrastructure and Institutional Support', and 'Platform Accessibility and Peer-based Support.' The

thematic data were analysed, being focused on describing experiences by students in simple and clear language while linking findings in the discussion.

For this research, ethical issues were carefully maintained. Before the interview, participants were clearly informed about the purpose of the study and provided information used just for research. My participants were voluntarily involved in the interview. Pseudonyms such as Student A and Student B were used to protect their identity.

Results and Discussion

As previously mentioned, transcribed data were coded, grouped, and thematized under two research questions, which are described below.

Dalit Girls' Experience with Digital Learning

Digital learning has grown to be an integral aspect of Dalit girls' learning experiences, because they enable the flexibility in learning resource access. They became confident and independent in their learning as they became used to digital tools. But the positive sides came with the problems of health, technology reliance, and lowered social interaction.

Flexibility and Self-directed Learning

Higher-level students began digital learning with little knowledge, but gradually learned to use it for their studies. When students got admitted to the bachelor level, they were (un)familiar/ less familiar with digital learning and online tools. In recent years, they started using mobile phones and laptops for learning purposes. When their teachers clarified topics in their class, and they didn't understand the lesson descriptions, they used Google to search for the information quickly. On this, one student (Student A) stated, "If I do not understand the lesson in class, I search that in Google and sometimes I get more knowledge than in class." Similarly, YouTube videos helped them understand Karki (2026). Negotiating Digital Learning . . .

difficult topics through examples and explanations. One of the students replied, " In my M. Ed. first semester, we had to write a term paper, I had no idea before, then I searched about the topic and format on the internet, learned how to write it and what format it had." Some students also used ChatGPT or DeepSeek to get ideas and explanations. These tools made learning easier because students did not have to depend only on classroom teaching. They could find answers by themselves and learn new things step by step. Digital learning also helped them feel more comfortable with technology over time. Stokes (2001) also adds digital learning environment is successful, satisfying, and helpful in understanding. Thus, even without prior knowledge, digital tools helped Dalit girls begin learning independently and flexibly.

Digital learning helped Dalit girls become confident and self-directed in learning their lessons. If learners have to learn things, they could learn anywhere, anything, without time limits. Such things made learning more flexible. Student A said, "When I use mobile apps, I can learn anytime I want. There is no time limit. If I do not understand something, I can search immediately and learn." When they were confused in class, they could search for the same topic at home and understand it better. Digital tools were very useful for academic work, such as writing term papers. Student A again stated, "In my M. Ed. first semester, we had to write a term paper, I had no idea before, then I searched on Google and YouTube and learned how to write it and what points to include." Students learned how to write, format, and organize their work by watching videos and reading online materials. Spires et al. (2012) also stated that video viewing and creation are ways to engage students in learning, where students self-organize their resources in a meaningful way. They no longer felt completely lost when given new academic tasks. Learning at their own pace and time helped them feel less pressure. Such facility of devices and the internet, students felt more confident and self-directed in learning. Student B replied, "Sir, when I use mobile apps, whenever I feel

like learning, I can learn. There's no time limit. If I don't know something, I can search and watch or learn right away." After that they felt more confident in their ability to learn independently. As a result, digital learning increased students' confidence and supported self-directed learning.

Health, Dependency, and Unsociability

Dalit girls experienced health-related problems due to the prolonged use of digital devices. They spent many hours on mobile phones and laptops for learning (and other tasks). This long screen time caused eye problems and headaches. Student A reported, "I have some eye problems, like if I use the phone and look at the screen for a long time, my eyeballs get sore and my head aches." Filkina et al. (2020) also support this view by saying long-term use of digital devices may cause different eye diseases. Some students felt tired after using digital devices for a long time. These health problems make learning uncomfortable and stressful. Continuous screen use also reduces their physical movement. Hamer and Stamatakis (2013) also describe how increased screen time lowers physical activity, i.e., which may cause laziness and weight gain. Over time, such health issues affected their concentration and motivation to study. Therefore, digital learning created health challenges that made learning difficult at times.

Digital learning increased dependency and reduced social interaction. Students became more dependent on the internet for their learning. When the internet was not available, they felt less confident and worried about their studies. On the same issue, Student B said, "Sometimes there is no internet on campus and at home also, I couldn't complete my given task. At that time, I only think if the internet were available, I would learn many things." Many students felt they could not study properly or complete home assignments without online access. Anderson and Perrin (2018) concluded, "Learners are often or sometimes unable to complete homework assignments because they do not Karki (2026). Negotiating Digital Learning . . .

have reliable access to a computer or internet." They looked just addict on internet, and they mostly depend on it for different activities. Similarly, heavy use of mobile devices also reduced students' face-to-face interaction with family members, teachers and classmates. Student A reported a similar view as " There are many disadvantages of using the internet, there may be health issues like eye pain, and less interaction with family, teachers and friends." Students felt less connected with others during digital learning. Group discussion and personal interaction became limited. This made learning feel lonely and less social. Thus, digital learning led to dependency, reduced confidence, and weaker social interaction.

Institutional Infrastructure and Digital Learning Experiences

Institutional infrastructure is one of the key factors that can significantly impact students' digital learning experiences, affecting their digital learning resources, access to the internet, and access to technology. While online platforms were introduced at higher education institutions, Zoom, MS Teams, and Google Meet, inadequate internet facilities, the lack of computer laboratories, and limited support from the institutions often compromise participation in online learning. To face such challenges, students used platforms that were easy to access as well as peers, showing the importance of institutional infrastructure and collaborative support to support meaningful and equitable digital learning experiences.

Inadequate Digital Infrastructure and Institutional Support

Infrastructural problems of the campus strongly affected students' digital learning experiences. In our context, most online classes were started during the COVID-19 pandemic. The most popular online platforms for such classes were Zoom, Microsoft Teams, and Google Meet. Student B stated, "We took class on Zoom which is easier to connect and use in comparison to Microsoft Teams and Google Meet." But

Student A had the experience with Teams, and their teacher joined them through Teams. However, many students faced internet problems at home. Power cuts and weak internet are often problematic when taking classes. Household noise also disturbed students during online learning. Student A reported, " I have low power internet at my home which is disrupted most of the time, and there are other problems, such as household noises, pets and animals' noises, load shedding, etc., which disturb the classes most of the time." These problems made it hard for students to focus and participate actively. Zaki (2022) found that learners were more easily distracted in online learning than in traditional or face-to-face learning. Many students missed important lessons due to technical issues. As a result, online learning became stressful instead of helpful. Therefore, poor home infrastructure reduced the quality of digital learning.

Lack of digital infrastructure also limited the effectiveness of digital learning. If the higher education institutions cannot provide fast internet facilities and adequate computer infrastructure, it hinders students' learning experiences. Students of the Campus shared their experiences about the internet facility, i.e., the WiFi did not give sufficient range in all classrooms. In this regard, Student A shared, " Sir, we connected to campus Wi-Fi in the first and second semesters, but the router was far from our room and the range wasn't good in our class; it was slow. If the campus provided faster Wi-Fi, it would be easier for us." Students experienced frequent disconnections while trying to use the campus internet. Similarly, there was no computer lab available for students. Because of this, students had to bring their own laptops or use mobile phones for online learning. Another student said, " If the campus provided facility of computer lab, it would be easier for everyone because some students might not have laptops and good mobile phones to connect. An interactive board is there on campus near our classroom, but we never used that." It also seems that carrying personal devices was not always easy or possible for all learners. Conrad et al. (2022) also found out " Higher education

institutions continuously face difficulties in creating satisfactory online learning experiences that adhere to the new norms." So, from the side of students, they felt that strong campus internet facilities and computers would help everyone to use and learn equally. Thus, weak campus infrastructure created barriers to digital learning.

Platform Accessibility and Peer-based Support

Students preferred digital platforms that were easy and accessible. Among different platforms, Zoom was preferred because it worked even with slow internet. Students found Zoom easier to access compared to Teams and Google Meet. Student B stated, "We took class on Zoom, because it is easier to use and it works even with slow internet. Teams and Google Meet need faster internet." Data-heavy platforms for learning as LMS, Moodle, Teams, etc., require a strong internet connection, which many students might not have. When such learning Apps are difficult to use, students feel frustrated in learning new things. Easy platforms helped students attend classes regularly and understand lessons better. Ismail et al. (2022) also suggest that the usability of Zoom and Teams in higher education is appreciable because they are considered intuitive and easy for learners. Therefore, platform accessibility played an important role in digital learning.

In the case of using and learning via digital devices and platforms, peer support was more helpful than teachers' guidance. Students often depended on friends to learn how to search for information and use digital tools. One of the students said, "I don't have the Teams app on my phone, my friend helps me to register, use the app, its features, and even search for the materials uploaded by teachers." According to students, teachers' guidance is very limited. When teachers are unavailable, their friends explain how to use apps and solve technical problems. They work in groups on using learning apps, learning possibilities, and they also get help from YouTube videos for using digital devices and digital learning. They reported teacher guidance for digital learning was

Karki (2026). Negotiating Digital Learning . . .

limited. Students felt they had to manage learning on their own. Peer help made learning easier and less stressful. Bariyyah (2015) stated about the role of peer learning as " peer-helping is effective to reduce students' academic stress collaboratively... by giving effective information with language that is easily understood." As a result, peer support became a key source of help in digital learning.

Discussion

The results demonstrate that Dalit girls gained flexibility, confidence and the ability to learn at their own pace with digital learning. Over time, the students were able to achieve self-reliance in their learning and increase independence by making use of digital resources, including Google, YouTube, and AI applications, to grasp lessons, complete assignments, and perform academic tasks. The results indicate that digital technologies can be used to support learner autonomy by facilitating access to resources at any time and learning at any speed. Such conclusions have been drawn by Stokes (2001), who noted that digital learning provides important ways to enhance learning experiences, and Spires et al. (2012), who reported that digital resources create an incentive for independent and meaningful learning. Similarly, the results corroborate the claim that digital technologies are beneficial in facilitating the engagement of learners with academic activities and boosting their academic confidence when suitable learning resources are provided (Ismail et al., 2022).

The study, however, revealed the following challenges that made digital learning less effective. High levels of screen time led to eye strain and headaches, limited internet connectivity and computer facilities and institutional support hampered learning. Students also found that they were highly dependent on the Internet and received more calls from friends than from their teachers for technical advice. This study shows that in addition to the students' motivation, good infrastructure and institutional support are also crucial to effective digital learning. The realization that Karki (2026). *Negotiating Digital Learning* . . .

screen time is an unfavorable health risk has been echoed by Filkina et al. (2020), and that institutions need to be ready and able to support quality online learning by Conrad et al. (2022). Promoting the improvement of digital infrastructure, the strengthening of teacher support and equal access to technology are therefore crucial to developing inclusive and effective digital learning spaces for marginalized students.

Conclusion

The study about digital learning of Dalit girls studying in MMC, Dharan, found that in higher education, digital learning had positive and negative sides. It helped students to learn by themselves using digital devices and the internet. For this purpose, students mainly used Google, YouTube, and AI tools to make their learning easy and accessible. Students used their mobile phones as a simple tool that they can use anytime, anywhere, easily. Different digital tools, mainly YouTube, were very helpful for them to prepare for the examination and write term papers as well. Such devices not only help them in learning and exam preparation but also develop confidence in their knowledge. However, in students' digital lives, it also created some problems. For example, when they engaged with the screen for a long time, it caused eye pain and headaches. Similarly, learners became more dependent on the internet, which lessened their creativity and physical activity. They became habituated to the digital world. As a result, even a temporary loss of internet access made them feel stressed and helpless. Likewise, digital learning also reduced social relationships and face-to-face interaction with family members, teachers, and friends.

Students stated they got weaker institutional support for digital learning. There was the facility of internet access, but the WiFi was very weak and did not reach all the classrooms well. The computer lab was not installed for the education students. Instead of them, they also have challenges at their home, such as load shedding, slow home internet, household noises, etc., disturbed online classes and their digital learning. Dalit Karki (2026). *Negotiating Digital Learning* . . .

students had limited experiences of teacher guidance in digital learning. Instead of teachers' support, students depended more on friends than teachers on using devices and the way of using digital learning platforms. Their peer learners helped them downloading apps and better ways of using digital tools in completing tasks and exam preparations.

Implications of the Study

This research work has significant meaning for learners, campuses and teachers. Proper digital learning helps marginalized students to be independent learners. From the side of academic institutions, just giving online classes is not enough; they must facilitate fast and reachable internet, computers, faculty support, and teacher training for handling a digital-based environment. Teachers of the campus should also guide students properly in digital learning. Nowadays, there is a big issue of the digital divide, which creates a greater gap among the graduates. So, without equal access and facilities for digital, information and communication technology, the digital gap between learners will grow bigger. Higher-level learners from geographically and socially marginalized groups and from poor families will remain behind. Dalit and poor girls should be provided extra support and encouragement from the side of teachers and the Campus, and findings of such research studies should be applied by related authorities.

Delimitations of the Study

This study was mainly limited to the following:

- Only two Dalit girls who were studying at MMC, Dharan were included.
- As the sample was small, the findings cannot represent and generalizable for all Dalit girls.
- The study was done in MMC, Dharan only.
- Data were collected through interviews only.

- Other methods, like observation, were not used.
- There was the possibility of not sharing all their negative experiences because the researcher was their own teacher.

Future Research Directions

This study tries to fill the knowledge gap in the field of digital learning and the struggles among Dalit girls studying in MMC, Dharan. But there are some areas that still remain for future studies that can improve the research in this field. Some of them are as follows.

- Dalit girls from other higher-level institutions can be included as respondents
- For far better findings, both male and female Dalit students can be studied.
- Apart from in-depth interviews, other data collection methods like surveys and classroom observation can be used.
- This study only covers students' experiences, but teachers' views on digital learning can also be explored.
- In future research, researchers can include a comparison between the experiences of learners studying in rural and urban campuses.

References

- Anderson, M., & Perrin, A. (2018). Nearly one-in-five teens can't always finish their homework because of the digital divide. <https://lstwr.com/RlzJNV>
- Baecker, R., Sellen, K., Crosskey, S., Boscart, V., & Barbosa Neves, B. (2014). Technology to reduce social isolation and loneliness. Proceedings of the 16th international ACM SIGACCESS conference on Computers & accessibility.

- Bariyyah, K. (2015). The effectiveness of peer-helping to reduce academic-stress of students. *Addictive Disorders & Their Treatment*, 14(4), 176-181.
<https://doi.org/10.1097/ADT.0000000000000052>
- Basak, S. K., Wotto, M., & Bélanger, P. (2018). E-learning, M-learning and D-learning: Conceptual definition and comparative analysis. *E-learning and Digital Media*, 15(4), 191-216. <https://doi.org/10.1177/2042753018785180>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589-597.
<https://doi.org/10.1080/2159676X.2019.1628806>
- Conrad, C., Deng, Q., Caron, I., Shkurska, O., Skerrett, P., & Sundararajan, B. (2022). How student perceptions about online learning difficulty influenced their satisfaction during Canada's Covid-19 response. *British Journal of Educational Technology*, 53(3), 534-557. <https://doi.org/10.1111/bjet.13206>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Dash, S. (2025). Double burden: Navigating caste and gender violence against Dalit women. *International Journal of Arts, Humanities and Social Studies*, 7(1), 638-644. <https://doi.org/10.33545/26648652.2025.v7.i1i.242>
- Filkina, O., Vorobyova, E., Dolotova, N., Kocherova, O. Y., & Malyshkina, A. (2020). Long use of digital devices as a risk factor that causes myopia occurrence in schoolchildren. *Health Risk Analysis*(4), 77-84.
<https://doi.org/10.21668/health.risk/2020.4.08.eng>
- Hamer, M., & Stamatakis, E. (2013). Screen-based sedentary behavior, physical activity, and muscle strength in the English longitudinal study of ageing. *PloS one*, 8(6), e66222.
- Karki (2026). Negotiating Digital Learning . . .

- Ismail, H., Khelifi, A., & Harous, S. (2022). A cognitive style based framework for usability evaluation of online lecturing platforms-A case study on Zoom and Teams. *International Journal of Engineering Pedagogy*, 12(1), 104-122.
<https://doi.org/10.3991/ijep.v12i1.25295>
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning. *Center for Technology in Learning, US Department of Education*.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.
- Moustakas, C. (1994). *Phenomenological research methods*. SAGE Publications, Inc.
<https://doi.org/10.4135/9781412995658>
- Spires, H. A., Hervey, L. G., Morris, G., & Stelpflug, C. (2012). Energizing project-based inquiry: Middle-grade students read, write, and create videos. *Journal of Adolescent & Adult Literacy*, 55(6), 483-493.
<https://doi.org/10.1002/JAAL.00058>
- Stokes, S. P. (2001). Satisfaction of college students with the digital learning environment: Do learners' temperaments make a difference? *The Internet and Higher Education*, 4(1), 31-44. [https://doi.org/10.1016/S1096-7516\(01\)00046-X](https://doi.org/10.1016/S1096-7516(01)00046-X)
- Van Dijk, J. (2020). *The Digital Divide*. Polity Press. <https://doi.org/10.1002/asi.24355>
- Zaki, M. S. (2022). Advantages and disadvantages of online learning. *Journal of International Social Research*, 15(92). <https://doi.org/10.17719/jisr.2022.75162>

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 37 – 58 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Teaching and Learning Experiences Through ICT: A Case Study of Sukuna Multiple Campus

<https://doi.org/10.3126/ajos.v6i1.98103>

Dharma Kumari Kalakhethi

Sukuna Multiple Campus, Sundarharaincha, Morang, Nepal

Sukuna Secondary School, Sundarharaicha, Morang, Nepal

saritabhandari152@gmail.com

Abstract

This study explores the teaching learning experiences of ICT use and practical issues associated with the technology. Using survey and interview methods (a mixed-methods approach) carried out with 74 randomly sampled students and 7 purposively sampled teachers from the research site, the study was accomplished. The study revealed that despite the students' positive response to the use of ICT, the complaints they suggested were teachers sue text materials, copied and screenshots materials and teacher reluctance in the use of ICT in the classroom. The complaints were justified even by the teachers' information, resulting to the negative growth of the impression towards the teachers due to the teachers' lack of creativity and poorly trained ICT-based class performance. The teachers' information, on the other hand, suggested practical reasons of difficulty and issues of using ICT, such as availability of devices and skills required in the subjects -mathematical and numerical subject areas, 'students' disciplinary problems of motivation and students' class bunk', and occasional 'creation of awkward/deadening situations due to the sudden electric power cut-off '. Therefore, the study suggests for improving both professional and administrative mechanisms for: timely

device updates, making available of the devices and dedicated internet access for students, providing meaningful ICT training for teachers in specific subject areas; and even providing training to the students for ethical use of ICT to address the motivational and disciplinary issues raised in this study.

Keywords: ICT, Classroom, Technology, Interactive, e-learning, digital literacy

Introduction

Information Communication Technology (ICT) is everywhere these days. It refers to a “diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information” (Tinio, 2003, p.4). ICT technologies include devices such as computers, the Internet, broadcasting technologies, and telephony (Tinio, 2003). It also includes software, networks, satellite links, and related systems that enable people to access and share information and knowledge in various forms (Ghavifekr & Rosdy, 2015). Moreover, various services and applications, such as videoconferencing and distance learning, fall under the umbrella term ICT (Kumar, 2008).

In educational institutions such as colleges and universities, information and communications technology (ICT) has been gaining prominence as a learning tool (Gil-Flores, Rodríguez-Santero, & Torres-Gordillo, 2017). Therefore, educational systems have sought to increase the availability of computers and internet connections in classrooms as efficient tools for study, valuable sources of information, and useful supports for teaching. An internet connection enables access to information and resources available on educational platforms (Gil-Flores et al., 2017). Then, ICT has been a means of making information available. Earlier, one had to wait for newspapers to get information from around the world. It extends human capacity and expands the social environment of supporting learning (Huang, 2019). Nowadays, classes have become more sophisticated due to the use of advanced technological tools. At the same time, teachers are expected to use the technological tools appropriately.

Kalakhetti (2026). Teaching and Learning . . .

Educational Context of ICT Use

In the broader context of ICT use in the classroom, Sukuna Multiple Campus (SMC) has made ICT devices available to make higher education classes more effective and creative, meeting educational goals (SMC, 2024, SMC, 2025, SMC, 2026). In most of the classrooms (but not all), multimedia (MM) projectors are set up, internet connection ports are created in the classroom (SMC, 2024, SMC, 2025, SMC, 2026), and almost all teachers (but not all) are supported financially for purchasing laptop computers (SMC, 2024, SMC, 2025, SMC, 2026). However, the availability of ICT should not be the end of effectiveness and performance. To ensure quality performance, issues such as teaching and learning culture with the use of ICT, despite the policy and provision (Joshi, 2017; Rana & Rana, 2020), are emerging. Therefore, revisiting the use and effectiveness of ICT at the implementation level has been an issue for systematic study. The study has attempted to address the same fundamental issue with the research questions: (a) How are teachers using ICT in the classroom? (b) What is student-teacher responses to the current use of ICT in the classroom? and (c) How can ICT use be made effective/innovative? Essentially, this study will be significant to the Sukuna Multiple Campus principally for decision-making, providing a baseline for future researchers and informing the policy-making process regarding ICT-enhanced programs.

The significance of ICT use in classrooms has been highlighted in several studies, in which teachers are the primary agents in using these tools. Therefore, the teachers are also called educational technologists. According to Huang (2019), teachers are persons to use the technological tools, system administrator responsible for managing and supporting an education system, content management system, learning management system, and/or a network environment used to support learning and instruction, and developer/programmer such as responsible for coding instructionally related software and/or developing mediated objects and resources to be used in support of learning and instruction. Likewise, Nikolopoulou's (2018) exploration of the Kalakheti (2026). Teaching and Learning . . .

requirement for a link between creativity and ICT tools states that the use of ICT tools helped (rather than hindered) their creativity. The significance of ICT use has been further highlighted by its support for daily life activities and, in the field of education, by its support for the teaching-learning process, making it effective, high-quality, advanced, and fruitful (Joshi, 2017). The use of ICT has also been considered a fundamental obligation for work in the 21st century (UNESCO, 2014; Joshi, 2017). Moreover, ICT plays several roles in education, including educational, cultural, social, professional, and administrative (Hepp et al., 2004), and it has integrated several streams into our daily lives (Geneva Plan of Action, 2003).

In their study on the use of ICT, Bauer & Kenton (2005) found that teachers did not integrate ICT tools into their teaching due to insufficient skills and a lack of innovation. In another study, Rana and Rana (2020) have also raised the issue of ICT integration in teaching and learning. In the same vein, Reynolds, Treharne & Tripp (2003) also pointed out the teachers' problems in the adoption of ICT. Thorvaldsen et al (2012) studied the teachers' views of highly achieving ninth-grade mathematics classes in Norway. The findings show that teacher-guided student activity affects the use of ICT. Similarly, Nikolopoulou (2018) explored the link between creativity and ICT tools in school education, finding that the use of ICT tools helped (rather than hindered) creativity. A bibliographical review by Carrión-Martínez et al. (2020) on Information and Communications Technologies (ICTs) in Education for Sustainable Development aimed to synthesize the scientific evidence on the use of ICTs for Sustainable Development. The results showed that the most widely used strategies are mobile learning and distance education. Štemberger and Konrad (2021) studied Slovenian student teachers' attitudes towards using digital technologies in education; their self-reported proficiency in using digital technologies reflected the ICT attitude dimensions such as Teaching and learning, Assessment and critical thinking, empowering learners, and facilitating learners' digital competence. The results showed that Slovenian student Kalakheti (2026). Teaching and Learning . . .

teachers predominantly hold positive attitudes towards the use of digital technologies in education, yet rate themselves as low-level users. Poudel (2022) explored secondary English language teachers' experiences with ICT use in the classroom in the Nepalese context, finding that teachers used ICT tools to monitor students and provide feedback. To him, the training given to the teachers is skill-focused rather than classroom teaching content.

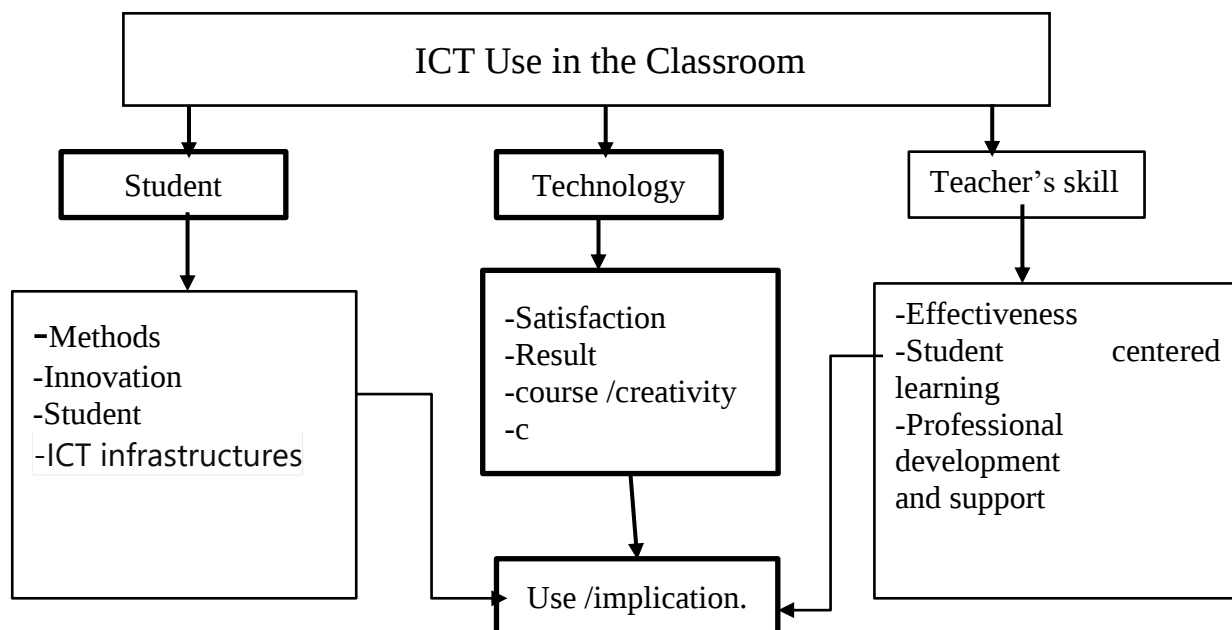
In the practical use of the ICT for teaching and learning, TPACK has been a useful theoretical perspective proposed by Punya Mishra and Koehler(2006) has been used with three major knowledge components-: Content knowledge (CK)- any subject-matter knowledge that a teacher is responsible for teaching; Pedagogical knowledge (PK)- knowledge about a variety of instructional practices, strategies, and methods to promote students' learning; and Technology knowledge (TK)- the teacher knowledge about traditional and new technologies that can be integrated into curriculum (Koehler et.al, 2014). The TPACK framework means that content (what is being taught) and pedagogy (how the teacher imparts that content) must form the foundation for any effective educational technology integration. This order is important because the technology being implemented must communicate the content and support the pedagogy to enhance students' learning experience (Kurt, 2018). Although the framework is proposed, it can be used in our context with appropriate modifications.

Based on the studies and insights from the TPACK framework, several research opportunities have been identified. In the studies, results were multifaceted, including teacher experiences (Poudel, 2022), ICT integration in teaching and learning (Rana & Rana, 2020), attitudes (Štemberger & Konrad, 2021), and Carrión-Martínez et al. (2020) on sustainable development. However, a narrower, in-depth case study of higher education institution-based insights in the local context of a community college, where ICT tools are used for teaching and learning in classrooms, would be a better approach

for performance improvement and for reviewing the institutional investment in this study. Therefore, the exploration of SMC was conceptualized as in Figure 1.

Figure 1

Conceptual framework of the study



Methods and Materials

The issue of how teachers use ICT tools in teaching and how students respond to these practices was the study's major concern. Therefore, this study employed a single-case study design using a mixed-methods approach. Data were collected through surveys with students and teachers to capture broad patterns in the first attempt, followed by semi-structured interviews to gain in-depth insights from purposively selected key teacher and student informants. This triangulation of methods provided a comprehensive understanding of ICT use in the classroom at the sampled college. Two sets of survey questionnaires were developed: one for students and another for teachers.

Kalakhetti (2026). Teaching and Learning . . .

The questionnaires were administered via online platforms, and participants were informed both personally and through offline and online communication channels, including Messenger, WhatsApp, and email. In addition, qualitative data were collected through interviews with seven purposively selected teachers. The quantitative data were presented in tables and analyzed, while qualitative data were sequenced, categorized, and presented thematically for analysis, interpretation, and conclusion. From among 250 (of B.Ed., BA, and BBS) students of the target population, the sample size of the study was as stated in Table 1

Table 1

Sample size

Tools/Instruments	Student	Teacher	
Online survey	74 students (35 F+ 39M)	-	Total number of samples = 81
Semi- structured Interview	-	7 interviews	Total number of samples = 81

Results and Discussion

This subsection includes the two main types of study results and the discussion: the use of ICT based on the availability of classroom facilities and the effectiveness of its use, followed by the issues, concerns, and challenges raised by the teachers while using ICT. The information-based results are presented first, followed by discussions.

Use of ICT tools in the classroom

A central concern of the study was exploring the use of ICT materials in the classroom. The question was: "How many classes out of 5 are being run by the teachers using ICT? ". The information received has been presented in Table 1 and analyzed henceforward.

Table 2*Teacher Use of ICT Class-wise*

Classes/ teacher (Per day)	Response	Number of respondents (beneficiaries)	Student beneficiaries in percentage
5	5 out of 5 (fully run)	19	25.7%
5	4 out of 5 (Maximally run)	16	21.6%
5	3 out of 5 (Largely run)	24	32.5%
5	2 out of 5 (Lower use of ICT)	8	10.8%
5	1 out of 5 (Least use of ICT)	5	8.6%
5	0 out of 5 (No use)	2	2.7%

Table 2 presents student responses on teachers' use of ICT in the classroom per day, 'out of 5 classes,' since there were 5 classes allocated to them per day. The data show that 25.7% of students have received the full benefits of ICT in terms of teachers' use, as all teachers use ICT devices in their classes. These students were the beneficiaries of both the availability and use of the ICT in the respective classes. At the opposite end of the continuum, 'No use of ICT' was given to them, and their response indicates that the devices may not be available in the classes, so the teachers are not using them. These students are the deprived group of learners who are denied the benefits of ICT. Likewise, 21.6% of students have benefited from 4 of 5 classes using

ICT, but this is not satisfactory because 1 teacher out of 5 is reluctant to use ICT in the classroom. However, despite the availability of the devices (MM projectors in the classrooms and laptops with the teachers), 32. 5% (the largest group in the sampled population) of students have benefited from 3 out of 5 classes using ICT.

The information on ICT uses and student benefits in terms of teachers' use indicates that, despite the campus's claim, students are not equally benefited by the use of ICT in the classroom. A considerable portion of the students are found to be deprived of facilities on campus, signaling potential dissatisfaction or the unexplored dissatisfaction growing among students whose voices are not heard by the campus. So, the unequal distribution of ICT devices and teachers' use has been negatively impacting the campus and students' satisfaction with it.

The second and most significant aspect of the information regarding the use of ICT has been the teachers' reluctance or lack of ICT skills, as the devices available in the classes were not used by the teachers. This result supports the claim by Gil-Flores et al. (2017) that until teachers begin using the technology in innovative pedagogies, the devices are less significant. In the same way, the current result also shows the need, as pointed out by Lomos, Luyten, and Tieck (2023), for ICT to be associated with teachers' ICT-related beliefs, attitudes, and ICT expertise in its implementation. From a TPACK perspective, as defined by Mishra and Koehler (2006), the integration of technology by teachers in their teaching practice is missing. For this reason, teacher training in information and communication technology (ICT) needs to be a guideline for the college.

Infrastructure, management, skills, and intentions in the use of ICT

Two fundamental aspects, infrastructure and skills, were informed factors in the use of ICT in the classroom, as per the information given by the key teacher informants during the unstructured interviews. Fundamentally, although the teachers did not outright reject the students' claim about their use of ICT tools, they supported it to some Kalakheti (2026). Teaching and Learning . . .

extent because the teacher informants were also not satisfied with the current situation of using ICT. However, they differed from the students in many respects. One of the teachers openly stated that he would continue using a board marker and a whiteboard during his teaching. According to his claim, the conventional tools were more useful than the use of a laptop and multimedia (ICT) in the classroom. His objection was to the technical difficulties in the classroom environment and the lack of favorable infrastructure, such as seating, conventional desks and benches, frequent power cuts, and device display problems during class delivery. The information indicates that the integration of ICT in classroom teaching is constrained by infrastructural inadequacies and technical challenges. It also signals the need to evaluate organizational management. Frequent electricity interruptions, unsuitable classroom furniture, and device malfunctions undermine the effectiveness of ICT-based pedagogy. These barriers highlight that successful ICT adoption requires not only teacher readiness but also systemic investment in infrastructure, reliable electricity, and technical support frameworks (Acharya, 2025; Sigdel & Joshi, 2026).

A participant teacher reported that he lacks ICT skills, so he has not been using the tools in the classroom. This signifies a teacher-related barrier to technology integration: a lack of skills and confidence, and an urgent need for training. He claims this is teaching-subject related: *mathematical theorems can be taught better through conventional board and marker rather than the use of technology, such as laptops and MM projectors*. "This conflicts with the use of technology; however, he shares the finding of Billman, Harding, and Engelbrecht (2018), in which many staff members at a large South African University felt that chalkboards were still more suitable than technology for teaching mathematics. This finding supports the idea of a strong subject culture (Billman et al., 2018). To him, *"teaching with technology means copying from books or screenshots or photos of the book contents"*, and it is not effective. The strongest point he accepted aligns with the student's claim that there is a requirement for the creative use of ICT.

Kalakhetti (2026). Teaching and Learning . . .

But this understanding is based on a limited understanding of how technology can be used for interactive, creative, and student-centered learning. This belief also highlights resistance to ICT integration stemming from negative experiences or a lack of exposure to innovative uses (Tondeur, 2022). Therefore, this suggests that the teacher has not been trained to use ICT beyond basic content reproduction, and then the teachers feel ICT is ineffective when they lack training in pedagogical integration, not just technical use (Spangenberg & De Freitas, 2019). This indicates the call for continuous professional development (CPD) to support mathematics teachers' effective use of ICTs in the classroom.

Another informant also mentions, *If we do not have an idea to use technology creatively, it is not good to use technology in the name of technology*". This also suggests better use of 'subject-specific tools' such as 'Geozebra' for teaching and learning mathematics and other numerical subjects. The teacher might mean that theorems often involve logical reasoning, proofs, and symbolic manipulation, which can be harder to represent visually or interactively than subjects with more concrete content. However, it doesn't mean ICT is ineffective; it means teachers must carefully select and adapt tools to complement traditional methods, ensuring that technology supports rather than replaces the reasoning process (Hoyle, 2018). Therefore, we cannot reject the use of ICT, even in the teaching of mathematics and other numerical subjects. Research consistently shows that technology cannot replace the logical reasoning central to mathematics, especially in teaching abstract concepts such as theorems. For instance, Campbell and Zelkowski (2020) found that dynamic geometry environments can support students' exploration of proofs, but only when teachers guide learners to connect digital experimentation with formal deductive reasoning. Therefore, the effectiveness depends largely on how teachers integrate them into instruction.

Regarding the use of ICT, complaints have been suggested; among them were the time and administrative issues: "*It takes a lot of time to make ICT materials. 'Subject change' in the routine every academic year discourages me from developing ICT-related materials. According to another mathematics teacher, he lacks good ICT skills and has not received training, so he is not using ICT tools in the classroom. He is*

just using it to make questions for the internal examination run by the campus. The suggestions were principally concerned with skills and management.

Effectiveness of the ICT use in the classroom

The effectiveness of ICT tools in the classroom was another concern of the study. The information collected regarding this concern has been presented in Table 2 and the paragraphs following it.

Table 3

Student Response on Effectiveness of ICT Use

Effectiveness	Number of students	Response in percent	Result in criteria
Very effective	20	27	Effective
Effective	40	54.1	Effective
Less effective	7	9.5	Not effective
Boring/not effective at all	7	9.5	Not effective

Regarding the effectiveness of ICT use in the classroom, respondents were asked, "How effectively are teachers using ICT tools in the classroom?" At this point, most respondents (54.1%) considered the current use of ICT in the classroom 'effective but not very effective', and 27.00% considered it 'very effective'. But around 20% of students (9.5% + 9.5%) reported that classes conducted using ICT tools were less effective (9.6%) or not effective (9.6%) at all, i.e., a boring classroom with the use of ICT. This figure provides crucial information for the institution and teachers regarding the effectiveness of ICT tools in classrooms.

Following the assessment of ICT effectiveness, participants were asked to report on the types of materials the teachers were using in the classroom. Around 48% of respondents reported that teachers were using just text materials. Only 36% of teachers were using

Kalakhetti (2026). Teaching and Learning . . .

materials that were really good for them (audio-video and text) in the classroom. This may be the cause of becoming less effective in the classroom, even when using ICT. A considerable number of informants (14%) have reported that teachers are still using manual notes for their students. Likewise, 50% of students have reported that teachers do not use PowerPoint slides when presenting material in the classroom.

Table 4

Teachers' Effective and Creative use of ICT materials

Findings from teacher interview Effective %	Findings from teacher interview Effective %	Creative %	Creative %
Very effective	12.2	Very creative	9.5
Effective	66.2	Creative	56.8
Less effective	13.5	Less creative	24.3
Monotonous	12.2	No creativity at all	9.5

Regarding the effectiveness and creative use of the ICT materials, student respondents were asked questions. In responding to the questions, the majority of the respondents (66.2%) reported that the materials were 'effective', and 12.2 % responded that the materials were 'very effective'. But according to 8% of students, they considered them monotonous, and 12. 5% respondents considered the materials less effective. While categorizing them into a negative and positive continuum, combining the negative responses (12.2 and 13.5 regarding the effectiveness of the materials, 26% have negative expressions about the ongoing use of ICT materials. This result signals the need for teacher competency in the material improvement aspect of ICT. Closely related responses have been provided regarding the creative use of ICT materials by

teachers in the classroom, as presented in Table 3, in which around 33% of respondents have responded negatively. Regarding the quality of the materials provided to students in the classroom using ICT, respondents were asked questions. Among the respondents, 36.5% of students reported receiving both Word files and PowerPoint slides for their study, whereas 3% reported finding no materials at all.

Student respondents were asked to provide suggestions to teachers, the campus, and their friends to improve ICT use in the classroom. A few responses include: "*use the ICT materials in every subject, use the audio, text is not enough, provide the materials for the reading, use the materials skillfully; if not, do not use them.*" The information suggests that the students were not satisfied with the teacher's presentation of the solo text materials in the classroom. All the students have said that ICT tools are useful and important, but if not used skillfully, they will do more harm than good. Bingimlas (2009) recognized that ineffective use of ICT can frustrate learners and reinforce negative attitudes. Therefore, teachers are suggested to use the ICT materials skillfully and creatively. This result is not very new in that the process of integrating ICT into class is still a challenge (Pittman & Gaines, 2015), as it has also already been reported that teachers infrequently use ICT in classrooms and laboratories, and the way classes are taught has not been changed by using such resources (Cuban et al., 2001). However, teachers are still the key people who ultimately decide whether to apply ICT in their teaching practice and how to implement it (Ertmer, 2005). Therefore, teachers' skill development has been the center of proper use of ICT in classrooms after infrastructure.

Practical Issues on the Effective Use of ICT

Regarding the effectiveness of ICT use, the information was debatable. One of the teacher informants suggested the occasional use of ICT as a better way, such as for student motivation and providing reading notes and handouts. To him, book photos (Screenshots) are not enough, and technology-oriented, ready-made materials are not better for teaching and learning. In his understanding, "*Lazy teachers copy long*

Kalakhetti (2026). Teaching and Learning . . .

theorems and display them once in the classroom, which does not demonstrate the creativity of the teachers. In the same vein, a female teacher in the faculty of management suggested that the balanced use of ICT will make classroom teaching more effective. According to her report, most of the time she uses a whiteboard rather than a laptop and a multimedia projector. She also makes digital materials, but she does not use them all the time in regular classroom teaching. Instead, she uses ICT for providing reading materials. *"ICT use in the classroom has a negative effect rather than a positive one".* In her experience, *students bunked classes when classes were taught using ICT.* Therefore, she posts digital notes on Google Classroom for lessons. This aligns with Kassem (2018) and suggests that the blind application of technology, regardless of content, students' needs, learning styles, and methodology, will cease to be pedagogically effective. The informants have also pointed out the negative impact of ICT use in the classroom.

The second essential component explored for the effective use of ICT was training, as suggested by Sharma (2021), who pointed to the need for more support with the infrastructure and training, especially in rural regions (Sharma, 2021). But in this study, the informants have also suggested that the training be conducted not only for teachers but also for students to create an atmosphere conducive to implementing the tools. Regarding effectiveness and use, a science teacher informant states that he uses laptops and a multimedia projector to create teaching materials. This is another way to use the ICT device, not only in the classroom but also outside the classroom. He emails his materials to the students and uses audio-video and text materials. In his experience, too, students who are too lazy even to draw figures, even when they have to, instead just take photos in the classroom, and the classroom becomes boring. Another significant remark made to other teachers of the informant states, *'will power or motivation has been the main factor; training helps a little.'* To him, *'Those teachers who are favoring the use of white boards instead of the use of MM projectors are an 'escaping strategy'.* This suggests that it is teachers' motivation, rather than students', that matters. Therefore, Kalakhetti (2026). Teaching and Learning . . .

it is concerned not only with the availability of the materials but also with the teacher's readiness to use them. It is also necessary to reshape teachers' beliefs, practices, and approaches to successfully integrate technology into language instruction, as pointed out by Hassan & Mirza (2020). It also does not reject the remark that teachers' belief in ICT as a pedagogical tool and dynamic participation of teachers in creating considerable potential for facilitating the integration of ICT in the classroom (Hassan & Mirza, 2020) are very crucial for learning to take place effectively.

Some teachers who are poor in ICT skills were also found to use other techniques; as one teacher reported, *"most of the time I use mobile, give teaching notes to the student through messenger"* because he cannot prepare digital notes properly. For the effective use of ICT, teachers have pointed out the need for appropriate classroom infrastructure, as there is not a comfortable environment for using ICT tools in classes with conventional desk-bench arrangements. The additional requirements were curtain, light management, and assurance of the regular supply of electricity. As strongly pointed out, the 'electric power cut off' that turned the classes dead was pertinent. Another suggestion for the effective use of ICT in the classroom was teacher skills development to manage learner interests. Teachers admitted some points in making the ICT tools included that the ICT: saves time, is easy to teach, teachers can give complete notes and ideas to the students, along with administrative suggestions such as creating an ICT-friendly atmosphere with regular updates of the tools , and integrating e-learning platforms such as LMS, so that teachers can give tasks and assignments to the students. Counter criticisms were also explored during the interview with the teachers, with a strong belief that the board-marker teaching system should be replaced by digital tools on the one hand, and with a student-oriented emphasis on the ethical use of ICT, such as not allowing them to use ICT for purposes other than learning. The effectiveness of ICT use has also been negatively affected by poor Wi-Fi access for all students, poor internet connectivity, and expensive internet data.

Conclusion

One of the key findings of the study was the lack of uniform availability and use of ICT facilities across classrooms within Sukuna Multiple Campus. From the study, it is known that although most classrooms are equipped with multimedia projectors, a considerable proportion of students reported inadequate access to internet facilities and technological resources, such as multimedia projectors or interactive panelboard. Such unequal distribution of ICT facilities has limited, and even deprived, students of both access to and the effectiveness of technology-enhanced learning, creating disparities in students' learning experiences. It has fundamentally affected the use of ICT and teaching and learning experiences.

A significant aspect explored regarding the use of ICT devices was that students were curious and positive about having information from the teachers' effective use of them. At the same time, the majority of students rated ICT use as effective, but many expressed dissatisfactions with the teachers' excessive reliance on text-based materials and PowerPoint presentations. Nearly half of the respondents reported that teachers primarily used textual materials, whereas only a limited number of teachers integrated audio-visual resources into their lessons. This finding supports the argument of Thorvaldsen et al. (2012), who emphasized that effective ICT integration depends not merely on the availability of technology but on how teachers guide learning activities through technology. Similarly, Nikolopoulou (2018) found that ICT contributes to creativity when it is used in innovative and interactive ways. In the present study, students' concerns regarding monotonous presentations suggest that the creative potential of ICT has not yet been fully realized. Associated with this revelation, a few teachers' reluctance to use ICT has also been noted by the students, which has given rise to negative attitudes towards teachers and teaching and ultimately affects the academic performance and reputation of the institution.

The meeting point of the teachers and the students was found in the effective use of ICT. Students acknowledged the usefulness of ICT but demanded more creative, practical, and interactive classroom practices. Several teachers expressed reservations about the effectiveness of ICT; some accepted it, while others pointed out the challenges to its effective use, particularly in subjects such as mathematics and numerical subjects. At the same time, some teachers preferred conventional board-and-marker teaching and reported difficulties in preparing digital instructional materials. These findings are consistent with Bauer and Kenton (2005), who reported that teachers may possess access to technology yet still hesitate to integrate it effectively into classroom instruction. Likewise, Reynolds, Treharne, and Tripp (2003) highlighted teachers' challenges in adopting ICT despite institutional support. This highlights the requirements of the institutional and managerial support for teaching and learning in association with the ICT.

The interview data also revealed that inadequate ICT skills, lack of subject-specific training, power interruptions, and insufficient classroom infrastructure remain significant barriers to effective ICT integration. Teachers emphasized that preparing quality digital materials requires both technical competence and pedagogical understanding. This observation aligns with the Technological Pedagogical Content Knowledge (TPACK) framework proposed by Mishra and Koehler (2006), which stresses that effective technology integration requires a combination of technological, pedagogical, and content knowledge. The students' recommendations for more engaging digital materials and the teachers' demand for professional training further reinforce the relevance of the TPACK framework in higher education classrooms.

The findings also indicate that ICT use has generated unintended challenges, such as student absenteeism after receiving digital notes, reduced classroom participation (and class bunking), and increased dependence on ready-made learning materials. While ICT provides opportunities for flexible learning, teachers expressed
Kalakheti (2026). Teaching and Learning . . .

concerns about students' declining motivation for independent learning activities.

Poudel (2022) found that ICT use in Nepalese classrooms often focuses on monitoring and content delivery rather than promoting deeper student engagement and creativity.

The findings suggest that ICT integration at Sukuna Multiple Campus is positively viewed by both students and teachers; however, its effectiveness is constrained by infrastructural limitations, inadequate teacher preparation, and limited pedagogical innovation. Therefore, improving ICT-based teaching requires not only technological investment but also continuous professional development, subject-specific ICT training, training to understand learner interests, reducing teacher reluctance and their demands, regular equipment maintenance, and the promotion of interactive and student-centered teaching practices. Orientation for students on the ethical use of ICT, regular updates to devices, and extending ICT platforms to accommodate changes, along with free access to dedicated devices and internet access, would help progress the use of ICT on campus.

Conflict of Interest

The author declares no conflict of interest.

References

- Acharya, G. (2025). Issues and Challenges of ICT Use in Government and Non-government Schools: A Study on ICT Integration in the Teaching-Learning Process in Surkhet District. *Surkhet Journal*, 4(1), 131-152.
- Billman, A., Harding, A., & Engelbrecht, J. (2018). Does the chalkboard still hold its own against modern technology in teaching mathematics? A case studies. *International Journal of Mathematical Education in Science and Technology*, 49(6), 809-823.

- Bingimlas, K. A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. *Eurasia Journal of Mathematics, Science and Technology Education*, 5(3), 235-245.
- Carrión-Martínez, J. J., Luque-de la Rosa, A., Fernandez-Cerero, J., & Montenegro-Rueda, M. (2020). Information and communications technologies (ICTs) in education for sustainable development: A bibliographic review. *Sustainability*, 12(8), 3288.
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*, 1(2), 175-191.
- Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: explaining an apparent paradox. *American Educational Research Journal*, 38(4), 813–834
- Ertmer, P. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 63(4), 25–39. <https://doi.org/10.1007/BF02504683>
- Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J.-J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in human behavior*, 68, 441-449.
- Hassan, M. M., & Mirza, T. (2020). Impact of ICT in changing the role of a teacher: an overview. *Gedrag & Organisatie Review*, 33(03), 441-449.
- Hoyles, C. (2018). Transforming the mathematical practices of learners and teachers through digital technology. *Research in Mathematics Education*, 20(3), 209-228.
- Huang, R. (2019). *Educational technology a primer for the 21st century*. Springer Nature Singapore Pvt. Ltd.

- Joshi, D. R. (2017). Policies, practices and barriers of ICT utilization in school education in Nepal. *International Journal of Research in Social Sciences*, 7(2), 408-417.
- Kassem, M. A. M. (2018). Balancing technology with pedagogy in English language classroom: Teachers' perspective. *International Journal of English Language Teaching*, 6(9), 1-19.
- Koehler, M. J., Mishra, P., Kereluik, K., Shin, T. S., & Graham, C. R. (2014). The technological pedagogical content knowledge framework. In *Handbook of Research on Educational Communications and Technology: Fourth Edition* (pp. 101-111). Springer. https://doi.org/10.1007/978-1-4614-3185-5_9
- Kumar, R. (2008). Convergence of ICT and Education. *International Journal of Information and Communication Engineering*, 2(4), 300-303.
- Kurt, S. (2018). TPACK: Technological Pedagogical Content Knowledge Framework. *A Blog Post*. <https://educationaltechnology.net/technological-pedagogical-content-knowledge-tpack-framework/>
- Lomos, C., Luyten, J., & Tieck, S. (2023). Implementing ICT in classroom practice: what else matters besides the ICT infrastructure? *Large-Scale Assessments in Education*, 11(1), 1.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. *Teachers College Record*, 108 (6), 1017–1054
- Nikolopoulou, K. (2018). Creativity and ICT: Theoretical approaches and perspectives in school education. *Research on e-Learning and ICT in Education: Technological, Pedagogical and Instructional Perspectives*, 87-100.
- Pittman, T., & Gaines, T. (2015). Technology integration in third, fourth and fifth grade classrooms in a Florida school district. *Educational Technology Research and Development*, 63(4), 539–554. <https://doi.org/10.1007/s11423-015-9391-8>
- Kalakhetti (2026). Teaching and Learning . . .

- Rana, K., & Rana, K. (2020). ICT Integration in Teaching and Learning Activities in Higher Education: A Case Study of Nepal's Teacher Education. *Malaysian Online Journal of Educational Technology*, 8(1), 36-47.
- Sharma, A. (2021). *Impact of ICT on teaching practices in India*. Columbia University, Earth Institute, Center for Sustainable Development (CSD).
- Sigdel, J., & Joshi, B. R. (2026). Implementing ICT in Rural Community Schools: Challenges and Strategies for Effective Integration. *Educational Journal*, 5(1), 11-22.
- Spangenberg, E. D., & De Freitas, G. (2019). Mathematics teachers' levels of technological pedagogical content knowledge and information and communication technology integration barriers. *Pythagoras*, 40(1), 1-13.
- Štemberger, T., & Konrad, S. Č. (2021). Attitudes towards using digital technologies in education as an important factor in developing digital competence: The case of Slovenian student teachers. *International Journal of Emerging Technologies in Learning (iJET)*, 16(14), 83-98.
- Thorvaldsen, S., Vavik, L., & Salomon, G. (2012). The Use of ICT Tools in Mathematics: A Case-control Study of Best Practice in 9th Grade Classrooms. *Scandinavian Journal of Educational Research*, 56(2), 213–228.
<https://doi.org/10.1080/00313831.2011.581684>
- Tinio, V.L. (2003). *ICT in Education*. UNDP. Retrieved March 28, 2010 from
<http://www.apdip.net/publications/iespprimers/eprimer-edu.pdf>
- Tondeur, J. (2022). Teachers' pedagogical beliefs and technology use. In *Encyclopedia of teacher education* (pp. 1960-1964): Springer.

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 59 – 80 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Enumeration of Freshwater Algae in Rasa Tal, Sunsari, Nepal

Doi: <https://doi.org/10.3126/ajos.v6i1.98107>

Dilli Ram Rai^{1*} and Shiva Kumar Rai²

¹Sukuna Multipal Campus, Sundarharaicha, Morang, Nepal

²Department of Botany, Degree Campus, Tribhuvan University, Biratnagar, Nepal

* raidilli731@gmail.com

Abstract

Algae are aquatic plants that can-do photosynthesis and are found in freshwater environments. The primary goal of this study is to count all algae in Rasa Tal and identify the most common types. Twelve algal samples, two from each of the six algal sample collection sites at Rasa Tal, were randomly chosen and put in sample containers. For floating algae, plankton nets were used, while for other types of algae, submerged leaves and roots of aquatic macrophytes were squeezed. This study identified 52 algal species across 6 phyla, 8 classes, 17 orders, 26 families, and 31 genera. In terms of algal species, Rasa Tal's aquatic ecology is rich in freshwater algae, much like other freshwater bodies in eastern Nepal.

Keywords: Algal flora, east Nepal, charophyta, *cosmarium*, ochrophyta, *dinobryon*

Introduction

Around the world, there are many kinds of freshwater algae. Most algae from various families are photosynthetic due to the presence of chlorophyll A and chlorophyll B. They can be found in various forms, such as long filaments, colonies, or individual

cells (Chaterjee & Raziuddin, 2006). The diameters of algae vary greatly; unicellular forms are 0.5 μm in diameter, while colonial, palmelloid, filamentous, or bushy species are 30 μm or larger. Algae play an important role in aquatic food chains because they can carry out photosynthesis, serving as primary producers and absorbing large amounts of CO_2 from the environment. They can be used as food sources for humans and animals, as biofertilizers to increase fertility and productivity in crop fields, as fuel in the form of biodiesel, as bioindicators of water pollution, as medicines and cosmetics, and in research (Prescott, 1969). Men and animals use different species of algae as food. Animals and humans both eat a variety of algae species. Algae are considered very good bioindicators of water quality and freshwater ecosystems due to their position at the base of aquatic food webs (Stoermer, 1977).

When humans came to know the significance of algae in the 1980s, many authors like West and West (1902), Fritsch and Rich (1937), Scott and Prescott (1961), Turner (1892), Bruehl and Biswas (1926), Geitler (1932), Hendy (1964), Foged (1980, 1982), and Gandhi (1999) started to explore algae flora around the world. Historical records indicate that Carter (1926) may have been the first to document Nepal's algal flora in the Nuwakot and Makawanpur districts. The country's algae have since been studied by teams from Nepal, India, Japan, and Germany, primarily in the Himalayan region. Studies on Nepal's algal flora is scarce, and those that are available are mostly limited to the country's higher highlands and central midhills.

A comprehensive analysis has not yet been conducted, even though the hot, humid climate of Nepal's Tarai belt supports luxuriant algal growth and diversity. Algae from some wetlands in eastern Tarai have been explored by several workers, and Shrestha et al. (2013) reported a total of 52 taxa, including 10 new species for Nepal, after studying algae in Itahari and the surrounding area. A total of 23 algal taxa, including 6 diatoms new to Nepal from the Betana wetland (Rai, 2011), and 81 taxa, including 22 new to

Nepal from the Koshi Tappu region (Rai, 2013b), have also been studied. A total of 12 diatoms, including 5 taxa new to Nepal (Rai & Rai, 2005), and 19 Euglenophyceae algae, along with 9 taxa new to Nepal (Rai & Rai, 2007), from Biratnagar, have been reported. Recently, the diatoms of Haseena Wetland were also studied by Adhikari (2016), and the remaining algae of this locality were studied by Rai and Rai (2018). Rajopadhyaya (2016) also studied the algae of the Bagh Jhoda Wetland in Morang, Nepal.

Materials and Methods

Study Area

Rasa Taal (Rastriya Sampada Taal) was established in 2071 BS and is in Ward No. 7 of Ramdhuni Municipality, covering 64 Bighas. It has 75 bigha localities to the west and Charkoshe Forest to the north, east, and south. It lies on the northeast side of Jhumaka Bazar, Itahari Sub-Metropolitan City. Water makes up the entire 2.5-hectare area known as the Tal.

Figure 1

The map of Rasa Taal accessed from Google Earth



Rai & Rai (2026). Enumeration of Freshwater . . .

Algae Collection and Identification

Six algal sample-collection sites at Rasa Lake were randomly selected, yielding a total of 12 algal samples, two from each site. During March 2023, plankton forms were collected using plankton nets (0.5 mm mesh size), while epiphytic forms were collected by squeezing the submerged leaves and roots of aquatic macrophytes. Quarters of the container were filled with algae, and then the optimal amount of water and a 4% formaldehyde solution were added to preserve the samples in the container, with proper tagging and labeling. The specimen material from each sample was mounted with glycerin jelly on the slides (Sharma, 1992).

While closely inspecting the prepared slides under a compound microscope, the necessary photos were taken using a Canon Digital PowerShot camera and an Olympus CH20i microscope. For a longer exposure time, the macro mode was employed, and the flashlight was switched off. The identification of the algal taxa was done by consulting several books and monographs, including Prescott (1951), Desikachary (1959), Scott and Prescott (1961), Croasdale and Flint (1986, 1988), and Prasad and Mishra (1992).

Result and Discussion

Since Rasa Lake is a suitable habitat for freshwater algae, 52 algal species were identified using a compound microscope throughout this study period. The largest number of algal taxa is 23 in the phylum Charophyta, followed by Bacillariophyta (10), Chlorophyta (7), Cyanobacteria (6), Euglenozoa (5), and Ochrophyta (1). Similarly, the dominant families were Desmidiaceae, Chlosteriaceae, and Euglenaceae, with 13, 6, and 5 algal taxa, respectively.

Taxonomic Description of Algae

Microcystaceae

1. *Aphanothece stagnina* (Sprengel) A. Braun (1863) (Pl. 1, fig. 1-2)

Prescott, (1951), P. 469, Pl. 103, Fig. 14-16; Desikachary, (1959), P. 137, Pl.21, Fig. 10
Rai & Rai (2026). Enumeration of Freshwater . . .

Several centimeters of thallus in diameter and might be spherical, ellipsoidal, dull brown, brownish, or pale blue green; calcareous crystal interior; long cells & 3.5-11 μm in breadth, somewhat ovoid or cylindrical, and blue green in color.

Selenastraceae

2. *Kirchneriella lunaris* (Kirchner) Moebius (Pl. 7, fig. 1-2)

Prasad & Misra, (1992), P. 28, Pl. 4, fig.3

Spherical to subelliptical colonies within a thin outer gelatinous coat; cells flattened, crescent-shaped, highly curved & pointed ends; solitary chloroplasts almost fill the cell and contain a single pyrenoid; colonies with diameter 46-51 μm ; cell length 8.5- 13 μm .

3. *Ankistrodesmus falcatus* (Corda) Ralfs (1848) (Pl. 5, fig. 2-4)

Prescott (1951), P. 253, Pl. 56, Fig. 5, 6; Philipose (1967), P. 211, 212, Fig. 121 a, c

Chloroplast 1, a parietal plate devoid of pyrenoids, needle-like to somewhat spindle-shaped cells found alone or in groups of two to three without a colonial sheath; cells 2–6 μ in diameter and 25–100 μ long.

4. *Monoraphidium griffithii* (Berkeley) Komárková-Legnerová (1969) (Pl. 7, fig. 3-6)

Peixoto Ramos et al. (2012), p. 429, Fig. 3c

The parietal chloroplast is absent in the solitary, fusiform, elongated cells, 16–22 times longer than broad, straight or slightly curved, gradually narrowing, and ending in an acute or short spine. Cell length 45 58 μm , width 2- 3.5 μm .

Chlorellaceae

5. *Dictyosphaerium pulchellum* Wood (1874) (Pl. 4, fig. 7)

Prescott (1951), P. 238, Pl. 51, fig. 5-7

An ovoid to spherical colony with around 32 spherical cells arranged in four series on dichotomously branched colony threads; diameter of cells 3 to 10 μm , and the colony is coated in mucilage.

Sphaerocystidaceae

6. *Sphaerocystis schroeteri* Chodat (1897) (Pl. 5, fig. 1)

Rai & Rai (2026). Enumeration of Freshwater . . .

Prescott (1951), P. 83, Pl. 3, Fig. 6, 7

Within the colonial envelope, a colony with small spherical clusters of both newly divided and undivided cells; diameter of a cell & colony 6–20 μ & 500 μ , respectively; abundant and widely dispersed in both soft and hard water lakes.

Aphanizomenonaceae

7. *Anabaena* sp. Bory ex Bornet & Flahault (1822) (Pl. 2, fig. 4)

Prescott (1951), P. 510, 511; Desikachary (1959)

Filamentous, gregarious algae enclosed in amorphous mucilage; cells are like a barrel or cylindrical; large numbers of heterocysts present, dispersed throughout the trichome, which can be spherical, oval, or cylindrical; round, ovate, or cylindrical gonidia present.

Naviculaceae

8. *Navicula rostellata* Kützing (1844) (Pl. 3, fig. 5)

Karthick et al. (2013), Pl.66

A lanceolate to slightly linear valve is present; a thin axial region; a moderately wide, rounded central area that is symmetrical; and a central nodule that is thicker on one side; valve length 25.0- 40.5 μ m, valve breadth 7-9 μ m.

Gomphonemataceae

9. *Gomphonema pseudoaugur* Lange-Bertalot (1979) (Pl. 4, fig. 4)

Marquardt et al. (2011). P. 226, Fig. 21

Strongly heteropolar, oval to lanceolate club-shaped valves with rounded foot poles and strongly prolonged head poles have weakly radical, indistinctly punctate striae throughout and a small central area formed by the shortening of central striae.

10. *Gomphonema acidoclinatum* Lange-Bertalot & Reichardt (2004) (Pl. 4, fig. 2-3)

Rai & Khadka (2017); Werum and Lang- Bertalot (2004), Pl.92, Fig.1-5, 6-11

Claviform-shaped valves are like lanceolate; heteropolar and usually somewhat bent; the unilateral middle area is roughly rectangular and considerably elongated; the tip is blunt and rounded triangular; striae are 20-25 μ m long and 6.5-9 μ m wide.

Rai & Rai (2026). Enumeration of Freshwater . . .

Oscillatoriaceae

11. *Oscillatoria crassa* (C.B. Rao) Anagnostidis (2001) [Old name: *Oscillatoria ornate* var. *crassa* C.B. Rao (1938)] (Pl. 1, fig. 5-6)

Desikachary (2059), P. 206, Pl. 39, Fig. 11; Anagnostidis 2001, P. 372

Thallus is dark blue green; narrow trichomes at the cross wall, granular at the cross wall, straight, and uniformly thick; cells 11–15 μm in width and 2- 5.5 μm in length.

12. *Oscillatoria* sp. Gomont (1892) (Pl. 1, fig. 7-8)

Prasad & Srivastava (1992), P. 55.

Trichomes occur alone or in the shape of a flat, spongy, free-swimming thallus without a sheath.

Trichomes have pointy ends, bent like a sickle, coiled, or less like a screw.

Cyanothrichaceae

13. *Johannesbaptistia* sp. Toni (1934) (Pl. 1, fig. 2-3)

Desikachary (1959), p. 163, Pl. 14. Fig. 19

Algae have a tiny, linear, elongated, cylindrical, straight, or curved thallus; discoid-shaped cells in a single series within the narrow, cylindrical hyaline mucilage.

Aphanizomenonaceae

14. *Anabaena inaqualis* (Kutz.) Bornet and Flahault (Pl. 2, fig. 1-3)

Desikachary (1959), P. 413

Thallus looks like floccos, free-floating or attached to other algae, blue-green color;

Trichome 4–5 μ wide, always parallel, straight, and occasionally free of a mucilaginous sheath; cells 5–6 μ long, spherical or barrel-shaped with rounded ends and barely attenuated apices.

Aulacoseiraceae

15. *Aulacoseira granulata* (Ehrenberg) Simonsen (1979) (Pl. 2, fig. 5)

Karthick et al. (2013), Pl. 3

Valve diameter is 13–30 μm ; the valve mantle depth is 3–6 μm ; long filaments are formed by the end-to-end elongated linking spines that adjoin the frustules; smaller spines may also be present around the valve margin.

Ulnariaceae

16. *Ulnaria ulna* (Nitzsch) Compère (2001) (Pl. 2, fig. 6; Pl. 3, fig. 1-3)

Karthick, Hamilton & Kociolek (2013), Pl.18

Valves linear, with margins parallel, tapering to protracted to rostrate apices; central sternum narrow, straight; central area transversely expanded rectangular area, nearly square in shape; valve length 74–103.5 μm , valve breadth 6.5–8.0 μm .

Eunotiaceae

17. *Eunotia bilunaris* (Ehrenberg) Schaarschmidt (1880) (Pl. 3, fig. 4)

Karthick et al. (2013), Pl. 33

Only a little section of the raphe is visible on the valve face, and the valves are lunate or curved; apices slightly swollen, rounded; striae indistinctly punctate; valve length 66–86 μm , valve breadth 2–3 μm , stria density 19–20/10 μm .

Pinnulariaceae

18. *Pinnularia cf. cardinaliculus* Cleve (1895) (Pl. 3, fig. 6)

Friedman & Potapova (2021).

The sides of a valve are almost parallel and linear. The cuneate apices are marginally wider than the valve's overall width. The linear axial region makes up around one-third of the valve width. Valve 76–123 μm long, 15–19 μm wide, and striae 8–8.5 μm

19. *Pinnularia grunowii* Krammer (2000) (Pl. 4, fig. 1)

Jüttner & Carter

Cell shape is linear with undulating margins, capitates, and subcapitate ends, 27–55 μm long, 6.5–9 μm wide; isopolar, bilaterally symmetrical; radiate striae, becoming strongly convergent at capitate valve ends.

Bacillariaceae

20. *Nitzschia palea* (Kützinger) W. Smith (1856) (Pl. 4, fig. 6)

Karthick (2013), Pl. 118

From linear-lanceolate to linear or lanceolate, the valve appears; the poles are thin with apices subcapitate or weakly capitate; the marginal raphe is supported by a short block; the valve is 27.5–47.5 μm long and 3.5–5 μm wide.

Cymbellaceae

21. *Encyonema silesiacum* (Bleisch) D.G. Mann (1990) (Pl. 4, fig. 5)

Karthick et al. (2013), Pl. 100.

Widespread dorsiventral valves with a little center expansion; blunt tip, rounded, and not extended; linear axial region and tapering, lanceolate central portion. Valve length 37.5–68.0 μm , Valve breadth 10.0–13.5 μm , and stria density 7–11/10 μm .

Scenedesmaceae

22. *Scenedesmus obtusus* var. *apiculatus* (West & G.S. West) P.M. Tsarenko (2000) (Pl. 8, fig. 5)

West & West (1984), P. 16, Pl. 2, Fig. 38

Colonies enclose 4–8 cells; fusiform, ellipsoid, oblong-ellipsoid to ovoid-shaped cells with obtuse poles; Colonies aggregated in syncoenobia; Cells measure 4.5–7.9 μm in width and 10–16.7 μm in length.

Hydrodictyaceae

23. *Pediastrum tetras* (Ehr.) Ralfs. (Pl. 8, fig. 6)

Prasad & Misra, (1992), P. 11, Pl. 1, Fig. 9

Circular colonies with 8 cells lacking intercellular spaces and perforation on wall; outer side of marginal cell with a deep, cuneate incision up to the middle of cell; size of colonies 24–26.5 μm , cell length 7.0–9.0 μm & lat. cell. 8–9.5 μm

Spirogyraceae

24. *Spirogyra* sp. Link (1820) (Pl. 8, fig. 4)

Rai & Rai (2026). Enumeration of Freshwater . . .

Prasad & Misra (1992), P. 77.

Simple, unbranched filaments, with short to very long cylindrical cells; chloroplasts 1–16 parietal ribbon-like, spiral, or sporadically nearly straight, with multiple prominent pyrenoids; the nucleus positioned in the middle of the protoplasmic strand.

Gonatozygaceae

25. *Gonatozygon monotaenium* De Bary (1858) (Pl. 8, fig. 1-3)

Kalina; Walne & Houk, (2001), P. 121; Das & Keshari, P. 142, Pl.XXVII, Fig.455, 456. cylindrical apices, occasionally curved cells truncated and somewhat dilated; 10 times longer than broad; chains of 4–8 cells; two axial in each cell; undulate chloroplasts with three to four pyrenoids; cell 105–112µm long, 9–10µm broad, & apex 6–8µm.

Closteriaceae

26. *Closterium diana* Ehrenberg ex Ralfs (1848) (Pl. 8, fig. 7)

Prasad and Misra (1992), P. 105, Pl. 16, Fig. 7.

Medium-sized cells with a smooth cell wall and 9–10 times longer length than breadth; chloroplasts with 6–8 pyrenoids arranged in a row; cells 105–303 µm long and 16–35 µm broad.

27. *Closterium diana* var. *arcuatum* (Brebisson ex Ralfs) Rabenhorst (1868) (Pl. 9, fig. 5-6)

Croasdale & Flint (1986), P. 58, Pl.

This variety is characterized by its greater curvature (130-176°) and, in general, dimensions greater than 250x20µm.

28. *Closterium ehrenbergii* Meneghini ex Ralfs (1848) (Pl. 9, fig. 4)

Scott & Prescott (1961), P. 11, Pl. 2, Fig. 2; Prasad & Misra (1992), P. 106, Pl. 17, Fig. 1, 2

Large cells, 6-8 times longer than broad, moderately curved, inner margin concave; however, inflated in the center; chloroplast with 6-8 bands and numerous scattered pyrenoids; cells 450-530 µm long, 65-80 µm broad.

Rai & Rai (2026). Enumeration of Freshwater . . .

29. *Closterium gracile* Brébisson ex Ralfs (1848) (Pl. 10, fig. 1-4)

Oliveira, Bicudo & Moura, P.122, Fig.23

The semi-straight cells have an apex width of 2.5–4 μm , are 112.5–200 μm long, 3.5–6 μm wide, and are 30- 33 times longer than wide; cells with a convex dorsal margin, a straight ventral margin in the middle region, and a slight apical region curve.

30. *Closterium setaceum* Ehrenberg ex Ralfs (1848) (Pl. 10, fig. 5-6)

Oliveira, Bicudo & Moura, P.122, Fig.23

Fusiform-lanceolate-shaped cells with 255-350 μm length, 10-20 μm in width, and 2.5-3 μm at the apex; nearly straight dorsal and ventral margins, with equal convexity; and a fusiform middle region.

31. *Closterium cf. striolatum* Ehrenberg ex Ralfs (1848) (Pl. 11, fig. 1-3)

Croasdale and Flint (1986), P., Pl.10, Figs. 1, 2

Apices of cells are broadly truncate with rounded angles, sometimes slightly capitulate with thickened walls; cell wall brownish with girdle bands, striae, 5-10 striae in 10 μm , mostly punctate between striae.

Desmidiaceae

32. *Pleurotaenium ehrenbergii* (Ralfs) Delponte (Pl. 11, fig. 4-5)

Croasdale & Flint (1986), P. 71, Pl.14, Fig. 8; Das & Keshari (2016), P. 155, Pl. XXIV, Fig. 397, 398.

Slightly constricted large cells and 13–15 times longer than broad; semicells with one or two smaller swellings; the wall is punctate, and the semicell margins are tapered slightly to a rounded shape. The cells are 621–626 μm long and 23–30 μm broad, and the chloroplast is organized into longitudinal bands, with four parietal bands in the face view and several pyrenoids.

33. *Euastrum binale* (Turp.) Her. ex Ralfs, Plate 22, fig. 8

Suseela & Toppo, (2007), P. 109, Pl. 1, Fig. 7

Semicells have concave sides above a big, truncate apex, complete, broadly rounded basal angles, and usually acute outer angles, giving them a subpyramidal appearance. There is a slight center protuberance and no decoration on the face. The zygospore appears globose and contains several blunt spines. It has spines that measure 5.7 to 11.6 μm and a diameter of 20 to 26 μm .

34. *Cosmarium auriculatum* Reinsch (1875)

Prasad & Misra (1992), P. 153, Pl.22, Fig. 14

Semi-elliptical, with five undulating sides with sharp, pointed ridges and a thin, straight apex; cell wall arranged in transverse series; cell length: 41.5-45 μm ; cells are tiny, with a shallow constriction at the middle, an open sinus outward, and a rounded apex.

35. *Cosmarium blytii* Wile forma Croasdale (Pl. 12, fig. 4-5)

Prasad & Misra (1992), P. 155, Pl. 24, fig. 2, 3.

Each semicell of Forma has six somewhat elongated granules around the center granule, with marginal crenations not being as noticeable. The chloroplast axial filament has a single central pyrenoid, and the cell is 16.5 μm long, 13 μm wide, with an isthmus of 3 μm .

36. *Cosmarium cf. lundellii* Delp. (Pl. 12, fig. 6-8)

Prasad and Misra, 1992, P. 163, Pl. 22, fig. 1, 5.

Medium-sized cells are somewhat shorter than they are wide, highly constricted, and almost linear. Semicells feature a sub-semicircular to sub-pyramidal shape, a rough punctuation pattern on the cell wall, and a spherical basal angle. The dimensions of the cell are 20.5-23 μm in height, 51-56 μm in breadth, and 62.5-71 μm in length.

37. *Cosmarium circulare* Reinsch, nom. illeg. 1867 (Pl. 13, fig. 1-2)

Prasad and Misra, 1992, P. 156, Pl. 22, fig. 8

Semicircular, sinusoidally linear, and closely spaced are the typical characteristics of semicells. Each semicell has two pyrenoids, a rigid chloroplast axis, and visible cell wall punctures. Cell length: 70.5 μm , lat. cell: 59 μm , isthmus length: 21 μm .

Rai & Rai (2026). Enumeration of Freshwater . . .

38. *Cosmarium connatum* Brébisson ex Ralfs (1848) (Pl. 13, fig. 3-4)

Prasad and Misra, 1992, p.157, pl.23, fig.10, 15; Croasdale, H. & Flint, E.A., 1988, p.60, pl.37, fig. 30

Semicells that are transversely subelliptic with a rounded or slightly flattened apex; subcircular in end view; walls that are relatively thick, delicately scrobiculate, and punctate; chloroplasts with two pyrenoids and with more than one; cells 60-105 X 42-90 μm (c. 1.3 $\times$), with a very shallow and wide-open sinus at the isthmus 31-71 μm .

39. *Cosmarium obsoletum* (Hantzsch) var.*sitvense* (Gutw.) Krieger (Pl. 13, fig. 5-7)

Prasad & Misra, 1992, P. 171, Pl.22, fig. 13; Scott, A.M. & Prescott, G.W., 1961, pp. 63- 64, Pl.25, fig. 11, Pl. 26, fig. 2

With the broadest part in the center, the cell has a larger, almost round shape, thick, mucrate basal angles, and somewhat broader apices. At 55 μm for cell length, 69 μm for lat. cell, and 31 μm for lat. isthmus, the cell wall is strongly punctuated.

40. *Cosmarium obtusatum* (Schmidle) Schmidle 1898, (Pl. 13, fig. 8)

Croasdale & Flint, 1988, P. 81, Pl. 36, fig. 14-16

The cells are sinus-deep, closed but dilated within, 48-60 (87) $\times$ 41-50 (54) μm in size, and 15-18 μm thick at the isthmus. Semicells can be semicircular or truncate-pyramidal with rounded angles, and they have two pyrenoids. The globose zygospore is 42–45 μm in diameter (ssp) and 57–62 μm in csp, with numerous sharp, conical spines.

41. *Micrasterias zeylanicavar.rectangularis* A.M.Scott & Prescott 1961 (Pl. 14, fig. 3)

Das & Keshari, 2016, P.150, Pl. XXX, fig. 517, 518; Croasdale & Flint, 1986, p. 102-110, Pl. 24, fig. 3,4 ; Scott & Prescott 1961: 53, pl. 21: figs 5-7

The sinus has a pointed inner terminal and is open, deep, acuminate, and triangular. It is made up of tiny, somewhat longer-than-wide cells. Cells are between 60 and 62 μm wide and between 62 and 65 μm long. The sinus has a pointed inner terminal and is open, deep, acuminate, and triangular. It is made up of tiny, somewhat longer-than-wide cells. Cells are between 60 and 62 μm wide and between 62 and 65 μm long.

Rai & Rai (2026). Enumeration of Freshwater . . .

42. *Staurostrum forficulatum* var. *verrucosum* Grönblad (1920) (Pl. 14, fig. 4-5)

Grönblad 1920, P.64, Pl. 3, Figs. 47, 50-51.

Semicells are small, about 1.5 times longer than wide, constricted, deep, and have a sinus that is sharply open but pointed at the apex. They are elliptical or subtrapeziform, with slightly convex tips, and four short emarginate spines arranged in protrusions on the upper and lower margins with two to three warts at the margin. The dimensions of cells are 14 μm in breadth, 39 μm in width, and 47.6 μm in length.

43. *Staurostrum lunatum* Ralfs (1848) [Recent name: *Staurostrum avicula* var. *lunatum* (Ralfs) Coesel & Meesters (2013)] (Pl. 14, fig. 6)

Croasdale, Flint & Racine, P. 111, Pl.83, Fig. 4- 6

With an isthmus of 10–15 μm and a width equal to their length, cells are quite densely packed. From the inside, the sinus opens wide. Semicells are semicircular or shallowly cup-shaped, with a strong spine that extends obliquely upward, an obtuse angle, a strongly convex ventral edge, and a slightly convex apex.

44. *Staurostrum muticum* Brébisson ex Ralfs 1848 (Pl. 14, fig. 7-8)

Das & Keshari, 2016, P.168, Pl. VII, Fig. 223-225

Medium-sized cells are slightly longer than broad. From a vertical perspective, the cells are triangular, narrowly rounded at the angles, and have heavily perforated cell walls. The cell width is 19–21 μm , the cell length is 21–22 μm , and the isthmus is 7- 8 μm .

Zygnemataceae

45. *Cylindrocystis brebissonii*(Ralfs) De Bary 1858(Pl. 15, fig. 1)

Croasdale & Flint, 1986, P. 34, Pl. 1, fig. 15, 16.

The cylindrical cells measure 26- 87 $\times$ 14- 22 (35) μm (2-4X) and contain widely rounded apices. Although they can occasionally be extended, chloroplasts are axially orientated and usually feature a few large rays and huge central pyrenoids. Zygosporos have a diameter of 26–62 μm and are subspherical to quadrate.

Mesotaeniaceae

46. *Netrium digitus* (Ehr.) Itzigs.et Rothé (Pl. 15, fig. 2)

Prasad & Misra, 1992, P. 89, 90, Pl.15, fig. 2

The medium-sized cells are oblong-elliptic, non-constricted, four to five times as long as broad, and have convex edges that gradually attenuate towards rotundo-truncate apices. Chloroplasts feature longitudinal plates and deeply serrated borders, while cell walls are smooth. Latitude: 41-44.5 μm ; Apex: 15-16.5 μm ; Length: 171-204 μm .

Dinobryaceae

47. *Dinobryon sertularia* Ehrenberg 1835 (Pl. 15, fig. 3-4)

Prescott, 1951, P. 378, Pl. 98, Fig. 10

With a smooth, convex lateral boundary that narrows above the mid region before flaring slightly to a large mouth and a blunt-pointed posterior, colonies eventually diverge; they resemble loricas fusiform-campanulate. colonies with dimensions of 10–14 μ in diameter and 30–40 μ in length.

Euglenaceae

48. *Trachelomonas armata* Ehrenberg (1834) (Pl. 15, fig. 6)

Prescott, 1951, P. 410, Pl.83, fig 32

The flagellum opening is surrounded by a circle of straight spines, while the cells themselves are roughly elliptical in shape. The cell, which is 22 μ in diameter and 38–40 μ long, has spines. The wall seems spiny at the front, with long spines pointing backward at the back and a poorly distributed spine in the middle.

49. *Trachelomonas intermedia* P.A.Dangeard 1902 (Pl. 15, fig. 7)

Prescott, 1951, P. 415, Pl.83, fig. 10

The cells are oval to subspherical in shape, with a small anterior narrowing; the flagellum aperture is thickened but lacks a clear collar; and the wall is black and heavily perforated. The cell is 16–18 μ in diameter and 20–25 μ in length.

50. *Euglena proxima* Dangeard 1902 (Pl. 16, fig. 1)

Rai & Rai (2026). Enumeration of Freshwater . . .

Prescott, 1951, P. 394, Pl.85, fig. 25

Cells with a large chloroplast, a disc that is irregularly shaped, spiral-striped periplasts, fusiform cells that are constricted posteriorly to a blunt tip, and tiny rods scattered all over the cell. Cells with dimensions of 14.5–19–(21) μm in diameter and 50–70–85–95 μ in length.

Phacaceae

51. *Phacus longicauda* (Ehrenb.) Dujardin 1841 (Pl. 16, fig. 2)

Prescott, 1951, P. 400, Pl.87, Fig. 1

The cells appear to be broadly ovoid to pyriform, tapering gradually posteriorly to create a long, straight, sharply pointed caudus, and the periplast is longitudinally striated. The flagellum is shorter than the cell length. Cells vary from 4 to 70 μ in width and 85 to 170 μ in length.

52. *Phacus orbicularis* Huebner 1886 (Pl. 16, fig. 3-4)

Presscott, 1951, P. 401, Pl. 87, fig. 10

The cells are orbicular in shape and spherical on the front. The flagellum is twice as long as the body, the periplast has fine longitudinal striation, and the paramylon bodies are two disc-shaped plates with a short caudus that curves to the right when viewed ventrally. The cells are 39–45 μ in diameter and 60–70–100 μ in length.

Figure 1

1. *Aphanothece stagnina*; 2. *Kirchneriella lunaris*; 3. *Dictyosphaerium pulchellum*; 4. *Sphaerocyttis schroeteri*; (5-6) *Ankistrodesmus falcatus*; 7. *Anabaena* sps.; 8. *Navicula rostellata*; 9. *Gomphonema pseudoaugur*; 10. *Oscillatoria crassa*; 12.

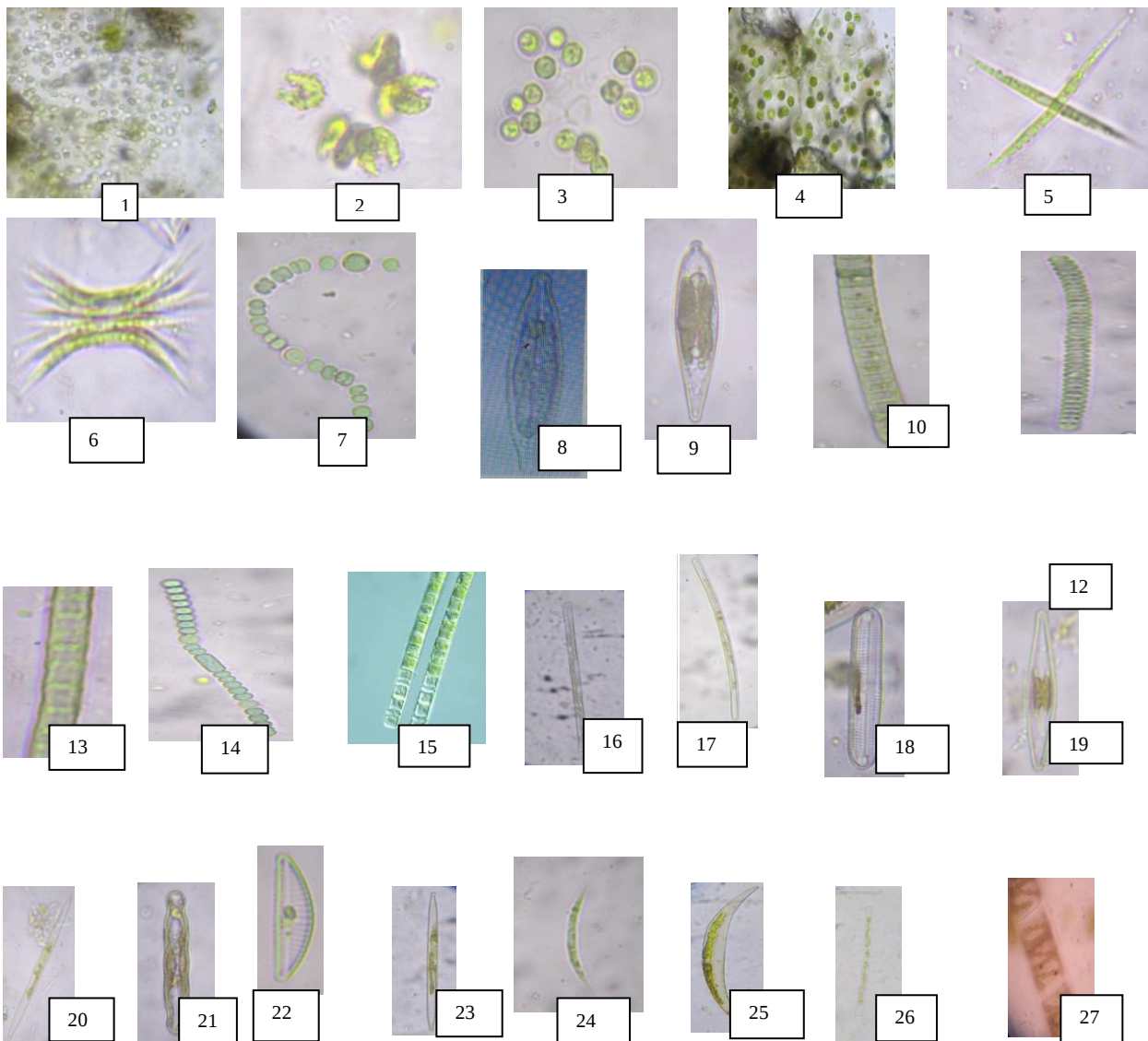
Johannesbaptistia; 13. *Oscillatoria* sp.; 14. *Anabaena inaequalis*; 15. *Aulacoseira granulate*; 16. *Ulnaria ulna*; 17. *Eunotia bilunaris*; 18. *Pinnularia cardinaliculus*; 19. *Gomphonema acidoclinatum*; 20. *Nitzschia palea*; 21. *Pinnularia grunowii*; 22.

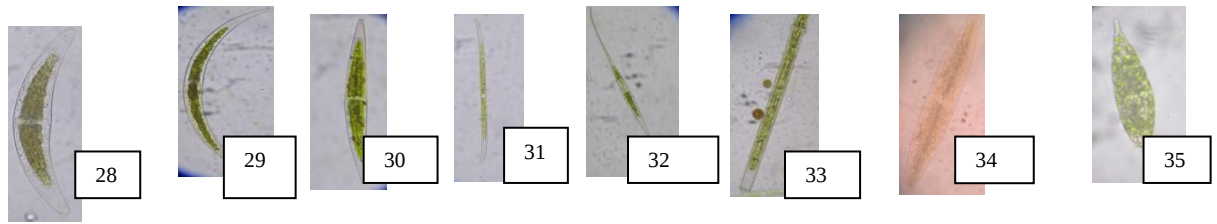
Encyonema silesiacum; 23. *Ulnaria ulna*; 24. *Monoraphidium griffithii*; 25. *Closterium diana*; 26. *Gonatozygon monotaenium*; 27. *Spirogyra* Sp.; 28. *Closterium ehrenbergii*;

Rai & Rai (2026). Enumeration of Freshwater . . .

29. *Closterium diana* var. *arcuatum*; 30. *Closterium striolatum*; 31. *Closterium gracile*;
32. *Closterium setaceum*; 33. *Pleurotaenium erenburgii*; 34. *Netrium digitus*; 35.

Euglena proxima

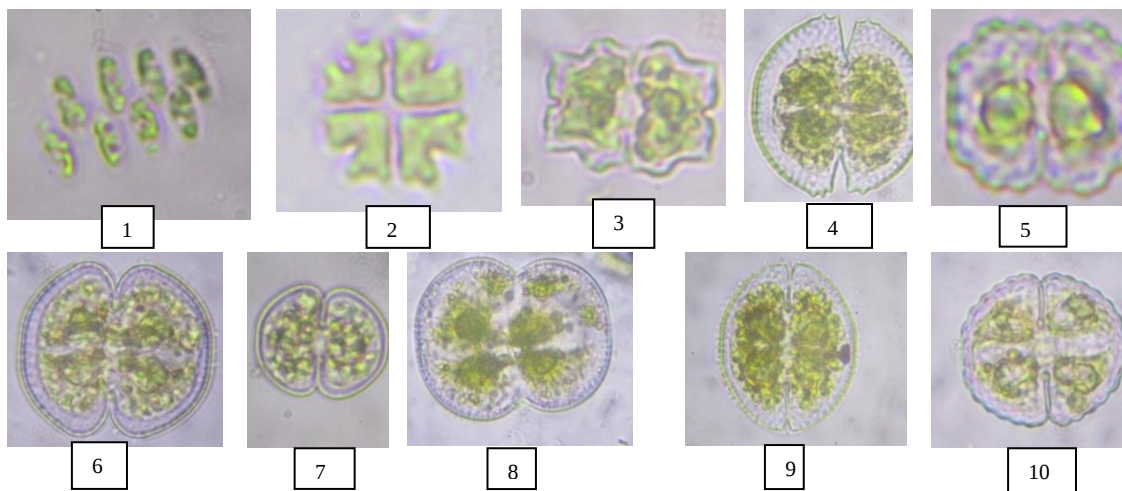


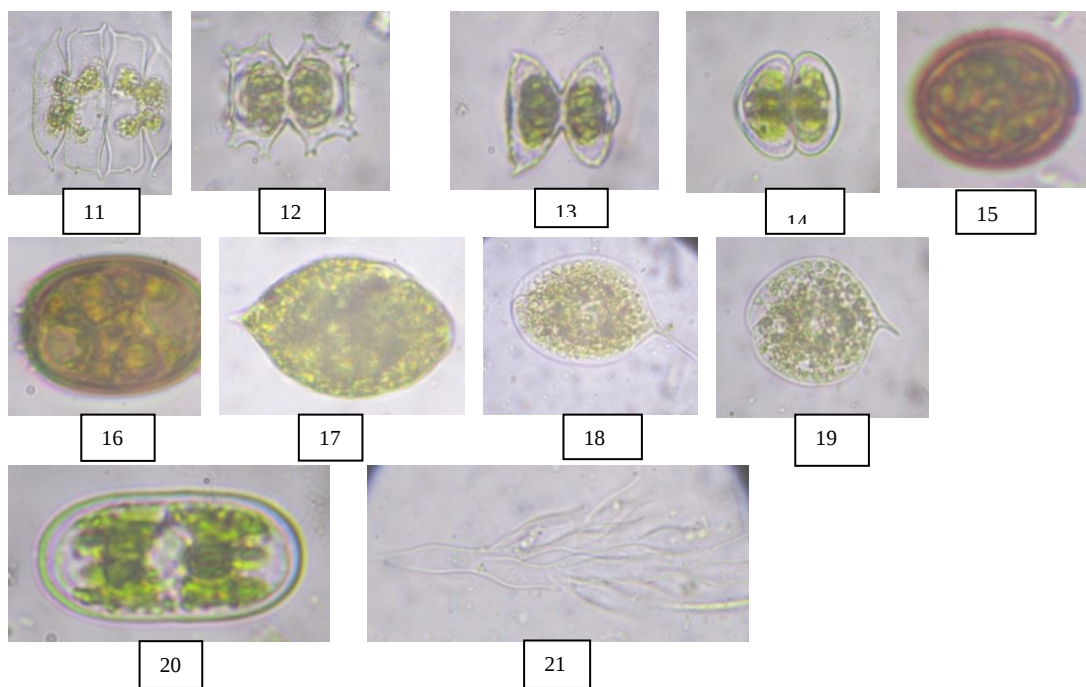


Photoplates continued

Figure 2

1. *Scenedesmus obtusus*; 2. *Pediastrum tetras*; 3. *Euastrum binale*; 4. *Cosmarium auriculatum*; 5. *Cosmarium blyttii*; 6. *Cosmarium cf. lundellii*; 7. *Cosmarium circulare*; 8. *Cosmarium connatum*; 9. *Cosmarium obsoletum*; 10. *Cosmarium obtusatum*; 11. *Microsterias zeylanica* var. *rectangularis*; 12. *Stauroastrum forficulatum* var. *verrucosum*; 13. *Stauroastrum lunatum*; 14. *Stauroastrum muticum*; 15. *Trachelomonas intermedia*; 16. *Trachelomonas armata*; 17. *Euglena proxima*; 18. *Phacus longicauda*; 19. *Phacus orbicularis*; 20. *Cylindrocystis brebissonii*; 21. *Dinobryon sertularia*





Conclusion

While fewer algal taxa were found in the lake's lentic habitat, the aquatic environment of Rasa Tal has more freshwater algae in the lotic water flowing through the lake's northern stream channel. It might suggest that, to grow and develop properly, freshwater algae need bodies of water that are both fresh and moving.

Acknowledgments

We are very grateful to the Department of Botany, Degree Campus, Biratnagar, for providing laboratory facilities. We would like to thank the Research Management Cell (RMC) of Sukuna Multiple Campus for providing funds to carry out this mini-research work.

Conflict of interest

The author declares no conflict of interest.

References

- Adhikari, K. (2016). Diatoms of Haseena Wetland, Morang, Nepal. Department of Botany, Post Graduate Campus, TU. (M.Sc. Thesis)
- Bruehl, P. & Biswas, K. (1926). Algae of Loktak lake. *Mem. Asiatic. Soc. Bengal* 8(3): 257-315. Caduto, M.J. 1990. Pond and Brook: A Guide to Nature in Freshwater Environments. Prentice Hall, Inc. Englewood Cliffs, N.J.
<https://www.amazon.com/Pond-Brook-Freshwater-Environments-1990-03-15/dp/B01FGKW0P6>
- Carter, N. (1926). Fresh water algae from India. *Records bot. Surv. India* 9(4): 263-302.
https://www.algaebase.org/search/species/detail/?species_id=tfe14fed634a0868e
- Chatterjee, G. & Raziuddin, M. (2006). Status of water body in relation to some physicochemical parameters in Asansol Town, West Bengal. *Proceedings of the Zoological Society of India* 5(2): 41-48.
- Croasdale, H. & Flint, E.A. (1988). *Flora of New Zealand, Freshwater algae, Chlorophyta, Desmids with ecological comments on their habitats*. Vol. II. Botany Division, D.S.I.R., Christchurch, New Zealand.
<https://phoenixbooksnz.com/products/flora-of-new-zealand-desmids-volume-ii-signed-by-flint>
- Croasdale, H. & Flint, E.A. (1986). *Flora of New Zealand, Freshwater algae, Chlorophyta, Desmids with ecological comments on their habitats*. Vol. I. Wellington, Govt. Print, New Zealand.
https://books.google.com.np/books/about/Flora_of_New_Zealand_Freshwater_algae_ch.html?id=rabwAAAAMAAJ&redir_esc=y
- Desikachary, T.V. (1959). *Cyanophyta*. Indian Council of Agricultural Research (I.C.A.R.) *Monograph on algae*, New Delhi. 686p. Desikachary, T.V. (1959). *Cyanophyta*. Indian Council of Agricultural Research (I.C.A.R.) *Monograph on algae*, New Delhi. 686p
- Rai & Rai (2026). Enumeration of Freshwater . . .

- Foged, N. (1980). Diatoms in Egypt. *Nova Hedwigia*33(1-4): 629-675-707.
- Foged, N. (1982). Diatoms in Human Tissue. *Nova Hedwigia*36(2-4): 345-379.
- Fritsch, F.E. & Rich, F. (1937). Contribution to our knowledge of the fresh water algae of Africa xii. Algae from Belfast Pan Transuaal. *Trans. Roy. Soc. S. Africa* 25(2): 153-288.<https://philpapers.org/references/FRICTO-2>
- Gandhi, H.P. (1999). *Fresh water diatom of Cental Gujrat*. B. Singh and M.P. Singh, Deharadun, India. 324p.<https://www.amazon.com/Fresh-Water-Diatoms-Central-Gujarat-Review/dp/8121101484>
- Geitler, L. (1932). *Cyanophyceae in Rabenhorst's Kryptogamen flora*, Leipzig 14. 1196p. <https://bibdigital.rjb.csic.es/en/records/item/10392-rabenhorst-s-kryptogamen-flora-zweite-auflage-band-14?offset=40>
- Hendy, N.I. (1964). *An introductory account of the smaller algae of British coastal water, Part V, Bacillariophyceae (Diatoms)*. H.M.S.O., London.
- Prasad, B.N. & Misra, P.K. (1992). *Fresh water algal flora of Andaman and Nicobar Islands*, Vol. II, B. singh & M.P. Singh Publ., Dehradun, India.https://books.google.com.np/books/about/Fresh_Water_Algal_Flora_of_Andaman_and_N.html?id=BilHAAAAYAAJ&redir_esc=y
- Prescott, G.W. (1951). *Algae of the western great lakes area*. WM.C. Brown Publishers, Dubuque, Iowa.<https://www.biodiversitylibrary.org/item/23616#page/5/mode/1up>
- Prescott, G W (1969). *The algae: A review*. Thomas Nelson and Sons Ltd; London, UK; 436p. <https://www.abebooks.com/first-edition/algae-review-Prescott-G.W-Nelson/30474647982/bd>
- Rajopadhya, R. (2016). Some freshwater algae from Bagh-Jhoda wetland, Morang. Department of Botany, Post Graduate Campus, TU. (M.Sc. Thesis)
- Rai, S K & Rai, R K (2005) Some bacillariophycean algae from Biratnagar, Nepal. *Ecoprint* 12:71–76.
- Rai & Rai (2026). Enumeration of Freshwater . . .

- Rai, SK & Rai, R K (2007) Some euglenophycean algae from Biratnagar, Nepal. *Our Nature* 5:60–66.
- Rai, S K (2011) Algal flora of Betana wetland, Morang, Nepal. *Nepalese Journal of Biosciences* 1: 104–113.
- Rai, S K (2013b) Algal flora of Koshi Tappu Wildlife Reserve including some new species to Nepal. *Nepalese Journal of Integrated Sciences* 3: 26–32.
- Rai, S.K. & Rai, D.R. (2018). Freshwater Algae (Excluding Diatoms and Red Algae) form Hasina Wetland, Sundarharaicha, Morang, Nepal. *Himalayan Journal of Science and Technology*, 2 ,1-12. Dharan: Central Campus of Technology.
https://www.researchgate.net/publication/331274888_Freshwater_Algae_Excluding_Diatoms_and_Red_Algae_from_Hasina_Wetland_Sundar_Haraicha_Morang_Nepal
- Scott, A.M. & Prescott, G.W. (1961). Indonesian desmids. *Hydrobiologia*, 17(1-2), 1-132.
- Stoermer, E.F. (1977). Phytoplankton assemblages as indicators of water quality in the Laurentian Great lakes. *Trans. Amer. Micros. Soc.* 96: 2-16.
- Sharma, O P (1992). *Text book of algae*. Tata McGraw-Hill Publishing Company Limited; New Delhi, India. <https://search.worldcat.org/title/Textbook-of-algae/oclc/773210581>
- Turner, W.B. (1892). The fresh water algae of East India. *Kongl. Sv. Vet. Akademiens Handlingar*. 25(5): 1-187.
- West, W. & West, G.S. (1902). A contribution to the freshwater algae of Ceylon. *The transactions of the Linnean Society of London*. Vol. VI, Part 3. <https://academic.oup.com/transactionslinneanbot/article-abstract/6/3/123/2410674>

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 81 – 110 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Fermenting Livelihoods: Exploring the Role of Millet Liquor Production in Rural Household Economies

Doi: <https://doi.org/10.3126/ajos.v6i1.98110>

Hom Bahadur Magar

Sukuna Multiple Campus

Sundarharaincha, Morang, Nepal

homthapa2@gmail.com

Abstract

Millet liquor (*kodo ko rakshi*) is a traditional household production process and an integral part of the traditions among rural people of Nepal which plays a significant role in their livelihood. But little study has focused on its total economic value, the gender of workers involved in its organization and intergenerational transfer of knowledge within rural household economies. The socioeconomic, cultural, gender and livelihood importance of millet liquor production in Kanepokhari Rural Municipality, Morang, Nepal has been studied. It is based on the descriptive analytical research design following method of qualitative techniques. The methodology involves a purposive sampling, Semi- structured, in-depth interview, participant observation, field notes of seven participants aged 38-52 years. The results indicated that the production of millet liquor provided 35% – 75% of the household income while supplying the food, education and healthcare needs, and other requirements of the household. Women were at the core of the brewing process, earning income, decision making and the passing down of indigenous knowledge. Capabilities to do with climate, communication inside the home, trust, and social networking within the community strengthened livelihood

Magar (2026). Fermenting Livelihoods: Exploring

resilience, while important limitations were high input prices, shortage of fuel, climate sensitivity during fermentation, and market and policy limitations. The study demonstrates that the production of “millet liquor” is an important rural livelihood system in the cultural context, and the need to regulate it with sensitivity to the local context, to establish producer cooperatives, to strengthen linkages with markets and to acknowledge women's economic and cultural value.

Keywords: Millet liquor, rural livelihoods, informal economy, feminist economics, Indigenous knowledge

Introduction

Rural households have a lot of different livelihood activities to deal with low pay, seasonal income, and economic uncertainty. In agriculture, the family combines farming, wage labour, livestock rearing, petty trade, and home-based production to meet daily requirements in villages. The Sustainable Livelihoods Approach is based on the use of human, social, natural, physical, and financial resources social and institutional contexts, as well as how people can use and make use of these resources in this way (Scoones, 1998; Bebbington, 1999). Small-scale household production can be a key factor for income diversification and rural economic sustainability.

Millet is related to the rural food system and the indigenous livelihood practices. Finger millet (*Eleusine coracana*), known locally as kodo, is widely used in Nepal for food and traditional beverages. The Food and Agriculture Organization (FAO, 2023) cites millet as a climate-resilient food source that could contribute to sustainable food security, smallholder livelihoods and local value addition. In some indigenous communities of Nepal, millet is distilled into kodo ko rakshi, a popular distilled liquor associated with festivals, rituals, marriage ceremonies, hospitality, and community meetings. So, millet liquor is cultural and economic.

Millet liquor production is also an important home-based business. In this research, millet liquor production is the small-scale household processing of millet into traditional alcoholic beverages for local consumption and exchange. The rural household economy consists of the income sources, labour, assets, social relations, and expenditure strategies families use to sustain their livelihoods. Because the production of traditional liquor is often carried out outside official business systems, it is part of the informal rural economy. Women frequently do home-based productive work that is rarely reported in formal employment statistics (Chant & Pedwell, 2008).

The Sustainable Livelihoods Approach provides a useful tool for understanding this activity. Scoones (1998) contends that rural households develop livelihood strategies by combining resources in response to vulnerability and changing economic circumstances to meet their needs. Bebbington (1999) also argues that livelihoods are not merely a source of income but also individual capabilities and participation in social and institutional life. These views suggest that millet liquor production can be not only alcohol production but also an income generation strategy in the home, and hence a way for the family to be able to make money and handle economic insecurity.

The study of traditional beverage production indicates that traditional beverage production may contribute to household income and financial participation in the lives of women. Kayodé et al (2011), in a study of the production of household sorghum beer in Benin, found that traditional beverages were found to have social and income-generating functions. In the same spirit, McCoy et al. (2013) identified alcohol production as an adaptive livelihood strategy for women farmers in Tanzania. Their study also pointed out the health and social effects of traditional alcohol production and the need for a careful study of economic benefits and wider threats.

In Nepal, Rajbanshi A (2005) investigated the livelihoods of women who made homemade chhyang and raksi and pointed out the economic benefits of traditional Magar (2026). Fermenting Livelihoods: Exploring

beverage production. Shrestha (2021) also explored traditional alcohol making as a source of sustainable rural livelihood and found both job prospects and institutional challenges. But there is another prominent stream of Nepalese research which focuses mainly on the types, ingredients, and ethanol content of homebrewed alcoholic beverages (Thapa et al., 2015). While these studies are important from a public health perspective, they do not have much to do with household economic relationships for traditional liquor production.

Although millet has gained a lot of attention as a climate-resilient and economically crucial crop, studies have often focused on cultivation, nutrition, food security, and formal farming value chains. Little is known about how rural communities turn millet into culturally relevant products such as traditional liquor and use it to supplement their income. Other studies have also discussed women's involvement and the chance of homemade alcohol being a source of income, yet few studies have combined household income and livelihood diversification, gendered labor, indigenous knowledge, and institutional challenges in Nepal.

In addition, it is not known how millet liquor production income impacts food expenditure, education of children, health, and home economy. Previous research did not focus on the role of who oversees production, income, and how technical knowledge flows between generations. In addition, rural producers with the challenges experienced by market access, regulatory uncertainty, ecological constraints, and changing social attitudes are not well-studied. The situation is particularly acute in Kanepokhari Rural Municipality in Morang District, where indigenous communities have always made millet liquor as part of their traditional culture and economy.

Therefore, this study looks at millet liquor production as a culturally embedded, gendered, and informal rural livelihood activity. The purpose of this study is to understand the socioeconomic and cultural nature of millet liquor production in rural

Magar (2026). *Fermenting Livelihoods: Exploring*

household economies and its impacts on household income and livelihood diversification. This research also investigates labour and economic decision making in the gender perspective, indigenous and intergenerational knowledge and market, environmental and institutional and regulatory problems faced by producing households.

The study answers four research questions: What is the contribution of millet liquor production to household income, livelihood diversification and economic security? What are the gender divisions of production responsibilities, income control and household decision making? How does indigenous knowledge and knowledge from elders contribute to the sustainability of millet liquor production? Which market, environmental, institutional and oversight problems do households encounter in this activity?

This research adds to rural livelihood research by examining an informal economic activity that is not adequately explored in the mainstream rural development literature. It connects the Sustainable Livelihoods Approach to a culturally embedded form of household production and focuses on women's labour, indigenous knowledge, and informal economic participation. The investigation provides context-specific evidence from Kanepokhari Rural Municipality and is an addition to the limited Nepalese scholarship on traditional millet liquor as a livelihood activity. Traditional beverages such as rakshi in Nepal, tella in Ethiopia, handia in India, and chang'aa in Kenya demonstrate how craft beverages can make a shift from commerce to cultural articulation and social unity (Huang et al., 2020; Sangappa et al., 2023). They may work alongside livelihood to assist families in dealing with social and economic adversity (Yadav et al., 2024; Tiwari et al., 2022).

The research has been conducted on millet in the literature due to its adaptability and versatility. However, the emphasis on cereals, such as maize and rice, has been Magar (2026). Fermenting Livelihoods: Exploring

decreasing the interest in millet and traditional farming systems relevant to agrobiodiversity and food security (Abid et al., 2024; Kalpana et al., 2024). Gender also plays an important role in the production and processing of millets. Women are frequently involved in processing and selling millet products such as kodo ko rakshi, and their labor is still undervalued and under-celebrated (Rawat et al., 2021). This intersection of gender, agriculture and culture indicates the necessity for policy responses in which women are recognized for their role in the welfare of families and socio-economic development (Peine, 2023; Otieno et al., 2022).

Traditional fermentation practices also reflect cultural and social resilience (Douyon et al., 2022; Jackson et al., 2024). Households might derive a significant part of their income from small-scale alcohol production, and reciprocity during rituals and ceremonies can help to preserve social relationships and communal cohesion (Miller et al., 2023). Craft liquor production can be seasonally volatile, and market entry is often limited by economic and legal barriers (Kaphle et al., 2022; Gao et al., 2022; Pathak et al., 2023).

Gender and the informal economy of alcohol show gendered opportunities for economic empowerment and also social powerlessness. Informal liquor production can generate income and give women more agency and autonomy in the decision-making of household business and the life of their household, yet this work is not well considered in the formal social, legal, and economic framework (Wang et al., 2021; Abid et al., 2024). So, producers are vulnerable to health, economic, and regulatory failure. In addition, recent research has shown that informality should not be seen only as evidence of poor economic performance or lack of regulation but rather as an informal system that helps rural communities' buffer against economic threats in places where the formal world is weak (Frosch, 2024; Xheneti & Madden, 2024).

The impact of rural artisans with respect to regulation of alcohol manufacturing is quite complex taxation and authorizations, along with licensing and prohibition, market entry barriers and loss of activities licenses and case studies (Frosch, 2024) Health of the general public and local customs is a delicate matter and therefore regulation lacks focus and is only a cursory response towards the prevailing social and the even more complicated economic realities (Laudien et al, 2022, Frosch, 2024).

Although substantial literature exists on millet and artisanal liquor production, notable gaps continue. Most rural economy research is conducted by urban-based academics, which can distance them from direct engagement (Huang et al., 2020). Little research examines the income potential of liquor production over time, especially from a female perspective (Laudien et al., 2022). A few studies also link economic impact to millet processes, such as sewing, drying, and storage. This spotlights the requirement for thorough research on the millet value chain. An evident lack of in-depth studies on class, caste, and youth agency in millet and liquor production is also evident. This weakens the analysis of the rural socioeconomic dynamics of millet liquor production.

The study “Fermenting Livelihoods” aims to fill these gaps by exploring the socio-economic and gender relations of millet liquor production in Nepal. It will highlight the economic value of kodo ko rakshi and the contributions of women to the brewing process, as well as the sociolegal structures that the producers navigate. Ultimately, the study intends to demonstrate the significance of millet liquor production and expand the understanding of its capacity to boost rural economies.

The Sustainable Livelihoods Approach (SLA), Feminist Economics, Native Knowledge Systems, and the informal economy perspectives that are employed in this study are integrated. The SLA describes how rural households depend on human, financial, natural, physical, and social resources to sustain livelihoods and respond to vulnerability (Scoones, 1998; Bebbington, 1999). From this perspective, millet liquor Magar (2026). Fermenting Livelihoods: Exploring

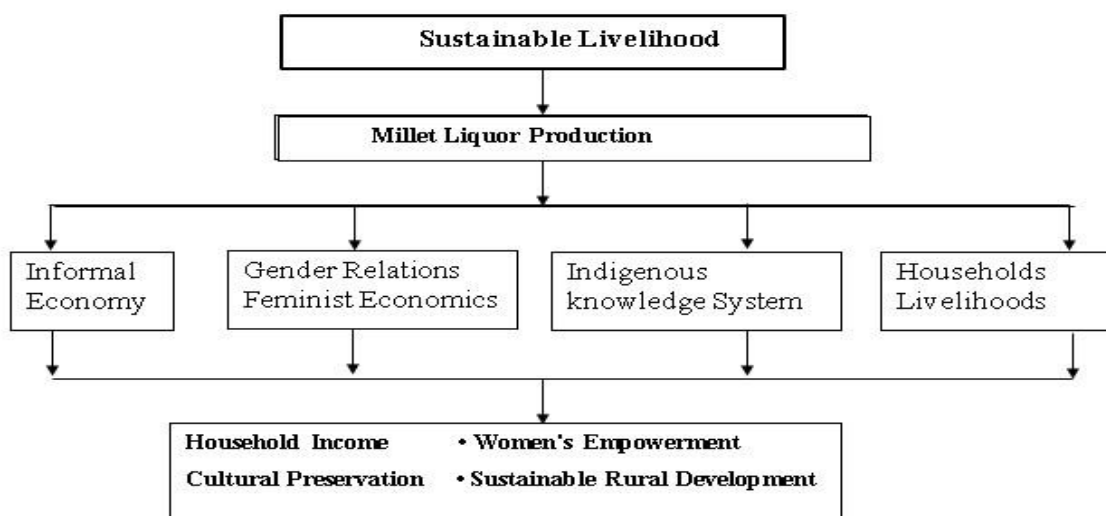
production can be seen as a livelihood diversification strategy that utilizes local resources, family labour and community networks to build income for the family and strengthen household resilience. Feminist Economics additionally underscores the often-under-seen contribution of women to household and informal economic activities such as unpaid labour, home-based production, and care work (Nussbaum, 2011; Hesse-Biber, 2013). This is a perspective that allows for a better understanding of women's roles in millet liquor production, income generation and household decision-making.

Native Knowledge Systems explain how traditional brewing knowledge, local fermentation techniques, and culturally embedded production practices are developed and transmitted from generation to generation (Tamang, 2022). The informal economy perspective provides insights into the production process of millet liquor, practically outside of the formal regulatory and statistical frameworks, where community cooperation, trust, reciprocity and networks play a significant role. The conceptual frameworks collectively developed, provide a broad picture of the millet liquor industry as a rural livelihood system, which is dependent on household incomes, gendered livelihoods, transfer of local knowledge, community engagement and policy concerns in rural Nepal.

In this research we have linked the Sustainable Livelihoods Approach (SLA), Feminist Economics, Local Knowledge Systems and the Informal Economy with the concept of framework to understand the socio-economic importance of production of millet liquor in rural Nepal. The framework emphasizes on the production of millet liquor as a multi-dimensional livelihood approach that provides livelihood income and generates indigenous cultural knowledge, women's economic participation and an informal institutional structure.

Figure 1

Integrated Conceptual Framework of Millet Liquor Production and Sustainable Rural Livelihoods



Methods and Materials

This study employed a descriptive and qualitative research design to understand the socio-cultural and socio-economic importance of Kodo Ko Rakshi (millet production). The qualitative approach was chosen to investigate the lives, practices, and livelihood strategies of the inhabitants, and the meanings they attach to their daily activities, as well as to provide a greater understanding of their livelihoods (Creswell & Poth, 2016).

The sampling method used in this study was purposive sampling, a non-probability sampling method used in qualitative research to identify knowledge-rich and experienced participants. Seven people with at least 5 years of experience in producing Kodo Ko Rakshi from Wards 4 and 6 of Kanepokhari Rural Municipality were included in the sample. They include producers, sellers, elderly people, and local knowledge of the production process. The eligibility criteria were to (i) have at least five years of

Magar (2026). Fermenting Livelihoods: Exploring

experience in millet liquor production or marketing, (ii) live in the region of study, and (iii) be willing to participate voluntarily in the study. The sample size was chosen by considering the concept of data saturation, which states that there would be no new data collected through further interviewing (Palinkas et al., 2015). The sample included males and females with different household structure, occupation and experience in liquor production by men and women in the millet industry. Some were household producers and others were local sellers, and their age ranged from 38 to 52 years. In addition, there were also experts and elders in the traditional brewing methods who were well-known in the community.

Semi-structured, in-depth interviews in the Nepali language were carried out to collect the data. Interviews lasted about 35–50 minutes and mainly discussed production practices, cultural meaning, economic role, gender roles, and challenges of Kodo Ko Rakshi production. An interview guide with open-ended questions was designed to provide a common template of open-ended questions and allow the participants to be able to discuss their experiences and perspectives. Follow-up probing questions were asked when clarification as well as additional information was needed. Interviews were audio-recorded, transcribed verbatim, and translated into English with the consent of participants. Fieldwork was conducted over a period of two months, from August to September 2025. During this time, repeated visits to participants' homes were made to see brewing activities and establish rapport with participants, which increased the credibility of the collected data.

Thematic analysis with the help of the software ATLAS. Friese (2019) was used to analyze the gathered data. Analysis included the repeated reading of transcripts, coding of meaningful statements, and identification of themes. Themes emerged from the narratives of the participants and were linked with the study objectives for gaining a

comprehensive understanding of the socio-cultural and socio-economic significance of the production of Kodo ko Rakshi.

In order to provide trustworthy findings, the qualitative quality of the study was established (Lincoln & Guba, 1985). To achieve credibility, long-term interaction with participants, triangulation of interview data with field observations and field notes, and member checks were conducted to identify what was being said in the interviews. Data collection and analysis records were documented clearly to be more reliable. Confirmability was built on reflexive notetaking as well as an audit trail that was maintained throughout the research. Transferability was achieved through providing detailed descriptions of the study setting, participants, and research procedure so that readers can assess how relevant the findings are for a similar situation.

Results and Discussion

The findings fall into five major themes which include demographic and household characteristics of the respondents; millet liquor production; their economic contributions and earnings; their labour organization and problems and future possibilities. These findings can be related to the themes of traditional production, economic needs of the households, gender relations, generational knowledge and community ties in the rural livelihood systems.

Respondents' Household and Demographic Features

The age range of participants was 38-52 years and they were actively engaged in supporting their families. Male and female producers were involved in the study and this indicates the gendered but inclusive nature of millet liquor production. Men were more likely to be located in joint family systems, while women, especially widows and women headed households, were more likely to have primary control over household economic activities.

The size of a nuclear household was typically three to four people and the size of a joint household was often six or more, covering several generations. Within a joint family, the family members worked together in the production process and also shared the earnings for household expenses, education of children etc. In contrast, women who headed small families and were widows were likely to have multiple roles of head of household and breadwinner.

The majority of the participants had finished primary or secondary school and some up to 12th grade. There was a higher likelihood of college/University education for the children of the participants. Proceeds from millet liquor making were often used to send children to school, signifying a family investment. Producers depended more on practical intergenerational knowledge than formal education to brew and these earnings allowed for higher levels of education for children.

The participants ranged from 8 to over 20 years' experience in millet liquor production. The length of this engagement was due to its economic and cultural significance. One participant explained: *I have been making rakshi for over 15 years; now my husband passed away, this is how I support my kids in their schooling.*

(Participant 3)

Millet liquor making was the main or only livelihood and source of income for some female headed and widowed households. Other participants engaged in both production and subsistence farming and/or vegetable farming or other farming activities, which resulted in more diversified family livelihoods.

Millet liquor revenue was used for food security, household consumption and education of children. In joint households pooled production income was beneficial for covering key expenses. Women's involvement in production was correlated with economic autonomy and decision-making in female-headed households. The participants also saw the production of millet liquor as cultural heritage passed down

from generation to generation. Community pride and a sense of cultural tradition remained with continued cultivation and production.

These results are consistent with the theory of SLA, which views households in the rural setting as formulating their livelihoods through combinations of assets and activities rather than having one livelihood strategy (Scoones, 1998; Bebbington, 1999). The situation in relation to female-headed households underscores the importance of Feminist Economics where economic activity at home may have an economic value even if it does not appear in the labor market figures.

Millet Liquor Production Practices

Practices of millets liquor production differed at household level regarding equipment, scale, and fermentation process. But producers used to integrate the two; that is, stability of culture and adaptability of practices. The traditional methods of preparation involved hot and cold water soaking of millet followed by cooking of millet till it burst; and adding *marcha*, local herbal starter which contains herbs and microorganisms that are used for fermentation. Information on adequate *marcha*, fermentation time, odor and nature of the product was often shared within families. As Participant 1 stated:

“Particularly with the *marcha*, which we still use at home; my mother showed me how much to mix up and when to smell.

It was stored in clay pots or drums and the mixture fermented for 15 days to three weeks. Those who continued to do so found importance in being genuine and connected to rituals, festivals and a body of inherited knowledge.

Respondents indicated a traditional distillation configuration with 3 vessels or layers. The base thick fermented millet, called *Foshi*, was fermented in the bottom layer. The middle layer, *Paini*, was a semi-liquid. The “steam and condensation chamber” (upper vessel – Baata) was used to cool the alcohol and condense the vapor.

Magar (2026). Fermenting Livelihoods: Exploring

This technology developed as a productive one and became culturally transmitted practice. Its use is one of the best examples of the transmission of technological information

Meanwhile, some households switched to blending production techniques to address increased efficiency, hygiene, storage capacity and/or production scale. Clay pots were replaced by plastic or large fermentation containers in some homes owing to their easier maintenance. Others used modern grinders, plastic sieves, and improved temperature regulation techniques. Due to scarcity of firewood and instability, LPG gas is increasingly being used for boiling.

“It was only clay pots and firewood before but as Participant 4 said, it is the same use gas for earlier they only used clay pots and firewood.

Some sources indicated production levels of between 50 and 100 litres per month, others mentioned production volumes in excess of 400–/–500 litres per year. Liquor was being distilled by small producers for their own consumption and for limited local market; large producers were distilling liquor for traders, events and community meetings. During weddings, festivals and winter months, production got increased due to increased demand. It included earthen vessels, traditional sieves and grinders as well as modern processing equipment and plastic fermentation containers.

Those producers who improved machines highlighted better storage, better hygiene conditions, more efficiency in labour use and less spoilage. Traditional clay pots and charcoal or firewood heating was appreciated by those who still use them while enjoying eating food of different taste and cultural uniqueness. The results thus show a spectrum of the high level of traditional production to a semi-modern level of production. Household resources and market objectives influenced the choice of methods.

The mix of traditional and modern technological elements should not be regarded as the end result of indigenous production being superseded. In its place, people picked and chose modern machinery, while clinging on to traditional knowledge on fermentation and distillation. This flexibility of continuity is made meaningful by Native Knowledge Systems: traditional knowledge is reproduced amongst generations, but also has the capacity to adapt to changing material and economic conditions (Tamang, 2022).

Economic Aspect and Income Generation

Household economic security was very closely related to the production of millet liquor. Few, if any, of the respondents were willing to accept the notion of production as a "sideline" activity. Instead, it was considered as an activity carried out from the household center and the income was at about 35-75% of the household income. Participant 2 highlighted, *“This rakshi is not additional work, this is our main income, otherwise there is no provision of living here.”*

Income from liquor money was found to be a bigger source of income as compared to income through agriculture and wage employment and this income was used to buy food, pay school fees, health expenditure and household expenditure, especially in a drought when the income through farm goes down. This means that income produced was a stable source of income, and provided a way of managing the seasonality risk.

The relative prices in the local market have a significant feature of stability. The respondents indicated the higher input cost had been price reflected for quite some time of about 2 years or more at the price of NPR150 per litre. So local production costs were not necessarily the only factor that determined local pricing, as a relationship and community market use also influenced the pricing. The conditions of long-term

production and consumption seemed to help in continuation of pricing and market confidence building.

There were differences between participants in sales networks. The producers, some of whom were compelled to sell their produce to their friends and relatives in the same village or locality, produced sold them to traders, hotels, outlets and restaurants. Some producers were able to liaise directly with hotels or retailers and curb the reliance on intermediaries and gain the control in the distribution process. Additionally, producers changed product units -- for instance, "litres" to the larger group and/or institutional group and "sheets" to the household.

About 40% - 45% add-on production costs were reported for raw materials, such as millet. Other costs that were incurred were packaging, electric costs and moving. Despite all these costs participants indicated profit margins that enable them to cover the basic costs of household. When not on the farm it was nice to have a year-round income earner. The findings herein suggest that this share of 35%–75% of household income is not just the fringe informal livelihood of liquor production by millets. A pragmatic livelihood mode which underlies SLA approach, and involves inhabitants or households' use of local knowledge, family labour, their social network, property of production to manage vulnerability. Another piece of evidence that suggests the relation between home production and well-being of the family is income spent on food and education.

The conclusions are also contradictions to the idea that all informal economic relations are necessarily relations of impersonal exchange of market. Local markets operated due to stable customer relations, trust of the community as well as frequent exchange. This is in line with studies showing the importance of social capital and community relations within informal economies. In the absence of formal institutional and market structures, social relationships can offer a range of protection and continuity.

Magar (2026). Fermenting Livelihoods: Exploring

Stable prices, however, also imposed pressures at those raw-material cost increases. Current circumstances of production costs indicate that selling NPR 150 per litre of water while maintaining those prices might jeopardise customer relationship while at the same time it may slacken producer margins. So, social stability in local markets, provides at the same time both on the one hand, a social place of strength and on the other, economic constraints.

Labor and Social Organization

The production of millet liquor involved much household group labour and cooperation. Typically, each origin centered on the familiar area in which family members engaged in various tasks involved in the production and processing of raw material, in fermentation, in distillation, and in packing and sale of the goods. There was at times some difference in the way labour was distinguished, based on sex, age, physical capacity and experience. Sometimes, the role of preparing the brew and service was left to females and more difficult chores like grain grinding, boat lifting or trips to the markets were undertaken by men. Other homes were more adaptable and cooperative in sharing the responsibilities. Evidently these differences indicate that there was no uniform and fixed technique of working, nor was there any uniform and fixed technique for all types of working. Here is one woman's example of a division of labor at home: *"I take care of the brewing, cleaning, and let the man lift the pots."* (Participant 5)

In another home the husband did much work and took care of the customers, a younger brother-in-law helped to grind and package the product and the daughters helped during the school holidays. The entire family was sometimes employed in these sorts of set-ups. By collaborating, other people were able to expand their contact with others across generations and share with them technical expertise.

Sometimes the producers didn't use permanent workers, instead they used temporary workers for 1-2 months depending upon the situation of the festivals and marriages. Some other producers did the same regardless of the intensity of the season, among the process as a whole. Labour Organization was ranged from being completely withdrawn from the workforce to complete family integration, but at times also temporary workers. It was not only in the households that cooperation was limited. The producers discussed with each other the production processes and shared information concerning the production techniques; in some cases, the producers purchased raw materials from the farmers together so that they could obtain them by paying at a lower price. Material shortages and demand peaks were especially important occasions in which informal networks were important. Some cross over transactions with neighboring villagers with rice and maize, in terms of labour, liquor and/or money were reported. The practices tell us that there have been traditional, and even 'monetary' alternative ways of exchange that have existed together.

The social capital that underlies informal production is referred to as community coordination. Trust and support for each other allowed households to make use of the support in accessing and/or reordering resources. Social interactions and communities' networks can reinforce resilience to economic instability, as Putnam (1995) says. In the context of the millet liquor industries, these relationships were not distinct from economically-related activity, rather they were part of the production system.

Besides, the role of women is not just to contribute in the economic aspect, but also to preserve the cultural values, as can be seen in the outcomes. In most cases, the women traditionally carried out the main brewing process and women had greater participation in managing household activities and livelihoods in the participatory aspects of the brewing process. This confirms Feminist Economics argument that we have to give credit to the women's informal work and domestic work that contributes to

Magar (2026). Fermenting Livelihoods: Exploring

the welfare of the household, but is not represented in the formal economy (Nussbaum, 2011; Hesse-Biber, 2014).

Women's involvement in economic activities was not only income generation but also in other ways. This knowledge, breaking, supervising and organizing skills in household labour, farming and the transfer of skills lent them to the perception of being cultural bearers. The economic/cultural roles were thus associated with women's work. The findings reinforce the emphasis laid on the role of women in informal productive activity by Chant and Pedwell (2008) and show that the process of empowerment in terms of economic agency can be one that is rooted in the culture.

Overall, labour relations in the production of millet liquor was dynamic, rather than rigid. Household structure, economic needs, gender relations, and productive ability as well as level of production affected work allocation. The concept of reciprocity at the community level coupled with intra-household cooperation indicates social capital is not just an important source of livelihood but can also be a basis for a collective producer initiative.

Struggles and Prospects

Financial, environmental, market and institutional factors, however, hampered mill production of millet liquor. Common challenges mentioned were high inputs costs, particularly that of millet. In some cases, those producers who had no option of buying in bulk may have had to purchase the raw materials and whoever sold them they may have not priced them lower than retail. Another significant issue was the lack of fuel. Working would be more difficult in times of high production, since there is infrequent wood required for the traditional distillation process. Such limitations on forest utilization and problems with accessing firewood added to these pressures. To facilitate this, some households opted for 'LPG' gas, which too proved to be cost intensive.

Product quality was directly impacted by eco-variation as was fermentation. High temperature, extreme cold and heavy rainfall were reported to be interfering with fermentation, causing spoilage and/or causing production to be inconsistent. Participant 6 explained that it was easy to change *rakshi* during the summer, and took a long time to ferment in the winter.

Small household producers were especially vulnerable as they had no protected production and storage areas. Fermentation will be unstable at a high temperature, and longer at cooler times. The storage problem added to the risk of loss of products and due to the storage period, the shelf life was enhanced. The findings have implications for the possible livelihood threats to the farmers whose livelihoods depend heavily on the success of fermentation due to these ecological withers. Market access was another issue that was raised. A number of producers were not in direct contact with the larger buyers and were dependent on intermediaries resulting in less bargaining power, and less profit margin for them. Sales/deliveries appeared to be handled better by producers directly involved in the hotel/retail trade and traders (direct link) than by the other producers. Traders and producers with direct relation to the hotel/retail trade had some improvement in controlling their sales/deliveries compared to those not directly involved. This contrast indicates the importance of the market links in the economic scope of production of household.

The added vulnerability was a level of uncertainty in the regulatory framework. There was no recognition of millet liquor production among the participants, with some participants stating they feared that the authorities would 'punish' them for producing the liquor. Investors were not confident to invest in technology and/or business growth because of the uncertainty. Where legal and institutional impacts upon producers were ambiguous, negative or neutral, their readiness to support production expansion or some significant change was not high.

Magar (2026). Fermenting Livelihoods: Exploring

Although these were their challenges, a positivity was expressed and felt, and there were identified opportunities for improvement in the process. The interventions that were recommended were technical, training intervention, modernization of machines, cost support for raw materials, market linkage and support for producers' organizations. Cooperative structures in the insights of the participants are of most importance. A few of the producers were already engaging in discussions or planning about the formation of Cooperative Groups where they could buy supplies together, share their resources, collectively bargain for prices and market their goods together. It was believed that, group production and marketing might provide a viable option to economic empowerment and bargaining position. That formal cooperative structure was also correlated with lawyers, it was also reported to create more opportunities for enhancing Q, and participants noted more legitimacy. C is one among the producers.

Based on these results, it might be possible to develop an approach that would enable producer cooperatives to build on the existing forms of reciprocity and resource sharing, rather than develop a totally new model. Exchange of marcha, knowledge of production, labour and raw material is already taking place in the informal sector. Such links and improvements in inputs for production and including markets may be facilitated through formal / semi-formal linkages between agro-farmers and farmers' associations.

The study along with the results shows that Kodo Ko Rakshi cultivation is economically and socially important with the rural people of Kanepokhari Rural Municipality. It makes up 35-75% of the total home income and buys food, education, health and other house necessities. Many homes also engage their women in beer production and/or in income generation or decision making. Inherited methods have been interwoven with new technology to meet labor, fuel, storage and production issues. This is in alignment with livelihood diversification - a vector for household resilience

Magar (2026). Fermenting Livelihoods: Exploring

(Scoones, 1998) - and that helps ensure long-term resilience in the face of ongoing climatic change. Millet liquor production is a source of income during agricultural off-seasons and curb dependence on a single activity for livelihood. The importance is even greater for women-headed households, as the production may be most vital means of achieving their economic security.

The results also add to the debates on the informal economy and gender. Women's informal productive work (Chant & Pedwell, 2008) is emphasized by women in leadership roles in brewing, production management and household expenditure. But women's role should not be limited to the economic sphere. Women also hold indigenous fermentation skills and cultural practices that result from the interaction between economy, culture and social organization of the household. The mix of traditional and modern production practices suggests a move from a replacement to a substitution, and not just a new kind of production. Producers continued to ferment from marcha and gained technical experience in the use of plastic fermentation vessels or modern grinders or LPG stoves in their production. In this way, the traditional and modern aspects of production are merged: industry can respond to the challenges and limitations and keep the cultural production practices and production practices as close as possible and they are compatible and can be merged.

The social relations in the local informal markets are also being stressed and the selling price of NPR 150 per litre of produce though at high prices is also being strengthened. Local networks, long-term customers and trust are being affected by market practices. These findings are in line with the larger view that social capital can be a reliable source of economic resilience in the absence of formal market institutions (Putnam, 1995). A price decrease in the absence of a change in production costs would be unprofitable and can be viewed as an economic loss. The integrated theory can explain these results. The SLA gives a picture of the relationship between human

Magar (2026). Fermenting Livelihoods: Exploring

knowledge, family labour, local materials and social networks and household financial strategies in millet liquor production. Feminist Economics is to demonstrate the value of women's productive and reproductive work to society and how they make decisions for income and household decisions. Indigenous knowledge systems (IKS) explain fermentation and distillation by generations. The informal economy perspective helps to understand the importance of trust, reciprocity and community values in production and exchange when formal institutions are not well known and widespread. Some implications for rural development policy. While it is a traditional marginal activity that is not regulated, also it is a culturally located livelihood. Small scale regulation or micro-licensing mechanisms that are context sensitive will be better served if we have more institutional clarity and product hygiene and quality. Quality control, hygiene and business management training can be improved in the products and the market opportunities.

Producer cooperation would also help them to build their purchasing, selling, and bargaining power. Social networks already exist and provide a base for cooperative structures. Better market relations can ensure that producers do not have to depend on middlemen and more favourable returns can be achieved. Gender responsive activities should be clear about the role of women in production, the economy management of a household and the transmission of indigenous knowledge. The qualitative nature of the study was the most convincing for the study, and allowed to investigate the participants' experiences and socio-cultural and economic impact of millet liquor production. The contextual detail reported with the interviews, repeated household visits, observation and field notes may not be provided by quantitative methods alone.

But the study also has its drawbacks. The number of participants was small ($n = 7$) and the participants recruited from one rural municipality only, which limited the generalizability of the results. A lot of self-reported information is also collected in the Magar (2026). Fermenting Livelihoods: Exploring

study - such as income contribution estimates and production experiences. More systematic economic measurement in conjunction with qualitative research will be important for future research. That is why multi-site and mixed methods studies with producers from different regions and social groups are needed. Further research will be needed on the aspiration of younger generations to pass on traditional brewing knowledge and the impact in the future on production and livelihoods of climate, market and regulatory changes from the long run in the context of climate change, and how these will affect production and livelihoods. Longitudinal studies will be particularly useful in assessing economic contributions and production practices. Systematic policy and regulatory studies can also provide evidence for policy options to facilitate traditionally entrenched livelihood activities and enhance formal recognition and quality governance.

Conclusion and Implication

The results show that the production of kodo ko rakshi is not only an activity within the households but it is also an important livelihood strategy for rural households in Kanepokhari Rural Municipality. It plays a significant role in household income, providing about 35-75% of household total income to those involved and helps to finance household food consumption, children's schooling, health care and other basic needs. It plays an especially important economic role when agricultural production is secondary to other livelihood activities and where in female headed households, farming could be the main income generating activity.

Women play a pivotal role in the production system as brewers, income earners, household decision makers and custodians of indigenous brewing knowledge. Their participation illustrates the contribution informal homebased work can have in providing significant economic and social value, and yet is still under-represented in formal economic systems. The production of millet liquor is another example of

Magar (2026). Fermenting Livelihoods: Exploring

indigenous knowledge continuity, where skills and knowledge are passed from one generation to another and are then chosen and integrated with current technologies.

Producers nevertheless face rising raw-material and fuel costs, firewood scarcity, climate-sensitive fermentation, inadequate storage, restricted market access, dependence on intermediaries, and regulatory uncertainty. Household cooperation, community trust, reciprocity, and resource sharing enable producers to manage some of these pressures and demonstrate the central importance of social capital to informal rural livelihoods.

The findings suggest that local governments and rural development agencies should recognize millet liquor production as a culturally embedded livelihood activity. Context-sensitive regulation, producer cooperatives, hygiene and quality control training, market access, and appropriate technologies will enhance livelihood security and bargaining power. And women's home-based labour and indigenous brewing knowledge also need to be better considered for inclusive rural development. In the end, culturally appropriate support for millet liquor production could build up rural resilience and preserve indigenous knowledge and cultural practices.

Conflict of Interest

The author declares no conflict of interest.

References

- Abid, M., Sekrafi, H., Gheraia, Z., & Abdelli, H. (2024). Regulating the unobservable: The impact of the environmental regulation on informal economy and pollution. *Energy & Environment*, 35(7), 3463–3482.
- Bebbington, A. (1999). Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods and poverty. *World Development*, 27(12), 2021–2044. [https://doi.org/10.1016/S0305-750X\(99\)00104-7](https://doi.org/10.1016/S0305-750X(99)00104-7)

Magar (2026). Fermenting Livelihoods: Exploring

- Chant, S., & Pedwell, C. (2008). *Women, gender and the informal economy: An assessment of ILO research and suggested ways forward*. International Labour Organization.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.
- Douyon, A., Worou, O. N., Diama, A., Badolo, F., Denou, R. K., Touré, S., ... & Tabo, R. (2022). Impact of crop diversification on household food and nutrition security in southern and central Mali. *Frontiers in Sustainable Food Systems*, 5, 751349. <https://doi.org/10.3389/fsufs.2021.751349>
- Food and Agriculture Organization. (2023). *International Year of Millets 2023*. <https://www.fao.org/millets-2023>
- Friese, S. (2019). *Qualitative data analysis with ATLAS.ti*. SAGE Publications.
- Frosch, M. (2024). Revealing the unseen: The 21st ICLS statistical standards on the informal economy. *Statistical Journal of the IAOS*, 40(4), 767–785.
- Gao, J., Wang, Y., Zhang, M., & Huo, Z. (2022). Group heterogeneity of rural households' satisfaction with good life from the perspective of rural revitalization: A case study from Zhejiang Province of China. *Sustainability*, 14(9), 5432. <https://doi.org/10.3390/su14095432>
- Hesse-Biber, S. N. (Ed.). (2013). *Feminist research practice: A primer*. SAGE Publications.
- Huang, G., Xue, D., & Wang, B. (2020). Integrating theories on informal economies: An examination of causes of urban informal economies in China. *Sustainability*, 12(7), 2738. <https://doi.org/10.3390/su12072738>
- Jackson, S. E., Oldham, M., Angus, C., Holmes, J., & Brown, J. (2024). Trends in purchasing cross-border, illicit and home-brewed alcohol: A population study in

Great Britain, 2020–2023. *Drug and Alcohol Review*, 43(5), 1160–1171.

<https://doi.org/10.1111/dar.13838>

Kalpana, M., Balakrishnan, N., Rajavel, M., & Divya, M. (2024). A review on value chain analysis of millets. *Journal of Basic and Applied Research International*, 30(3), 76–85.

Kaphle, S., Acharya, A., Shakya, A., & Aryal, B. (2022). Determination of alcoholic concentration in four different home brewed alcoholic beverages using gas chromatography. *Nepal Journal of Health Sciences*, 2(2), 56–59.

<https://doi.org/10.3126/njhs.v2i2.56804>

Kayodé, A. P., Nout, M. R., Linnemann, A. R., Hounhouigan, J. D., Berghofer, E., & Siebenhandl-Ehn, S. (2011). Uncommonly high levels of 3-deoxyanthocyanidins and antioxidant capacity in the leaf sheaths of dye sorghum. *Journal of agricultural and food chemistry*, 59(4), 1178–1184.

Kovachevikj, M. G., Dimitrov, L., & Stojanov, D. P. (2023). The structure of rural households' income in North Macedonia: A case study in Polog and Pelagonija. *Agroznanje*, 24(2), 117–131. <https://doi.org/10.7251/agren2303117gj>

Laudien, R., Schauburger, B., Waid, J., & Gornott, C. (2022). A forecast of staple crop production in Burkina Faso to enable early warnings of shortages in domestic food availability. *Scientific Reports*, 12(1), 1638.

<https://doi.org/10.1038/s41598-021-04591-5>

Lincoln, Y. S. (1985). i Egon G. Guba. *Naturalistic inquiry*.

McCoy, D. C. (2013). Early violence exposure and self-regulatory development: A bioecological systems perspective. *Human Development*, 56(4), 254–273.

Miller, A. V., Wilkin, S., Smithers, R., Larson, K., Spengler, R. N., Haruda, A., ... & Roberts, P. (2023). Adaptability of millets and landscapes: Ancient cultivation in

north-central Asia. *Agronomy*, 13(11), 2848.

<https://doi.org/10.3390/agronomy13112848>

Nussbaum, M. (2011). *Creating capabilities: The human development approach*.

Harvard University Press.

Otieno, G., Ogola, R. J. O., Recha, T., Mohammed, J. N., & Fadda, C. (2022). Climate change and seed system interventions impact on food security and incomes in East Africa. *Sustainability*, 14(11), 6519. <https://doi.org/10.3390/su14116519>

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), 533–544.

<https://doi.org/10.1007/s10488-013-0528-y>

Pathak, H., Kiran, K. N. M., & Gauraha, A. (2023). Consumer awareness and consumption pattern of millets and millet-based products in Raipur City, Chhattisgarh. *Indian Journal of Agricultural Economics*, 78(3), 486–500.

<https://doi.org/10.63040/ijae.vol.78.issue.03.012>

Peine, E. (2023). Trans-mountain moonshine: Liquor, identity, and resistance in the Appalachian and Carpathian Mountains. *Bulletin of the Transilvania University of Braşov, Series IV: Philology & Cultural Studies*, 15(Suppl.), 65–74.

Putnam, R. D. (1995). Bowling alone: America's declining social capital. *Journal of Democracy*, 6(1), 65–78. <https://doi.org/10.1353/jod.1995.0002>

Rajbanshi, A. (2005). Women's livelihood from Homemade Beer (Chhyang) & Whisky (Raksi) in Peri-Urban Village: A case study of Ghumrachok in Bajryogini Village Development Committee, Kathmandu District. *Tribhuvan University Journal*, 25(1), 61-78.

Magar (2026). Fermenting Livelihoods: Exploring

- Rawat, J. M., Pandey, S., Debbarma, P., & Rawat, B. (2021). Preparation of alcoholic beverages by tribal communities in the Indian Himalayan region: A review on traditional and ethnic consideration. *Frontiers in Sustainable Food Systems*, 5, 672411. <https://doi.org/10.3389/fsufs.2021.672411>
- Sangappa, Charishma, E., Babu, K. S., Rafi, D., & Laxmi, B. (2023). Strengthening millet value chain through farmer producer organizations. *Journal of Food Systems Research*, 30(2), 1–12.
- Scoones, I. (1998). Sustainable rural livelihoods: a framework for analysis.
- Sen, A., Ashraf, S. A. H., Sarkar, K., Bhardwaj, Y., Sinha, A. K., Shiddamallayya, N., Walsan, K. V., & Bora, D. (2025). Exploring the traditional knowledge on tongba: A review of the unique fermented beverage of the Himalayas. *Journal of Drug Research in Ayurvedic Sciences*, 10(1), 22–31.
https://doi.org/10.4103/jdras.jdras_297_23
- Shrestha, M., & Raj, S. (2021). Exploring the prospects of Traditional Alcohol Making as a Sustainable Rural Livelihood: A case of Burunchuli, Lalitpur. In *Proceedings of 10th IOE Graduate Conference* (pp. 855-864).
- Tamang, J. P. (2022). Dietary culture and antiquity of the Himalayan fermented foods and beverages. *Journal of Ethnic Foods*, 9, 34. <https://doi.org/10.1186/s42779-022-00146-3>
- Thapa, N., Aryal, K. K., Paudel, M., Puri, R., Thapa, P., Shrestha, S., & Stray-Pedersen, B. (2015). Nepalese homebrewed alcoholic beverages: Types, ingredients, and ethanol concentration from a nation-wide survey. *Journal of Nepal Health Research Council*, 13(29), 59-65.
- Tiwari, A., Bana, R. S., Rana, K. S., Singh, R., Godara, S., Grover, M., ... & Yogi, A. K. (2022). No-tillage with residue retention and foliar sulphur nutrition enhances productivity, mineral biofortification and crude protein in rainfed pearl millet
Magar (2026). Fermenting Livelihoods: Exploring

under Typic Haplustepts: Elucidating the responses imposed on an eight-year long-term experiment. *Plants*, 11(7), 943.

<https://doi.org/10.3390/plants11070943>

Wang, Y., Wei, W., Wu, W., Sun, J., Xu, Q., Wang, D., ... & Ni, B. J. (2021).

Improving medium-chain fatty acid production from anaerobic fermentation of waste activated sludge using free ammonia. *ACS ES&T Engineering*, 1(3), 478–489. <https://doi.org/10.1021/acsestengg.1c00104>

Xheneti, M., & Madden, T. (2024). Women's entrepreneurship in the informal economy: A socio-spatial perspective (Nepal case study). *Work, Employment and Society*. Advance online publication.

<https://doi.org/10.1177/00187267241288661>

Yadav, O. P., Singh, D., Kumari, V., Prasad, M., Seni, S., Singh, R. K., ... &

Mohapatra, T. (2024). Production and cultivation dynamics of millets in India. *Crop Science*. <https://doi.org/10.1002/csc2.21207>

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp.111 – 135 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Representation and Participation of the Community in Community Colleges

Doi: <https://doi.org/10.3126/ajos.v6i1.98111>

Nara Prasad Bhandari

Sukuna Multiple Campus, Sundarharaincha, Morang, Nepal

npscholar.doc@gmail.com

Abstract

This paper explores the current status of Nepali community colleges (CCs) regarding representation strategies and community participation in their internal governance. It draws on qualitative data from unstructured interviews with nine participants sampled using a non-probabilistic purposive sampling procedure, followed by a document study of the respective colleges. The sample included the head of college management, a CMC member, the campus chief, and student representatives from three colleges in Koshi province. The study reveals that the representation is highly local and donor-centric; therefore, little space is left for citizen- and parent-level representation in governance. The study further revealed that the level of participation in the decision-making process is not static; rather, it ranges from 'non-participation' to, at most, 'partnership', in which the power lies with the secretary and the CMC chair to make the decision. The study also showed that the degree of participation was largely determined by the agenda's localization; the more localized the agenda, the higher the degree of participation in the CMC meetings.

Keywords: Higher Education, Community College, Participation, Representation

Introduction

Participation is described with the definition of democracy as an act of inclusion in decision-making (Carpentier, 2012): “an act of joining with others in doing something” or “association with others in a relationship as a partnership” (Dijkers, 2010), usually on a formal basis with specified rights and obligations (Merriam-Webster, n.d.). The term has been an emerging agenda item in the democratic Western community for socio-economic life, even enshrined in the United Nations Universal Declaration of Human Rights (Jancovich, 2017). It is an active process whereby beneficiary or client groups influence the direction and execution of development or management to enhance their well-being in terms of income, personal growth, self-reliance, or other values (Coulibaly-Lingani, Savadogo, Tigabu, & Oden, 2011). Therefore, active participation in decision-making processes to influence, change, or improve outcomes (Churchman, 2012, p. 1) is well assumed in institutions and organizations.

The term 'participation' has been associated with another phrase, 'Community participation', 'public participation', or 'citizen participation', as a process where people, individually or through organized groups, can exchange information, express opinions and articulate interests, and have the potential to influence decisions or the outcome of the matter at hand (Oli & Treue, 2015 as cited in ILO 2000). The members of the community a) develop the capability to assume greater responsibility for assessing their...needs and problems, b) plan and then act to implement their solutions, c) create and maintain organizations in support of these efforts, and d) evaluate the effects and bring about necessary adjustments in goals and programs on an ongoing basis (Zakus & Lysack, 1998). Thus, community participation gives people a sense that they can solve their problems through careful reflection and collective action.

Categorizations are also made, such as those in Pateman (2012): full participation exists when all members of the body have equal power over the decision; Bhandari (2026). Representation and Participation . . .

partial participation is when some members have power while others only influence decisions; and pseudo-participation is when some members have no power (Cunningham, 1972). Fraser (2005), on the other hand, describes four approaches of community participation: (1) anti- or reluctant communitarians and economic conservatism; (2) technical-functionalist communitarians and managerialism; (3) progressive communitarians and empowerment; and (4) radical/activist communitarians and transformation.

Some participation frameworks have been developed, e.g., Carpentier (2011a, 2011b) views participation as an ideological contestation with five theoretical frameworks of participation, namely democracy, spatial planning, development, arts and museums, and communication; Hentschel & Lanjouw's (1996, p. xias cited in Heyi, 2020) Transformational approaches are few. A distinction is also made in terms of the degree of participation between “genuine” and “pseudo” participation (Carney, Bista, & Agergaard, 2007). In which genuine participation is one in which citizens are empowered to choose their roles and use “real” power in decision-making, whereas participation is “pseudo” when “the purposes of participation are to inform citizens about decisions, placate their complaints, and manipulate their opinions” (Khanal, 2013, p. 237).

Another well-known framework (Anderson & Grinberg, 1998) for characterizing community participation is Arnstein's (1969). To her, community participation is:

The redistribution of power that enables the have-not citizens to be deliberately included in the future. It is how they can induce significant social reform, which enables them to share in the benefits of the affluent society (Arnstein, 1969). The framework principally focuses on redistributing power to those who will benefit from it in the future.

Ladder of community participation

Community participation follows a terrain. To measure community participation in organizations and institutions, several frameworks are discussed; among them, the best framework (Cornwall, 2008) is Arnstein's (1975) ladder of participation, which serves as a point of reference for the present study. The ladder is presented in Table 1:

Table 1

Arnstein's Ladder of Citizen Participation (1969)

8	Citizen control	
7	Delegated power	Citizen power
6	Partnership	
5	Placation	
4	Consultation	Tokenism
3	Informing	
2	Therapy	Non-participation
1	Manipulation	

According to this framework, participation is based on the degree of power distribution in decision-making and its execution. This ladder of citizen participation constitutes eight levels. They are further grouped into three categories relative to authentic citizen participation. The lowest category represents manipulative participation (influencing the public and gaining support through propaganda, treating them as a rubber stamp or in a therapeutic role), while the highest category refers to degrees of citizen power/citizen control. The middle category indicates degrees of citizen tokenism (Tosun, 2006). To her, “participation without redistribution of power is an empty and frustrating process for the powerless” (p. 216). Nonparticipation includes manipulation and therapy. Tokenism includes the third, fourth, and fifth rungs of the

ladder: informing, consultation, and placation, respectively. In the middle is “degrees of tokenism”, shown in “informing”, “consultation”, and “placation”. Tokenism is a form of participation in which people have ‘voice’ and some degree of autonomy, though they rarely can change directly the status quo of decisions and plans already taken elsewhere. Citizen power includes the final three rungs of the ladder: partnership, delegated power, and citizen control.

The theme of community participation is frequently associated with accountability (Cornwall & Gaventa, 2001), sustainability (Warburton, 2013), development, and institutional strength across almost all development sectors, and higher education is no exception (Sharma, 2008). When the community college system in Nepal is in question, the issue of community participation is even more relevant, since this community holds a 38.06% share of student enrollment (University Grants Commission, 2024) and makes a significant contribution to the production of Bachelor's- and Master's-level graduates.

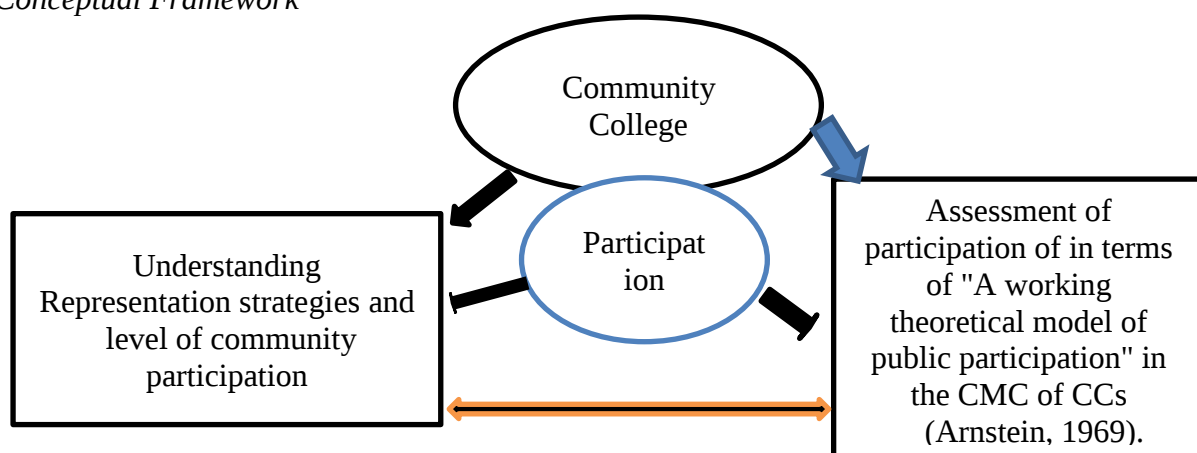
Method and Material

This paper examines the current status of community colleges in terms of stakeholders' understanding of the colleges, community representation strategies within internal governance, and their participation in the decision-making process. The study was framed as a generic/basis qualitative approach, which is described as the study in which "the researcher describes his study as a “qualitative research ” without declaring it a particular type- such as a phenomenological, grounded theory, narrative analysis, or ethnographic study" (Merriam & Tisdell, 2015, p. 23) or case study for "not finding to fit this study neatly within the confines of a single established methodology", the generic approach as an opportunity (Kahlke, 2014). The study is not bounded strictly enough to any one design, i.e., it is “not guided by an explicit or established set of philosophic assumptions of the known [or more established] and much focused

qualitative methodologies” such as the “big three” phenomenology, grounded theory, and ethnography.

Sampling was conducted using a non-probabilistic purposive technique, and, as described by Merriam and Tisdell (2015) as effective, nine unstructured interviews were undertaken to elicit participants’ experiences. Data were transcribed, thematized, and described as suggested by Kahlke (2014), staying near the surface of the participants’ descriptions. During analysis and interpretation of the data, the researcher used the community participation literature and Sherry Arnstein’s ‘Ladder of Citizen Participation’ to evaluate the amount of “citizen control” within the process of determining a program or policy based on the public participation techniques used at each phase of the college plan (Arnstein, 1969). The research sites were community colleges located in Koshi, covering both the hilly area and the Terai, namely Udayapur, Morang, and Jhapa, so that diverse understandings could be explored. The sampled community colleges were quality assurance accreditation (QAA) awarded by the University Grants Commission, Nepal, and were affiliated with Tribhuvan University (UGC). Of the colleges sampled, one is located in the hilly region and was established in 2043, another in 2048, and the third in 2038.

Figure 1
Conceptual Framework



Results and Discussion

In this subsection of the paper, I have discussed the data, keeping the three significant objectives of the study: the nature of community representation in CCs in the governing bodies at the college level, analysis and assessment of participation in campus management meetings based on the popular theoretical concept Arnstein's Ladder of Citizen Participation (1969).

Nature and Process of Representation in the Internal Governance

The first section of the analysis focuses on how community holders are represented in the governing bodies of the community college. As per the purpose, the statutes of the campuses were studied, followed by key informant interviews to identify the nature and types of governing bodies and the inclusion of members (henceforth, representation) in the CCs. From the information, it is known that the community colleges have two-layered bodies of governance: (i) the senate/campus assembly and (ii) the campus management committee. The first one is said to be the supreme body of legislation, which consists of a large number of members representing the wider community as much as possible, as per the policy provision of the campus statute itself. In addition, the colleges have established other subsidiary committees, such as the internal audit committee and the appeals committee. Such committees are in addition to the academic committees, including the Head of Departments, the Internal Examination Committee, the Alumni Association, Student Quality Circles, the Self-Assessment Team, the Research Management Cell, and the Internal Quality Assurance Committee.

When studying the nature of representation principally in the two governing bodies, the campus senate/council and the CMC, the following situation could be revealed:

Table 2*Community Representation in the Campus Council (CC) College-Wise*

Campus	Council/senate	CMC
A	Large legislative body that includes the conditionally selected cash/ land donors, FSU president, secondary-level school head teachers /principal of the catchment areas, teacher representative of the college, ward chair, member of parliament, mayor, deputy mayor, member of parliament of the provincial government,	A governing body made up of the elected members from the campus council/senate (27 members-flexible), the mayor, ward chair, members nominated by the new committee, a teacher representative, a university representative, and the campus chief.
B	A legislative body consisting of donors, former campus management committee members, and members nominated by the campus's current management committee	A governing body made up of the elected members from the campus council/senate (23 members-flexible), in which the mayor, ward chair, members nominated by the new committee, teacher representative, FSU president, university representative, and campus chief.
C	A legislative body consisting of donors, former campus management committee members, and nominated members by the campus current management committee, making decisions.	An executive body made up of the elected members from the campus council/senate (17 members-flexible), in which the mayor, ward chair, members nominated by the new committee, teacher representative, FSU president, university representative, and campus chief.

From the study, it has been known that the senate (previously called council or parisad), as a legislative body, has been dominated by cash or land donors since its

Bhandari (2026). Representation and Participation . . .

establishment to date. The statutory provision shows that the nominated members in this body are usually the elite (though they were called educationists or intellectuals) who donated to the colleges. From the study of the statute, it can also be known that the principle of inclusion, such as gender, is not mandatory for colleges. In the process of CMC formation, the number varies from college to college, except for the inclusion/exclusion of the student representative on the committee. Of the three colleges, only one has made mandatory representation of female members on the CMC, while one has not. In the case of colleges, two colleges have student representatives, while one does not have a representative in the CMC. The obligatory member in all colleges has been the university representative appointed by the affiliating university for the campus, who has usually been a teacher at the constituent campus.

Based on the information in Table 1, community colleges have established two main governing bodies to maintain a deliberate balance between academic governance and community, following the UGC (2019) guidelines, which aim to balance academic quality and community accountability in CCs. This oversight has not been made obligatory in the UGC manual, but the UGC's aim serves as the guideline for implementation. The only requirement of the UGC is an updated CMC when applying for funds and/or when intending to pursue quality assurance accreditation, and for participation in UGC projects such as NEHEP and EPBF (UGC, 2019). Such a two-tiered representation of governance in the CCs is justified by the Nepal Public Campus Association (NPCA) (2021), which highlights that the two-tier governance system serves as a democratizing force in higher education, ensuring that both educators and local stakeholders share decision-making power. The fitness of the two-tier governance was also highlighted by Poudel (2016), who argued for its sustainability and its ability to respond to challenges and maintain the balance between academic autonomy and community expectations. To compare the university senate with the senate of the CCs, it has been noticed that the senate has been an academic body rather than the Bhandari (2026). Representation and Participation . . .

representation of the citizens in the Tribhuvan University Affiliation Guidelines (2018), while the senate of the CCs has been largely dominated by representatives and local donors rather than academicians.

Based on key informant interviews on the nature of the governing bodies, an attempt was made to explore the reality by posing the question: "How are community stakeholders represented in the two-tier bodies?" According to the key informants of campus A and C (campus chiefs) mentioned in the two extracts:

...the senate is formed including all the CMC members since the establishment of the college, mayor of the municipality, deputy mayor of the municipality, chair of each ward of the municipality, major members of the teachers' association of the campus unit, major officials of the Free Student Union, major members of the non-teaching staff unit of the college, guardians of the students who topped the class in each class and some locally popular people nominated by the CMC.

... a senate is formed with the inclusion of selected parents as per the nomination of the college chief, donors nominated by the CMC, some educationists-intellectuals nominated by the CMC, and the representatives of the municipality and governmental bodies. This senate forms a new campus management committee. In the CMC and the senate, both teachers and students are represented, along with the members of the senate, in which the campus chief, as the academic head, is the member-secretary.

From this triangulated information, it is known that they have followed the statute to form the governing body. Still, the involvement of community stakeholders such as students, parents, and people's representatives, and the process they expressed, is flexible and debatable, resulting in conflict among the stakeholders. The Senate is not formed through a broad-based election involving common citizens, but rather on the judgment of already established bodies and their continuation, known as historical bias Bhandari (2026). Representation and Participation . . .

(Bhat, Rajan, & Gamage, 2023), in the representation for inclusion. The selection is predetermined rather than open to the common stakeholders.

In the case of colleges, the opportunity for representation is largely dependent on donations to the campus. It seems that citizens' access is restricted by donations; hence, democracy has been minimized, as indicated by Creamer (2026) in community colleges. At this point, we can examine the different ways the common people are represented by the mayor, deputy mayor, ward chairpersons, and members of parliament (people's representatives). However, a stronger argument is that the representation is weakened by the priority given to land or to a cash donation. Such representation is a proxy for civic representation from the social capital perspective (Putnam, 2020) and the perspective of democratic education theory (Democracy, 1944), and it does not guarantee deliberative democracy. So, from Dewey and Putnam's perspective, representation is insufficient, and symbolic representation risks weakening civic trust and engagement.

The absence of students and parents, in particular, in the senate reflects the dominance of a donor-centric governance model (Sajjad, 2016) that prioritizes external legitimacy over grassroots participation to satisfy affiliating universities and funding agencies. In this situation, an argument is also found that community colleges are not supported by the government; as a result, they depend on local donors (Phuyal, 2023), leaving the students and the parents aside, making community representation pseudo, in contrast to the 'genuine' as discussed in (Rose, 2003; Sanoff, 2015). This structure may shape the governance towards accountability to external stakeholders rather than internal beneficiaries.

Student Participation in the CMC

Moving from the representation of the community in the community college to the level of community participation, a common question was asked of the campus chiefs and the CMC chairs of the CCs: "How are campus management committee Bhandari (2026). Representation and Participation . . .

meetings run in general and specific cases such as teacher appointment and non-teaching staff appointment?" The campus chiefs and the CMC chairs of campuses A and C mentioned that they have a student representative on the Campus Management Committee, but in decisions on the selection of teachers and non-teaching staff, the student representatives are not involved, despite the equal rights of the members stated in the campus statutes. As mentioned in Table 1, at campus B, the student representative is not considered a member of the CMC. As the campus chief of campus, A mentioned:

As per the policy, a student representative for selecting teachers and non-teaching staff has to be appointed, but it looks like a drama in practice for us. So, we have convinced the student leader that it would be odd for students to select teachers, and we have also convinced them that they do not want to get involved in the teacher and non-teaching staff selection process. The principal of College C mentions the experience as, "..., we did involve them once in teacher selection; now we have convinced all not to involve student representatives in the teacher evaluation marking since s/he is his/her teacher"

The student participant of college C also justifies the information and says, *"They suggested not to get involved in the marking for evaluation during teacher selection, so are we doing?"* Based on the information, the FSU president of college C mentions: *In all situations, we are involved in the meeting of the CMC, but in the case of teacher and non-teacher staff selection, we are not supposed to get involved".* This information has been corroborated by the campus chief as well.

Table 3*College-wise Provisions for Representation*

Provision for representation		College A	College B	College C
In the UGC document	No Provision is specified	Representation is provided in the statute, but the participation is selectively denied in practice	Representation and participation of the students in the CMC are not provided	Representation is provided in the statute, but the participation is selectively denied in practice
In the affiliating university document	The free student union representative was, but it has been avoided by the 2026 Ordinance			

From the information in Table 3, the issue of student participation in the university and the colleges has become even more debatable, since the subject colleges have not stated a mandatory provision in their statutes in parallel. Moreover, participation has also been a matter of compromise, a form of cooperation among the members on some issues, such as teacher selection and recruitment. This can be considered a form of politics, a sociopolitical solicitation, or a functional reality of the context. But, in many instances students' involvement is being given great importance as Dunder (2013) described it as a unique kind of wisdom that should be taken seriously when decisions are made that will primarily and most directly impact student experience; involving students proved to be one of the most effective mechanisms of accountability because the students were able to weigh in on decisions and offer perspectives that others simply could not (Gibbs & Wood, 2023). In contrast, Detchen Bhandari (2026). Representation and Participation . . .

(1940) in "Shall the Student Rate the Professor?" admits that a completely factual basis for evaluating the operation of teaching by the students is most unlikely and any one set of characteristics with equal force to teaching of all kinds of material to all kinds of students under all kinds of circum? Stance is uncertain; the exclusion of student involvement is based on the functional reality of the context, in contrast to the other issues, such as the teacher and non-teaching staff quality (Mainali, 2021), the complaint of the recruitment and selection controlled by CMC and administrators (Mainali, 2021). Some scholars have also called it a selective bias, in that student representatives are deliberately excluded from critical decisions (Gupta, 2018), as a historical denial of access (Bhatta, Adhikari, Thada, & Rai, 2008). Therefore, participation is expressed in degrees (Khanal, 2013), and participation can be interpreted in layers, leading to a logical conclusion. In essence, despite the seriousness of the issue of student participation in promoting institutional democracy, as in Arnstein (1969) and Dewey (1916), the specific community context should be considered equally vital in resolving the issue of student participation.

Analyzing the level of participation

Concerning the analysis and assessment of the level of participation in the CCs, the information was drawn from the meeting status of the CMC, from the campus chiefs, and the CMC members who were asked, " How intensive are the CMC meetings?" How much do the CMC members participate in the meeting?" In response, the campus chief of Campus B mentions:

In my experience, when the issue is purely academic, such as result analysis, teacher performance, or the requirements of educational instruments, the members do not argue, and the agenda is unanimously passed at the meeting. When the issue concerns students and political conflicts, the members discuss it at length in the meeting, but it is difficult to reach a decision. On most occasions, there is indecision since they carry out the agenda outside the
Bhandari (2026). Representation and Participation . . .

meeting and discuss it at the political level. Until there is political consensus outside the college, the agenda cannot be settled. Sometimes it helps. When the agenda is about construction, most participants actively participate in the meeting. In quality concerns, such as policy-making, only two to three members participate in the meeting. It is easily endorsed.

The information indicates that the degree of participation varies depending on the nature of the agenda and the participants' areas of expertise. Additionally, participation is observed to be high when the issue concerns students' political conflicts, because everyone knows something about the local conflicts. So, we cannot accurately determine the level of participation, but it is relatively correlated with the nature of the agenda.

Regarding participation, the observation at Campus C is slightly different. To him, *"in many instances it is difficult to reach the minimum presence of the participants in the meeting, so, occasionally we have to call them to sign the decision. Sometimes, we have to send the decision to the house of the members, then they put the approval signature in the decisions."* This context is also evident in the case of Campus A and B as well but the frequency of such cases differ from campus to campus and situation to situation. The campus chief of campus B mentions, *"at least there will be discussion between the campus chief (secretary) and the chair of the CMC before the participants are asked to agree with the decisions."* In this situation, a few members, such as the campus chief and the CMC chair, actively participate; others are non-participants but they just put the signatures. In this sense, it is difficult to discriminate solely by level of participation.

New issue-based information has been provided by one of the CMC members of campus B regarding his own level of participation. He informs:

We are seen as so weak in the meeting that we easily put our signature on the decision because the campus chief and the CMC chair represent the same

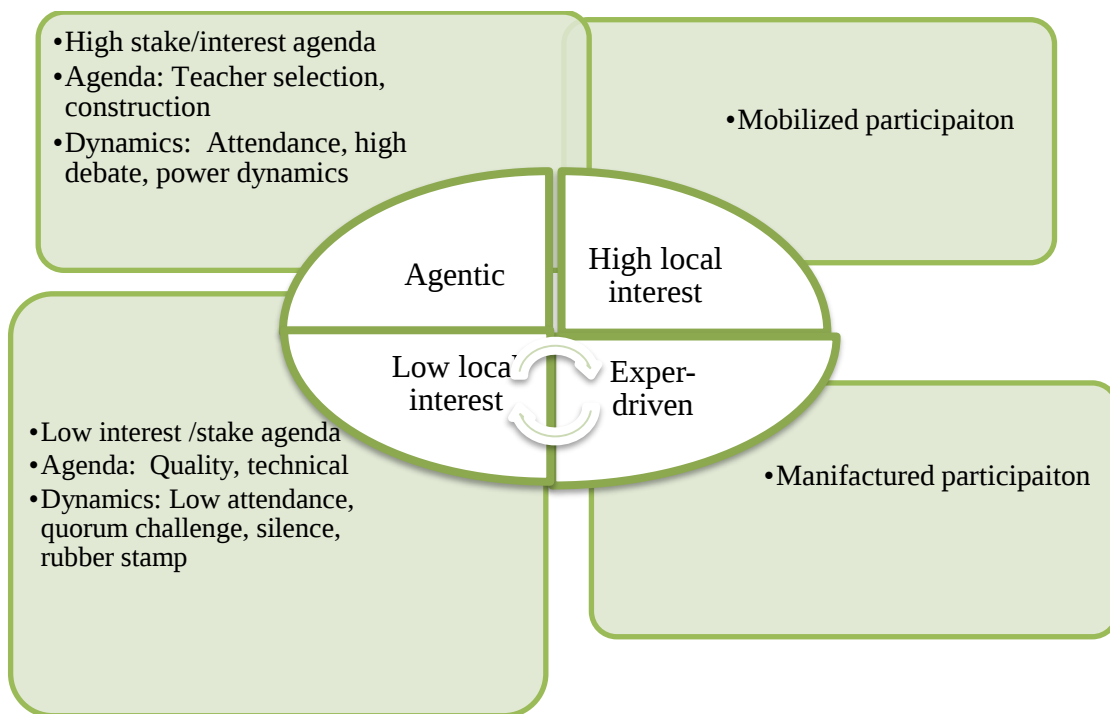
Bhandari (2026). Representation and Participation . . .

ideology; they often meet outside in separate meetings and come with ready-made decisions. That seems fine since, in most cases, the discussion agenda is kept secret from the members.

This signals the manipulation of the meeting by the key figures, with a strange kind of participation. It is closely related to informative participation, in which the key persons discuss and decide; others' role is to listen and agree. The situation of the community college, then, resembles the parents' participation in schools as observed by Khanal (2013), who remarked that parental participation in school governance has been captured by established local leaders and politicians. Likewise, the information provided also reflects the country's socio-political situation (Simkhada & Van Teijlingen, 2010). In this situation, the ideological community becomes active, whereas the real community serves as a dummy in decision-making processes. When compared with the theoretical concepts of participation, genuine participation is absent (Finsterbusch & Van Wicklin, 1989); instead, pseudo participation (Khanal, 2013, p. 237) exists in practice in the CCs, as also mentioned by one of the college students who is a CMC member of college A:

We are not involved in the key evaluation process for the selection of teaching and non-teaching staff, e.g., the written and oral examinations for teacher selection. So, there is little doubt, but if there is doubt, we disagree with the recommendation while endorsing the decision from the CMC. In almost all cases, we are convinced by the decision.

From the information from the campus chiefs and the student representatives, we can summarize the information in the following framework:

Figure 2*Participation Framework*

From the framework, we can observe four dynamics of participation in CMC meetings within CCs.

1. Mobilized participation: Participation can be considered mobilized, high-stakes, or High-Interest in cases such as human resource management, such as teacher selection. At this time, participation peaks; members attend voluntarily and debate intensely because the outcomes yield tangible local capital, influence, patronage, or ideological alignment.
 2. Manufactured participation: concerns the "Quorum Crisis". It takes place in academic, pedagogical, or non-public concern agendas. In such a situation, the minimum required number of presences is challenging. Participation drops below the institutional baseline because the issues lack immediate political or
- Bhandari (2026). Representation and Participation . . .

public salience; getting members to physically attend becomes a logistical challenge. Participation here is artificial, sustained only through chasing members to meet legal quorums.

3. Silent/Deceptive participation: Silent/Deceptive participation occurs when the meeting is purely educational; during a meeting, only a few vocal members dominate the floor while the majority remain passive. This silence is a mix of a lack of technical expertise and an absence of personal or political stakes.
4. Structural barriers to authentic participation: A hidden mechanism that actively suppresses people from participating is a critical aspect of participation. It has been a deliberate structural exclusion or gatekeeping. In this participation, key persons are bypassed in favor of wider stakeholders, such as students, by imposing certain high-stakes restrictions, not because stakeholders are indifferent, but because their involvement would disrupt the power balances.
5. Manufactured consensus in participation: This reveals how agendas are manipulated and consensus developed. When the campus chief and chairperson iron out disagreements before the meeting starts, the formal meeting becomes a performance. The "readymade agenda" turns authentic democratic participation into administrative obedience. The decision has already happened; the CMC is just giving it a legal stamp.

Assessing community participation based on Arnstein's 'Ladder of Participation'

Based on information from key informants who participated in the CMC meeting, the assessment of participation has also been made using Arnstein's Ladder of Participation framework.

Table 4*Assessing participation*

Agenda Item	Level on the participation ladder	Actual Power Dynamic
Teacher Selection / Politics	Partnership / Placation	High stakeholder power, bargaining, and fierce negotiation
Educational Issues	Informing / Consulting/Tokenism	Members are present but largely passive listeners to expert staff.
Pre-aligned Readymade Agendas	Manipulation / Therapy	Participation is engineered purely to rubber-stamp executive decisions.

By examining the information and Table 4, we can argue that when CMC issues offer a lower level of local political capital (such as standard educational issues), the degree of participation declines to 'Tokenism', relying on executive pressure just to secure a quorum. However, when an issue threatens or feeds local power and patronage, such as hiring a teacher, the committee rapidly climbs the ladder to demand a partnership in power. This shifting baseline justifies that participation in the CCs is determined by a mix of personal expertise and localized stakes.

If certain members of the committee attend the meeting with outside influence, and decisions are taken based on political sharing, it can be considered non-participation rather than the genuine one in which the powerholders 'teach' and 'cure' other participants (Arnstein, 1975). There are situations, as informed by the students, where the participants are not involved, but they are "informed of the decision", and they allow them to hear. They can also raise their voices in the meeting, but their voices are not reflected in the decision; this is what Arnstein calls 'informing' and 'consultation' and, in a single term, 'tokenism'. In other situations, such as collaborating with certain institutions, purchasing equipment, or construction, participants are free to opine, partner, decide, and withdraw from the decision. They often act in ways that emphasize

“sharing” and “working together” to make decisions, as noted by Gray in 1989 (Nishimura, 2017). Even some power is delegated to a particular member of the committee to table the decision, depending on their expertise. This is the highest level of participation, called 'citizen control' with 'partnership' and 'delegation' of power in Arnstein's words. In essence, participation and its level analyzed from the perspective of Sherry Arnstein's “A ladder of citizen participation”; the level of participation varies across agenda items rather than with the sequential and individualistic nature of expression.

Findings and Conclusion

As a locally structured community institution, the community of the community college is an issue of discussion and worth studying the community representation at the level of common citizens and beneficiaries. Such colleges are understood as a local property (cultural property) of the community established based on the 'local need and access of the time' for higher education. The communities, as expressed by the informants, include students and parents, individual donors, teachers, the community of schools, governmental and non-governmental organizations, consumers of the forest, the tax office, and the UGC. From the document study followed by the key informant interview, two-layered representations- senate/assembly and Campus Management Committee (CMC) could be known, in which the first is the legislative and the second the executive, in which the donor domination is higher than the academic ones due to their obligations of donor dependency and the lack of government funding to the CCs agencies. At the same time, the students' representation is not found mandatory within the CCs and across the higher education institutions in Nepal. Some colleges provide student representation, whereas others avoid it. In some colleges, students are represented in both the governing bodies, whereas in others, the provision is to be represented only in the senate, not in the CMC. This is the structural denial as well as the functional reality of the community, since the binding policies are not specifically Bhandari (2026). Representation and Participation . . .

guiding the colleges; rather, this is being denied even in the government's current policy. Despite the two levels of representation, variation is found among the colleges, including the inclusion and exclusion of students and the specification of inclusion criteria (e.g., gender and caste).

Based on the operational realities of Nepali community colleges, institutional governance is characterized by uneven stakeholder participation in CMC meetings. Participation fluctuates based on individual stakeholders, local political capital, and elite gatekeeping by key committee members. These dynamics reveal that participation is not a stable institutional metric but an opportunistic resource that ranges from highly mobilized to barely noticeable in terms of the agenda of their concern. It has also been observed in the participation that authentic democratic governance is arguably undermined by information irregularities and strategic exclusion. Sometimes, the members (such as students during teacher recruitment) are intentionally locked out, and sometimes the backroom political alignments make participation "readymade," reducing the participation to rubber-stamp.

Conflict of interest

The author declares no conflict of interest.

References

- Anderson, G. L., & Grinberg, J. (1998). Educational administration as a disciplinary practice: Appropriating Foucault's view of power, discourse, and method. *Educational administration quarterly*, 34(3), 329-353.
- Arnstein, S. (1975). A working model for public participation. *Public Administration Review*, 35(1), 70-73. doi:10.2307/975206
- Bhat, R. M., Rajan, P., & Gamage, L. (2023). Redressing historical bias: Exploring the Path to an accurate representation of the pasp. *Journal of Social Science (2720-9938)*, 4(3).
- Bhandari (2026). Representation and Participation . . .

- Bhatta, P., Adhikari, L., Thada, M., & Rai, R. (2008). Structures of denial: Student representation in Nepal's higher education. *Studies in Nepali History and Society*, 13(2), 235-263.
- Carney, S., Bista, M., & Agergaard, J. (2007). 'Empowering' the 'Local' through education? Exploring community-managed schooling in Nepal. *Oxford Review of Education*, 33(5), 611-628. Retrieved from <http://www.jstor.org/stable/20462361>
- Carpentier, N. (2011a). The concept of participation. If they have access and interact, do they really participate? *CM Komunikacija i mediji*, 6(21), 13-36.
- Carpentier, N. (2011b). Defining participation: An interdisciplinary overview. In *Media and Participation* (pp. 13-136): Intellect.
- Carpentier, N. (2012). The concept of participation. If they have access and interact, do they really participate? *Revista Fronteiras*, 14(2).
- Churchman, A. (2012). Public participation around the world: Introducaiton to the special theme issue. *Journal of Architectural and Planning Research*, 29(1), 1-4. Retrieved from <http://www.jstor.org/stable/43030955>
- Cornwall, A. (2008). Unpacking 'participation': models, meanings and practices. *Community development journal*, 43(3), 269-283.
- Cornwall, A., & Gaventa, J. (2001). Bridging the gap: citizenship, participation and accountability. *PLA notes*, 40(2001), 32-35.
- Coulibaly-Lingani, P., Savadogo, P., Tigabu, M., & Oden, P.-C. (2011). Factors influencing people's participation in the forest management program in Burkina Faso, West Africa. *Forest Policy and Economics*, 13(4), 292-302.
- Creamer, E. T. (2026). The democratic mssion: community colleges as Engines of social mobility and civic Engagement. *Innovative Higher Education*, 1-16.
- Cunningham, J. V. (1972). Citizen participation in public affairs. *Public Administration Review*, 32, 589-602.
- Bhandari (2026). Representation and Participation . . .

- Democracy, D. (1944). Democracy and education: An introduction to the philosophy of education. In: Free Press New York.
- Detchen, L. (1940). Shall the student rate the professor? *The journal of higher education*, 11(3), 146-154.
- Dijkers, M. P. (2010). Issues in the Conceptualization and Measurement of Participation: An Overview. *Archives of Physical Medicine and Rehabilitation*, 91(9, Supplement), S5-S16. doi:<https://doi.org/10.1016/j.apmr.2009.10.036>
- Dundar, S. (2013). Students' participation to the decision-making process as a tool for democratic school. *Educational Sciences: Theory and Practice*, 13(2), 867-875.
- Finsterbusch, K., & Van Wicklin, W. A. (1989). Beneficiary participation in development projects: Empirical tests of popular theories. *Economic Development and Cultural Change*, 37(3), 573-593. Retrieved from <http://www.jstor.org/stable/1153912>
- Fraser, H. (2005). Four different approaches to community participation. *Community development journal*, 40(3), 286-300.
- Gibbs, B., & Wood, G. C. (2023). How can student partnerships stimulate organisational learning in higher education institutions? *Teaching in Higher Education*, 28(7), 1551-1564.
- Gupta, S. P. (2018). Public Financing in Higher Education Institutions: Issues and Challenges. *Shiksha Shastra Saurabh*, 21, 1-18.
- Heyi, B. D. (2020). The role of participation in development in enhancing local people empowerment: The case of Bishoftu city administration (BCA), Oromia. In B. K. Debela, G. Bouckaert, M. A. Warota, D. T. Gemechu, A. Hondegheem, T. Steen, & S. Troupin (Eds.), *Public Administration in Ethiopia* (pp. 171-198): Leuven University Press.
- Jancovich, L. (2017). The participation myth. *International Journal of Cultural Policy*, 23(1), 107-121.
- Bhandari (2026). Representation and Participation . . .

- Kahlke, R. M. (2014). Generic qualitative approaches: Pitfalls and benefits of methodological mixology. *International Journal of Qualitative Methods*, 13(1), 37-52.
- Khanal, P. (2013). Community participation in schooling in Nepal: a disjunction between policy intention and policy implementation? *Asia Pacific Journal of Education*, 33(3), 235-248.
- Mainali, H. L. (2021). An analysis of students' perceptions towards teacher management practices: a study on community colleges in the Sarlahi district of Nepal.
- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*: John Wiley & Sons.
- Nishimura, M. (2017). Community participation in school management in developing countries. In *Oxford Research Encyclopedia of Education*.
- Oli, B. N., & Treue, T. (2015). Determinants of participation in community forestry in Nepal. *The International Forestry Review*, 17(3), 311-325. Retrieved from <http://www.jstor.org/stable/43739856>
- Pateman, C. (2012). Participatory democracy revisited. *Perspectives on politics*, 10(1), 7-19.
- Phuyal, P. (2023). Status, leadership, and administrative practices of community college in Nepal. *Вища освіта України*(2), 109-119.
- Poudel, S. (2016). *Higher education academic standard in Nepal*. (Masters in Philosophy Degree). University of Oslo,
- Putnam, H. (2020). A reconsideration of Deweyan democracy. In *Pragmatism* (pp. 183-204): Routledge.
- Rose, P. (2003). Community participation in school policy and practice in Malawi: Balancing local knowledge, national policies and international agency priorities. *Compare: A Journal of Comparative and International Education*, 33(1), 47-64.

- Sajjad, T. (2016). Heavy hands, helping hands, holding hands: The politics of exclusion in victims' networks in Nepal. *International Journal of Transitional Justice*, 10(1), 25-45.
- Sanoff, H. (2015). Schools designed with community participation. In *Schools for the future: Design proposals from architectural psychology* (pp. 149-171): Springer.
- Sharma, T. (2008). Structures and mechanisms of community participation in school management. *Journal of Education and Research*, 1(1), 72-85.
- Simkhada, P., & Van Teijlingen, E. (2010). Higher education in Nepal: Several challenges ahead. *Diaspora*, 3(1), 44-47.
- Tosun, C. (2006). Expected nature of community participation in tourism development. *Tourism management*, 27(3), 493-504.
- UGC. (2019). *Higher education reform project program implementation manual (HERP-PIM), 5th Amend.*: UGC, Nepal
- Warburton, D. (2013). *Community and sustainable development: participation in the future*: Routledge.
- Zakus, J. D. L., & Lysack, C. L. (1998). Revisiting community participation. *Health policy and planning*, 13(1), 1-12.

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 136 – 152 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Butterfly Diversity in Sukuna Community Forest, Morang, Nepal

Doi: <https://doi.org/10.3126/ajos.v6i1.98112>

Pramisha Poudel and Kishor Dahal*

Sukuna Multiple Campus, Sundarharaincha, Morang, Nepal

* kishordahal47@gmail.com

Abstract

This study was carried out to explore the diversity of butterflies in Sukuna Community Forest, Morang, Nepal. Surveys were conducted from January to June 2025 (60 survey days) using the Pollard walk method along three 500 m line transects. We recorded 489 individuals from 31 species, 24 genera, and five families. The family Nymphalidae was dominant with 18 species and 297 individuals, while Hesperidae was the least represented with one species and three individuals. Ecological indicators such as the Shannon-Weaver Index ($H = 3.18$), Pielou's evenness ($E = 0.92$), and Margalef's index ($D = 4.84$) revealed that the Sukuna community forest provides favourable habitat conditions, supporting high butterfly richness and abundance.

Keywords: Ecological indices, Entomofauna, Lepidoptera, Species richness, community forest

Introduction

Butterflies are the most attractive, colourful insects belonging to the order Lepidoptera and suborder Rhopalocera (Durairaj & Shina, 2015), having recognizable taxonomic traits, including two pairs of scaled wings, a coiled proboscis, clubbed antennae, and four sequential life stages: egg, larva, pupa, and adult (Bhardwaj et al., 2012; Lodh & Agarwala, 2016). They serve as pollinators

Poudel & Dahal (2026). Butterfly Diversity in . . .

and environmental indicators of terrestrial ecosystems because they are sensitive to environmental changes, floral resource availability, and climate change (Parmesan et al., 1999; Sharma & Sharma, 2021; Tiple et al., 2007). Habitat components, such as canopy cover, wind speed and direction, vegetation types, and temperature, influence butterfly richness and abundance (KC, 2023). Butterflies are also sensitive to microhabitat conditions; warm and humid habitats generally support greater butterfly diversity by providing favourable conditions for feeding, breeding and thermoregulation (Bonebrake et al., 2010). Butterfly habitat deterioration, climate change, and overuse of pesticides contribute to the decline of butterfly populations (Smith, 1994).

Although several studies in mid-mountain areas of Nepal (Prajapati et al., 2000); protected areas and natural habitats, including Koshi Tappu Wildlife Reserve (Khanal, 2005), eastern Siwalik hill (Bhusal & Khanal, 2008), sacred forests in the Kathmandu Valley (Shrestha et al., 2018), eastern lowlands (Tamang et al., 2019) have documented butterfly diversity. Despite the ecological importance of butterflies, baseline data in community forest ecosystems remain scarce due to limited research.

Sukuna community forest supports diverse vegetation and habitat types in the lowland Terai of eastern Nepal, making it a suitable site for butterfly diversity and establishing baseline data. The findings from this study will provide the present status of the butterflies, which is crucial information to the Community Forest User Groups (CFUGs) regarding the ecological significance of butterflies and their habitats. This study, therefore, aimed to assess the present status of butterfly diversity in the Sukuna community forest area.

Material and Methods

Study area

The present study was carried out in Sukuna Community Forest, Morang, Nepal, which is part of the Charkose Jhadi and has a tropical climate. It lies 26°40'54" to

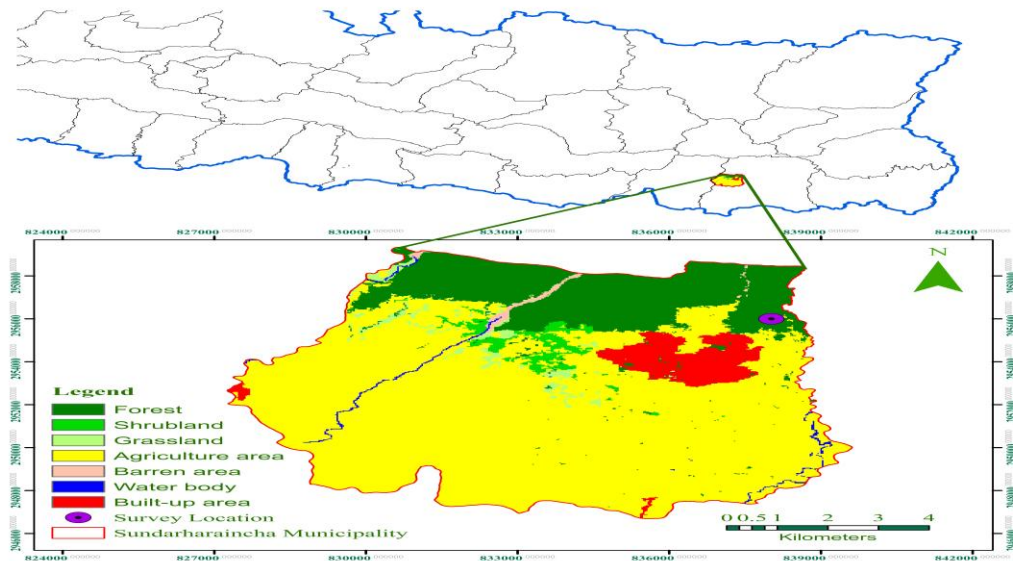
26°42'15" N, and 87°18'56" to 87°20'37" E, at an elevation of 154 m above sea level.

The total forest area covers 297.08 hectares, including Block A (156.30 hectares), Block B (133.56 hectares), and a wetland (7.22 hectares).

The study area has a rich mix of broadleaf trees, shrubs, and grasses managed by community forest user groups (CFUGs), offering ideal habitats for butterflies. The study area is primarily dominated by Sal (*Shorea robusta*), Asana (*Terminalia alata*), Karma (*Adina cordifolia*), Kumbhi (*Cochlospermum regiosum*), Khayar (*Acacia catechu*), Jamun (*Syzygium cumini*), Tatari (*Dillenia pentagyna*), Bot Dhayaro (*Lagerstroemia parviflora*), Hallude (*Lannea coromandelica*), Lati Karm (*Hymenodictyon excelsum*), and fruit trees such as Litchi (*Litchi chinensis*), Mango (*Mangifera indica*), Amla (*Phyllanthus emblica*), and Tamarind (*Tamarindus indica*). Additionally, in the study area, the invasive alien plant species *Lantana camara*, *Chromolaena odorata*, and *Mikania micrantha* are also present.

Figure 1

Map of the study area



Data collection and species identification

Butterfly surveys were carried out over a period of six months from January to June 2025, during which 10 survey days were covered in a month (60 survey days), using the Pollard walk method (Pollard, 1977). Three survey transects were established, each measuring 500 m in length. The surveys were conducted on both sides of each transect, covering up to 10 m, walking at a consistent slow pace between 10:00 AM and 2:00 PM on sunny days, when they are highly active. Butterflies were caught using a sweep net, photographed with a Samsung Galaxy A32 smartphone (Model: SM-A325F/DS), and were then released unharmed. Species were identified using the *Illustrated Checklist of Nepal's Butterflies* and *Butterflies of Nepal* (Smith, 2011). Species identification was based on external morphological characters, including wing colour, wing pattern, spots, bands, eyespots, venation, and body size. Butterfly abundance was recorded through direct observation and manual counting, ensuring that each individual was counted only once to minimize the sampling error.

Data analysis

Data analysis was conducted using Microsoft Excel (2010). Three diversity indices were calculated.

Shannon-Weaver Diversity Index (H'): Species diversity was calculated using the Shannon-Weaver Diversity Index (H) (Shannon & Weaver, 1949).

$H' = -\sum_{i=1}^n P_i \times \ln P_i$ where, Σ denotes the total sum, $\ln$ is the natural logarithm, and P_i is the proportion of individuals of the i^{th} species (n/N)

Pielou's Evenness (E): Species evenness (Pielou, 1969) was calculated using the following formula.

$E = \frac{H}{\ln(S)}$ where, H' is the Shannon-Weaver Diversity Index and S is the number of species.

Margalef's Richness Index (D): It measures species richness based on species abundance (Margalef, 1958).

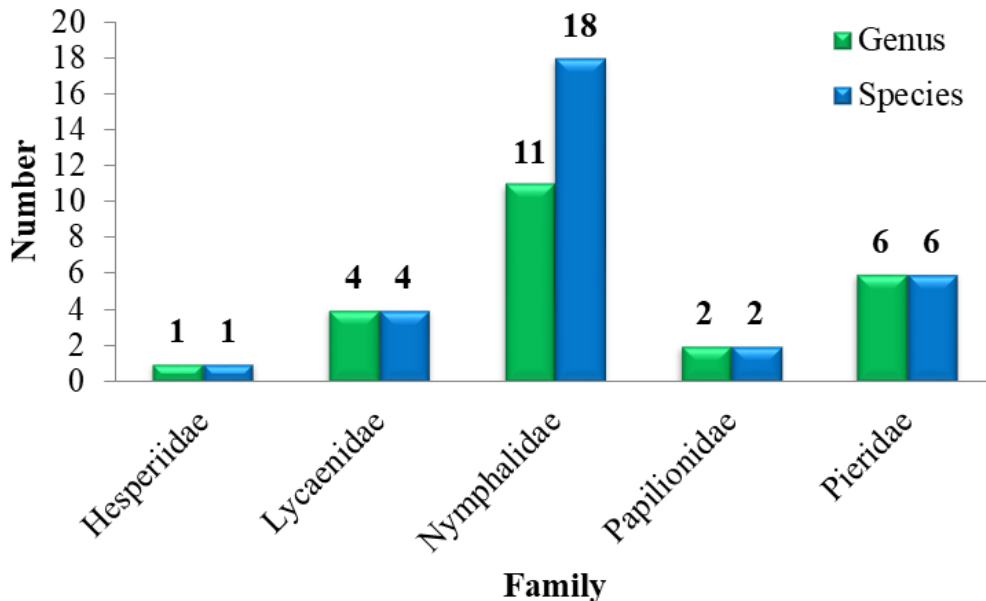
$D = \frac{S-1}{\ln(N)}$ where, S is the number of species and N is the number of individuals.

Results and Discussion

The present study documented a total of 489 butterflies, representing 31 species and 24 genera under five families (Appendix I). Among the five families, Nymphalidae was the dominant with 18 species, followed by Pieridae with six species, Lycaenidae with four, Papilionidae with two, and least by the family Hesperidae with a single species (Figure 2).

Figure 2

Butterfly composition at family, genus, and species levels in the study area



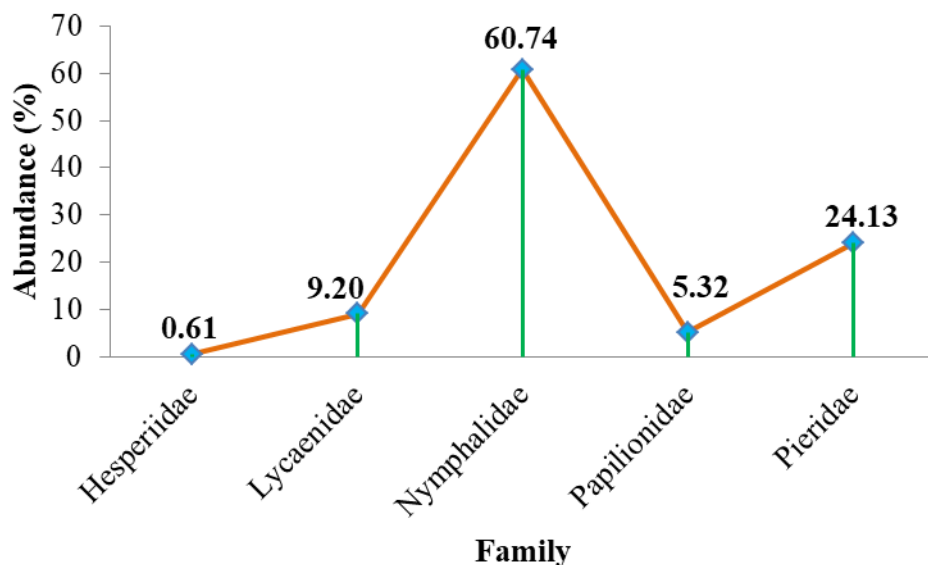
is the most diverse and dominant (Koneri & Nangoy, 2019; Sharma & Paudel, 2021; Neupane & Miya, 2021; Roy et al., 2022; Oli et al., 2023; Gupta & Kumar, 2024) due to their active flight capacity (Raut & Pendharkar, 2010), high dispersal ability (Dudley & Poudel & Dahal (2026). Butterfly Diversity in . . .

Adler, 1996), and rapid adaptation to environmental conditions (Jiggins et al., 1996). The dominance of Nymphalidae was also likely supported by the abundant nectar sources such as *Lantana camara*, *Mangifera indica*; a warm and humid microclimate and heterogeneous forest habitats, which provided suitable habitats for feeding and breeding. The present study documented the lowest species richness of the family Hesperidae, which is consistent with previous studies (Koirala et al., 2020; Dar et al., 2022; Oli et al., 2023; Gupta & Kumar, 2024) due to their dependency on specific environmental conditions for survival (Siewert et al., 2014).

Among the 489 butterfly individuals recorded, the family Nymphalidae was dominant, representing 297 individuals (60.74%). It was followed by Pieridae with 118 individuals (24.13%), Lycaenidae with 45 individuals (9.20%), and Papilionidae with 26 individuals (5.32%), while Hesperidae was the least abundant, with only three individuals (0.61%) (Figure 3).

Figure 3

Butterfly abundance across different families



The highest abundance was shown by the family Nymphalidae; consistent with the findings of Hailay et al. (2022), because of their high adaptability and ability to inhabit diverse habitats, including grasslands and disturbed forest areas (Ojiaiwuna & Akpan, 2021). The lowest abundance of the family Hesperidae is similar to previous studies (Hailay et al., 2022; Gupta & Kumar, 2024), due to a lack of specific host plants and limited dispersal ability (Kehimkar, 2008).

In this study, the Shannon-Weaver Diversity Index (H') was 3.18, suggesting that butterfly diversity was relatively high (Fernando et al., 1998), indicating favourable environmental conditions in the Sukuna community forest, providing suitable habitats and food resources for various species. Pielou's evenness index (E) was 0.92, which is close to 1, indicating a balanced butterfly community ecosystem. This result indicates that individuals were distributed relatively evenly across species, with no species showing clear dominance. The Margalef's Richness Index (D) was found to be 4.84, showing moderate species richness (Hussain et al., 2012), which reflects favourable intermediate habitat conditions for butterflies.

Conclusions

The present study revealed that the Sukuna community forest provides a suitable and ecologically balanced habitat that supports a highly diverse butterfly community. In this study; the families Nymphalidae and Hesperidae were the most abundant and least abundant respectively. These findings provide baseline information for future butterfly monitoring and conservation in the study area.

Conflicts of interest

The authors declare no conflict of interest.

References

- Bhardwaj, M., Uniyal, V. P., Sanyal, A. K., & Singh, A. P. (2012). Butterfly communities along an elevational gradient in the Tons valley, Western Himalayas, India. *Journal of Threatened Taxa*, 4(8), 2796-2810.
- Bhusal, D. R., & Khanal, B. (2009). Seasonal and altitudinal diversity of butterflies in eastern Siwalik of Nepal. *Journal of Natural History Museum*, 23, 82-87. <https://doi.org/10.3126/jnhm.v23i0.1843>
- Bonebrake, T. C., Ponisio, L. C., Boggs, C. L., & Ehrlich, P. R. (2010). More than just indicators: A review of tropical butterfly ecology and conservation. *Biological Conservation*, 143(8), 1831-1841. <https://doi.org/10.1016/j.biocon.2010.04.044>
- Dar, A. A., Jamal, K., Shah, M. S., Ali, M., Sayed, S., Gaber, A., Kesba, H., & Salah, M. (2022). Species richness, abundance, distributional pattern and trait composition of butterfly assemblage change along an altitudinal gradient in the Gulmarg region of Jammu & Kashmir, India. *Saudi Journal of Biological Sciences*, 29(4), 2262-2269. <https://doi.org/10.1016/j.sjbs.2021.11.066>
- Dudley, R., & Adler, G. H. (1996). Biogeography of milkweed butterflies (Nymphalidae: Danainae) and mimetic patterns on tropical Pacific archipelagos. *Biological Journal of the Linnean Society*, 57(4), 317-326. <https://doi.org/10.1111/j.1095-8312.1996.tb00313.x>
- Durairaj, S., & Shina, N. K. (2015). A study on diversity of butterflies in and around the sacred groves of Cuddalore District, Tamil Nadu. *International Journal of Pure and Applied Zoology*, 3(2), 147-151.
- Fernando, E., Janzen, D., & Hallwachs, W. (1998). A new species of Calisto (Satyridae) from the Cordillera Central of the Dominican Republic. *Tropical Lepidoptera*, 9(1), 1-4.

- Gupta, V., & Kumar, P. (2024). Diversity and status of butterfly fauna at Kurukshetra University campus, Haryana, India. *Journal of Threatened Taxa*, 16(5), 25209–25219.
- Hailay, G., Biru, Y., & Kassie, A. (2022). Butterfly diversity and abundance at two different habitat types of Gozamen woreda, Amhara regional state, Ethiopia. *Arthropods*, 11(3), 153-163.
- Hussain, A., Ghafoor, A., & Tariq, M. (2012). Butterfly diversity of the Islamabad-Murree region of Pakistan. *Pakistan Journal of Zoology*, 44(5), 1333-1339.
- Jiggins, C. D., McMillan, W. O., Neukirchen, W., & Mallet, J. (1996). What can hybrid zones tell us about speciation? *Biological Journal of the Linnean Society*, 59, 221-242.
- KC, U. (2023). *Floral preference of butterflies in National Botanical Garden, Godawari, Nepal* [Doctoral dissertation, Department of Zoology].
- Kehimkar, I. (2008). *The book of Indian butterflies*. Bombay Natural History Society; Oxford University Press.
- Khanal, B. (2006). The late season butterflies of Koshi Tappu Wildlife Reserve, eastern Nepal. *Our Nature*, 4(1), 42-47. <https://doi.org/10.3126/on.v4i1.501>
- Koirala, P., Tenzin, T., & Lhamo, K. (2020). Butterfly diversity in Gidakom forest, Thimphu, Bhutan. *Bhutan Journal of Natural Resources and Development*, 7(1), 43-50. <https://doi.org/10.17102/cnr.2020.7.1.4>
- Koneri, R., & Nangoy, M. J. (2019). Diversity and abundance of butterfly species (Lepidoptera: Rhopalocera) in the Gunung Ambang Nature Reserve, North Sulawesi, Indonesia. *Journal of Biological Diversity*, 20(7), 1984-1991. <https://doi.org/10.13057/biodiv/d200727>
- Lodh, R., & Agarwala, B. K. (2016). Diversity and abundance of butterfly fauna in a semi-evergreen forest of Tripura, Northeast India. *Journal of Entomology and Zoology Studies*, 4(2), 22-29.

Poudel & Dahal (2026). Butterfly Diversity in . . .

- Margalef, R. (1958). Information theory in ecology. *General Systems*, 3, 36-71.
- Neupane, K., & Miya, M. S. (2021). Butterfly diversity and distribution pattern in western Nepal. *Journal of Entomology and Zoology Studies*, 9(5), 1752-1757.
- Ojianwuna, C. C., & Akpan, E. E. (2021). Temporal variation in abundance and distribution of butterflies in a Southern Nigerian National Park. *Open Environmental Research Journal*, 14, 1–11.
- Oli, B. R., Sharma, M., & Shahi, B. (2023). Butterfly diversity in Kakrebihar Forest Area, Birendranagar, Surkhet, Nepal. *Surkhet Journal*, 2(1), 10–19.
- Parmesan, C., Ryrholm, N., Stefanescu, C., Hill, J. K., Thomas, C. D., Descimon, H., Huntley, B., Kaila, L., Kullberg, J., & Tammaru, T. (1999). Poleward shifts in geographical ranges of butterfly species associated with regional warming. *Nature*, 399(6736), 579-583.
- Pielou, E. C. (1969). *An introduction to mathematical ecology*. Wiley-Interscience.
- Pollard, E. (1977). A method for assessing changes in the abundance of butterflies. *Biological Conservation*, 12(2), 115-134.
- Prajapati, B., Shrestha, U., & Tamrakar, A. S. (2000). Diversity of butterfly in Daman area of Makawanpur district, central Nepal. *Nepal Journal of Science and Technology*, 2(1), 71-76.
- Raut, N. B., & Pendharkar, A. (2010). Butterfly (Rhopalocera) fauna of Maharashtra Nature Park, Mumbai, Maharashtra, India. *Check List*, 6(4), 548-551.
- Roy, G. C., Miah, A., Roy, S., Roy, D., Kar, D., Banerjee, S., & Gupta, M. (2022). Diversity and abundance of butterfly as an environmental indicator at Dinhata Subdivision, Cooch Behar, West Bengal, India. *Notulae Scientia Biologicae*, 14(1), Article 11156. <https://doi.org/10.15835/nsb14111156>
- Shannon, C. E., & Weaver, W. (1949). *The mathematical theory of communication*. University of Illinois Press.

- Sharma, G., & Sharma, N. (2021). Butterfly diversity of district Reasi, Jammu and Kashmir, India. *Journal of Threatened Taxa*, 13(2), 17721-17730.
- Sharma, J., & Paudel, L. (2021). Butterfly diversity in Kumakh Rural Municipality, northern part of Salyan District, Karnali Province, Nepal. *Arthropods*, 10(2), 53-59.
- Shrestha, B. R., Sharma, M., Magar, K. T., Gaudel, P., Gurung, M. B., & Oli, B. (2018). Diversity and status of butterflies at different sacred forests of Kathmandu Valley, Nepal. *Journal of Entomology and Zoology Studies*, 6(3), 1348-1356.
- Siewert, R. R., Iserhard, C. A., Romanowski, H. P., Callaghan, C. J., & Moser, A. (2014). Distribution patterns of riordinid butterflies (Lepidoptera: Riordinidae) from southern Brazil. *Zoological Studies*, 53, Article 15. <https://doi.org/10.1186/1810-522X-53-15>
- Smith, C. (1994). *Butterflies of Nepal (Central Himalaya)* (3rd ed.). Craftsman Press.
- Smith, C. (2011). *An illustrated checklist of Nepal's butterflies* (3rd ed.). Craftsman Press.
- Tamang, S. R., Joshi, A., Pandey, J., Raut, N., & Shrestha, B. R. (2019). Diversity of butterflies in eastern lowlands of Nepal. *The Himalayan Naturalist*, 2(1), 3-10.
- Tiple, A. D., Khurad, A. M., & Dennis, R. L. (2007). Butterfly diversity in relation to a human-impact gradient on an Indian university campus. *Nota Lepidopterologica*, 30(1), 179.

Appendix I

Table 1: Butterfly species documented in the study area

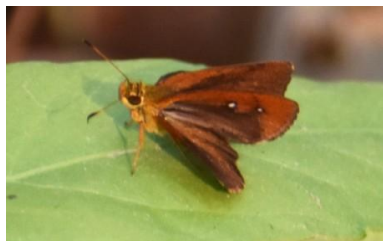
S.N.	Scientific name	Author & Year	Common name	Abundance
Family: Hesperiiidae				
1	<i>Iambrix salsala</i>	Moore, 1866	Chestnut Bob	3
Family: Lycaenidae				
2	<i>Acytolepis puspa</i>	Horsfield, 1828	Common Hedge Blue	11
3	<i>Castalius rosimon</i>	Fabricius, 1775	Common Pierrot	7
4	<i>Jamides celeno</i>	Cramer, 1775	Common Cerulean	16
5	<i>Poritia hewitsoni</i>	Moore, 1866	Common Gem	11
Family: Nymphalidae				
6	<i>Danaus chrysippus</i>	Linnaeus, 1758	Plain Tiger	12
7	<i>Elymnias hypermnestra</i>	Linnaeus, 1763	Common Palmfly	3
8	<i>Euploea core</i>	Cramer, 1780	Common Indian Crow	23
9	<i>Euploea mulciber</i>	Cramer, 1777	Striped Blue Crow	5
10	<i>Junonia almana</i>	Linnaeus, 1758	Peacock Pansy	13
11	<i>Junonia altites</i>	Linnaeus, 1763	Grey Pansy	14
12	<i>Junonia hierta</i>	Fabricius, 1798	Yellow Pansy	8

13	<i>Junonia iphita</i>	Cramer, 1779	Chocolate Pansy	12
14	<i>Junonia lemonias</i>	Linnaeus, 1758	Lemon pansy	13
15	<i>Melanitis leda</i>	Linnaeus, 1758	Common Evening Brown	28
16	<i>Mycalesis mineus</i>	Linnaeus, 1758	Dark-brand Bushbrown	25
17	<i>Neptis clinia</i>	Moore, 1872	Clinia Sailer	11
18	<i>Neptis hylas</i>	Linnaeus, 1758	Common Sailer	10
19	<i>Orsotriaena medus</i>	Fabricius, 1775	Jungle Brown	10
20	<i>Pantoporia hordonia</i>	Stoll, 1790	Common Lascar	9
21	<i>Vanessa indica</i>	Herbst, 1794	Indian Red Admiral	4
22	<i>Ypthima baldus</i>	Fabricius, 1775	Common Five-Ring	66
23	<i>Ypthima huebneri</i>	Kirby, 1871	Common Four-Ring	31
Family: Papilionidae				
24	<i>Pachliopta aristolochiae</i>	Fabricius, 1775	Common Rose	18
25	<i>Papilio demoleus</i>	Linnaeus, 1758	Lime Butterfly	8
Family: Pieridae				
26	<i>Catopsilia pomona</i>	Fabricius, 1775	Common Emigrant	11
27	<i>Delias descombesi</i>	Boisduval,	Redspot Jezabel	5

		1836		
28	<i>Eurema hecabe</i>	Linnaeus, 1758	Common Grass Yellow	12
29	<i>Leptosia nina</i>	Fabricius, 1793	Psyche	20
30	<i>Pieris canidia</i>	Linnaeus, 1768	Indian Cabbage White	32
31	<i>Pontia daplidice</i>	Linnaeus, 1758	Bath White	38

Appendix II: Photographic records of butterfly species documented in the study area

Family: Hesperiiidae



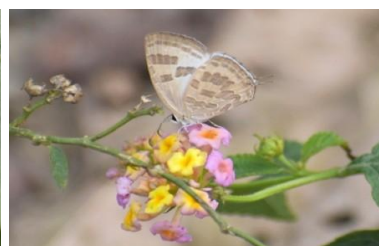
Iambrix salsala



Acytolepis puspa



Castalius rosimon



Jamides celeno

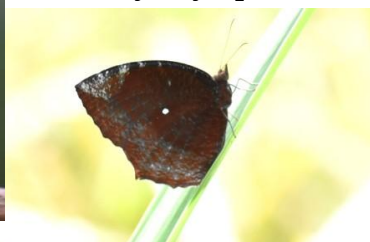


Poritia hewitsoni

Family: Nymphalidae



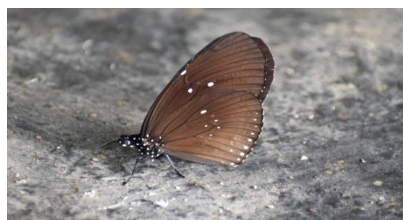
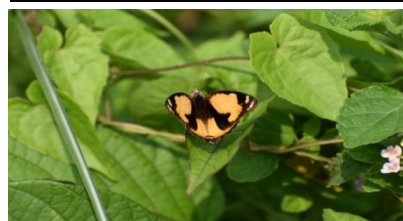
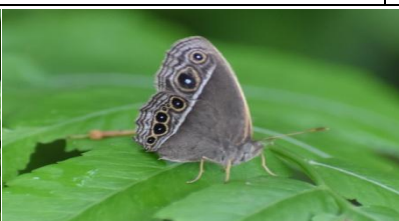
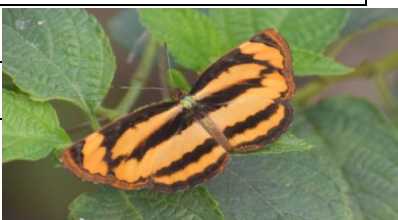
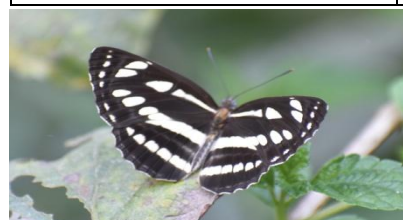
Danaus chrysippus

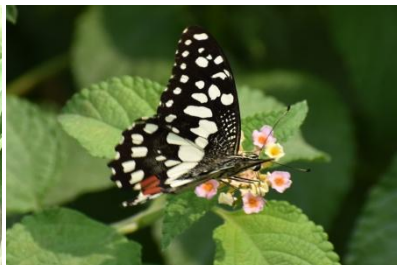
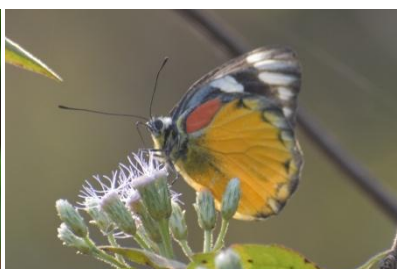


Elymnias hypermnestra



Euploea core

*Euploea mulciber**Junonia almana**Junonia altites**Junonia hierta**Junonia iphita**Junonia lemonias**Vanessa indica**Ypthima baldus**Ypthima huebneri**Melanitis leda**Mycalesis mineus**Neptis clinia*

Family: Papilionidae*Pachliopta aristolochiae**Papilio demoleus***Family: Pieridae***Catopsilia pomona**Delias descombesi**Eurema hecabe**Leptosia nina**Pieris canidia**Pontia daplidice*

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 153 – 171 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

**The Role of Cooperatives in Women's Economic Empowerment: A Study of
Sundarharaincha, Morang**

Doi: <https://doi.org/10.3126/ajos.v6i1.98118>

Rojina Luitel*

Tulashi Rimal

Khagendraraj Dahal

Sukuna Multiple Campus

Sundarharaincha, Morang, Nepal

* rojinaluitel47@gmail.com

Abstract

Co-operatives are voluntary organizations established to fulfill the common interest of their members. The issue of women's empowerment has been studied by scholars since the twentieth century. Though the Nepal Government has given special rights to women in the constitution against discrimination in any case, women are equal to men. But it was confined mainly to papers, while the majority of women were essentially powerless. The paper studied 100 women co-operative members from different co-operatives in Sundarharaincha ward number one of Morang district, Nepal, using a closed-ended questionnaire. The study was analyzed with both descriptive and simple statistical techniques. The sample was collected through convenience sampling to investigate the economic empowerment of women members in co-operatives. The study found that co-operatives support women's economic empowerment, thereby enhancing the economic welfare of their members.

Luitel, Rimal & Dahal (2026). The Role of . . .

Keywords: Co-operatives, economic welfare, empowerment, skill development

Introduction

A cooperative is a group of people who voluntarily unite to achieve common economic, social, and cultural needs, wants, and goals through a business who jointly owned and managed democratically. Co-operatives are established to address markets where monopolies exist (Novkovic, 2022). Despite considerable advances in many fields, women, especially in developing countries, still face significant challenges in accessing economic opportunities and resources. But being part of a cooperative can help surmount these obstacles: co-ops are organizations in which every member owns a share and has an equal say; they typically promote cooperation, which has historically proven an effective way to achieve mutual growth (Birchall, 2003).

Empowerment means enhancing individuals' belief in their ability and strengthening employees' self- confidence and competence (Conger & Kanungo, 1988). Women's empowerment refers to the process of developing women's power in life decisions and in their participation in family matters, work, and social life (Richardson, 2018). Economic empowerment of women refers to access to and control over income, education, jobs, assets, and productive activities, which enhances decision-making ability by reducing inequality (Duflo, 2012). The issue of 'women empowerment' has become a central point in the programs and activities of the United Nations and other Government and Non-Government Organizations. Subsequently, it has also become a major concern of social scientists, politicians, bureaucrats, and researchers. But there is no unanimity among scholars on the meaning of the term "empowerment". Various scholars have sought to define the term from their respective perspectives. The term empowerment has different meanings in different socio-cultural, economic, and political contexts. An exploration of local terms associated with empowerment around the world often yields a wide range of definitions. These terms include self-strength, self-control, Luitel, Rimal & Dahal (2026). The Role of . . .

self-power, self-reliance, personal choice, the ability to fight for one's rights, independence, decision-making power, freedom, etc. These definitions are embedded in local value systems and beliefs. Empowerment has both intrinsic and instrumental value. The most common use of the term "empowerment" refers to increasing the power of a low-power group so that it more nearly equals that of a high-power group (Bhadra, 2001).

Cooperatives play a significant role by enabling the pooling of resources and the sharing of risks among members, an approach that can be particularly helpful for women. This is because women are often found wanting in access to financial services, education, and markets, which the strategy could easily address. According to Majurin (2012), women stand to gain various benefits from participating in cooperatives. They include increased income, which leads to improved financial stability and ultimately an elevated social status. All these advantages help steer a broader socio-economic development wave towards individuals, their families, and local communities.

An important way cooperatives help women financially is by providing financial services such as credit, savings, and insurance. These services are required for women to initiate and develop income-generating activities for their families; this, in turn, leads to higher household wealth. Grameen Bank, a cooperative in Bangladesh, was created by Yunus (2007). Microloans from Grameen Bank have enabled millions of women to start small businesses and become financially independent. In addition to financial services, cooperatives provide training and capacity-building opportunities to help women increase their skills and knowledge. Leadership skills, entrepreneurship, agricultural practices, and financial literacy are just a few of the many topics covered in those programs. This type of preparation helps increase women's employability and productivity and provides them with the confidence and ability to take on leadership

roles in their community projects, thereby facilitating their access to these projects (ILO, 2016).

. Women in cooperatives can collectively advocate for the recognition of their rights, promote collective action against gender inequality, participate in decision-making processes, challenge traditional gender norms, and pursue greater gender equality. For example, independent studies by Kumar & Mahadevan (2014) show that women in cooperatives have greater voice in household and public community decisions, stronger public status, and greater economic independence. In terms of cooperative inputs to community development, a further significant area for impact from women's participation in cooperatives is community development in the form of cooperative investments and community investments in local public goods, such as clean water, health care facilities, education facilities, and so on (Wanyama et al, 2008).

Cooperative membership offers enormous benefits, but as a woman, I encounter many challenges in fully realizing its potential. Cultural constraints, gender biases and other factors may inhibit women's participation and leadership in co-operatives. Women's mobility and decision-making authority are often limited by broader social norms, resulting in women's exclusion from cooperative activities. Access to important resources such as land, capital and technology is still a serious problem for many women (Agarwal, 2010).

These issues point to the need to strengthen legal mechanisms to guarantee women's rights to join and lead cooperatives. Barriers can be overcome and their investment increased through measures that support orientation in cooperatives and prepare women for training and capacity building. Building more solidarity among women's formations can also help to strengthen the role of women in the cooperative movement (International Cooperative Alliance, 2017)

The research therefore discussed the complex impact of women's economic participation through membership in the cooperative enterprises. This looks at the effect of these factors on gender equality, community development, increased household income and elevated social class status via the stated contributions. By analyzing contextual analyses and observational data, this study aims to show the specific capacity of cooperatives to engage women and achieve a rational financial utopia (UN Women, 2020).

This study will add to an in-depth analysis on how cooperative models can be enhanced to support women's economic empowerment and improve the socioeconomic fabric of communities. The study aims to inform policymakers, development practitioners, and cooperative leaders on best practices and strategies for encouraging women's economic contributions through cooperative frameworks. It highlights successful examples and identifies areas for improvement. The main objective of the study is to study the economic empowerment of women members in co-operatives.

Co-operatives play an important role in the economic empowerment of women, by giving them the opportunity to engage in economic activities that lead to their independence and overall empowerment. Co-operatives provide women with an organized opportunity to earn income from activities such as agriculture, handicrafts, retail and services (Birchall, 2003). Many of these activities are often more feasible and profitable within the cooperative due to pooling of resources, sharing of knowledge and collective bargaining power. In the agrarian sector, women in cooperatives have access to better farming inputs, such as seeds, fertilizers, and implements, which improve their efficiency. Chagwiza et al. (2016) reported increases in both farm women's income and yields among members of the agricultural cooperative in Ethiopia. They could benefit from economies of scale, access to training on the latest farming techniques, and receive better market prices through the cooperatives' framework.

Luitel, Rimal & Dahal (2026). The Role of . . .

Another area where women derive considerable financial benefit is through cooperatives for artisans and handicrafts. Many of these cooperatives provide training in skills development, product design, and marketing to their participating women, as a 2016 ILO study elaborates. The economic empowerment of women refers to the capacity of women to participate in, contribute to, and benefit from economic activities in ways that recognize their value and dignity, acknowledge their contributions, and support the equitable distribution of economic resources, as articulated by UN Women in 2020.

Cooperatives economically empower women by providing them with access to financial services they would otherwise be denied in the traditional banking system. Majurin (2012) points out that women in cooperatives have access to credit, savings and insurance, which are crucial to start-ups and business expansion. Such access to financial services will make women less vulnerable to economic shocks and more able to invest in productive activities.

In Bangladesh, Baruah (2018) found that women who participate in cooperatives experience greater economic empowerment because they have better access to credit and training. Women reported that their income increased and their financial management skills improved, leading to increased confidence in making economic decisions. Overall, these cooperative models helped in collective savings and credit schemes which were essential in supporting women's entrepreneurial activities.

Cooperatives also provide an enabling environment for women to build business skills beyond financial services. Cooperatives run training programs to improve women's financial literacy, entrepreneurship and vocational skills. These programs increase women's employability and ability to take up leadership roles in communities and in businesses. The economic empowerment of women is best elaborated by case studies of several cooperatives on this issue. Millions of women have been empowered

Luitel, Rimal & Dahal (2026). The Role of . . .

with this cooperative model under SEWA in India (Baruah et al., 2022). Through its daily savings scheme, which offers training and access to financial services and markets, the organization equips its members to improve their livelihoods and attain economic independence.

In Kenya, the Kenya Women Holding Cooperative has played a very important role in empowering women through microfinance services and business training. In relation, a study by Fakoya, van der Walldt, and de Jager (2016) found that women in the cooperative demonstrated improved business skills, increased participation in economic activities, and higher incomes. By focusing on financial literacy and entrepreneurship, women have been able to start and sustain their businesses, which contribute to local economic development.

Despite the many benefits, several challenges limit women's ability to fully enjoy cooperative membership. Culture and gender biases can affect women's participation and leadership in cooperatives. Agarwal (2010) strengthens the argument by pointing out that, in most settings, women are denied cultural norms and biases that limit their mobility and decision-making roles, thereby affecting their direct participation in cooperative activities.

There are quite a few alternative ways of facing these challenges. But beyond these, the legal frameworks need to be improved to secure women's equal rights to cooperative membership and leadership. Policies that support gender equality in cooperatives, coupled with targeted training and capacity-building programs, will help address skill gaps for women and increase their participation. Support for women's networks and alliances can further strengthen their voices and increase their influence within the cooperative movement. This study examines the role of cooperatives in promoting women's economic empowerment and provides insights to support strategies for enhancing women's economic participation and well-being.

Luitel, Rimal & Dahal (2026). The Role of . . .

Methods and Materials

The basic information on the cooperatives of Sundarharaincha was obtained from the cooperative unit at the municipality office in Biratchowk, Morang. In Sundarharaincha municipality, a total of 85 cooperatives are registered, of which 73 are functioning (Sahakari Jhalak, 2077). Among them, there are six cooperatives in Sundarharaincha ward one. In this sampling, we selected six cooperatives in ward one using convenience sampling. The number of female members of cooperatives in Sundarharaincha ward one was 786. The sample size was 100. Women and cooperators were selected based on available resources and time, using convenience sampling. The collected data were analyzed using both descriptive and statistical techniques. There are three major parameters, each with five questions, and each question uses a three-point Likert scale. The data were used to create simple frequency tables and descriptive statistics. The age distribution of the women was as follows: 76 percent were in the 30-50 age group, 13 percent were under 30, and 11 percent were over 50. The educational status of the women showed that 37 percent had completed secondary education, 31 percent had attained a bachelor's degree, and 32 percent were categorized as literate. In this way, 92 percent of women were married, whereas only eight percent were unmarried. 55 percent of the women members had been members of cooperatives for more than five years, 19 percent had participated for one to three years, 18 percent for three to five years, and only eight percent had been members for less than one year.

Results and Discussion

Results

The data collected from the field survey of female cooperative members are presented and analyzed in the following tables. Respondents were the women's co-Luitel, Rimal & Dahal (2026). The Role of . . .

operatives of Sundarharaincha municipality, ward one. The brief profiles of the cooperative involvement are described below.

Table 1

Relation Between Involvement in Co-operatives and Personal Contribution Towards Members (In: Increasing, Co: Constant, De: Decreasing)

	Less than one year	Less than one year	Less than one year	One to Three years	One to Three years	One to Three years	Three to Five years	Three to Five years	Three to Five years	More than five years	More than five years	More than five years
	In.	Co.	De.	In.	Co.	De.	In.	Co.	De.	In.	Co.	De.
Personal income	5	3	0	13	5	1	8	10	0	26	29	0
Economic contribution	6	2	0	13	6	0	11	7	0	41	14	0
Improvement in living standard	5	1	2	11	7	1	11	5	2	36	17	2
Diversify income	2	4	2	8	9	2	6	9	3	10	30	15
Overall financial stability	6	1	1	11	4	4	8	4	6	19	29	7

The analysis of cooperative tenure and members' contributions showed positive results. Among 100 women from six cooperatives, longer involvement correlated with greater contributions. Increased involvement led to higher personal income, improved living standards, diversified income, and enhanced overall financial capacity.

Table 2*Relation Between Reason for Joining and Financial Contribution Towards Members*

	Finan cial supp ort	Finan cial supp ort	Finan cial supp ort	Savi ng facil ity	Savi ng facil ity	Savi ng facil ity	Loan availa bility	Loan availa bility	Loan availa bility	Busines s develop ment	Busines s develop ment	Busines s develop ment
	H. In.	In.	Co.	H. In.	In.	Co.	H. In.	In.	Co.	H. In.	In.	Co.
Acce ss to loan	8	6	5	13	18	2	12	6	4	13	9	4
Abilit y to save	4	10	5	12	19	2	5	17	0	13	11	2
Utiliz e finan cial servi ce	1	16	2	10	21	2	5	17	0	9	17	0
Finan cial litera cy	3	13	3	9	21	3	7	13	2	9	14	3
Abilit y to inves t	3	12	4	11	19	3	4	13	5	7	16	3

The relationship between the reasons for joining and cooperative financial contributions was satisfactory. Financial support and savings services grew significantly, while access to loans and business growth improved only marginally. Some members complained about the financial support, explaining that their expectations were not met.

Table 3

The Relation Between Duration of Involvement and Its Contribution Towards Members through Skill Development

	On e yea r Le ss	On e yea r Le ss	On e yea r Le ss	One to Thr ee year s	One to Thr ee year s	One to Thr ee year s	Thr ee to Five year s	Thr ee to Five year s	Thr ee to Five year s	Mo re tha n five yea rs	Mo re tha n five yea rs	Mo re tha n five yea rs
	Hi. In.	In.	Co	H In.	In.	Co.	H In.	In.	Co	H In.	In.	Co
Quality and Relevanc e of Training	3	5	0	9	7	3	4	14	0	17	25	13
Increase Knowled ge and Skill	1	5	2	8	9	2	8	10	0	13	36	6
Participat ion Training Worksho p	2	4	2	9	7	3	6	7	5	13	32	10
Develop New Business Skills	0	7	1	5	13	1	6	11	1	16	31	8
Develop the New Business	2	5	1	14	3	2	8	2	8	34	4	17

One study on cooperative membership duration and contributions found that a longer tenure is associated with greater benefits. No quality training, no workshop opportunities, no business skills development for the new members. Longer membership meant access to different training and business skills development, but still around 50% did not have access to skills and knowledge to develop their businesses.

Discussions

Based on the study's findings, the cooperatives have greatly contributed to the economic empowerment of women in Sundarharaincha Municipality, Morang. As the findings in Table 1 show, women who had stayed longer in cooperatives achieved higher personal incomes, greater economic contributions, better living conditions, greater income diversification, and overall economic stability. The results confirm the cooperative theory, which holds that through collective action, members gain access to resources and share risks, resulting in improved economic outcomes. Birchall (2003) noted that cooperatives offer women an organized opportunity to participate in productive economic activities and improve their livelihoods through resource sharing. In addition, Duflo (2012) highlighted that women's economic empowerment occurs when they gain greater access to income opportunities and productive resources.

Moreover, the study shows that membership duration is positively related to economic gains. Women who have been members of cooperatives for more than five years showed higher rates of financial gains compared to newer members. From this finding, it can be argued that the advantages of cooperative participation grow over time. In the same way, Chagwiza, Muradian, and Ruben (2016) also found that participants who had been members of agricultural cooperatives for long periods in Ethiopia were significantly more productive and earned more income than non-participants, due to constant access to cooperative services, training, and bargaining power. Additionally, Yunus (2007) argues that sustained participation in cooperatives Luitel, Rimal & Dahal (2026). The Role of . . .

and microfinance institutions helps women build their assets and become economically independent.

The rise in quality of life among the study participants also validates the contribution of cooperatives to improving household welfare. Respondents have reported improvements in their standard of living through their participation in the cooperatives, indicating that economic empowerment extends beyond income generation. This finding is consistent with Majurin (2012), who found that women's participation in cooperatives improves household welfare through increased income and savings. Barua (2018) also found that cooperatives in Bangladesh improve women's economic status and their standard of living.

The results in Table 2 indicate that financial assistance, savings opportunities, loans, and opportunities to develop business ventures were the main reasons for joining cooperatives. Most respondents reported positive changes in their capabilities in saving, obtaining loans, and using financial services. These results clearly support Majurin's (2012) claim that savings, credit, and insurance are the primary economic gains for women from cooperatives. Cooperatives serve as alternative financial institutions for women who often have difficulty accessing traditional banks. Financial services of cooperatives contribute to financial inclusion and reduction of women's economic vulnerability through access to credit and savings facilities.

It is important to note that the benefits of savings facilities in this research are especially valuable because savings are an essential basis for economic security and investment. Saving regularly makes women more resilient to economic changes and allows them to invest in productive endeavors. Economic empowerment refers to an increase in women's financial autonomy and their ability to make economic decisions independently, according to Richardson (2018). Hence, the improvement in respondents' saving practices indicates another component of economic empowerment.

Luitel, Rimal & Dahal (2026). The Role of . . .

Finally, it can be assumed that thanks to the loans of the cooperatives women became more able to invest and to engage in entrepreneurial activities. Women said their ability to participate in economic activities and to invest in economic activities increased after they became members of cooperatives. The study results support Yunus' (2007) evidence that women with access to microloans can establish a small business, earn an income, and improve their socioeconomic status. UN Women (2020) pointed out that access to financial assets is one of the most effective ways of women's economic empowerment.

As seen in Table 3 above, cooperatives play an important role in women's empowerment through training and skill development. Women with a long period of membership had more opportunities for training programs and to learn new skills in running businesses. This is consistent with the International Labor Organization (2016), which states that cooperatives empower women economically through vocational training, entrepreneurship training, leadership development, and financial literacy programs. These training sessions will enable women to become more productive, more knowledgeable about how to start a business, more employable, and hence economically empowered.

This link between the opportunity for training and empowerment may also be analyzed from the perspective of the empowerment theory advanced by Conger and Kanungo (1988). In their study, empowerment refers to the process by which individuals acquire knowledge, competence, and confidence to influence decisions that affect their lives. With the knowledge gained through training and skill development opportunities offered by cooperatives, women have become more confident and competent in engaging in economic activities.

However, some shortcomings exist in the cooperative approach as well. Although long-term members of the cooperatives benefited from training and business Luitel, Rimal & Dahal (2026). The Role of . . .

development, many new members lacked these opportunities. In other words, there are some inequalities in the provision of cooperative services among its members. The same problem was discussed by Agarwal (2010), who argued that structural impediments and institutional inequalities make it harder for women to access production resources, information, and leadership roles. Hence, cooperatives need to provide new members with equal opportunities to receive proper training and develop their capacity.

Another valuable finding is that, despite improvements in income levels and financial stability, income diversification remained low. Although cooperatives successfully improved savings and credit services, their impact on entrepreneurial diversification seems to be smaller. The conclusion is consistent with the results of research by Fakoya, van der Walldt, and de Jager (2016), which found that cooperatives help women achieve financial inclusion; however, more efforts are necessary to sustain business growth and diversify income.

Another reason for the strong results obtained in the present research could be the educational background of the respondents. All the respondents were literate, and many had secondary or higher education. Educated women are better placed to access financial services, understand cooperative programmes and make decisions in organised settings. Kumar and Mahadevan (2014) also found the same and reported that educated female members of cooperatives feel more confident, have higher bargaining power and participate in decision making at both household and community levels.

The study shows that apart from economic empowerment, cooperatives are associated with social empowerment. Financial well-being boosts women's self-confidence, they are able to participate in household decision-making and their social status in the community is raised. The results therefore support Bhadra's (2001) suggestion that empowerment is a process where marginalised people start to have more

control over their lives and decisions. The same idea was elaborated by UN Women (2020).

The research findings therefore support that cooperatives are effective institutions for poverty reduction, social inclusion and development as found in other studies. Wanyama, Develtere and Pollet (2008) observed that cooperatives have a big role in poverty reduction and development through collective actions and resource mobilisation. Likewise, Novkovic (2022) asserted that cooperatives enable inclusive and transformative development by providing marginalised groups with opportunities to participate in economic activities. From the current study, there is no question that cooperatives have a positive role in women economic empowerment by improving access to finance and skills development for participation in economic activities.

Conclusion

The study revealed that the cooperatives have played a positive role in the economic empowerment of women in Sundarharaincha Municipality, Morang. The women participants enhanced their income, living standards, lifestyle, economic status, savings behaviour, financial stability and access to financial services. The results have demonstrated that the extent of involvement increases the advantage of cooperative membership, highlighting the significance of continued participation in cooperative activities. But there are still challenges in income diversification, in the promotion of entrepreneurship, in access to training and in the participation of women in leadership. Cooperatives are therefore working to strengthen capacity-building activities, to provide more flexible financial services, to support women-owned businesses and to ensure better representation of women in leadership and decision-making. Such measures would further reinforce the role of cooperatives in the promotion of women's economic empowerment and local socio-economic development. There have been positive developments, but challenges remain in terms of income diversification,

Luitel, Rimal & Dahal (2026). The Role of . . .

entrepreneurship, access to training and women's participation in leadership positions. Hence cooperatives need to enhance capacity building programs, offer flexible financial services, support women owned enterprises and make sure women have more representation in leadership and decision-making positions. These measures will help to increase the contribution of cooperatives to the promotion of women's economic independence and local development of the socio-economic.

Conflict of interest

The authors declared that no conflict of interest.

References

- Agarwal, B. (2010). *Gender and green governance: The political economy of women's presence within and beyond community forestry*. Oxford University Press.
- Baruah, P. (2018). Empowering women through cooperatives: Evidence from Bangladesh. *Development in Practice*, 28(1), 98–112. <https://doi.org/10.1080/09614524.2017.1363382>
- Baruah, S., Mohanty, S., & Rola, A. C. (2022). Empowering women farmers through collective action: a case study of Khanizpur Hamlet, Odisha. *Gender, Technology and Development*, 26(1), 58–73. <https://doi.org/10.1080/09718524.2022.2040218>
- Bhadra's (2001). *Janani o prayukti: Lingakaran o kshamatayaner sahabastan*. Yojana.
- Birchall, J. (2003). *Rediscovering the cooperative advantage: Poverty reduction through self-help*. International Labour Organization.
- Chagwiza, C., Muradian, R., & Ruben, R. (2016). Cooperative membership and dairy performance among smallholders in Ethiopia. *Food Policy*, 59, 165–173. <https://doi.org/10.1016/j.foodpol.2016.01.008>

- Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review*, 13(3), 471–482.
<https://doi.org/10.5465/amr.1988.4306983>
- Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature*, 50(4), 1051–1079. <https://doi.org/10.1257/jel.50.4.1051>
- Fakoya, M. B., van der Waltd, G., & de Jager, C. (2016). Women’s economic empowerment in the South African agriculture sector: The role of cooperatives. *Journal of Co-operative Organization and Management*, 4(2), 78–87.
<https://doi.org/10.1016/j.jcom.2016.10.002>
- International Labour Organization. (2016). *Providing a voice for rural women through cooperatives*. <https://www.ilo.org>
- Kumar, A., & Mahadevan, R. (2014). Women’s cooperatives and gender equality: Evidence from India. *Gender & Development*, 22(2), 287–307. s
- Majurin, E. (2012). *How women fare in East African cooperatives: The case of Kenya, Tanzania and Uganda*. International Labour Organization.
- Novkovic, S. (2022). Cooperative identity as a yardstick for transformative change. *Annals of Public and Cooperative Economics*, 93(2), 313–336.
<https://doi.org/10.1111/apce.12362>
- Richardson, R. A. (2018). Measuring women's empowerment: A critical review of current practices and recommendations. *Social Indicators Research*, 137(2), 539–557. <https://doi.org/10.1007/s11205-017-1622-4>
- Sahakari Jhalak, (2077) <https://deoc.gov.np/content/160/cooperative-glimpses--204/>
- United Nations. (2017). *The world’s women 2017: Trends and statistics*.
<https://unstats.un.org>
- UN Women. (2020). *Progress of the world’s women 2019–2020: Families in a changing world*. <https://www.unwomen.org>
- Luitel, Rimal & Dahal (2026). The Role of . . .

- Wanyama, F. O., Develtere, P., & Pollet, I. (2008). Encountering the evidence: Cooperatives and poverty reduction in Africa. *Journal of Co-operative Studies*, 41(3), 16–27.
- Yunus, M. (2007). *Creating a world without poverty: Social business and the future of capitalism*. PublicAffairs.

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 172 – 207 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

E-learning Tools and Methodology adopted by Students: A Case Study of Sukuna Multiple Campus

Doi: <https://doi.org/10.3126/ajos.v6i1.98122>

Er. Santosh Dahal

Teaching Assistant, Sukuna Multiple Campus

santoshdl2002@gmail.com

Abstract

The traditional method of classroom-based learning has experienced significant change towards technology-based approaches. In the current study, digital learning strategies and technologies used by the undergraduate students of Sukuna Multiple Campus in Nepal have been explored. Using quantitative survey design, a total of 100 participants were randomly sampled across different majors within the institution. Results have revealed a higher inclination for hybrid learning strategies that include synchronous and asynchronous approaches (74%). In the specific digital learning strategies, LMS-based instructions (mean = 3.76) and collaborative learning (mean = 3.42) were the most used, whereas gamification strategy was the least preferred one. In terms of infrastructure, Google Classroom was found as the predominant LMS (98%), Zoom was the most prevalent one in video conferencing (84%), and Facebook Messenger was the most popular tool for collaborative academic discussions (76%). Further, YouTube (91%) has become the most prevalent tool for academic video content, and ChatGPT (97%) had attained universal adoption among the students using AI technologies for their academic

needs. More than half of the respondents (86%) have clearly expressed preference for free and open-source tools over paid ones due to budgetary constraints.

Keywords: E-learning, community campus, Methodology, digital learning tools

Introduction

The Integration of technology into the education system has changed the traditional educational practice throughout the world. Nowadays electronics media and internet platform are used to delivered the educational content to learners. This method of learning is referred by technology-enhanced learning (Wheeler, 2012), distance learning (Wheeler, 2012), digital learning (Basak et al., 2018), mobile learning (Basak et al., 2018), internet learning, networked learning (Alfiriani et al., 2021), tele-learning, distributed learning, virtual learning, and computer-assisted learning. E-learning uses electronic or digital technologies with the support of internet connections, and encompasses learning experiences that use different varieties of online education, such as online courses, virtual classrooms, digital educational materials, and interactive learning platform (Wheeler, 2012). E-learning is now integral part for delivering education and training due to its ability to meet modern demand of accessibility, flexibility, and efficiency. While developed countries have made significant progress towards implementing online learning models, the reality on the ground at Nepal's Sukuna Multiple Campus looks quite different. Community and public campuses throughout Nepal are experiencing problems with implementing e-learning in part due to deficiency in digital infrastructure, ICT literacy, and resources (Giri, 2021).

In context of Nepal, COVID-19 pandemic made educators and students adopt e-learning, forcing the traditional classroom teaching and learning to digital platform. Globally, after the spread of COVID-19 pandemic, the educational system was disrupted worldwide, with more than 1.5 billion students and learners affected by educational institutions closure (UNESCO, 2020). To overcome the crisis, many

Dahal (2026). E-learning Tools and . . .

countries in the world promoted e-learning to deliver the education (Aslam & Sonkar, 2021). Therefore, different tools and techniques for e-learning ensured the continuity of learning and were promoted through immediate interaction and collaboration. During this difficult time, educational platforms rapidly shifted from offline to online classrooms. Ultimately, COVID-19 pandemic accelerated the adaptation of online learning making it dominant trend in education worldwide (Chatterjee & Chakraborty, 2020). The countries that were far behind in the implementation of e-learning started implection in education sector. Educational institutions and the Ministry of Education responded by adopting platforms like Zoom and Google Classroom and broadcasting lessons via TV and radio (UNICEF Nepal, 2020).

Students on public campuses today are depending more and more on digital resources for their education due to the easy access to the internet and the affordable pricing of smartphones. Though students on public campuses frequently encounter difficulties like irregular internet access, lack of institutional support, and inadequate digital literacy (Giri, 2021). So, due to problem with infrastructure in campus students still rely on the free or paid e-learning platform for taking the education. Tools like YouTube, Moodle, Google Classroom and mobile applications are used by students for educational purposes (Pangeni, 2016). This growing use of digital tools reflects a shift in learning culture, where students take ownership of their learning experience even in the absence of fully developed institutional systems (Sapkota, 2020).

While a lot of research has been done on e-learning in context of developed countries but very little local research has been done on how students in Sukuna Multiple Campus are using e-learning tools and techniques. By investigating the methodology and tools that students are habituated with, educators can understand their learning preferences, identify existing gap in delivering the content and design an instructional strategy that align with their existing practices for deeper engagement and

Dahal (2026). E-learning Tools and . . .

growth. This study aims to close that gap finding the methodologies and tools student are currently using, how they are using them, and the difficulties they encounter.

By concentrating on the real-world experiences of students on public campuses, this study will produce information that can guide future training initiatives, policy decisions, and investments in digital infrastructure, guaranteeing that e-learning develops into a useful and inclusive component of Nepal's educational system. Additionally, the results will assist educational institutions in determining which methodologies are working and which need further support, ultimately contributing to a more efficient and effective digital learning environment in Nepal.

Previous studies have mainly concentrated on infrastructural problems such as lack of infrastructure, poor internet access, and lack of institutional effort. Research is needed on how students in public campuses, contrary to these caveats, are autonomously adopting, modifying, and using e-learning tools. Without it, educators and administrators will not have the kind of evidence that could inform decisions regarding the establishment of support systems, modes of instructional delivery, or training programs—a complementing factor to what students actually do. Such a gap becomes extremely significant in an era in which digital learning has become one of the essential areas of higher education. The specific objectives of this study are as follows:

- i. To identify e-learning methodologies adopted by the students of Sukuna Multiple Campus.
- ii. To identify different types of e-learning tools and software adopted by the students of Sukuna Multiple Campus.

The research question of the study is as follows:

- i. What are the different types of e-learning methodologies adopted by the students of Sukuna Multiple Campus?
- ii. What are the most commonly used e-learning tools across different categories?

Dahal (2026). E-learning Tools and . . .

The results of this study will yield practical, evidence-based and data-driven insights for policymakers, educators, and administrators who wish to improve the integration of e-learning in Nepal's public higher education sector. By aligning institutional strategies and actions with the preferences of students, public campuses will increase access to education, engagement in courses, and ultimately learning outcomes for students.

This section presents a review of various theoretical literature relevant to the study.

E-Learning Methodologies

E-learning has become an important way of education delivery, providing number of approaches to enhance teaching and learning. By providing flexible learning methodologies, mainly through synchronous and asynchronous approaches, e-learning has revolutionized education. According to Food and Agriculture Organization (FAO, 2021) there exist two approaches of e-learning i.e. synchronous and asynchronous. Asynchronous is characterized by learning that can be studied at any time, learners can access materials or communicate through emails, discussion boards, and wikis. Conversely, synchronous communication refers to learning interactions conducted in real time, with all participating learners and instructors present at the same scheduled moment and can occur when live sessions are scheduled. Examples of synchronous communication include audio and video conferencing, live lectures, webinars and virtual classroom. Several communication tools are available that can be used by facilitators, instructors, and learners to collaborate. Oye et al. (2012) recommended three different methodology asynchronous, asynchronous and blended mode and suggests the blended which is the combination of synchronous and asynchronous mode as best methodology for anytime and anywhere learning. The learning environment are usually asynchronous with discussion, assessment and assignments and controlled through synchronous tools.

Dahal (2026). E-learning Tools and . . .

Learning management systems (LMS) combine synchronous and asynchronous tools within one platform and are essential for the successful execution of flexible and blended e-learning settings. According to Furqon et al (2023) LMS can be classified as commercial and open source and based on access platforms as web-based and application-based. LMS provides a wide range of features, including content management, assessment tools, discussion boards, and student tracking, facilitating e-learning experiences. The LMS having features to store educational materials, communication and feedback systems promotes learner independence. The claim that integrating both learning modalities promotes greater accessibility and engagement is supported by this support structure. Examining this role, it's clear LMSs are essential to any modern e-learning ecosystem since they are not only delivery tools but also strategic facilitators of pedagogical innovation.

Adopting the flipped classroom approach as a novel method in online education promotes active learning and fosters a learner-centered environment. Santos & Serpa (2020) studied the flipped classroom model, which rebuild the primitive teaching sequence. It initiates with autonomous student work and culminating in the application of knowledge with proper teacher guidance. Focusing on active learning, this method enables students to participate directly in the creation of knowledge. It aids in gaining subject expertise and transferable skills that are essential for coping with problem of the 21st century. According to Bergmann & Sams (2023) under the flipped classroom model, activities, discussions, and problem-solving take place in class while students are exposed to material at home through readings and videos. Flipped classes use a variety of tools, such as online discussion boards, interactive simulations, and video lectures and promotes the creation of dynamic and attractive learning environments.

Collaborative e-learning is a methodology that fosters critical 21st-century skills like communication, collaboration, and critical thinking by fusing the ideas of

Dahal (2026). E-learning Tools and . . .

collaborative learning with digital technology. According to Sthal et al. (2014) through online platforms, collaborative e-learning enables students to collaborate while they are in different locations. Regardless of where they are physically located, it uses digital tools to help students interact, cooperate, and work together intellectually. Learning outcomes may be improved by encouraging critical thinking, active participation, and the exchange of different viewpoints. Given this, I believe that collaborative e-learning enhances learning outcomes while simultaneously developing the social and cognitive abilities required for students to thrive in a world that is becoming more digitally dependent and interconnected.

AI-powered e-learning technologies are changing the way we learn by making it more personalized and interactive. AI-powered e-learning tools, such as ChatGPT allows conversation in real-time, instant feedback and solve complex concepts. According to Khaldi et al. (2023) AI improves the educational experience by incorporating features such as automatic grading, feedback mechanisms, text-to-speech, speech-to-text, and advanced search capabilities, greatly enhancing accessibility and the overall learning journey. Reflecting on this, addition of AI into e-learning not only enhance efficiency but also transforms the educational process making it more student centered, insight based, and accessible to border population of learners.

Microlearning is a highly effective e-learning methodology that uses small content, focused segments that help learners to retain information more efficiently. According to Giurgiu (2017) microlearning breaks complex topics into small-sized, manageable content, which supports better understanding and longtime memorizing. Microlearning blended with asynchronous learning allows student to access and revisit the content time and again from their own place (FAO, 2021). Similarly, microlearning can be integrated with the LMS and promotes the personalized learning tracking and customizing modules based on the learner performance (2023). Microlearning is

Dahal (2026). E-learning Tools and . . .

trending due to the learning methodology that responds effectively to the evolving to complement the needs of modern learners that aids being focused, engaging and flexible educational experiences.

E-Learning Tools and Software

Oye et al. (2012) highlighted curriculum tools, digital library tools and knowledge representation tools as major e-learning tools. Curriculum tools encompass instructional resources including curriculum design framework and online quizzes with automated grading features. Administration tools focus on function like file management authentication, and authorization. And lastly the student tools include browsing class material tools, collaboration and sharing tools, learning progress scheduling and tracking tools, self-testing and evaluating and WebCT and Blackboard tools. Digital library tools provide the platform to find the right information from large amount of digital content. Similarly, knowledge representation tools visually review, capture, or develop knowledge.

E-learning is supported by researchers, and the COVID-19 pandemic sparked a trend toward e-learning combined with traditional methods. Ali et al. (2023) carried out experimental research to determine the effects of blended learning and e-learning. Similar to this, studies on e-learning platforms and tools propose various kinds according to classification.

Dearmer (2023) classified e-learning tools into six types: authoring tools, video conferencing tools, LMS, assessment tools, interactive tools and content libraries. Teachers can create structured course materials using authoring tools, multimedia, and templates, and synchronous interaction through live lectures and discussions is supported by video conferencing tools. LMS platforms are essential to digital education because they deliver content, track progress, and host assessments, all of which manage the entire learning process. Assessment tools offer tests, quizzes, and automated

Dahal (2026). E-learning Tools and . . .

grading, which decrease the workload for instructors and provides instant feedback. Content libraries act as stores of reusable and flexible educational resources, and interactive tools like gamification and simulations increase learner motivation. When taken as a whole, these categories show that meaningful use of tools is just as important to successful digital learning as their accessibility.

According to Leporini et al. (2023) video conferencing tools aids multiple people from various physical locations, to connect and work together virtually. They help in sharing text, audio, video and presentations over the internet in real time. Some of the most popular video conferencing tools used for e-learning are Zoom, Google Meet, and MS Teams

Social media provides an accessible means of obtaining information with minimal commands. E-learning has been propelled on a trajectory through the use of social media platforms that serve educational and professional learning in better ways. Social media tools such as Twitter, YouTube, Facebook, LinkedIn and WhatsApp, have been tools frequently used by students (Ahamad et al., 2023).

The achievement of AI based solution in teaching learning like chatgpt is clearly a sign for to adopt. AI powered eLearning have created engaging and personalized learning experiences. According to Arora (2014) AI tools are applications that use AI algorithms to carry out a particular task and solve problems. Some popular AI tools are ChatGPT, DALL-E, Midjourney, Sythesia, Copilot, Fliki AI, Alli AI. The features of AI based products such as automatic grading and feedback system, text to speech and speech to text which have supplanted conventional models, have improved accessibility, and offered smarter search capabilities (Philip, 2023).

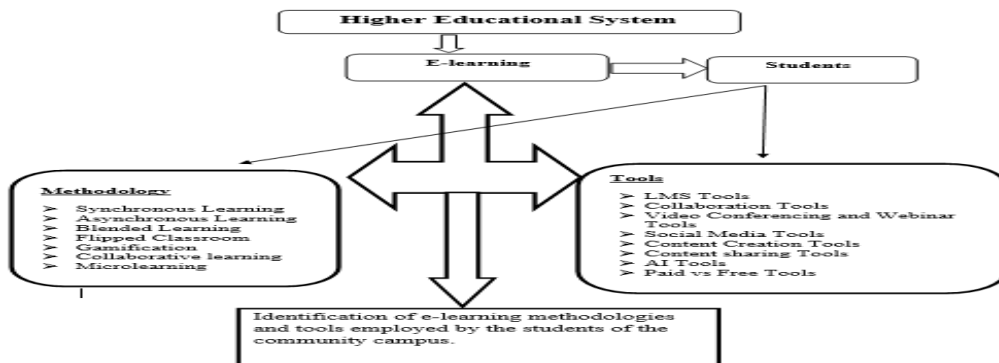
Governmental Plan and Policy Of E-Learning

According to Nepal's IT policy (Nepal Government, 2016), the fusion of ICT into the education system is a strategy to improve pedagogy and thereby improve

Dahal (2026). E-learning Tools and . . .

Research Gap

While the global literature on e-learning is extensive, there is limited empirical research on how students in Sukuna Multiple Campus independently adopt and adapt to e-learning methodologies and tools. This study provides a localized perspective, examining actual usage patterns and preferences in a resource-limited academic environment. The conceptual framework of this article is



Methods and Materials

The study is based on quantitative survey design to examine the e-learning methodology and tools adopted by students of Sukuna Multiple Campus. The target population was all the Bachelor student of Sukuna Multiple campus from educational program Business Administration, Information Communication Technology in Education (BICTE) and Business Studies. A sample of 100 students were selected randomly from different faculty.

A structured, close-ended questionnaire was designed based on literature review, research findings and study objectives to collect the data form the respondent. The structured and close-ended questionnaire was put into an online form with the help of Google Forms and then distributed to students via student communication platforms, including social media pages dedicated to particular courses and other digital means of communication managed by the faculty. Secondary sources included academic journals, reports, conference proceedings and government policy documents. To ensure instrument validity, the questionnaire was peer-reviewed by experts, and a pilot test was conducted with five students to check clarity, understanding and decrease time required to complete the questioner. Feedback from the pilot resulted in implementing question with less use of technical word and translation of question in Nepali.

In terms of ethics, institutional permission was obtained from the campus administration, and mandatory digital informed consent was secured from all voluntary, participants before data collection. Data from Google Forms were exported into Microsoft Excel for cleaning and preliminary analysis. The results were presented in tabular form and descriptive statistics such as frequencies, percentages and means were calculated to summarize student responses. The study is based on the following delimitations:

- i. The study was conducted on Sukuna Multiple Campus and may not reflect all public higher education institutes in Nepal.
- ii. Only students with internet access and experience utilizing online survey software were involved, so students who were less digitally literate did not take part.
- iii. The study focused on student usage of e-learning tools and practices, not what higher education institutes may provide, or whether faculty have adopted the tools and practices.

Result and Discussion

Demographic Information

Table 1

Participant Demographic

Title	Number/Percentage
Gender	
Female	61
Male	39
Total	100
Educational Program	
BBA	68
BICTE	20
BBS	12
Total	100

Table 1 shows demographics information of research, indicating 39% of male student and 61% of female student. Majority of student were enrolled in BBA (68%) program, followed by BICTE (20%) and BBS (12%).

E-learning Methodologies Employed by Students

The objective of the research was to find the e-learning methodology adopted by the students of Sukuna Multiple Campus following data and description support this aim.

Learning Preference of Students**Table 2***Learning Preference of Students*

Learning Preference	Percentage
Traditional classroom-based learning	6
Modern E-learning	20
Hybrid of Traditional & Modern E-learning	74
Total	100

Table 2 shows the students learning preference of the students only 6% them prefer traditional classroom-based pedagogy system, 20 % prefer e-learning and 74% prefer hybrid of traditional and modern e-learning. This aligns with Qi & Tian (2011) who found hybrid pedagogy popular due its ability to transform the primitive education classroom based educational system to a structured, transformed, planned, interactive, flexible and easily accessible digital learning platform. This indicates hybrid approach not only creates diverse learning style but also helps in self-paced learning with real time classroom discussion.

Use of E-learning Methodologies

Students in Sukuna Multiple Campus tend to use asynchronous e-learning methods more frequently than synchronous methods.

Table 3*Use of E-learning Methodology*

Methodology	Never	Rarely	Occasionally	Frequently	Very Frequently	Mean
Asynchronous	3	22	24	40	11	3.34
Synchronous	1	22	42	23	12	3.23
Grand Mean						3.28

According to Table 3, e-learning methods include synchronous and asynchronous learning. Eleven percent of students practiced asynchronous learning very frequently, 40% frequently, 24% occasionally, 22% rarely, and 3% never. The mean score of 3.34 suggests a clear preference for the flexibility asynchronous learning provides. In regard to synchronous learning, 12% of the students used it very frequently, 23% frequently. It was used occasionally by 42% of the students, 22% used it rarely, and 1% never used this learning method as indicated by the mean score of 3.23. This implies that synchronous learning was appreciated, but it was not as useful as asynchronous learning. At an overall grand mean score of 3.28, it is evident that students are engaged more on asynchronous learning. This reinforces the fact that students prefer asynchronous class over synchronous ones and participate more in asynchronous classes.

Preference of E-learning Methodologies.**Table 4***Preference of E-learning Methodology*

E-Learning Methodology	Percentage
Synchronous	10
Asynchronous	29
Hybrid of Synchronous & Asynchronous	61
Total	100

Table 4 presents the preferences of students on e-learning methodologies. The data show that the 61% of students preferred a hybrid approach that combines both synchronous and asynchronous learning. Similarly, asynchronous learning was chosen by 29% of respondents and only 10% of the students preferred synchronous learning. These results align with recent findings by Paul & Jefferson (2019) who found that 58% of university students preferred hybrid models due to their flexibility in balancing active learning activities and self-paced study, while 25-30% preferred asynchronous formats due to increased autonomy.

This shows that hybrid with the features of both the synchronous and asynchronous are the most preferred by the student of Sukuna Multiple Campus. The findings resemble to those of Paul & Jefferson (2019) who found out that college learners prefer hybrid models due to their flexible nature brought about by self-paced resources as well as live interactions. This is also corroborated by the claims of Giri (2021) regarding structural limitations which make it highly impractical for Nepalese learners in public universities. The combination of the features means that students can enjoy the advantages of the flexibility of self-paced learning with the opportunity for real-time interaction, guidance, and feedback from instructors.

Methodology of E-learning Used

Majority of students in Sukuna Multiple Campus has adopted LMS based and collaborative learning for day-to-day learning purpose.

Table 5

Methodology of E-learning Used

Methodology	1	2	3	4	5	Total Score	Mean(M)
Flipped Classroom	10	22	35	26	7	298	2.98
Adaptive learning	8	22	25	36	9	316	3.16
Gamification learning	30	37	15	14	3	222	2.22
Collaborative learning	5	14	28	40	13	342	3.42
Microlearning	13	23	20	40	4	299	2.99
LMS based Learning	4	11	24	27	34	376	3.76
Grand Mean							3.08

(1 =Never, 2 =Rarely, 3=Occasionally, 4=Frequently, 5 =Very Frequently)

Table 5 represents the analysis of e-learning methodologies adopted by student based on Likert scale responses. The scale was designed to capture the frequency of use where 1 indicated never, 2 indicates rarely, 3 indicates occasionally, 4 indicates frequently and 5 indicates very frequently.

The mean score for the flipped classroom is 2.98, which is slightly below the grand mean of 3.08, demonstrates comparatively lower preference of flipped classroom by students of Sukuna Multiple Campus. The finding aligns with Pokhrel et al. (2025) who concluded flipped classroom methodology had improved performance in the rural schools but did not show significant impact in city's schools, which indicates students were receptive to the flipped methodology most likely because of contextual factors and previous exposure. Similarly, Shrestha et al. (2016) found that when introducing flipped

classrooms to the students had a difficult time due to technology barriers and then issues of traditional teaching, which helps frame student comfort and preferences.

Adaptive Learning had mean score of 3.16, the score being higher than the grand mean of 3.08, indicating that adaptive learning is popular among students in Nepalese public colleges. This preference coincides with international research about adaptive systems. Dziuban et al. (2018) stated that adaptive learning platforms analyze the performance of learners and customize instruction based on content most needed by the learner to improve motivation and persistence with learning activities. Similarly, Plooy et al. (2024) found that adaptive technologies keep learners engaged by rewarding them with timely feedback and creating a pathway customized to the capability of the students.

Gamification learning appeared the least popular. The mean score of 2.22 was way below the grand mean and highlighted the limited use of this method in the context under examination. On the other hand, collaborative learning seemed to be the most preferred with a mean score of 3.42, it ranked second in popularity, just behind LMS-based learning. According to Scager et al. (2015), collaborative learning enhancing the learning experience through teamwork and shared knowledge and renowned for its interactive nature. This methodology increases the sense of working with community and solving problem collaboratively making it highly effective in e-learning environments.

Microlearning deserved a moderate level of engagement with the mean score 2.99 shows that microlearning has seen steady but not great adoption yet. LMS learning found the number one methodology with microlearning having less adoption compared to it of 3.76 was the highest, showing that LMS platforms form the backbone of e-learning in public colleges. According to Emmamoge et al. (2023) LMS platforms encourage active student engagement by promoting concept through interactive tools

Dahal (2026). E-learning Tools and . . .

like quizzes, discussion forum and multimedia resources. This feature helps student focus their academic goals by providing structured, self-regulated learning, self-critical thinking enhancing learning environment.

LMS received the most widespread acceptance as these offered organization of course materials; and added interactive elements for student directed study while students mostly use collaborative learning particularly in team-based development and problem-solving contexts. In relation to adaptive learning, there were positive perceptions based on the personal engagement and motivation. The participants expressed moderate adaptation of both flipped classroom and micro-learning methods due to little technological affordances and familiarity. Though gamification is one of the trending methodologies of e-learning it is less adopted by the students of Sukuna Multiple Campus. Though, innovative approaches like microlearning and gamification have great pedagogical potential, they are not adopted by the students this condition can be improved by awareness, education, and infrastructure support.

E-learning Tools Employed by Students

As the primary objective of the research was to find the e-learning tools adopted by the students of the public college the following data and description support this aim.

LMS Tools for E-learning

Google Classroom is the most widely adopted LMS tool among students of Sukuna Multiple Campus, while the use of other tools remains relatively low.

Table 6*Use of LMS Tools for E-learning*

LMS Tool	Number /Percentage
Google Classroom	98
Moodle	7
Canvas	25
Blackboard	17
E-school	8
Veda	7
mySecondTeacher	17
Vurilo	3
Other Software	24
No Any	2

Table 6 shows the use of different Learning Management System (LMS) tools for e-learning. The findings reveal that Google Classroom was the most popular platform, with 98% students reporting using it. It is popular mainly because it is free to access, simple to use, and well-integrated with widely-used Google applications. Canvas (25) and Blackboard (17) came after, and they continued to have modest adoption compared to Google Classroom. Local and alternative tools, like my Second Teacher (17), E-school (8), Veda (7), and Vurilo (3), were found less adopted, a hint of limited institutional or student engagement with these platforms. But Moodle was used by 7 students only, though it remains the famous open-source system worldwide. Oddly, 24 respondents identified other types of software. Generally, the result shows that LMS tools are almost fully adopted, with Google Classroom leading conspicuously.

Social Media Tools for E-learning

Majority of student of Sukuna Multiple Campus use Youtube and Facebook as social media tools to support their learning.

Table 7

Use of Social Media Tools for E-learning

Social Media Tools	Number/Percentage
Facebook	61
YouTube	91
LinkedIn	19
Coursera	7
Skill Share	3
Tik Tok	14
Twitter	11
Pininterest	17
Other Software	34

Source: Field Survey, 2024 AD

It appears from e-learning on social media tools that YouTube (91%) and Facebook (61%) are the most widely adopted among learners, whereas apps such as LinkedIn (19%), TikTok (14%), Pinterest (17%), Twitter (11%), Coursera (7%), and Skillshare (3%) exhibit relatively limited usage. Further, 34% of students reported using “other software,” which may include some form of collaborative tools, such as Zoom, Microsoft Teams, or Google Classroom. The prominence being given to YouTube supports its claimed status as the top video-based tutorial and educational content platform. This result resembles with findings by Moghavvemi et al. (2018) stating that YouTube is considered an equally viable self-learning tool owing to its ease of availability, materials diversity, and multimodal presentation. On the other hand,

Dahal (2026). E-learning Tools and . . .

Facebook is the second most popular platform, consistent with evidence from Liu (2009) who found Facebook to be among the most used social media tools for e-learning due to its facilitation of peer interaction, discussion groups, and content sharing. There seems to be a limited focus on the professional or specialized platforms as LinkedIn, Coursera, and Skillshare.

Content Creation Tools

Students heavily rely on popular content creation tools like MS Office and Google Workspace, while the use of other e-learning authoring tools is minimum.

Table 8

Use of Content Creation Tools

Content Creation tools	No. of Student/percentage
MS Office	89
Google Workspace	38
Articulate Storyline 360	3
Elucidat	1
WPS Office	26
Ispring Suite	2
Easy Generator	4
Other Tools	12
No Any	4

Knowledge Sharing Tools

Study shows that the majority of students on Sukuna Multiple Campus use LMS as knowledge-sharing tools.

Table 9*Use of Knowledge Sharing Tools*

Knowledge Sharing Tools	No. of Students/Percentage
Content Management System	12
File Sharing Platform	48
LMS	76
Video Sharing Platform	33
Message sharing platform	63
Other Tools	3
No Any	10

When it comes to the use of knowledge sharing tools, LMSs were utilized by 76% students-the most used system-for organizing, distributing, and communicating within the e-learning environment; message-sharing platforms are the second with 63% students. This is in line with Al-Busaidi & Al-Shihi (2011) who emphasized that LMSs have an important role in support of structured knowledge sharing, collaboration among learners, and monitoring through a medium of instruction. In the meanwhile, the others reviewed showed that message sharing platforms tend to provide for people instant communication and collaboration, whether formal or informal, among learners Sobaih et al. (2020). File-sharing platforms were favored by 48% students, while 33% students preferred video-sharing platforms, indicating a fairly widespread use of multimedia sources and collaborative repositories to exchange learning resources. Content management systems (12%) students and other tools (3%) students were rarely used; that might have been due to the complexity of the type of tool or limited awareness of such tools by the learners.

Video Conferencing Tools

Zoom is the most preferred video conferencing tool for students, however Messenger and google meet are also important in making virtual communication easier.

Table 10

Use of Video Conferencing Tools

Video Conferencing Tools	No. of Students/percentage
Zoom	84
Google Meet	51
MS teams	23
Facebook Messenger	59
Skype	2
Others	10
No Any	3

Table 10 shows the video conferencing tools adopted by students of Sukuna Multiple Campus. Zoom was the most adopted which having been used by 84% of students. Facebook Messenger follows in popularity, with 59% of students having reported usage, and Google Meet with 51%, showing heavy preference toward accessible and familiar tools for online communication. Currently, MS Teams serves 23% of students, while Skype and others are hardly used at 2% and 10%, respectively. Notably, only 3% of students reported that they do not carry out any video conferencing activity, thus, making it apparent that a majority of students employ online communication among themselves. These findings are consistent with Sapkota's (2020) account of Zoom and Google Meet were emerged as most essential tools for continuity of education during the COVID-19 pandemic, where students and instructors reported they were highly dependable for synchronous education. Both the present study and Sapkota's study provide additional support for the idea that video-conferencing

Dahal (2026). E-learning Tools and . . .

platforms, especially Zoom and Google Meet, which were used as temporary solution during COVID-19 has emerged as the most important component digital learning ecosystem of Nepal.

Collaborative and Interactive Tools

Table 11

Use of Collaborative and Interactive Tools

Collaborative and Interactive Tools	No. of Students/percentage
Google Workspace	21
Microsoft Teams	22
Blackboard	11
Zoom	40
Facebook Messenger	76
Other Platform	8
No Any	8

According to the survey on student use of collaborative and interactive software, Facebook Messenger tops the list at 76%, used for communication and teamwork by students. This is followed by Zoom at 40%, Microsoft Teams at 22%, and Google Workspace at 21%. The rest of the platforms fall below 10%, with Blackboard and others having an 11% and 8% user rate, respectively. Simultaneously, 8% of students indicated a lack of usage of any collaborative or interactive tools. Overall, there appears to be a preference for platforms that are easily accessible and simple to use. This finding resembles with the research by Pedroso et al. (2023) which justifies the common situation and clarifies the influence of Facebook Messenger is due to its freely available features like facilitating collaboration, easy navigation, convenience to use.

AI Tools for E-Learning

ChatGPT is adopted most widely by student of Sukuna Multiple Campus, while the adoption of other AI tools is very less.

Table 12

Use AI Tools for E-Learning

AI Tools	No. of Students/percentage
ChatGPT	97
MS Copilot	12
Gemini	28
Character AI	15
QuillBot	20
Midjourney	7
Other Tools	15
No Any	2

The results indicate that ChatGPT is the AI tool with the highest frequency of tool use (97%). These findings suggest that it has a significant role in personalized learning and offering writing support. Other tools classified as lesser-used included Gemini (28%), QuillBot (20%), Character AI (15%), and MS Copilot (12%); Midjourney (7%) ranked last in engagement, likely reflecting its minimal potential for direct academic use. Only 2% students reported not using any AI tools, indicating that nearly all students used AI, likely meaning that it could be classified categorized as universal adoption. It is clear that such a trend is consistent with the predictions made by Kasneci et al. (2023) and Rudolph et al. (2023), who argue that LLMs are outpacing conventional assessment procedures in higher education institutions. This is because while it may be wise for institutions to formulate policies on how to handle the challenge, students have fully embraced the technology.

Dahal (2026). E-learning Tools and . . .

Purpose of Using E-learning Tools

Table 13

Purpose of Using E-learning Tools

Purpose of Using E-learning Tools	No. of Students/percentage
Take Classes	47
Access note, videos and other educational document	68
Examination	42
Collaboration	45
Other Purpose	18

Table 13 lays out the data on why people use those e-learning tools, you know. From the survey, it turns out most students, like 68% of them, grab these tools mainly to get their hands-on notes, videos, and all sorts of other educational stuff. Then there's nearly half who use them for actually taking classes, that's 47%, and about the same number, 45%, for teaming up with other students on projects or whatever. Oh and, 42% go for exams through these things. Only 18% said something else entirely. So yeah, the big takeaway here is students lean on e-learning tools mostly for pulling up learning materials and making it easier to work together academically.

Method of Accessing E-learning Platform

This study highlights study on different method of accessing e-learning platform.

Table 14*Method of Accessing E-learning Platform*

Method	No. Students/percentage
Mobile Application	78
Laptop/Desktop Application	73
Website	63

The results of the survey show the most frequently used access platform is the mobile application as 78% of the students used them most frequently. This was very closely followed by the use of a laptop or desktop application at 73% and then the use of web browsers at 63%. This information suggests, instead, with m-learning being so widely adopted, that mobile learning is abundant among learners. This could be due to the portability, flexibility, and convenience of smartphones. These findings are consistent with Ally & Prieto-Blazquez (2014) where they noted mobile technologies transform e-learning technologies with ease of access to educational resources anywhere, anytime, and supporting autonomous and flexible learning. Similarly, Crompton and Burke (2020) found areas that use mobile applications in online learning are becoming more widespread as they offer collaborative, friendly, and context-aware environments.

Use of Paid Software for E-learning**Table 15***Use of Paid Software for E-learning*

Use of Paid Software for E-learning	Frequency
Yes	14
No	86
Total	100

Table 16 shows the use of paid or freeware software used by the student for the e-learning and most student (86%) are not using freeware software for e-learning any only 14% use paid e-learning software. This preference indicates the value students place on low cost and easy access in selecting their digitally delivered resources. Freeware platforms, including Google Classroom, Zoom (basic version), and Moodle, provide adequate features for most learners, thus it is understandable why they are popular. While paid platforms package access to additional features, premium content and/or an ad-free experience, they are not generally viable for students who experience affordability constraints, in particular students attending public colleges. Our findings resonate with Weller (2020) that open-source and free tools will continue to affirm the relevance of e-learning due to their scalable and inclusive functionality, particularly in settings where resources are restricted. In the same vein, Al-Busaidi (2013) highlighted that although paid systems offer improved institutional control and support, learners often prefer freeware and easy access and flexibility, in particular. In summary, our findings indicate that while freeware software is essential for providing equitable access to e-learning, they may not always be adopted where specialized tools, or institutional support options, are warranted.

Conclusions

The current study proves that students from Sukuna Multiple Campus are ready and flexible enough to use the available online learning environment. At the same time, the engagement of the students is still largely self-initiated due to lack of official institutional support. There is an apparent gap between students' independent adoption of new technologies and the capacity of the institution to respond to this change. The lack of digital infrastructure, limited number of trained educators, and insufficient funds continue to hinder the process of transition in the case of public campuses of Nepal. For e-learning to progress beyond voluntary and informal usage to become an integral part

Dahal (2026). E-learning Tools and . . .

of the higher education system, academic institutions should make strategic investments into building necessary infrastructure and integrating technology into the teaching process.

Implications for Policy and Practice

The results provide several practical suggestions for the administrators and policymakers who want to improve their digital education framework. In particular, policy initiatives should address the issue of equal access to digital sources while considering the different preferences of the learners. It is essential for campus administrators to pay attention to transforming traditional classes into ICT-based ones and providing them with reliable broadband connections, digital boards, and projectors. Besides, institutional administrators should create structured programs aimed at the improvement of digital pedagogy skills and Learning Management Systems. Moreover, it is crucial to update curricula in order to combine traditional and digital elements with the help of targeted workshops and feedback.

Directions for Further Research

Although the current study provides information on the baseline adoption of e-learning approaches and software, it raises many issues which can be investigated by scholars in the future. First, future research should be based on longitudinal designs in order to find out the influence of blended learning models on student achievements and learning experience. In addition, further studies should examine the role of artificial intelligence in the personalized learning process in view of the high level of Generative AI usage observed in the current study. Lastly, the influence of the different demographic backgrounds of the students on the effectiveness of digital tools as well as the impact of the digital learning environment on students' mental state should be considered in future studies.

References

- Ahamad, S., Naim, S., Panda, S. N., & Bansal, R. (2023). Investigating the impact of social media as a tool for e- learning in the digital era. *International Conference on Emerging Trends in Materials, Computing and Communication Technologies*.
<https://doi.org/10.1063/5.0150401>
- Al-Busaidi, K. A. (2013). An empirical investigation linking learners' adoption of blended learning to their intention of full e-learning. *Behaviour & Information Technology*, 32(11), 1168-1176. <https://doi.org/10.1080/0144929X.2013.774047>
- Al-Busaidi, K. A., & Al-Shihi, H. (2011). Key factors to instructors' satisfaction of learning management systems in blended learning. *Journal of Computing in Higher Education*, 24(1), 18-39. <https://doi.org/10.1007/s12528-011-9051-x>
- Alfiriani, A., Setyosari, P., Ulfa, S., & Praherdhiono, H. (2021). Developing networked online learning designs and its effectiveness on the works of students in higher education: case studies in Indonesia. *Journal of Technology and Science Education*, 12(1), 4-20. <https://doi.org/10.3926/jotse.1189>
- Ali, A., Khan, R. M., & Alouraini, A. (2023). A comparative study on the impact of online and blended learning. *Sage Journals*, 13(1), 1-10.
<https://doi.org/10.1177/21582440231154417>
- Ally, M., & Prieto-Blazquez, J. (2014). What is the future of mobile learning in education? *RUSC Universities and Knowledge Society Journal*, 11(1).
<https://doi.org/10.7238/rusc.v11i1.2033>
- Arora, J. (2014, May 26). *AI tools are software applications that use artificial intelligence algorithms to perform a specific task and solve problems.* . Retrieved from <https://www.geeksforgeeks.org/>:
<https://www.geeksforgeeks.org/top-artificial-intelligenceai-tools-list/>

- Aslam, S., & Sonkar, S. K. (2021). Platforms and tools used for online learning all over the world during Covid-19: A study. *Library Philosophy and Practice*, 1-22. <https://doi.org/10.2139/ssrn.4587912>
- Basak, S. K., Wotto, M., & Be' langer, P. (2018). E-learning, m-learning and d-learning: Conceptual definition and comparative analysis. *Sage Journals*, 15(4), 191–216. <https://doi.org/10.1177/2042753018785180>
- Bergmann, J., & Sams, A. (2023). *Flip your classroom: Reach every student in every class every day*. International Society for Technology in Education.
- Bishop, J., & Verleger, M. (2013). The flipped classroom: A survey of the research. *American Society for Engineering Education*.
- Chatterjee, I., & Chakraborty, P. (2020). Use of information communication technology by medical educators amid COVID-19 pandemic and beyond. *Sage Journal*, 49(3), 310-324. <https://doi.org/10.1177/0047239520966996>
- Chugh, R., & Ruhi, U. (2017). Social media in higher education: A literature review of Facebook. *International Federation for Information Processing*, 23(2), 605-616. <https://doi.org/10.1007/s10639-017-9621-2>
- Dearmer, A. (2023). *E-Learning tools: Top tools and expert recommendations*. Retrieved from Appsembler: <https://appsembler.com/blog/e-learning-tools-top-tools-and-expert-recommendations/>
- Dziuban, C., Howlin, C., Moskal, P. D., & Johnson, C. (2018). Adaptive learning: A stabilizing influence across disciplines and universities. *Online Learning*, 22(3), 7-39. <https://doi.org/10.24059/olj.v22i3.1465>
- Eom, S. (2022). The effects of the use of mobile devices on the E-learning process and perceived learning outcomes in university online education. *E-Learning and Digital Media*, 0(0), 1-22. <https://doi.org/10.1177/20427530221107775>

- FAO. (2021). *E-learning methodologies and good practices: A guide for designing and delivering e-learning solutions from the FAO elearning Academy* . Rome.
- Furqon, M., Sinaga, P., Liliyasi, L., & Riza, L. S. (2023). The impact of learning management system (LMS) usage on students. *TEM Journal*, 12(2).
<https://doi.org/10.18421/TEM122-54>
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education*, 15(1), 7-23. <https://doi.org/10.1080/08923640109527071>
- Giri, S. (2021). Board, ICT tools and applications used in online education during COVID-19 pandemic in Nepal: A purposed model using white. *International Journal of Science and Research*, 10(11), 1062-1067.
<https://doi.org/10.21275/SR21717103829>
- Giurgiu, L. (2017). Microlearning an evolving elearning trend. *Scientific Bulletin*, 1(43), 22. <https://doi.org/10.1515/bsaft-2017-0003>
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275-285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Karki, T. B., Mahat, D., & Kandel, D. R. (2021). Effectiveness of online class and physical class during Covid-19 pandemic. *Nepal Journal of Multidisciplinary Research*, 4(1), 14-30. <https://doi.org/10.3126/njmr.v4i1.36615>
- Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., . . . Nerdel, C. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences*, 103.
<https://doi.org/10.1016/j.lindif.2023.102274>

- Khalidi, A., Bouzidi, R., & Nader, F. (2023). Gamification of e-learning in higher education: a systematic literature review. *Smart Learning Environments*.
<https://doi.org/10.1186/s40561-023-00227-z>
- Leporini, B., Buzzi, M., & Hersh, M. (2023). Video conferencing tools: Comparative study of the experiences of screen reader users and the development of more inclusive design guidelines. *ACM Transactions on Accessible Computing*, 16(1), 1-36.
- Liu, Y. (2009). Social media tools as a learning resource. *Journal of Educational Technology Development and Exchange*, 3(1), 101-114.
<https://doi.org/10.18785/jetde.0301.08>
- Moghavvemi, S., Sulaiman, A., Jaafar, N. I., & Kasem, N. (2018). Social media as a complementary learning tool for teaching and learning: The case of Youtube. *The International Journal of Management Education*, 16, 37-42.
- Mushtaha, E., Dabous, S. A., Alsyuf, I., Ahmed, A., & Abdraboh, N. R. (2022). The challenges and opportunities of online learning and teaching at engineering and theoretical colleges during the pandemic. *Ain Shams Engineering Journal*, 13(6), 9-10.
- Nepal Government. (2016). *IT policy of Nepal*. Retrieved from
<https://readersnepal.com/it-policy-of-nepal-2072-and-electronic-transaction-act>
- Oye, N., Salleh, M., & Iahad, N. A. (2012). E-Learning methodologies and tools. *International Journal of Advanced Computer Science and Applications*, 3(2), 48-52.
- Pangeni, S. K. (2016). Open and distance learning: Cultural practices in Nepal. *European Journal of Open Distance and E-Learning*, 19(2), 110-120.
<https://doi.org/10.1515/eurodl-2016-0006>

- Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course From 2009 to 2016. *Frontiers in Computer Science*, 1(7). <https://doi.org/10.3389/fcomp.2019.00007>
- Pedroso, J. E., Tubola, L. F., & Aquidado, E. J. (2023). Facebook messenger: As means of communication for academic inquiries. *Journal of Digital Learning and Distance Education*, 2(2), 491-505. <https://doi.org/10.56778/jdlde.v2i2.116>
- Philip, A. J. (2023). *Harnessing the power of AI In elearning: Revolutionizing education*. Retrieved from [elearningindustry.com](https://elearningindustry.com/harnessing-the-power-of-ai-in-elearning-revolutionizing-education): <https://elearningindustry.com/harnessing-the-power-of-ai-in-elearning-revolutionizing-education>
- Plooy, E. D., Casteleijn, D., & Franzsen, D. (2024). Personalized adaptive learning in higher education: A scoping review of key characteristics and impact on academic performance and engagement. *Eileen Du Plooy;Daleen Casteleijn;Denise Franzsen*, 10(21). <https://doi.org/10.1016/j.heliyon.2024.e39630>
- Pokhrel, S., Wosti, M., & Subedi, Y. P. (2025). Student outcomes in secondary physics flipped classrooms: An explanatory sequential mixed methods investigation. *Himalayan Physics*, 13(1), 61-78. <https://doi.org/10.3126/hp.v13i1.66161>
- Qi, L.-s., & Tian, A.-k. (2011). Design and application of hybrid learning platform based on Joomla. *Springer*. https://doi.org/10.1007/978-3-642-22456-0_79
- Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Ed-tech Reviews*, 6(1). <https://doi.org/10.37074/jalt.2023.6.1.9>
- Santos, A. I., & Serpa, S. (2020). Flipped classroom for an active learning. *Journal of Education and e-Learning Research*, 7(2), 167-173. <https://doi.org/10.20448/journal.509.2020.72.167.173>

- Sapkota, P. P. (2020). *Determining Factors of the use of e-learning during COVID-19 lockdown among the college students of Nepal: A Cross-Sectional Study*. Research Management Cell (RMC) Balkumari College.
- Scager, K., Boonstra, J., Peeters, T., Vulperhorst, J., & Wiegant, F. (2015). Collaborative learning in higher education: Evoking positive interdependence. *CBE Life Sci Educ*, 15(4), 1-9. <https://doi.org/10.1187/cbe.16-07-0219>
- Shrestha, B. K., & Shakya, M. (2016). Flipped class: New e-learning object in Nepal and perspective of teachers. *International Conference on ICT in Intelligent Computing*. Kathmandu.
- Sobaih, A. E., Hasanein, A. M., & Elnasr, A. E. (2020). Responses to COVID-19 in higher education: Social media usage for sustaining formal academic communication in developing countries. *Sustainability*, 12(16), 1-19. <https://doi.org/10.3390/su12166520>
- Sok, S., & Heng, K. (2023). ChatGPT for education and research: A Review of benefits and risks. *Electronic Journal*, 3(1), 1-12. <https://doi.org/10.2139/ssrn.4378735>
- Stahl, G., Koschmann, T., & Suthers, D. (2014). Computer-supported collaborative learning. In *The Cambridge Handbook of the Learning Sciences* (pp. 479 - 500). Cambridge University Press.
- Thi, N. P., & Minh, D. N. (2022). Challenges and opportunities of implementing e-learning in teaching english at tertiary level from teachers' perspective. *18th International Conference of the Asia Association of Computer-Assisted Language Learning*. 621. Atlantis Press. <https://doi.org/10.2991/assehr.k.211224.017>
- UNESCO. (2020). *Education: From COVID-19 school closures to recovery*. Retrieved from [unesco.org](https://www.unesco.org/en/covid-19/education-response): <https://www.unesco.org/en/covid-19/education-response>
- UNICEF Nepal. (2020). *COVID-19: UNICEF response in Nepal*. Retrieved from <https://www.unicef.org/nepal/reports/covid-19-response>

Weller, M. (2020). *25 Years of Ed Tech*. AU Press. Retrieved from

https://oro.open.ac.uk/70428/1/120290_99Z_Weller_2020-25_Years_of_Ed_Tech.pdf

Wheeler, S. (2012). E-learning and digital learning. *Encyclopedia of the Sciences of Learning*, 1109–1111. https://doi.org/10.1007/978-1-4419-1428-6_431

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 208 – 224 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

**Navigating Double Alienation: A Narrative Inquiry into Educational Resilience
and Identity Negotiations among Dhimal Students in Eastern Nepal**

Doi: <https://doi.org/10.3126/ajos.v6i1.98126>

Tika Prasad Subedi

Graduate School of Education, Tribhuvan University

Kirtipur, Kathmandu, Nepal

subedijyst@gmail.com

ORCID ID: <https://orcid.org/0000-0003-4054-3571>

Abstract

This article explores the educational resilience and identity negotiation among Dhimal students from Morang district in Nepal. There is growing attention to the educational deprivation of indigenous communities. However, Dhimal, as an indigenous community, and their education, how they navigate, negotiate, and perpetuate learning despite language barriers, cultural, and economic constraints. Using narrative inquiry based on life history interviews to explore students' lived experiences at school, at home, and in the community, it was found that students were subjected to double marginalization. Specifically, students faced challenges from land loss and poverty while experiencing cultural exclusion in Nepali medium schools where Dhimal language, history, and identity are remarkably absent. Yet, education among Dhimal students remained strong due to family encouragement, peer support, teachers' guidance, and a sense of responsibility for prospects. There are, however, tensions between cultural identity and the gradual weakening of everyday practices. This article concludes that resilience among Dhimal students is not a subjective characteristic, but a Subedi (2026). Navigating Double Alienation . . .

relational and culturally contextual process shaped by identity, family, and community in lived experience.

Keywords: Dhimal, Indigenous Education, Language Barrier, Socioeconomic Hardship, Identity

Introduction

Education is a fundamental component of personal growth. It is also considered a pathway to social mobility, creating better opportunities in life. However, education is not based on the principle of equality. Families invest in education, hoping that the next generation can participate in the social, political, and economic spheres of life at various levels. Educational institutions like schools are socially constructed and largely shaped by distinctive histories, languages, and cultures, and are also embedded within the power relations of specific cultural, social, economic, and political contexts. Scholars have argued that schools are not merely culturally neutral institutions, but rather they reproduce and reinforce existing social hierarchies and inequalities. Those who hold power through knowledge and are most comfortable with the social order recognize these institutions and legitimize the social organization (Apple, 2004; Bourdieu & Passeron, 1977).

The educational experiences of indigenous people are mediated by the tensions within the power-knowledge nexus as well as by contingent settings. Formal education is often considered a means of inclusive learning. The education of indigenous people in terms of their culture, language, history, and knowledge is often excluded and overlooked in research across the globe. Educational structures are based on dominant cultural codes; thus, Indigenous people are forced to navigate systems that may not reflect the reality as they know it in their own age or culture. So, success in education is not only about academic achievement but also about negotiation of cultural differences, identity anxiety, and unequal power relations. These issues are closely linked to the country's social and political history. Nepal is a country of linguistic, ethnic, and Subedi (2026). Navigating Double Alienation . . .

cultural diversity. The formal education system, as it developed, was part of a national, state-driven project centered on a common language and a shared curriculum, with national culture as the focus. Education largely reflected the language, values, and history of the majority Khas-Arya people through school (Bista, 1991; Lawoti, 2005; Onta, 2006). Education was presented as an institution that served all the people, but it often relied on people's cultural values of knowledge, citizenship, and language.

For Indigenous peoples termed as "*Adivasi Janajati*" in Nepal, formal schooling means going to schools that are culturally different from homes and communities where they live. Nepali has been the most common language of instruction, and Indigenous languages have received little recognition (Phyak, 2013). Educational programs have also usually placed a lot of emphasis on historical and cultural explanations of Indigenous people before and after school, as well as on their oral traditions (Onta, 2006). As a result, many Indigenous children find themselves separated from the cultural environment of home and school.

Language is of great importance in this educational divide. Children who start school speaking Indigenous languages need to be taught the content of their studies in Nepali, which is not their primary language of communication (Phyak, 2013; UNESCO, 2016). Such language differences can affect participation in the classroom, comprehension, confidence, and engagement in school. Students may not want to participate, may be mute in classrooms, or may find it difficult to share what they know in their home language with others. Such difficulties are often defined as deficiencies in learning one's own language, but more often they are simply the result of broader educational and language policies. But educational inequality goes beyond just language. Indigenous students may also experience subtle forms of cultural exclusion when school curricula, teaching practices, and institutional cultures fail to recognize their histories, identities, and knowledge traditions. Exclusion is not only about direct discrimination; it is also about silence, absence, and non-recognition. Students go to Subedi (2026). Navigating Double Alienation . . .

school with their peers but seldom encounter their culture, language, and/or history in the materials and practices schools provide for them. Such experiences affect students' sense of belonging and their perception of themselves as learners.

In recent years, despite several political changes in Nepal, including democratization, constitutional reform, and the formation of a federal republic, there are still educational inequities among Indigenous communities. Education policies today are largely focused on inclusion, equity, cultural diversity, and mother-tongue education. But in many Indigenous societies, participation, completion, and access to higher education remain very poor (CBS, 2012; Rai, 2017). Research has attributed this disparity to poverty, geographical isolation, language barriers, and educational resources. But while these are all important, such explanations tend to be deficit-based and portray Indigenous people through stories of disadvantage. It is this deficit perspective that often overlooks the strengths and agency that are present in families and communities of the Indigenous people. They often assume that failure in education is expected, and success is exceptional. These views do not recognize how Indigenous students, families and communities work to learn at the same time, despite social, cultural and economic obstacles.

Resilience is an alternative view of it, and early resilience research often depicted resilience as a trait or characteristic of a person. More recent research has defined resilience as the relational and socio-ecological processes of interaction among people, families, communities, institutions, and the broader social conditions (Masten, 2014; Ungar, 2011). Educational pathways are shaped not only by personal effort but also by family relations and community support, cultural identity, institutions, and structural constraints. A socio-ecological understanding of resilience is particularly relevant to Indigenous education. Indigenous students' educational work is often grounded in complex social, cultural, and material realities. As Ungar (2011) notes, resilience is not merely individual perseverance but also the capacity to negotiate and Subedi (2026). Navigating Double Alienation . . .

sustain access and resources in various contexts. It involves continuous negotiation between agency and structural constraints. The structural constraints and conditions of resilience have to be recognized (Joseph, 2013). Dhimal, recognized as an indigenous community, are inhabitants of the Eastern Terai region, particularly Morang and Jhapa districts in Nepal. Agriculture, forests, river bays, or communal lands characterize the living areas of Dhimal. The social and cultural lives of the Dhimal community are fundamentally based on kinship networks, collective labor, sharecropping, and strong ties of cultural practices. The use of the Dhimal language remained the effective medium of transmitting knowledge, histories, culture, values, and tradition over generations; however, the social, economic, political, and ecological dynamics have rapidly transformed the condition of the Dhimal community in recent decades.

Land dispossession, environmental change, migration, and changing labor markets have altered how people live and led to significant economic uncertainty. With this evolving world, education has become even more important for social mobility, jobs, and economic security. However, for many Indigenous students, the experience of formal education is at least partly about entering institutions where Dhimal language, culture, and ways of knowing are not fully understood. There are two dimensions of marginalization in education. The first is linguistic and cultural marginalization: students arrive in schools where they experience the lack of recognition of their language and culture. The second is the economic and material insecurity that is caused by poverty, environmental uncertainty, and limited access to resources. Educational participation must be a challenge of cultural and economic development simultaneously. Educational success cannot be viewed solely as a result of individual effort but must be examined in terms of social and structural conditions. Although there has been increasing research on educational inequalities in Nepal by Indigenous people, much of the research has been on barriers, disadvantages, and patterns of exclusion. There is less research on how Indigenous students understand and navigate educational challenges in Subedi (2026). Navigating Double Alienation . . .

their own lives. Indigenous students' voices are often underrepresented in the existing literature, and little is known about how they construct meaning in education, how they use support systems, and how they continue learning even when they are at odds with others.

Narrative inquiry is a useful tool to fill this gap. Narrative inquiry starts from the view that people make sense of their lives through stories (Clandinin & Connelly, 2000). Rather than viewing experiences as things that have happened in isolation, narrative inquiry examines how individuals connect past, present, and future experiences through time, social connections, and place. This approach is appropriate for Indigenous educational research as storytelling is a prominent feature of many Indigenous knowledge traditions. Narrative inquiry helps researchers see educational experiences not just as outcomes or events, but as lived and interpreted journeys grounded in relationships, aspirations, identities, and social conditions. Based on this, the present study examines the educational experiences of three Dhimel men from Morang District who graduated from higher education and pursued professional careers in education. Through their life stories, I want to know how resilience in education was established, sustained, and negotiated in changing social, cultural, and economic contexts.

The study is driven by three research questions: (1) How did linguistic and cultural identities shape the early educational experience of participants? (2) What kinds of support, motivation, and encouragement did they have to continue their education? And (3) what was the way that people worked through economic, institutional, and social barriers throughout their educational journey? In this article, I have argued that Dhimel learners' educational resilience does not stem solely from success in life and academic achievement. Rather, resilience is about the interplay of relationships, cultural identity, institutional experiences, economic reality, and personal aspirations. The Indigenous learner stories are the center of my research, and I hope to contribute to the Subedi (2026). Navigating Double Alienation . . .

dialogue on Indigenous education, educational resilience, social justice, and educational inequality in Nepal.

Methods and Material

This study adopted a qualitative explanatory method using a life-history approach, viewing education not as an isolated event but as an unpredictable journey shaped by time, memory, and environmental changes. A life-history approach allows participants to present from within and connect their personal experiences with broader social structures (Goodson & Sikes, 2001). Instead of measuring success by outcomes such as degrees or employment, this analysis allows exploration of how meanings of education, adversity and identity evolve (Goodson & Sikes, 2001). Education is not only a matter of individual choice but is also constrained by family decisions, economic shocks, language barriers, motivation and encouragement, and socioeconomic contexts. Therefore, this study uncovers the interplay between individual agency and structural constraints, and the changing dynamics of this interplay, rather than perceiving an individual's success or failure as merely individualistic (Ungar, 2011; Joseph, 2013).

The study was conducted in Belbari Municipality, Morang District, Nepal. This municipality comprises most of the Dhimal population, and livelihoods are characterized by agriculture and wage labor (CBS, 2021). Three Dhimal men were purposively selected and interviewed. These academically sound participants were selected but did not represent Dhimal youths to gather key information about resilience, support systems, and ongoing identity negotiation (Unger, 2011). Pseudonyms Sanjeev, Kedar, and Lekh were used to identify participants and ensure their privacy. These three participants were educators and members of a specialized school in the Dhimal communities, aged between 30 and 40 years at the time of the interview. Due to economic deprivation, language barriers, and no regular educational access and facilities, students' dropouts in schools within the Dhimal community remained remarkably high (CBS, 2021; Rai, 2017). The participants' life stories provided valuable Subedi (2026). Navigating Double Alienation . . .

insights and evidence that education continues despite frequent disruptions and constraints.

These lived experiences of participants simply go beyond hidden statistical interpretation of inequality in education, illuminating the relational work of staying in an educational organization (Goodson & Sikes, 2001).

In-depth interviews were conducted using semi-structured questions in Nepali, as is common for understanding, and lasted approximately two to three hours. Interviews were conducted in a highly familiar context for participants, ensuring open, undistracted conversations. Interviews incorporated questions related to participants' life events, including early childhood education, family context, crisis and transition periods, teachers and peers, economic constraints, and cultural and linguistic identity. Rather than using structured questions, participants were encouraged to share their lived experiences of educational resilience and identity negotiations, guided by the study's key themes. This flexibility during the interview provides detailed descriptions and an understanding of participants' perceptions and natural interpretations (Goodson & Sikes, 2001). All interviews were recorded on an audio tape recorder with the informed consent of participants. All recordings were transcribed verbatim, and key themes were developed and translated into English. The participants' tone and emotion during the interview were considered when translating the interview recordings, rather than relying solely on detailed description.

Thematic analysis was employed to analyze and interpret the data gathered through interviews. Interview transcripts were closely examined through multiple readings to grasp participants' lived experiences. To sketch the experiences and emotions related to schooling and language, initial coding was undertaken. These codes were sorted to develop broader themes that address the research questions. The common and diverse issues across participants' narratives were given special consideration. Special attention was paid to participants' expressions of ideas and perceptions. As Subedi (2026). Navigating Double Alienation . . .

Goodson and Sikes (2001) state, silence, hesitation, and contradiction in the narratives are considered crucial, as they indicate tensions, loss, and open struggles. During analysis, the aim was not to reduce participants' stories to simply developing categories and meaning. Rather, it sought to keep them firmly rooted in participants' lived experiences. The analysis revolved around individual narratives and shared storytelling, aimed at reconciling the distinctive nature of an individual life with the commonalities that shaped it.

Result and Discussion

Results

Entering School: Language, Fear, and Silence

The participants' stories varied as they entered school, reflecting uncertainty, fear, and a strong sense of difference. The home and schools were perceived as totally different worlds. The medium of communication at home was their mother tongue, the Dhimal language, and they lived in their familiar social and cultural setting. On the contrary, school became a new setting in which the Nepali language, while teaching and learning activities remained predominant, shaped every interaction among Dhimal students within the community.

One participant, Sanjeev, has had difficulty speaking Nepali at school since the very beginning of the year. He responded, "I tried to speak Nepali, but the tongue would not move properly." Lekh reminded us of his school years and said that the Nepali language was a major challenge for him. According to him, "I found difficulties in understanding lessons and classroom participation was anxiety-inducing rather than building confidence."

Kedar was such a peer that language difficulties were closely associated with others' behavior. He remembered classmates making fun of his accent and pronunciation. Though he did not mention direct exclusion, such experiences made him reluctant to talk in class. And silence became a way of avoiding embarrassment. The

Subedi (2026). Navigating Double Alienation . . .

participants repeatedly described feeling like outsiders in the classroom, even though they were physically present. At the same time, none of the participants reported any discrimination from teachers based on their ethnicity. Rather, their stories indicated a much more subtle experience. School was rarely aware of their language, cultural beliefs, and community knowledge. So, they had to learn to adapt to school expectations without expecting the school to adapt to them.

Finding Support and Purpose

Although schooling was new and challenging, the participants gradually found reasons to continue to participate. Early motivation came from external factors rather than personal interest, Kedar recalled. Sanjeev, too, said comparisons with children from other communities were so extreme that the pressure to continue school for comparison made him feel like he had to stay and go to school. School is not merely an academic domain but represents the community as a whole. Peers were crucial in reducing his fear of isolation and separation and in helping him overcome it more easily. The study revealed that students shared ideas and knowledge, notes, and combined their studies to understand the complex lessons. This showed that the interconnection, interdependence, and interaction among students help transform what they perceive as an unfamiliar place into a safe and convenient place and foster a sense of belonging. Teachers were further key sources of inspiration and support for the students' educational career pathways. For instance, one participant, Kedar, was particularly grateful to teachers, as they encouraged and motivated him academically rather than intimidating him, fostering confidence and making his educational journey more interesting. He contended that “teachers were not just instructors but people who can support and motivate the students’ potential.” However, motivation and excitement in the educational journey are not static but dynamic, changing over time. The study also found that parental pressure on the students became personal aspiration and a sense of community responsibility within Dhimel communities. In addition, very few Dhimel Subedi (2026). Navigating Double Alienation . . .

had graduated from school, and higher education remained a huge source of inspiration and motivation for their education. Therefore, educational attainment among the Dhimal is not seen as merely a personal achievement but also as the fulfillment of family expectations and community emancipation.

Living with Economic Hardship

Economic and financial constraints are common factors for students as a whole throughout their educational experiences. Dhimal students, specifically, are also constrained by economic hardships, even in the early stages of the learning process. One participant named Sanjeev, for example, was worried about financial insecurity. He had a response like “since we lost family land, displaced by floods; we experienced extreme economic hardship, education was never affordable and assured.” He added, “Threats of failure were given when absent from school; how to go to school while basic needs were not fulfilled.” These students also faced critical challenges and practical problems in purchasing textbooks and instructional materials, paying examination fees, and managing household duties and responsibilities. Academic achievement largely depends on the household's economic context.

Family members, nevertheless, were committed to ensuring education despite financial challenges. One participant, named Lekh, said during the interview: “My father was supportive regarding my studies and made sacrifices for my future.” It was found that parents saw school and learning as insurance for a secure future, and similar narratives were found throughout. Social and economic support from family members, relatives, neighbors, and community members was also obtained during economic hardship and times of crisis, and they received emotional support, temporary shelter, and practical support for their needs at the same time. Students developed their own survival strategies after graduating from their studies. It was also found that students had already learned resilient strategies through failures and disappointments through educational processes. At the same time, some students work and study simultaneously Subedi (2026). Navigating Double Alienation . . .

to continue their academic journey. In essence, the challenges of failure and difficulty are overcome by educational achievement, which usually leads to a sense of loss and failure during life's struggles, with the help of education at a broader level.

Success and Cultural Tensions

Educational achievement is closely tied to employment opportunities. The participants also completed their higher education and received employment opportunities. The employment opportunities are closely connected with financial security, social prestige, and power that were previously unavailable to many people within the Dhimel community. However, these produce emerging stresses. For instance, there were rapid transformations in language and culture within the family and the community. One participant's name was Lekh, and their response was: "Nepali language became the dominant language within the family; kids, even younger generations, used to speak Nepali rather than their mother language, Dhimel; there are huge shifts in language use and cultural practices in our family, even influencing our daily lives." Most importantly, they are proud of their identity as Dhimel, with their own language, costumes, heritage, and history. There are strong ties and bonds within the community. The narratives of participants, however, suggested that education remained crucial for ongoing processes of mobility within the Dhimel Community.

Discussion

The findings of the study revealed that the resilience of Dhimel students should not be understood merely as individual characteristics but rather as relational and inextricably interconnected with social, cultural, and ecological contexts. The narratives of participants highlight that educational achievement was notably shaped and facilitated not only by personal efforts but also by family support, social capital, and community relationships within the Dhimel community. Resilience is understood through sociological and ecological frameworks that interpret positive adaptation as a manifestation of relationships and resources rather than solely of personality (Ungar, Subedi (2026). Navigating Double Alienation . . .

2011; Masten, 2014). Strikingly, language was seen as fundamental to the learning processes. The lived experiences of participants on early school experiences showed that linguistic differences impact both learning and social participation and belonging. Previous research has indicated that the experiences of indigenous learners in schools are linguistically and socially challenging environments in which dominant languages prevail (Phyak, 2013). The participants' fear and hesitation revealed that language is not only a tool for instruction but also a sense of inclusion and exclusion. The findings suggest the role of social networks and relationships in maintaining educational involvement. Family members, peers, and teachers were key to academic endeavors in schools. Research on resilience suggests that social networks, support, and relationships serve as protective factors in coping with adversity and challenges (Masten, 2014). Therefore, academic achievement is not a product of individual effort based on self-dedication alone but also of the networks of support, sacrifices, and motivation from both family and community.

The findings of the study also indicate that access to education is often constrained by financial constraints, poverty, and economic disadvantage in indigenous education, particularly in Nepal (Rai, 2017). Poverty is not a unique event or hurdle. It creates uncertainty, difficulties, and disruption in education. Nevertheless, the participants' narratives showed that educational persistence relied on the collective efforts of individual, family, and community networks and relations. The results are particularly relevant to social inclusion and access to equal educational opportunities. It was found that participants' experiences included indirect discrimination. Language, culture, and history were missing from school life. The exclusion of students is not only a matter of discrimination but also a matter of non-recognition within the Dhimel community. This study contends that the current discourse on indigenous education states that cultural absence can impact belonging, identity, and educational experience. Therefore, the findings showed a complex association between educational success and Subedi (2026). Navigating Double Alienation . . .

cultural continuity. According to participants' life stories, educational mobility is often associated with adaptation to dominant linguistic and cultural norms. Education is crucial for cultural norms, but also causes the loss of the native Dhimel language. These tensions create discourse in indigenous education about inclusion and assimilation. However, educational success is not only about academic performance but also about cultural identity and continuity.

This study contends that the educational resilience of an indigenous community such as the Dhimel community is relational, culturally embedded, and driven by both opportunities and constraints. Resilience is not just about overcoming adversity but also about negotiating identity, maintaining a sense of belonging, and fostering opportunities through educational systems that often overlook the realities of indigenous communities. Finally, the study suggests that educational attainment should be assessed not only by academic performance but also by implications for cultural identity and continuity.

Conclusion and Implications

The article illuminates that educational resilience among Dhimel students is not merely the product of individual struggle and instantaneous but reproduced through the constant negotiation, adaptation, and social support embedded within social, cultural, and economic contexts. Students within the Dhimel community experienced double alienation in school as language, culture, and knowledge were unacknowledged. Educational achievement remained crucial for mobility and resilience, even as they lived in poverty, displacement, and hazardous conditions. The study demonstrated that the school itself was not a neutral institution. Students possessed linguistic and cultural characteristics from home but were rarely acknowledged in formal education. The predominance of the Nepali language in schools and classrooms posed challenges to students' participation, confidence, and sense of belonging. Parents, peers, relatives, teachers, and the community provide emotional and financial support in times of crisis.

Subedi (2026). Navigating Double Alienation . . .

Eventually, students also developed their own survival strategies by using educational attainment and also treated failure and challenges as learning opportunities. The study also explored the tensions between educational opportunities and cultural continuity, highlighting the educational and cultural mobility of the Dhimial community while raising concerns about the extinction of language, culture, and historical and cultural practices. Therefore, mobility within the Dhimial community is characterized by continuous negotiation between community involvement in predominant educational structures and existing cultural identity and community life.

In essence, the educational resilience of Dhimial students is relational and embedded within social, economic, and cultural contexts. Understanding resilience is not simply about overcoming adversity but also about negotiating identities and belonging and creating space through education. There is still a lack of cultural sensitivity in recognizing indigenous languages and knowledge in both educational policy and practice, and in teaching and learning processes at the classroom and school levels. Indigenous languages and culture should be recognized and valued in the school curriculum so that students can relate local knowledge and languages to school and promote meaningful and inclusive education.

This study underscores the urgent need for additional economic and institutional support, such as school meals, scholarships, and emergency practical needs, which is imperative for students from indigenous communities like Dhimial in times of uncertainty and for reducing the risk of economic vulnerability. Teacher training programs should be further developed to prepare teachers to teach in culturally and linguistically diverse classrooms, so they use culturally sensitive teaching methods to provide continuous support and motivation for students.

Conflict of Interest

The author hereby declares no conflict of interest.

References

- Apple, M. W. (2004). *Ideology and curriculum* (3rd ed.). Routledge.
- Bista, D. B. (1991). *Fatalism and development: Nepal's struggle for modernization*. Orient Longman.
- Bourdieu, P., & Passeron, J.-C. (1977). *Reproduction in education, society and culture*. Sage.
- Central Bureau of Statistics. (2012). *National population and housing census 2011, Volume 1: National report*. Government of Nepal, National Planning Commission Secretariat.
- Fraser, N. (2008). Reframing justice in a globalizing world. *New Left Review*, 36, 69–88.
- Giroux, H. A. (1988). *Teachers as intellectuals: Toward a critical pedagogy of learning*. Bergin & Garvey.
- Goodson, I. F., & Sikes, P. (2001). Studying teachers' life histories and professional practice. In P. Sikes (Ed.), *Life history research in educational settings: Learning from lives* (pp. 57–74). Open University Press.
- Joseph, J. (2013). Resilience as embedded neoliberalism: A governmentality approach. *Resilience: International Policies, Practices and Discourses*, 1(1), 38–52. <https://doi.org/10.1080/21693293.2013.765741>
- Lawoti, M. (2005). *Towards a democratic Nepal: Inclusive political institutions for a multicultural society*. Sage.
- Masten, A. S. (2014). Global perspectives on resilience in children and youth. *Child Development*, 85(1), 6–20. <https://doi.org/10.1111/cdev.12205>
- Onta, P. (2006). Ambivalence denied: The making of *Rastriya Itihas* in Panchayat-era textbooks. *Contributions to Nepalese Studies*, 33(2), 213–254.

- Phyak, P. (2013). Language ideologies and local languages as the medium-of-instruction policy: A critical ethnography of a multilingual school in Nepal. *Current Issues in Language Planning*, 14(1), 127–143.
- Phyak, P. (2016). Local-global tension in the ideological construction of English language education policy in Nepal. In R. Kirkpatrick (Ed.), *English language education policy in Asia* (Language Policy, Vol. 11, pp. 199–217). Springer. https://doi.org/10.1007/978-3-319-22464-0_9
- Rai, M. (2017). Education of indigenous peoples in Nepal: Policies and practices. *Journal of Education and Research*, 7(1), 1–19. <https://doi.org/10.3126/jer.v7i1.17762>
- Shrestha, N. R., & Pathak, R. (2012). Land, displacement and social exclusion in Nepal. *Studies in Nepali History and Society*, 17(2), 245–272.
- Skutnabb-Kangas, T. (2000). *Linguistic genocide in education—or worldwide diversity and human rights?* Lawrence Erlbaum.
- UNESCO. (2016). *If you don't understand, how can you learn? Global Education Monitoring Report*. UNESCO.
- Ungar, M. (2011). The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry*, 81(1), 1–17. <https://doi.org/10.1111/j.1939-0025.2010.01067.x>

**An Assessment of Customer Attitudes Toward Local Grocery Stores: Evidence from
Sundarharaincha Municipality, Morang**

Doi: <https://doi.org/10.3126/ajos.v6i1.98128>

Tulashi Rimal*

Binita Subedi

Sukuna Multiple Campus,
Sundarharaincha, Morang, Nepal

* rimal.tulashi01@gmail.com

Abstract

There has been a fast expansion of local grocery stores, which provide a variety of products for customers. Normally, such local grocery stores are owned or managed by a family and operate within a certain area. The main purpose of the research will be to find out customers' attitudes towards local groceries in Sundarharaincha. This is a descriptive type of research. The total population of the research includes all customers that come to the local grocery store. Simple random sampling technique has been used for selecting samples, which include 40 customers selected according to their age and gender. For data analysis, descriptive statistics will be used, which includes mean, standard deviation and percentage analysis, along with rank correlation. The result of this analysis suggests positive customer attitudes and satisfaction with the product quality, price, variety, store location, and service provided by the local grocery store. So, the local grocery store has maintained a good reputation due to its quality, pricing, and service. The analysis of Spearman's rank correlation shows a weak negative correlation between the actual and ideal ranks derived from theory. Different customers have different attitudes, perceptions, and levels of satisfaction towards local grocery stores. Understanding these differences and providing the service customers need is vital to the survival and growth of local grocery stores.

Keywords: Customer Attitude, Local, Grocery, Satisfaction

Introduction

Attitudes are often long-term judgments about people and objects, along with the emotional reactions they evoke. Personal ideas, convictions, and opinions about other people and things can also be expressed by attitudes. Simply put, a consumer is a person who consumes goods and services, spends money to obtain them, and uses them to satisfy their own needs is a customer. The local grocery store is a small-scale retail outlet that offers a wide selection of fresh produce, household essentials, and specialty items to meet the diverse demands and tastes of consumers (Blake et al., 2010).

According to Perner (n.d.), consumer attitude is essentially a combination of a consumer's beliefs, emotions, and inclinations toward a particular object in the marketing context. Attitude encompasses conduct, character, disposition, thoughts, and behavior patterns. It can have a positive or negative aspect and significantly impacts product purchases (Noel, 2009; Khan, 2012). Morris and Buller (2003) stated that local refers to products produced, processed, and retailed within a small geographic area. Attitudes are formed through experience and learning; attitudes influence buying behavior (Kotler & Keller, 2009). Consumer attitudes toward a firm and its products greatly influence the firm's success or failure. The retail industry in Nepal is experiencing significant changes, with the emergence of organized retail and the dominance of unorganized players, such as Kirana stores.

The Theory of Planned Behavior (TPB) is a late-1980s psychological theory developed by Icek Ajzen. TPB postulates that human behavior is a function of three fundamental factors: attitudes, subjective norms, and perceived behavioral control. Attitudes reflect an individual's opinions about a behavior, based on personal values and previous experience. Subjective norms concern social pressures to perform or not perform a behavior based on what others expect and believe. Perceived behavioral control is a factor that influences an individual's intention to perform a behavior. The core components of the Theory of Planned Behavior (TPB) by Ajzen (1991) are:

Attitude (A): TPB describes attitude as an individual's specific evaluation of a behavior. For example, in appraising local grocery stores, attitude refers to customers' general perceptions of the shop environment, including assortment, quality, price, shop atmosphere, and service (Ajzen, 1991).

Subjective Norms (SN): Subjective norms refer to social pressure or influence that an individual feels from important others in his life when deciding whether to carry out a certain action or behavior. When buying goods at nearby neighborhood stores, such norms would include the influence of social, family, and friends on customers' purchasing behavior. This could encompass how social groups enable or disable the option to shop in local grocery stores (Ajzen, 1991).

Perceived Behavioral Control (PBC): Perceived Behavioral Control involves the ease with which people perceive it is to carry out a particular behavior. In the case of local grocery shopping, this idea incorporates aspects such as the store's location, operating hours, parking availability, ease of movement within the store, and the overall shopping experience. All these factors contribute significantly to customers' perceptions of feeling in control while shopping at local grocery stores (Ajzen, 1991).

Applebaum (1951) argues that customers' buying attitudes are influenced by the needs and preferences of the consumers for whom the products are purchased. Aylott and Mitchell (1999) found in their study that staff behavior, along with the crowd and stress, is part of the decision process, alongside mainstream factors such as price, quality, and product. This concludes that consumer or customer satisfaction is an important factor when considering grocery shopping outlets. Uusitalo (2001) concluded that consumers focused on store layout, product variety, and convenience as the major factors rather than branding. Atulkar and Kesari (2014) provide information on customers' demographic profiles, family attributes, and income profiles, which play a major role in the selection of retail formats for product purchases. It concludes that, due to changing demographics, urbanization, and increased awareness driven by electronic media, especially the internet, customers have multiple options for modern retail outlets. The majority of customers are visiting organized formats for variety, easy availability, cleanliness, additional facilities for children, and convenient parking and restaurants. Wee et al. (2014) found that consumers' intention to purchase organic food was significantly influenced by perceptions of product safety, health, environmental factors, and animal welfare. Patnaik (2015) reported that consumers still preferred the experience they get from traditional stores, such as feeling the store's atmosphere, interacting with a salesperson, and seeking sensory stimulation. This might hinder the use of certain goods, such as groceries and apparel, as touch is the main

driver of shopping for these items. Dey (2017) noted that urbanization is a major influencing factor, acting as a change agent that is changing lifestyles. It will also affect customer perceptions. This study found that not all segments of society have the same choices available to them. Sarker and Rahman (2017) noted that customer purchasing decisions are influenced by cost, product variety, salesperson behavior, income level, product display, advertising, and familiarity with retailers. Dudziak et al. (2023) noted that demographic and psychological factors influence customers' attitudes towards local products.

Customers' attitudes towards local groceries are changing due to increased awareness and evolving lifestyles. Earlier, people used to buy groceries to fulfill their needs, but now they look for product quality, affordability, store location, staff behavior, and product variety. The study also found that customers' attitudes towards a local grocery depend on product quality, price, and variety. The main purpose of the study was to investigate customers' attitudes towards local grocery stores in Sundarharaincha.

In this study, the researcher has considered the following factor that determines customer attitude. Ajzen (1991) mentioned that customers' behavior in buying consumable products had certain priorities. His common priorities were product quality, price, location, product variety, and serviceability.

Methods and Materials

The research was conducted among customers who visit local grocery stores to examine their attitudes towards them in Sundarharaincha municipality, Morang district, Nepal. This paper used a descriptive-analytical research design and a quantitative research approach to investigate customers' attitudes towards local grocery stores. The descriptive aspect helped summarize the basic features of the collected data, and the analytical design enabled the examination of relationships among variables. A quantitative research approach was adopted in order to quantify the attitudes of the customers and perform a statistical analysis of the attitudes of the customers. The data source for the research report is primary data which have been obtained through a structured questionnaire. The questions in the questionnaire were closed ended questions on a 5-point Likert Scale where 1 indicated Strongly Disagree while 5 indicated Strongly Agree. Questionnaire development involved a literature survey of relevant theories pertaining to consumer attitudes and behavior including Theory of Planned Behavior (Ajzen, 1991).

The sample units for the survey include the customers of the local grocery store in Sundarharaincha, Morang, Nepal. Random sampling technique was used to choose the respondents where every customer had an equal chance of being selected in the study. A sample of 40 customers was used in the study. The respondents were all adult people aged 18 years and above who shop at the store regularly. ample size was deemed adequate because of the smaller geographical scope and the targeted population that was confined to the locality. Respondents were assured of anonymity as participation was on a voluntary basis. They were made aware of the purpose of the study and had the liberty to withdraw from it at any stage. Ethics in the study have been strictly adhered to.

In order to analyze data, MS Excel and IBM SPSS have been used for inputting and analyzing the gathered data. In the study, descriptive analysis (mean and standard deviation) has been performed to describe the answers of the respondents to each of the factors. Inferential analysis has been done using the Spearman's Rank Correlation Coefficient to determine the relationship between the independent and the dependent variable. The analysis helped to evaluate how to align the observed rankings with theoretical expectations. The data were presented in tabular form for clarity and to enhance understanding. The study's limited sample size may affect the generalizability of the findings to larger populations.

Results and Discussion

Results

The information and data collected through research are presented and analyzed through the following tables. Respondents were Sundarharaincha grocery store customers, selected at random for the survey. A short profile of the target respondent is prepared. Attributes such as respondents' age, gender, and consumption patterns are described here to build profiles of respondents.

Table 1

Analysis Based on Gender

Items	Category	Numbers of individuals
Gender	Male	20
	Female	20

The questionnaire was prepared to assess customers' attitudes towards the local grocery in Sundarharaincha. Respondents were given options for their age and gender. Of the 40 respondents, 50% were male, and 50% were female.

Table 2

Analysis Based on Age

Item	Category	Frequency	Percentage
Age	18-25	27	67.5%
	26-35	4	10%
	36-45	5	12.5%
	46 & above	4	10%

The study showed that 67.5% of respondents belonged to the age group of 18-25 years, 10% of respondents belonged to the age group of 26-35 years, 12.5% of the respondents to the age group of 36-45 years, and 10% of the respondents to the age group of 46 and above years. More than two-thirds of the respondents were under 25 years old.

Classification on the Basis of Consumption Pattern

How often do you shop at the local grocery store in Sundarharaincha?

Table 3

Analysis Based on Consumption Pattern

Shopping pattern	No. of Respondents	Percentage (%)
Daily	5	12.5
2-3 times a week	25	62.5
Once a week	7	17.5
2-3 times a month	2	5
Rarely	1	2.5
Total	40	100

The study showed that 12.5% of respondents visit the local grocery daily, while 62.5% of respondents visit the local grocery 2-3 times a week, 17.5% of respondents visit the local grocery once a week, similarly 5% visit 2-3 times a month, and the remaining 2.5% of respondents visit the local grocery rarely. According to the study, most people visit the local grocery store 2 or 3 times a week, which means they do not buy products in bulk but instead shop regularly at set intervals for fresh items.

Attitudes of Customers

The attitudes of customers towards local grocery stores were measured through a 5-point Likert scale where Strongly Disagree (SD=1), Disagree (D=2), Neutral (N=3), Agree (A=4), and Strongly Agree (SA=5).

Table 4

Analysis of Customers' Attitude

Factors	Mean(M)	Standard Deviation (SD)
Towards pricing	3.36	0.90
Towards product quality	3.40	0.75
Towards store location	3.56	1.87
Towards serviceability	3.56	0.97
Towards product variety	3.06	1.37

The study on customer attitudes towards local grocery stores revealed that respondents expressed relatively higher satisfaction with store location and serviceability ($M = 3.56$ and 0.97 , respectively), whereas product variety was relatively less satisfying ($M = 3.06$ and 1.37 , respectively). 'Customers' attitudes towards product quality and pricing were found to be moderately satisfactory ($M = 3.40$ & 3.36 , $SD = 0.75$ & 0.90 , respectively). Based on the results, customers' satisfaction with the store was high, but respondents showed variability in their responses. Regarding serviceability, the same degree of satisfaction with a lower standard deviation indicated a much better attitude. Similarly, the attitude towards product variety was low.

Although satisfaction was highest, the larger standard deviation of 1.87 suggests greater variability in customers' opinions about the store location. But the serviceability standard deviation of 0.97 indicates that respondents' satisfaction was more consistent. A lower mean satisfaction and a higher standard deviation in product variety indicate that customers were not fully satisfied.

Analysis of Correlation Coefficient between Dependent and Independent Variables

Furthermore, the research was analyzed using Spearman's rank correlation coefficient to assess the relationship between the ranks of the independent variables' means and the dependent variable, customer attitude.

Table 5

Rank Correlation Coefficient Between Dependent and Independent Variables

Factors	Mean	Actual Rank	Expected Rank	Difference(d)	d²
Product Quality	3.40	3	1	2	4
Pricing	3.36	4	2	2	4
Store Location	3.56	1.5	3	-1.5	2.25
Product Variety	3.06	5	4	1	1
Serviceability	3.56	1.5	5	-3.5	12.25
Total d ²					23.5
Spearman's Rank Correlation (ρ)					-0.175

Spearman's rank correlation was calculated to assess the relationship between the independent variables (product quality, pricing, store location, product variety, and serviceability) and the dependent variable (customer attitude), with ranks based on the grand mean of responses. The expected (ideal) rank was assigned from a theoretical assumption. The rank correlation coefficient ($\rho = -0.175$) indicated a very weak negative association between the independent and dependent variables. This suggests that Ajzen's (1991) theoretical assumption was found to be inverse in this research.

Discussion

In this study, there was an effort made to analyze the attitude of customers toward local grocery stores focusing on variables like product quality, price, store location, serviceability, and product variety. Descriptive statistics and Spearman's rank correlation were utilized in order to determine the perception, satisfaction level, and the application of Icek Ajzen's Theory of Planned Behavior. Positive results were observed in which the highest mean ($M = 3.56$) were attributed to store location and serviceability, indicating that consumers are very satisfied with the convenience and serviceability of the stores. This finding supports the Theory of Planned Behavior (Ajzen, 1991). Similarly, Uusitalo (2001) found a direct relationship between shopping decisions and convenience and store-related attitudes. Service quality and staff behavior are important factors in satisfaction with grocery shopping (Aylott & Mitchell, 1999). Therefore, the finding confirms that positive attitudes towards local grocery stores are influenced by serviceability and location.

The findings further indicated that product quality ($M=3.40$) and pricing ($M=3.36$) were moderately satisfying. These results indicate that local grocery stores offer quality products with reasonable prices. Freshness, hygiene, and product reliability are considered factors in product quality when making a purchase, as noted by Kotler and Keller (2009). Similarly, Khan (2012) highlighted that customer show favorable attitudes towards product quality and service to meet their expectations. This study further indicates that customers have a positive attitude toward fair pricing for high-quality products offered by local grocery stores.

Among the five factors, product variety has the lowest mean score ($M=3.06$), suggesting that customers are comparatively less satisfied with the range of products offered by grocery stores. Although the mean score is not below 3, the level of dissatisfaction is not severe; the results indicate that customers expect more choices. The reason local grocery stores cannot offer a variety of products is that they are comparatively small and have limited space and investment to stock a wide selection. Atulkar and Kesari (2014) also concluded that customers prefer stores with a variety of products, enabling better product choice. Therefore, local grocery stores can improve customer satisfaction through increasing product variety based on changes in customer needs. In addition, the results of the study showed different levels of satisfaction while buying groceries since customers have various preferences based on their age, lifestyle, and other

factors. Moreover, the results provide evidence to prove that consumer attitudes are influenced by various factors, such as demographic and psychological variables (Dudziak et al., 2023). Thus, local grocery stores should be ready to change services based on customers' preferences.

This study has identified a very important result, which is the Spearman's Rank Correlation ($\rho = -0.175$), showing a very low level of the negative correlation between the theoretical ranking based on the Theory of Planned Behavior and the real ranking of the factors based on customers' feedback. This means that in Sundarharaincha, customers' preferences are not completely matching the theoretical findings. Ajzen (1991) stated that the price of the goods and quality are the main factors influencing customers' positive satisfaction, whereas the results of this study show that serviceability and store location matter the most. It may be attributed to differences in context variables such as the level of convenience, shopping habits, and relations with grocery store owners. Moreover, the findings show that attitude can change depending on market conditions, location, and local consumer psychology characteristics.

Overall, it can be concluded that the consumers from Sundarharaincha have positive attitudes towards local grocery stores. Store location and serviceability are the most significant factors influencing shoppers' satisfaction, followed by product quality and fairness of price. One area that could be improved to increase satisfaction is the product variety. It is advisable for local grocery stores to continue providing quality products at affordable prices, as consumer expectations for greater satisfaction are rising. This will help them retain customers and, therefore, increase their competitiveness in the retail market.

Conclusion

The study aims to determine customer attitudes towards the local grocery in Sundarharaincha. The results and findings were based on the questionnaire responses. The frequency, percentage, and mean of responses were used to assess their attitudes and satisfaction levels with the Local grocery. The main purpose of this study is to examine the relationship between customer attitudes and the services offered by the local grocery.

Apart from this, quality, price, service, variety of goods, and location are factors that affect customers' choice of a local grocery store. Based on the study, we concluded that customers are satisfied with the current prices, quality, and freshness at the local grocery store. Customers also look at the store's image before buying or visiting the grocery store. From the

results and analysis, it is concluded that customers who visit local grocery stores are mostly young. Most customers who visit the grocery store are satisfied and have a positive attitude towards it. Analyzing customers' attitudes in local grocery stores helps the store adopt new strategies to better satisfy them.

In the study, customer attitudes and satisfaction levels regarding various local grocery stores were analyzed, revealing that customers are delighted with prices, location, variety, serviceability, and the quality of goods. The quality of the products offered at the grocery store is well accepted by the customers. Most of the customers like the quality of the grocery products. Customers assume grocery products to be fresh and hygienic. So, customers are satisfied with the quality and services of the local grocery.

Based on the descriptive data analysis, the majority of respondents were satisfied with the quality and price of local groceries. Recognizing these variations and meeting the requirements of customers is very important in sustaining and growing the local grocery shop. So, it is important to constantly assess customer attitudes and satisfaction in order to get feedback about the products and services to improve upon them. Certain local grocery shops have been able to sustain a good reputation of their product quality and low costs. They need to continue doing so in the present environment and considering changes in customer needs. It is imperative that a local grocery shop fulfills the customers' demands when it comes to product quality. Pricing should be reasonable and competitive. It should conduct various promotional activities for customers and ensure proper training of the employees in customer service and other related aspects. Also, they need to consider the convenience of the current location of their store.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Applebaum, W. (1951). Studying customer behavior in retail stores. *Journal of Marketing*, 16(2), 172–178. <https://doi.org/10.2307/1247625>
- Atulkar, S. & Kesari, B. (2014). A review of customer preference towards organized retail stores, *IRC's International Journal of Multidisciplinary Research in Social and Management Sciences*, 2(3).
- Aylott, R., & Mitchell, V. W. (1999). An exploratory study of grocery shopping stressors. *British Food Journal*, 101(9), 683-700. <https://doi.org/10.1108/00070709910288883>

Rimal & Subedi (2026). An Assessment of . . .

- Blake, M., Mellor, J., & Crane, L. (2010). Buying local food: Shopping practices, place, and consumption networks in defining food as “local.” *Annals of the Association of American Geographers*, 100(2), 409–426. <https://doi.org/10.1080/00045601003595545>
- Dey, S. (2017) A study on changing buying behaviour of Indian customers' global. *Journal of Marketing Management and Research*, 7(1), 1-4.
- Dudziak, A., Stoma, M., & Osmólska, E. (2023). Analysis of consumer behaviour in the context of the place of purchasing food products with particular emphasis on local products. *International Journal of Environmental Research and Public Health*, 20(3), 2413. <https://doi.org/10.3390/ijerph20032413>
- Khan, S. (2012). Factors Affecting Buying Behaviour of Females for Purchase of Cosmetics. *International Review of Business and Social Sciences*, 1(9), 68-76.
- Kotler, P. & Keller, K.L. (2009). *Marketing Management* (13th ed.). Pearson Education Inc. Upper-saddle River.
- Morris, C., & Buller, H. (2003). The local food sector: A preliminary assessment of its form and impact in Gloucestershire. *British Food Journal*, 105(8), 559-566
<http://dx.doi.org/10.1108/00070700310497318>
- Noel, H. (2009). *Consumer Behaviour*. AVA publishing SA.
- Patnaik, S. (2015). *The study on consumer perception towards online shopping in India. technical report*. Gangadhar Meher College.
- Perner, L. (n.d.). *Consumer Behavior: The psychology of marketing*. Consumer Psychologist.com. University of Southern California. Retrieved July 11, 2025, from <https://www.consumerpsychologist.com/index.html>
- Sarker, M. A. H., & Rahman, M. (2017). Consumers’ Purchasing Decision Toward Fast Moving Consumer Goods (FMCGs): An Empirical Study. *The Comilla University Journal of Business Studies*, 4(1). <https://ssrn.com/abstract=3515850>
- Uusitalo, O. (2001). Consumer perceptions of grocery retail formats and brands. *International Journal of Retail & Distribution Management*, 29(5), 214-225.
<https://doi.org/10.1108/09590550110390995>
- Wee, C. S., Ariff, M. S. B. M., Zakuan, N., Tajudin, M. N. M., Ismail, K., & Ishak, N. (2014). Consumers’ perception, purchase intention and actual purchase behavior of organic food products. *Review of Integrative Business and Economics Research*, 3(2), 378–397.
http://buscompress.com/uploads/3/4/9/8/34980536/riber_b14-173_378-397

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 237 – 258 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

Supply Chain Assessment of Banana Production and Marketing in Morang

Doi: <https://doi.org/10.3126/ajos.v6i1.98130>

Umesh Upreti

Sukuna Multiple Campus, Sundarharaincha, Morang, Nepal

umeshupreti01@gmail.com

Abstract

This study aims to examine the supply chain mapping, key problems, and cost-benefit ratio analysis of banana farming in Morang district. This is a mixed-methods descriptive research design using a deductive approach. The respondents selected for this study are aged 18-65 years and are from different professions. The major occupation of these respondents is real farmers (76.6%), and 23.4% are in other services, including teachers, businessmen, and service holders. A survey was conducted with a representative sample of 300 banana growers, including both males and females. The sample was selected using the convenience sampling technique. Required information for the study was collected primarily from primary data sources. Various statistical tools were used to analyze and interpret the data, which enabled the researcher to carry out this research work. Findings indicate that farmers from each Bigha earn an average income of Rs. 347000, with an average annual cost of Rs. 108000. Quality and commercial banana farming could bring immense opportunities for the prosperity and happiness of banana growers in the study area. To enhance production, key problems faced by farmers should be addressed. Also, they need to be encouraged by providing support, grants, subsidies, and other facilities. Government, concerned ministries and departments that

serve as guardians, should promote policies, programs, and plans that benefit real and small-scale farmers.

Keywords: Banana, Farmer's satisfaction, High-value crop, Production, Supply chain

Introduction

Supply chain management is an extension and development of logistics management. Logistics management deals with the flow of goods, including purchases, inventory level control, transportation, storage, and distribution within the company. Despite this, the supply chain also links producers to supply chain actors, including traders, contractors, wholesalers, retailers, and agents, to deliver products to the market and end customers. Swinnen (2007) noted that growth in high-value agriculture implies a greater need for closer linkages among farmers, processors, traders, and retailers to coordinate supply and demand. The supply chain involves coordination and collaboration with channel partners, including suppliers, intermediaries, third-party service providers, and customers. So, the supply chain is very important in agri-products, as it plays a key role in linking farmers and trading actors, enhancing mutual coordination and cooperation to ensure the timely flow of goods from the point of origin to the point of consumption. Planning, sourcing, manufacturing, materials handling, customer service, and satisfaction are considered most pivotal to the success of the supply chain for fruits and agri-products.

Nepal is an agricultural country and has been a major economic source for the majority of families. Most of the people in our country rely on farming. Over the years, people in Nepal have engaged in various farming activities. They harvest and produce various crops, fruits, and vegetables in different seasons for their livelihood. About 66% of the population depends on agriculture, and this sector accounts for 23.95% of gross domestic product (Nepal Rastra Bank, 2022). In Nepal, bananas are considered a commercial crop because it provides significant benefits to producers. The production Upreti (2026). Supply Chain Assessment . . .

and profitability of bananas depend on costs, varieties, manure, and the farm's location (Sharma et al., 2021). Panta (2018), in his research, concluded that the quality of fertilizer supply and price affordability directly affect farmers' productivity and profitability. This is also the second most important summer crop, sharing 21% of total summer fruits production, which can contribute to enhancing the livelihood of people due to its potential expansion in production area, productivity, high demand situation, and a sustainable crop in the climate change context (Pandey et al., 2017). Various indigenous knowledge systems are still used to cultivate and store banana seeds (Adhikari et al., 2022). The Ministry of Agriculture and Livestock Development (2019) reported that the total area under banana cultivation in Chitwan is 2329 hectares.

The history of banana cultivation in Nepal is not so long. Commercial banana cultivation in Nepal has only begun in the past few decades. It is reported that Commercial cultivation of banana in Morang district has started since 2045 B.S. It was started by Mr. Surendra Bahadur Basnet (A Former Minister) on his land, and the credit for linking the area's banana production to Kathmandu is given to Mr. Amar Bahadur Maghi, a local Trader (Ministry of Agriculture Cooperatives, 2006). The land and climatic conditions in Morang are highly suitable for banana cultivation. So, interested farmers can grow different varieties, such as local and tissue-culture varieties of banana, on their land. In the early period, more farmers were engaged in commercial banana farming. Respondents reported that from the establishment phase through 10 years, banana cultivation in Morang had become extensive in certain clusters. Under Morang district, banana orchard establishment started about 30-35 years ago (Source: Field Survey, 2024). Malvoke variety of banana is mainly grown in this region. At present, farmers have begun cultivating tissue-culture varieties of Malvoke, G-9, Jahaji, local Robusta, and William in some clusters of Morang District.

About 83.33% of banana growers report buying suckers from fellow farmers and neighboring districts, while the remaining 16.67% buy them from distant districts and Upreti (2026). Supply Chain Assessment . . .

India. Only a few farmers (10%) report cultivating tissue-culture varieties of bananas, which are obtained from nearby districts or imported from India. Most farmers have their own irrigation systems and start-up funds, and around 30% obtain these from fellow farmers, banks, and cooperatives (Interview & Field Survey, 2024). Farmers generally grow suckers during Falgun-Chaitra and begin plucking from Ashar through Mangsir (Field Survey, 2024). They supply bananas to end markets through a trading channel. The trading channel that helps banana growers reach their products includes local traders, wholesalers, retailers, contractors, and local bicycle traders. Farmers sell about 25 % of bananas to distant markets, 55 % to main city places, and 20 % to the local hat bazaar (Field survey, 2024).

Currently, nearly 40% of bananas in the Nepali market are imported from India (The Rising Nepal, 26th Feb, 2025). As a result, domestic production is being badly affected, and Nepalese consumption heavily relies on foreign markets. Thus, home production and the home market for bananas have become an emerging issue for real-scale farmers. Despite this, farmers face several barriers when cultivating bananas. Among them, the key barriers that farmers encounter in growing bananas in Nepal are a lack of inputs, disease-free seedlings, agricultural loans, poor irrigation systems, inefficient post-harvest management, price fluctuations, and low bargaining power of farmers (Dulal & Kattel, 2020). The government, on the other hand, should assist farmers with infrastructure and human resource development.

Logistics is a part of the supply chain. Before the 1950s, the concept of logistics was understood in military terms, focusing on procurement, maintenance, and transportation (Adhikari et al., 2022). In the past, logistics was seen as the physical distribution and storage of materials. Throughout human history, wars have been won and lost by the strength and capabilities of logistics. Many countries, driven by past interests, fought against each other and won or lost wars due to logistics management. It is also argued that Britain had to lose the war with America due to a lack of logistics.

Upreti (2026). Supply Chain Assessment . . .

With the passage of time and development, the importance of logistics was also felt in businesses. The key objective of the supply chain is to fill the gap created between the supplier and the end customers. This study mainly focuses on the flow of finished products and their value to end markets from producers or supply centers through upstream and downstream linkages. That means there are various actors who bridge the link between the flow of goods and the targeted market and consumers. This study strongly focuses on the organized, well-crafted path or track that is visible and indispensable in adding value to the product. It means that a visible series of organizations' efforts, in various forms, will play a key role in creating value for the products. So, an organization cannot ignore the presence and role of other organizations in the product supply process.

In addition to those activities, supply chain management also includes coordination and collaboration with its network partners, such as suppliers, intermediaries, third-party logistics providers, service providers, and customers. These are considered the trading actors and therefore play a key role in the completion of business deals across every aspect of every sector. It is very clear from the study that supply chain management is a large-scale operation that ensures the flow of the right amount of the right product to the right consumers, in the right places, at the right time. The growth of high-value agri-products, the development of agri-based industries, and coordinated vertical and structural patterns may present both opportunities and challenges for small farmers, especially in developing countries. It creates opportunities for small farmers in Nepal to raise their incomes by entering the growing markets for high-value agricultural commodities.

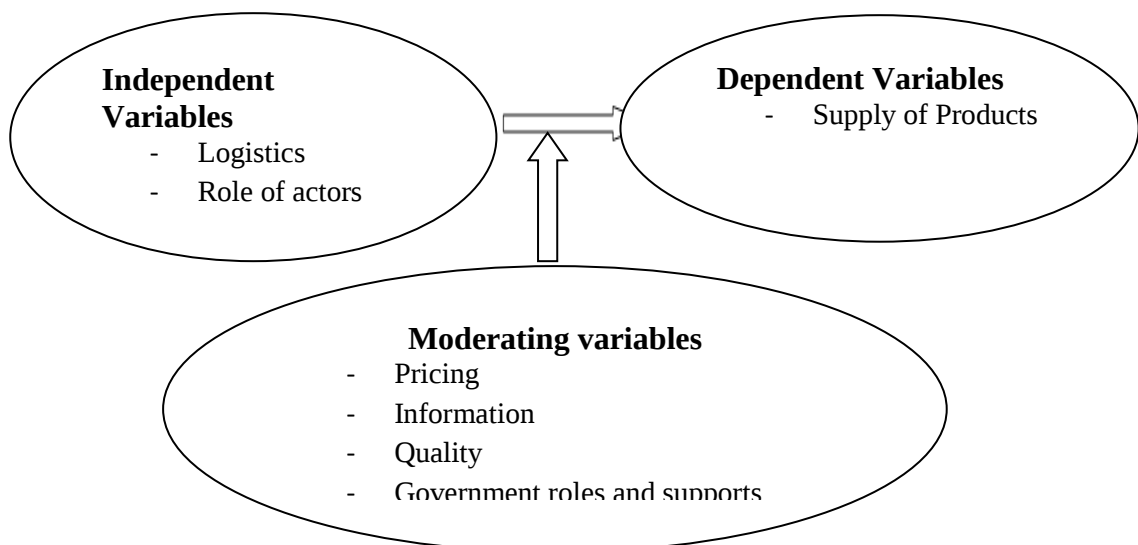
At the same time, the changes pose challenges for small farmers because high-value agricultural commodities often entail higher production costs and greater production and marketing risks (Swinnen, 2007). Understanding the agri-product value chain, including fruits, is very important for planning and executing the program, which Upreti (2026). Supply Chain Assessment . . .

significantly contributes to the nation's overall economic development. For marketing and commercial sales of products, the relationship between producers and traders is also very important. It ultimately supports good governance of the value chain by procuring and delivering necessary inputs and other natural resources. Shrestha (2021) reported that agricultural subsidies have not been properly utilized, and small and needy farmers are not benefiting from agricultural support policies and programs. Government support and subsidies are crucial for small and needy farmers to increase production and achieve profitability in the agricultural sector. However, in Nepal, government subsidies and grants are heavily exploited and influenced by political power and politically influential individuals.

The researcher in this study has applied Agile Supply Chain theory, which focuses on demand and supply management; helping farmers manage flexibility and speed; logistics management; market fluctuations; weather and seasonality; harvesting; cost-benefit efficiency; understanding government support and subsidies; recovering from disruptions; and mitigating risks.

Figure 1

Conceptual Framework of the Supply Chain of Banana



Banana farming in Morang has significant potential to contribute to rural livelihoods, food security, and the national economy. The region's agro-climatic conditions are well suited to banana cultivation, which attracts farmers. However, despite this interest, banana productivity in Morang remains relatively low compared with other districts and global averages. Farmers face several challenges, including limited access to quality seeds, inadequate knowledge of modern farming techniques, limited irrigation, post-harvest losses, and weak market linkages. Furthermore, the absence of organized supply chains, fluctuating market prices, inadequate government support and subsidies, limited market information, and poor cold storage facilities at farming sites discourage investment in banana farming. While various government and non-government initiatives have attempted to improve banana production, there is a lack of comprehensive research examining the key factors affecting productivity, farmer profitability, and market access. Therefore, this study aims to map the supply chain, identify and analyze key constraints in banana production and marketing in Morang, Nepal, and explore potential interventions to improve yields, profitability, and market efficiency.

Methods and Materials

This research was conducted in Morang District, which is among the most promising areas for banana production. This is purely exploratory research, using a deductive approach and both quantitative and qualitative methods. All farmers engaged in banana farming are considered the population of this region. A total of 300 banana-producing households in Morang District, comprising 250 males and 50 females, were selected through convenience sampling to assess supply chain mapping, key problems affecting production volume, and the cost-benefit ratio of banana farming from 2019 to 2024. Primary data sources were used to conduct the research. A field survey was conducted using structured and semi-structured questionnaires, household surveys, focus group discussions, direct observation, and key informant interviews. The Upreti (2026). Supply Chain Assessment . . .

researcher conducted conversations or posed many questions to respondents to address the research problems. The researcher conducted interviews with individuals or in groups. In the observation method, the researcher collected information by inspecting and directly observing the field. The researcher visited the field and observed the banana varieties, the area under cultivation, the plants' physical appearance, and the environment of the planting regions. In the focus group discussions, each group comprised 6 to 8 people. The researcher held discussions with informants as per the structured questionnaire to meet his research objectives. Discussions took place with real farmers, teachers, businessmen, and other service holders. The data collected were analyzed and interpreted using statistical tools such as averages, ratios, percentages, trend lines, tables, figures, and diagrams. The collected data have been recorded logically and systematically in accordance with the requirements of the research. Statistical and descriptive analyses have been used to analyze the data. For statistical and descriptive analysis, averages, ratios, percentages, tables, charts, graphs, trendlines, etc. have been used. Microsoft Excel was used to edit and properly tabulate the data. Such statistics were used to summarize the data and provide insights into banana supply chain performance.

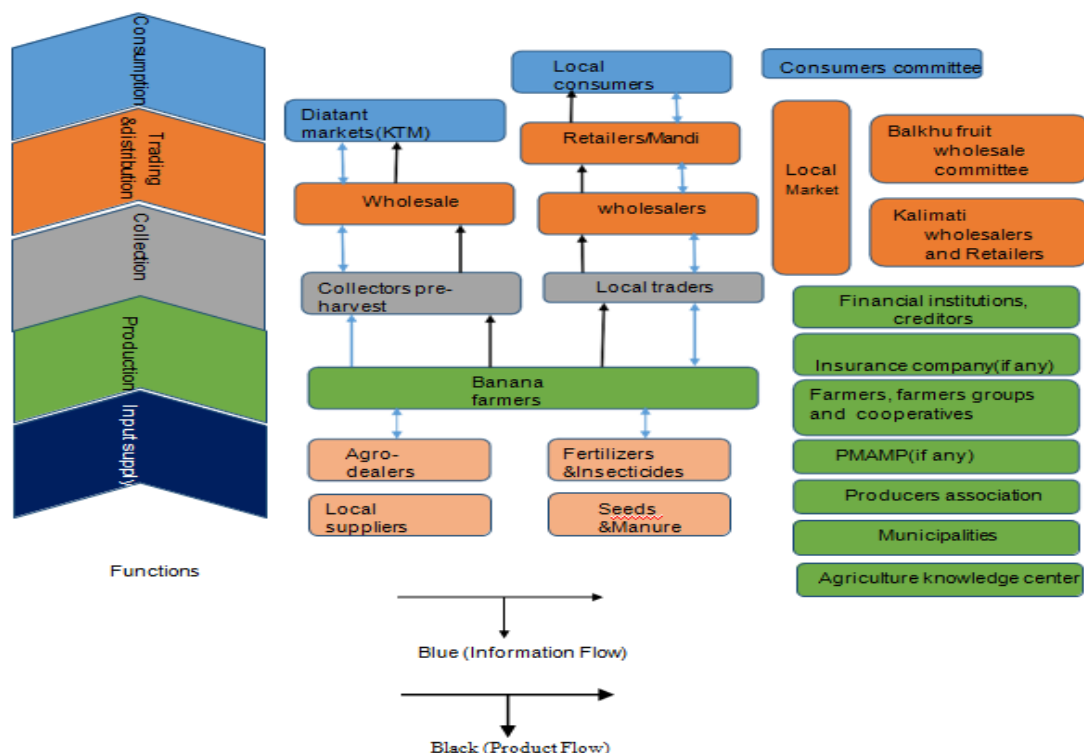
The mean (average) was calculated for various factors, such as the average cost of production per bigha per year, average sales per bigha per year, and average selling price per finger & per ghari, for the study areas of Jhapa, Morang, & Sunsari Districts, respectively. It provides some insights into the production & sales of bananas in the study area. Ratios were calculated for each year and district for the cost-benefit ratio, the average cost-benefit ratio for 2013-2023, and the combined average cost-benefit ratio of the three districts. It provides the researcher with clear and concise information on the cost-benefit ratio of banana farming. Tables & figures were developed to analyze the literature review, supply chain structure, supply chain conduct, respondent sample size, land area covered, & varieties of banana produced in the study area. They were Upreti (2026). Supply Chain Assessment . . .

developed to analyze production & sales volumes, sales area & year, cost-benefit ratios, & farmers' knowledge. Figures were used to show the conceptual & structural framework, represent supply chain mapping, supply chain structure & conduct, and assess other constructs, providing useful insight to the researcher to sum up his research study.

Results and Discussion

Results

The given chart shows the banana value chain, starting from input suppliers such as agro-dealers, local suppliers, and fertilizer, seed, and manure providers, who support banana farmers in production. Farmers then supply their produce to collectors, local traders, and wholesalers, who in turn distribute bananas to local and distant markets, such as Kathmandu. Retailers and Mandy sellers finally deliver bananas to local consumers. Alongside, various institutions, such as financial organizations, insurance companies, farmers' groups, cooperatives, municipalities, and agricultural knowledge centers, provide necessary financial, technical, and organizational support. The map highlights both the product flow (black arrows) from farmers to consumers and the information flow (blue arrows) among farmers, traders, consumers, and supporting institutions.

Figure 2*Supply Chain Mapping of Banana under Morang District***Table1***Supply Chain Structure of Banana in Morang District.*

Categories District	Indicators	Morang
Factor condition: application	Fertilizer availability	Crisis at the
	Insecticides/pesticides	Frequent basis
	Sucker replacement rate	5 to 7 years
	Irrigation facility (pump-set)	No dam/No
canal facility		
Demand and supply	Supply situation	April to July- 50
%, Behaviors:		August to
October- 35 %		

March-15 %		November to
Supply Chain Governance:	Demand	Lowest demand
at winter		(November to
March)	Governor	Collection
traders		(Local and bulk
scale traders)		
Entry barriers:	Power relation	Buyer driven
	Training, knowledge& technology	Lowest
	Land availability & accessibility	Yes
loan)	Capital	Yes (Own &
Institutional framework:	Price risk	Yes
pump-	Subsidies	Lower (Especially for
set,		
agricultural tools		Small
equipments)		&
	Research & Development	Poor

The banana supply chain in Morang District presents several challenges and features. Farmers face a fertilizer crisis during application and frequently use insecticides, while sucker replacement occurs only every 5 to 7 years. There is no dam or canal for irrigation, limiting water access. Banana supply is highest from April to July (50%), moderate from August to October (35%), and lowest from November to March (15%), which also marks the period of lowest demand. The supply chain is mainly governed by local and bulk-scale collection traders, making it buyer-driven. Entry barriers include very low access to training, knowledge, and technology, though land and capital (own and loan) are available, with price risk remaining a concern.

Institutional support is weak, with low subsidies (mostly for pump-sets and small tools) and poor research and development facilities. Overall, the banana supply chain in Morang struggles with input shortages, seasonal demand fluctuations, and weak institutional backing.

Table 2

Supply Conduct of Banana under Morang District

Categories	Indicators	Morang
District		
Product and market system:	Selling unit	Fingers
contract	Seller-buyer relationship	Informal
producers		between
bicycle, Safari,	Transportation means	Cycle,
tractor,		Pick-up van,
Price-setting strategy:	Wholesale commission	8-10 %
	Demand-supply equilibrium	50 %
	Responding	
	Price setting by negotiation	50 %
Technological adoption:	Adoption of selected technology	Low adopters
(6/60*100)	Initiation of tissue culture sapling	10%
(12/60*100)	Disease-resistant varieties	20%
(45/60*100)	Suckers treatment	75%
Replacement & buying of	Processing & Grading	No (0%)
(50/60*100)	At 5-7 years, from fellow farmers	83.33%
Suckers		
Risk supporting services:	Insurance service	Not Insured
Vertical linkage:	Linkage type	No long-term
business		Relationship

Supply Linkage: Farmers	Resources	I Suppliers &
	Traders	Play a key
role		

The banana supply chain in Morang District shows that bananas are mainly sold as fingers, with informal contracts between producers and buyers. Transportation is done using cycles, bicycles, safari vehicles, pick-up vans, and tractors, while wholesalers charge an 8–10% commission. Price-setting is equally divided between demand-supply equilibrium (50%) and negotiation (50%). Technological adoption is generally low: only 10% adopt tissue culture saplings, 20% use disease-resistant varieties, and 75% practice sucker treatment, while processing and grading are absent. Most farmers replace suckers every 5–7 years, and 83.33% source them from fellow farmers. Risk support is minimal because farmers are not insured, and vertical linkages remain weak, with no long-term business relationships. In terms of supply linkage, suppliers and farmers provide inputs, while traders play a key role in the overall supply chain. Overall, the banana supply chain in Morang is characterized by informal practices, limited use of technology, and weak institutional and risk-support services.

Key Factors Affecting the Supply Chain of Banana

The banana supply chain in Morang district faces several challenges that reduce farmers’ profits and product quality. Limited cold storage facilities, poor road connectivity, and lack of modern sorting, grading, handling, and packaging methods cause significant post-harvest losses. Farmers rely on unskilled labor, have weak market linkages, and are often exploited by traders. Government policies and subsidies rarely reach the real farmers due to political influence, while increased imports of hybrid bananas from India make local production less competitive. Additionally, pests,

diseases, high input costs, and low productivity further worsen the situation, forcing many farmers to struggle to sustain their livelihoods.

Cost-Benefit Analysis of Banana Farming

The table and figure below show the cost-benefit ratio of banana farming in Morang District from 2019 to 2024.

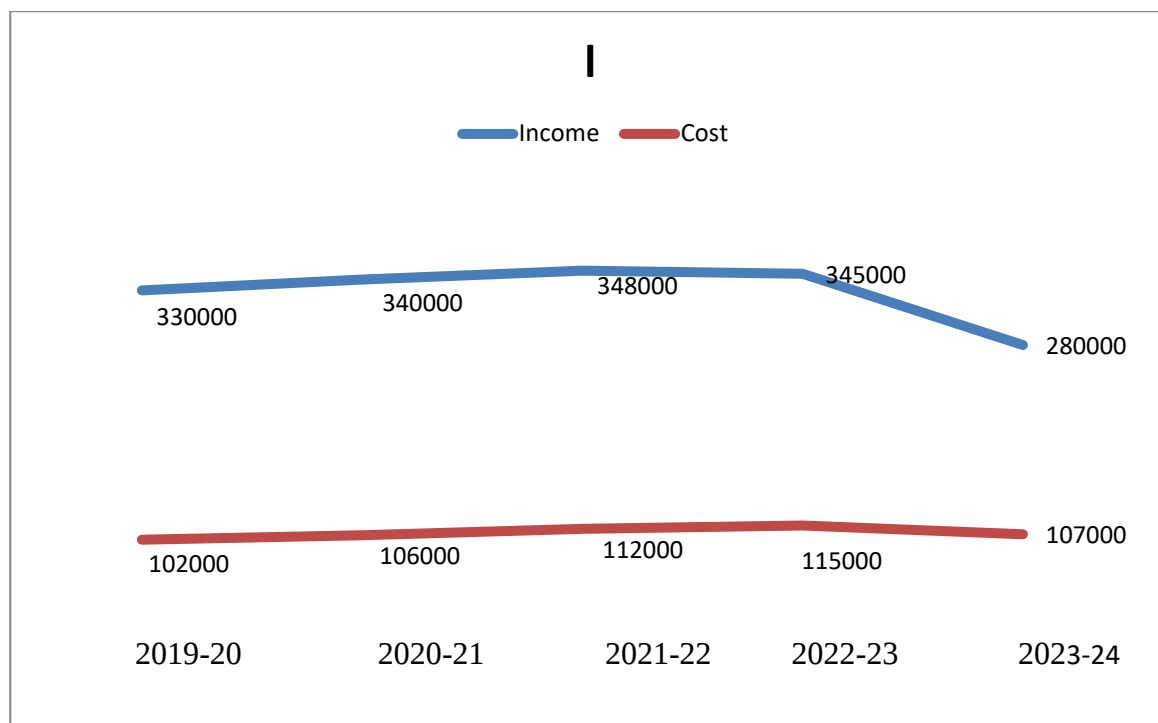
Table 3

Analysis of Cost-Benefit Ratio during the Years 2019 to 2024

Year	Income (Rs.) / Bigha	Cost (Rs.) / Bigha	BC Ratio
2019-2020	330000	102000	3.23:1
2020-2021	340000	106000	3.21:1
2021-2022	348000	112000	3.11:1
2022-22023	345000	115000	3.00:1
2023-2024	280000	107000	2.62:1

Figure 3

Trend Line showing Cost-Benefit Ratio during the Years 2019 to 2024



The table and figure above show the income, cost, and benefit-cost (BC Ratio) of banana fruit for the respective years. Table 3 shows that Rs. 348000 is the highest income and Rs. 280000 is the lowest income observed during the years 2018-19 and 2020-21. The benefit-cost ratio is highest at 3.23:1 in 2017-18 compared with subsequent years. Figure 1 shows the trend lines for income and cost of fruit produced across different years. The trend line, with benefit and cost factors fluctuating, indicates that income generated across different time periods is inconsistent.

Table 4

Variable Cost of Production per Bigha during the Years 2019-2024 under the Study Area

Variables	Average cost/Bigha (Rs.)
Fertilizer cost/Bigha	15000
Operation cost/Bigha	15000
Irrigation and pruning cost/Bigha	8000
Plant protection cost/Bigha	12800
Seeds purchasing cost/Bigha	16200
Labor cost/Bigha	15600
Land lease cost/Bigha	45000
Land preparation cost/Bigha	16800

The table above shows the varying costs of essential inputs (seeds, fertilizers, irrigation systems, insecticides, and pesticides) and labor wages. For one bigha of farmland, Farmers need to bear various costs, such as manure, operating, training and pruning, plant treatment and protection, seed purchase, labor, land lease, and land preparation. This results in an average annual cost of Rs. 108000 per bigha. Farmers most often manage these costs with their own funds and loans from financial institutions and other creditors.

Discussion

While the mapping highlights the presence of diverse actors, it also underscores the fragmented and underdeveloped nature of the banana supply chain. The study identifies several critical problems that directly affect farmers' productivity and profitability. One of the most pressing issues is the lack of cold storage and post-harvest management facilities. Very few cold storages exist in Morang, and those that do are often located far from farming sites. As a result, bananas are transported to urban

centers without preservation, leading to spoilage, quality deterioration, and wastage. Farmers and traders rarely practice proper sorting, grading, or packaging, which further reduces product value and consumer appeal. Poor connectivity and infrastructure compound this issue, as rural roads are often muddy, rough, and unreliable, especially during rainy seasons. These road conditions increase transportation time and costs, while also damaging bananas during transit. Weak infrastructure not only raises costs but also discourages traders from reaching farms directly, forcing farmers to depend on local middlemen (Field Visit & Interview with Smallholders, 2024).

Another major problem is the shortage of inputs such as fertilizers, insecticides, pesticides, and high-quality disease-free seedlings. Fertilizers are often not available when needed, while tissue culture varieties remain underutilized due to high costs and limited supply. This dependence on traditional inputs reduces productivity and increases vulnerability to pests and diseases. The problem is further intensified by the shortage of skilled labor. Banana farming requires intensive labor for land preparation, irrigation, pruning, harvesting, and post-harvest handling, yet most workers are untrained and unskilled, making their efforts less productive. Farmers themselves bear much of the workload, which not only limits output but also increases production costs (Field Visit & Interview with Smallholders, 2024)

Market linkages are another weak point in the supply chain. Farmers are highly dependent on middlemen for market access, and these intermediaries often exploit them through non-transparent pricing systems. Prices fluctuate with seasons, rising in summer when demand is high and falling sharply in winter, leaving farmers with inconsistent returns. Producers are price takers, not price makers, and negotiation power rests almost entirely with traders. This imbalance discourages farmers from making long-term investments in improving production. The role of government in addressing these issues also appears ineffective. Although the government allocates billions in subsidies to the agricultural sector, the study shows that genuine farmers rarely benefit.

Upreti (2026). Supply Chain Assessment . . .

Agricultural subsidies have not been utilized properly in practice and small and needy farmers are not benefited from the agricultural support, policies and programs.

Government subsidies are heavily influenced by political power and political influential persons (Mahesh Kumar Shrestha, 2021, P.N.16-22). Instead, subsidies are captured by politically influential individuals. Farmers in Morang report receiving minimal grants, mostly for small tools or pump-sets, while larger structural needs such as irrigation canals, cold storage, and research programs remain unaddressed. This failure of policy implementation leaves farmers without the institutional support needed to expand their production and reduce risks.

The problem of increased imports further undermines domestic banana farming. Almost forty percent of bananas consumed in Nepal come from India, and these imported bananas are often larger, hybrid varieties that dominate urban markets. This makes local production less competitive, forcing Nepalese farmers to sell at lower prices. Indian subsidies make their products cheaper, causing them to flood the Nepali market. This has led to increase imports of agricultural products in the total commodity trade” (Timilsina, 2019).

Such competition not only reduces their income but also contributes to Nepal’s trade deficit in agricultural commodities. Combined with this is the issue of declining productivity, which arises from pest attacks, diseases, high input costs, and poor-quality seeds. Farmers also face rising land lease costs and labor expenses, making banana farming less profitable than in the past.

The cost-benefit analysis carried out in the study paints a mixed picture. On one hand, banana farming in Morang is still profitable, generating three times higher returns than the cost of production. On average, farmers earn Rs. 347,000 per bigha annually, while the average cost is Rs. 108,000. This makes banana cultivation one of the most lucrative agricultural activities in the region. On the other hand, the trend analysis from 2019 to 2024 reveals that profitability is gradually declining. The benefit-cost ratio fell Upreti (2026). Supply Chain Assessment . . .

from 3.23 in 2019–20 to 2.62 in 2023–24, showing that profit margins are shrinking. The highest income of Rs. 348,000 was recorded in 2021–22, while the lowest, Rs. 280,000, was reported in 2023–24. The decline in profitability reflects rising costs of production, inconsistent productivity, and unstable market conditions. A breakdown of costs shows that land leasing and labor are the largest expenses, followed by seeds, fertilizers, irrigation, pesticides, and land preparation. Most of these expenses are covered by farmers themselves, either through personal savings or loans, which increases their financial burden. Without access to crop insurance or reliable subsidies, farmers remain vulnerable to losses caused by pests, diseases, natural disasters, and market fluctuations.

Taken together, the results highlight both the opportunities and the constraints of banana farming in Morang. The region has favorable climatic conditions, established farming clusters, and high demand for bananas at the local and national levels. Banana farming is still profitable compared to many other crops, making it an attractive option for rural households. However, the system is plagued by structural inefficiencies, weak infrastructure, poor institutional support, and unfair market practices. Farmers are trapped in a cycle of high production costs, declining productivity, and limited bargaining power. Unless addressed, these issues threaten the long-term sustainability of banana farming in the district.

The discussion makes it clear that the future of banana farming in Morang depends on comprehensive interventions. Improving road connectivity and expanding cold storage facilities would reduce post-harvest losses and increase farmers' returns. Promoting tissue culture varieties, ensuring the timely availability of fertilizers, and providing training in modern farming techniques would enhance productivity. Transparent price-setting mechanisms and stronger farmer cooperatives could reduce exploitation by middlemen. Effective distribution of government subsidies, combined with crop insurance and trade policies to protect domestic farmers from unfair

competition, would further strengthen the sector (Field Visit & Interview with Smallholders, 2024). Without such interventions, banana farmers in Morang may face declining incentives to continue or expand cultivation, despite the high potential of the crop. The study therefore emphasizes that sustainable development of the banana supply chain requires not only technological and infrastructural improvements but also political commitment to ensuring that policies and programs truly benefit real farmers.

Conclusion

The study on the banana farming supply chain in Morang district concludes that banana cultivation remains a profitable agricultural enterprise and a vital source of rural income, yet its sustainability is under increasing pressure due to structural, economic, and institutional challenges. Farmers in the district currently earn nearly three times their production costs, demonstrating that banana farming continues to hold significant economic potential. However, the benefit-cost ratio has been gradually declining, primarily due to rising input costs, decreasing productivity, inadequate infrastructure, and the exploitative practices of middlemen. These factors collectively threaten the long-term competitiveness of the sector.

Key constraints include the absence of adequate cold storage facilities, poor road connectivity, limited access to high-quality seeds and fertilizers, and ineffective subsidy mechanisms. Heavy dependence on banana imports from India further undermines the local supply chain, reducing incentives for domestic producers. Pest and disease outbreaks, limited access to modern tools and technology, and a lack of technical awareness among farmers also contribute to production-related difficulties. These issues have discouraged some farmers and reduced their enthusiasm for expanding banana cultivation.

Given these challenges, there is a clear need for timely and coordinated interventions. Governments at all levels should take proactive measures to strengthen infrastructure, provide grants and subsidies, ensure timely supply of inputs, and protect farmers from Upreti (2026). Supply Chain Assessment . . .

unfair market practices through effective regulations. Establishing storage facilities, improving road networks, and supporting farmer cooperatives could enhance the efficiency and profitability of the banana supply chain. Likewise, the involvement of institutions in research, development, and farmer training is essential. Support through access to credit, insurance schemes, and capacity-building initiatives will further encourage farmers to continue producing.

At the marketing level, farmers must be trained and encouraged to adopt practices such as sorting, grading, packaging, processing, and value addition to achieve better prices and expand market opportunities. The integration of local and global supply chain knowledge into higher education curricula can also play a crucial role. Field visits, research collaborations, and internships can expose students to real-world challenges and solutions, enabling them to develop innovative recommendations that directly benefit farmers.

In conclusion, banana farming in Morang district reflects both opportunity and vulnerability. With targeted interventions in infrastructure, technology adoption, policy reforms, and market regulation, banana cultivation can remain profitable, competitive, and sustainable. Strengthening the supply chain not only improves farmers' livelihoods but also contributes to food security, rural development, and the region's overall economic growth.

Conflict of interest

The author declares no conflict of interest.

References

- Adhikari, A., Poudel, B. & Pokharel, A. (2022). Banana production status and its role on income generation and livelihood improvement in Chitwan. *International Journal of Applied Sciences and Biotechnology*, 10(2), 93-98. DOI: <https://doi.org/10.3126/ijasbt.v10i2.46177>

Ministry of Agricultural Department (2019). *National Agro-Forestry Policy*. <https://lpr.adb.org>

Ministry of Agriculture Cooperatives [MOAC] (2006). *National crop and food supply assessment mission results*. <https://neksap.org.np>

Nepal Rastra Bank (2022). *Annual Report (2021-22)*. <https://www.nrb.org.np>

Pandey, L. N., Tiwari, M. R., Bahadur, B., Baskota, N. & Banjade, J. N. (2017). Feeding response of Tree fodder Bhimal on growth performance of castrated male goats. *Journal of Nepal Agriculture Research Council*, 3(2017), 1-5. DOI: <https://doi.org/10.3jnarc.vi1.17268126>

Sharma, S., Dhakal, S.C., Adhikari, R. K. & Tiwari, U. (2021). Profitability, productivity and resource use of efficiency of banana production in Hetauda-Dumkibas road corridor, Nepal. *Congent Food & Technology*, 7(1), 1-16. DOI: <https://doi.org/10.3126/jnarc.v3i1.17268>

Shrestha, M. K. (2021). Agricultural support policy of Nepal: Cases of Subsidies. *International Multidisciplinary Research Journal*, 1, 16-22. <https://www.imrjournal.info>

Shrestha, S., Joshi, N. R., & Pandey, S. (2021). Value chain analysis of mango (*Mangifera Indica* L.) in Saptari district, Nepal. *Malaysian E-Commerce Journal*, 4(1), 07-19. DOI: <http://doi.org/10.26480/mecj.01.2021.07.19>

Swinnen, J. F. M. (2007 October 30). *Global Supply Chains, standards and the poor*. Some Empirical and Theoretical Insights [Paper presentation]. Farrell Lecture at the University of Guelph.

The Rising Nepal (February 26th, 2025). Indian banana import affects Nepal's Market. *TRN Online*. <https://risingnepaldaily.com>

Timilsina, S., Khanal, M., Pradhan, R., Bhattarai, A., & Sapkota, P. (2022). Determinants of farmer's participation in banana insurance in Chitwan district, Nepal: *The Journal of Agricultural & Environment*, 23. DOI: <https://doi.org/10.3126/aej.v23i1.46844>

Academic Journal of Sukuna – AJoS, A Peer-reviewed Interdisciplinary Journal
Volume 6 (Issue 1), 2026 July, Pp. 259 – 286 ISSN 2594-3138 (Print)
Research Management Cell (RMC – Sukuna), Sundarharaincha, Morang

पूर्वीय षड्दर्शन दर्शनमा तत्त्वमीमांसा

Doi: <https://doi.org/10.3126/ajos.v6i1.98133>

दीपकप्रसाद न्यौपाने, पि.एच. डि.

सुकुना बहुमुखी क्याम्पस, सुन्दरहरैँचा, मोरङ

tu.deepak31@gmail.com

सारसङ्क्षेप

जीवन र जगत्का बिचको अन्तःसम्बन्धको यथार्थपरक विवेचना गरिएका संस्कृत वाङ्मयभित्रका दर्शनहरू नै पूर्वीय दर्शन हुन् । पूर्वमा वेद, ब्राम्हण, आरण्यक तथा उपनिषद्देखि नै जीवन र जगत्का बारेमा विमर्श गरिँदै आएको पाइन्छ । यो वैदिक वाङ्मयपछि संस्कृतमा वेदलाई आधार मानेर योग, साङ्ख्य, न्याय, वैशेषिक, मीमांसा तथा वेदान्त आदि दर्शनको विकास भएको छ । यी दर्शनहरूमा पदार्थ जगत्, आत्मा, चेतनाजस्ता तत्त्वहरूको मीमांसा कसरी गरिएको छ र यी दर्शनले ज्ञानको दिगो विकासमा कसरी योगदान पुऱ्याएका छन् भन्ने विषयमा यस लेखमा विमर्श गरिएको छ । ज्ञानका स्रोतका रूपमा रहेका वेदसँग सम्बन्धित भएर पनि यी छवटै दर्शनहरूले फरक फरक तत्त्वलाई दार्शनिक आधार बनाएका छन् । यी दर्शनहरू केकस्ता तत्त्वमीमांसामा केन्द्रित छन् र विश्वव्यापी ज्ञान निर्माणमा यिनीहरूको कस्तो योगदान रहेको छ भन्ने समस्यामा केन्द्रित रही यी दर्शनसम्बद्ध कृतिहरूको सूक्ष्म पठन गर्दा साङ्ख्य दर्शनमा प्रकृति र पुरुषसहित पञ्चिष तत्त्वको, योगदर्शनमा यी तत्त्वहरूसहित पुरुषविशेषलाई थपि छबिस तत्त्वको, न्याय दर्शनमा सोह पदार्थको, वैशेषिक दर्शनमा सात पदार्थका साथै परमाणुवादको, मीमांसा दर्शनमा आठ तत्त्वसहित आत्माको नित्यत्व एवम् सर्वगतत्वको तथा वेदान्त दर्शनमा परब्रह्मलाई सत्य मान्ने ब्रह्मवादको तत्त्वमीमांसा गरिएको निष्कर्ष

प्राप्त भएको छ । पूर्वीय दर्शनमा तत्त्वमीमांसा गरिएका यी तत्त्वहरूले मानवजीवन तथा सृष्टि प्रक्रियाका बारेमा गम्भीर व्याख्या गरी विश्वव्यापी भौतिक तथा आध्यात्मिक ज्ञानको आविष्कारमा विशिष्ट भूमिका खेले पनि अहिले यी दर्शनलाई केही मात्रामा कर्मकाण्डीय साम्प्रदायिक चिन्तनका रूपमा व्याख्या गर्नाका साथै जीवनजगत्का वस्तुयथार्थका विश्लेषणका लागि पश्चिमी ज्ञान एवम् दर्शनलाई महत्त्व दिने प्रवृत्तिको विकास भएको छ । वस्तुतः जीवनजगत्को तथ्यगत विवेचना पूर्वीय आस्तिक दर्शनमा सूक्ष्मरूपमा भएको र ज्ञाननिर्माणमा यी दर्शनहरूको विशेष भूमिका रहेको हुनाले ज्ञानको दिगो विकासका लागि यी दर्शनहरूको अध्ययन तथा विश्लेषण गर्न अपरिहार्य रहेको निष्कर्ष यस लेखबाट प्राप्त भएको छ ।

शब्दकुञ्जी : अद्वैत, ज्ञानमीमांसा, तत्त्वमीमांसा, मूल्यमीमांसा, षड्दर्शन

विषयपरिचय

हेर्नु अर्थ दिने ‘दृश्’ धातुमा ‘अन’ प्रत्यय लागेर बनेको ‘दर्शन’ शब्दले वास्तविक तत्त्वको ज्ञान भन्ने अर्थ दिएको पाइन्छ । संस्कृतमा ‘दृश्यते (ज्ञायते) वस्तुतत्त्वमनेन’ इति दर्शनम्’ भनेर जसका माध्यमबाट वस्तुतत्त्वको ज्ञान गरिन्छ, त्यसलाई दर्शन भनिएको पाइन्छ । यसर्थ वास्तविक तत्त्वको ज्ञान जसबाट हुन्छ, त्यसलाई दर्शन भनिन्छ । सामान्यतया तत्त्व भनेको वस्तुतत्त्व हो । हामी जुन विषय वा चिजलाई सत्य मानेर त्यसलाई नै जीवनको मूल आधार बनाउँछौं, त्यही नै वस्तुतत्त्व हो ।

मान्छेले आआफ्नो दृष्टिकोणअनुसार पृथक् पृथक् चिजलाई वस्तुतथ्य स्वीकार गरेको हुन्छ र त्यसलाई नै आधार मानेर ऊ गतिशील बनिरहेको हुन्छ । यही कारणले गर्दा दर्शन पनि फरक फरक बन्न पुगेका देखिन्छन् । आध्यात्म दर्शन वा भौतिक दर्शन, दुवै आआफ्ना दृष्टिकोणलाई आधार बनाउँदा विकसित भएका चिन्तन हुन् । नेपाली बृहत् शब्दकोशले पनि यही तात्पर्यमा दर्शनलाई परिभाषित गरेको देखिन्छ; जस्तै: - १. आध्यात्मिक चिन्तन, २. कुनै पनि विषयको मूलभूत सैद्धान्तिक अवधारणा र ३. प्रकृति, ईश्वर, ज्ञान, विज्ञान, वस्तु, जीवन र चेतनाबारेको विवेचन र विश्लेषण गरिने विद्या; तत्सम्बन्धी विषयमा यथार्थको खोजी गर्ने शास्त्र

। शब्दकोशमा दिइएका यी पृथक् पृथक् अर्थका समष्टिमा दर्शनलाई वस्तुतत्त्वको खोजी गर्ने विज्ञानका रूपमा लिनु सान्दर्भिक देखिन्छ ।

वास्तविकता र अस्तित्वको मौलिक प्रकृतिको अध्ययनसँग सम्बन्धित चिन्तनलाई नै दर्शन भनिन्छ । जगत्को स्वरूप के हो, यसको उत्पत्ति कसरी र किन हुन्छ, सृष्टिको प्रयोजन के हो, आत्मा के हो, ईश्वर के हो, ईश्वर छ कि छैन, जीवनको अन्तिम लक्ष्य के हो, ज्ञानको साधन के हो, जीवन र जगत्बिचको सम्बन्ध केकस्तो छ भन्ने सम्पूर्ण प्रश्नको उत्तर युक्तिपूर्वक दिने काम दर्शनले गर्ने भएकाले जीवनजगत्का बारेमा गरिने गभीर चिन्तन नै दर्शन हो । निष्कर्षमा भन्दा जीवन र जगत्का बिचको अन्तःसम्बन्धको यथार्थपरक ज्ञान प्रस्तुत गर्ने साधनलाई नै दर्शन भनिन्छ । दर्शनहरूको विकास पूर्व तथा पश्चिम दुवैतिर भएको देखिन्छ ।

संस्कृतमा ऋग्वेदेदेखि नै ज्ञानविज्ञानसम्बन्धी दार्शनिक पक्षमा चिन्तन हुँदै आएको देखिन्छ । वैदिक संहिता,

ब्राह्मण ग्रन्थ, आरण्यक ग्रन्थ एवम् उपनिषद्हरूमा थुप्रै दार्शनिक विचारहरू सार्वजनिक भएका छन् । यिनै वैदिक वाङ्मयका पृष्ठभूमिमा वेदलाई आधार बनाउँदै षड्दर्शनको विकास भएको पाइन्छ । ई.पू. ५०० देखि ईसाको प्रथम शताब्दीका बिचमा साङ्ख्यसूत्र, वैशेषिकसूत्र, न्यायसूत्र, मीमांसा, वेदान्त तथा योगसूत्रहरूको रचना गरिएको हुनाले यसै अवधिमा षड्दर्शनको विकास भएको देखिन्छ (कोइराला, सन् २०२३ पृ. १५) । षड्दर्शनका रूपमा रहेका साङ्ख्य दर्शन, योगदर्शन, न्यायदर्शन, वैशेषिक दर्शन, मीमांसा दर्शन र वेदान्त दर्शनलाई आस्तिक दर्शन र चार्वाक दर्शन, जैन दर्शन तथा बौद्ध दर्शनलाई नास्तिक दर्शनका रूपमा चिनाइएको पाइन्छ (वैद्य, २०७६, पृ. ३-४) । वेदको निन्दा गर्ने दर्शनलाई नास्तिक र वेदको समर्थन गर्ने दर्शनलाई आस्तिक भनिएका आधारमा यी दर्शनहरूले पनि वेदलाई स्वीकार गरेका हुनाले यिनीहरूलाई आस्तिक दर्शन भनिएको हो । आस्तिक दर्शनमा पनि ईश्वरको अस्तित्वग्रहण गर्ने र नगर्ने आधारमा ईश्वरवादी दर्शन र अनीश्वरवादी दर्शनका रूपमा दर्शनको विभाजन गरिएको पाइन्छ । षड्दर्शनमध्ये मीमांसा दर्शनलाई

अनीश्वरवादी र अरूलाई ईश्वरवादी दर्शनका रूपमा लिने गरिएको छ (घिमिरे, सन् २०२१, पृ. ७५) । यी दर्शनहरूमध्ये षड्दर्शनका रूपमा रहेका यी आस्तिक दर्शनमा के कसरी तत्त्वमीमांसा गरिएको छ' भन्ने कुरालाई यस लेखमा विश्लेषण गरिएको छ ।

पूर्वीय आस्तिक दर्शन (षड्दर्शन) ले जीवन र जगत्को यथार्थपरक व्याख्या गर्दै भौतिक र आध्यात्मिक ज्ञानको निर्माणमा विशिष्ट योगदान पुऱ्याएका छन् । यति हुँदाहुँदै पनि वर्तमान समयमा यी दर्शनहरूलाई केवल कर्मकाण्डीय र साम्प्रदायिक चिन्तनका रूपमा सीमित गर्ने संकुचित प्रवृत्तिको विकास भएको छ । यसका साथै जीवनजगत्को वस्तुपरक विश्लेषणका लागि पूर्वीय रैथाने चिन्तनलाई उपेक्षा गर्दै पश्चिमी ज्ञान तथा दर्शनलाई बढी महत्त्व दिने परिपाटी बढेको देखिन्छ । पूर्वीय आस्तिक दर्शनमा रहेका तत्त्वमीमांसागत सिद्धान्तहरू जस्तै: परमाणुवाद, प्रकृति-पुरुष विवेक, ब्रह्मवाद आदि केकस्ता हुन्, यिनीहरूमा के-कस्ता साझा तथा विशिष्ट विशेषताहरू छन् र ज्ञानको दिगो विकासका लागि यिनको सान्दर्भिकता कसरी स्थापित गर्न सकिन्छ भन्ने विषय नै यस लेखको मुख्य अनुसन्धान समस्या हो । मुख्य रूपमा यस लेखबाट पूर्वीय षड्दर्शनहरूले जीवन र जगत्का मूलभूत तत्त्वहरूलाई कसरी परिभाषित र वर्गीकरण गरेका छन् ? र आधुनिक भौतिक विज्ञान र विश्वव्यापी ज्ञान निर्माणको सन्दर्भमा पूर्वीय तत्त्वमीमांसाको सान्दर्भिकता के रहेको छ ? भन्ने प्रश्नहरूको उत्तर खोजिएको छ ।

यस लेखमा पूर्वीय आस्तिक दर्शन साङ्ख्य, योग, न्याय, वैशेषिक, मीमांसा र वेदान्तमा गरिएको तत्त्वमीमांसाको स्वरूप र तत्त्वहरूको पहिचान गरी तुलनात्मक विश्लेषण गर्नु र पूर्वीय तत्त्वमीमांसाले विश्वव्यापी ज्ञान निर्माण तथा मानव जीवनको व्यावहारिक पक्षमा पुऱ्याएको योगदानलाई उजागर गर्नु मुख्य उद्देश राखिएको छ ।

यो अध्ययन पूर्वीय षड्दर्शनमा मात्र केन्द्रित रहेको छ । यसमा नास्तिक दर्शनहरू चार्वाक, जैन र बौद्धलाई समेटिएको छैन । यसमा दर्शनका विभिन्न क्षेत्रहरूमध्ये मुख्य रूपमा तत्त्वमीमांसालाई मात्र

अध्ययनको मुख्य विषय बनाइएको छ । यस लेखमा ज्ञानमीमांसा र मूल्यमीमांसालाई प्रासङ्गिक रूपमा मात्र छुन खोजिए पनि यिनीहरूको विश्लेषणचाहिँ गरिएको छैन । यसमा प्राचीन दार्शनिक सूत्रहरूलाई प्राथमिक सामग्रीका रूपमा र यसका बारेमा गरिएका व्याख्याहरूलाई द्वितीयक स्रोतका सामग्रीका रूपमा उपयोग गरिएको छ । यसबाहेकका पक्षहरू प्रस्तुत लेखका सीमा रहेका छन् ।

विधि र सामग्री

प्रस्तुत लेख पुस्तकालयीय कार्यमा आधारित छ । यस लेखलाई गुणात्मक तथा वर्णनात्मक-विश्लेषणात्मक शोध प्रारूपमा तयार पारिएको छ । यस लेखमा अध्ययनका लागि आवश्यक सामग्रीहरू विभिन्न प्रामाणिक दार्शनिक ग्रन्थहरू जस्तै: साङ्ख्यकारिका, न्यायसूत्र, वेदान्तसूत्र आदि, जर्नल लेखहरू, शोधग्रन्थहरू र डिजिटल अर्काइभमा उपलब्ध सन्दर्भ सामग्रीहरूबाट सङ्कलन गरिएको छ भने सङ्कलित सामग्रीहरूको सूक्ष्म पठन, पाठ्यपरक विश्लेषण र तुलनात्मक समीक्षा गर्दै निष्कर्ष निकालिएको छ ।

सैद्धान्तिक पर्याधार

प्रस्तुत अध्ययन पूर्वीय आस्तिक दर्शन (षड्दर्शन) भित्रको तत्त्वमीमांसागत दृष्टिकोणमा आधारित रहेको छ । दर्शनमा सत्लाई तत्त्व मानिएको छ । भौतिकवादीहरू पदार्थ तथा प्रकृतिलाई सत् मान्दछन् भने अध्यात्मवादीहरू चाहिँ आत्मा तथा परमात्मा तथा ईश्वरजस्ता अभौतिक कुरालाई सत् मान्दछन् । यस किसिमका तत्त्वको विवेचन तथा समीक्षालाई तत्त्वमीमांसा भनिएको देखिन्छ । दर्शनशास्त्रमा कुनै पनि विचार वा सिद्धान्तको स्थापनाका लागि निश्चित सैद्धान्तिक धरातलको आवश्यकता पर्दछ । यस लेखमा प्रस्तुत गरिएका दार्शनिक प्रवृत्तिको विश्लेषण र वस्तुतथ्यको निरूपणका लागि सत्यको वस्तुपरक सिद्धान्त तथा द्वैतवादी भौतिकवाद र आध्यात्मिक एकात्मवाद दुईवटा मुख्य सैद्धान्तिक आधारहरूलाई आत्मसात् गरिएको छ । यस अध्ययनको प्रमुख सैद्धान्तिक जग महर्षि वात्स्यायनको तत्त्वसम्बन्धी परिभाषामा टिकेको छ । वात्स्यायनका अनुसार सत्लाई सत्का रूपमा र असत्लाई असत्का रूपमा बुझ्नु नै तत्त्व हो (राजाराम, सन्

१९२१, पृ. ४) । यस सिद्धान्तले संसारमा जे कुरा अस्तित्वमा छ, त्यसलाई 'छ' भनेर स्वीकार गर्नु र जे कुरा अस्तित्वमा छैन, त्यसलाई 'छैन' भनी बुझ्नु नै वास्तविक ज्ञान हो भन्ने मान्यता राख्दछ । यही सैद्धान्तिक कसीमा राखेर पूर्वीय षड्दर्शनले ठम्याएका भौतिक र आध्यात्मिक सत्ताहरूको यथार्थपरक विश्लेषण यस लेखमा गरिएको छ ।

यस अध्ययनमा तत्त्वको खोजी गर्ने क्रममा दर्शनमा विकास भएका दुई विपरीत तर परिपूरक दृष्टिकोणलाई अर्को महत्त्वपूर्ण विश्लेषणात्मक पर्याधार बनाइएको छ । दर्शनशास्त्रमा पदार्थ जगत् र प्रकृतिको सिद्धान्त वा भौतिकवादी/द्वैतवादी धार र चेतना र आत्मतत्त्वको सिद्धान्त अर्थात् आध्यात्मिक/एकात्मवादी धार गरी दुइटै मान्यताहरू स्थापित छन् । साङ्ख्यको 'प्रकृति-पुरुष' द्वैतवाद र वैशेषिकको 'परमाणुवाद' को सैद्धान्तिक आधार द्वैतवादी मान्यतासँग सम्बन्धित देखिन्छ । यी दर्शनले दृश्य जगत् र भौतिक पदार्थको यथार्थसत्तालाई स्विकाउँदै सृष्टिको विकास प्रक्रियालाई विज्ञानसम्मत व्याख्या गरेका छन् । न्यायको 'आत्म-प्रमेय', मीमांसाको 'कर्म-धर्म' र वेदान्तको 'अद्वैत ब्रह्मवाद' को सैद्धान्तिक आधार, अद्वैतवादी मान्यतामा केन्द्रित छन् । यी दर्शनहरूले भौतिकताभन्दा पर परब्रह्म, चेतना र अभौतिक सत्तालाई परमसत्य वा सत् मानेका छन् । यो लेख यिनै सैद्धान्तिक मान्यतामा आधारित रहेको छ ।

परिणाम र विमर्श

साङ्ख्य दर्शनमा तत्त्वमीमांसा

साङ्ख्य पूर्वको पुरानो दर्शन हो । साङ्ख्यतात्त्विक चिन्तन वेद, उपनिषद्, रामायण, महाभारत, पुराण, धर्मशास्त्र सबैतिर चर्चा भएको पाइन्छ । तिनै चिन्तनहरूलाई समेटेर कपिल मुनिले साङ्ख्य दर्शनको प्रवर्तन गरेका हुन् । यिनको समय ईसापूर्व छैटौँ शताब्दी मानिएको छ । उनलाई प्रजापति कर्दम तथा मनुपुत्री देवहुतीका पुत्र वा विष्णुका चौबिसौँ अवतारका रूपका चिनाइएको पाइन्छ (पौडेल, २०७५, पृ. १९९) । उनले साङ्ख्य

दर्शनको स्थापना गरे पनि यस दर्शनलाई ईश्वरकृष्णले साङ्ख्यकारिकामा सूत्रबद्ध गरेका छन् । यही साङ्ख्यकारिका नै साङ्ख्यदर्शनको आधिकारिक विवेचना गरिएको कृति हो ।

साङ्ख्य शब्द ‘सं’ र ‘ख्या’ को संयोगले बनेको छ । ‘सं’ को अर्थ सम्यक् तथा ‘ख्या’ को अर्थ ज्ञान हुन्छ । त्यसैले साङ्ख्यको वास्तविक अर्थ सम्यक् ज्ञान अर्थात् पुरुष र प्रकृतिबिचका भिन्नताको ज्ञान भन्ने हुन्छ । यस दर्शनले मूल तत्त्व प्रकृतिलाई प्रथम मान्छ । प्रकृति भनेको पदार्थ हो । यस दर्शनअनुसार सृष्टि अथवा विकास कुनै दैवीय शक्तिको प्रक्रिया होइन, प्रकृति अन्तर्वर्तीस्वभावको परिणाम हो । साङ्ख्य दर्शनमा सृष्टिप्रक्रियाका बारेमा तत्त्वमीमांसा गरिएको छ । यसमा ब्रह्माण्डको विकासलाई २५वटा तत्त्वका आधारमा स्पष्ट पारिएको छ । साङ्ख्य दर्शनमा २५ तत्त्वहरूबाट भएको सृष्टिविकासलाई यसरी प्रस्तुत गरिएको छ – साङ्ख्य दर्शनअनुसार प्रकृति र पुरुषको मिलनबाट महत् अर्थात् बुद्धिको उत्पत्ति भयो । बुद्धिलाई ब्रह्माण्डीय बुद्धिका रूपमा लिने गरिएको छ । यसपछि महत्बाट अहङ्कारको उत्पत्ति भयो । अहङ्कार सात्त्विक, राजस र तामस गरी तीन किसिमका रहेका छन् । साङ्ख्य दर्शनका अनुसार सात्त्विक अहङ्कारबाट पाँच ज्ञानेन्द्रिय (चक्षु, श्रोत्र, घ्राण, रसना र त्वक्) , पाँच कर्मेन्द्रिय (वाक्, पाणि, पायु, पाद र उपस्थ) र मनको उत्पत्ति भयो भने तामस अहङ्कारबाट पञ्च तन्मात्र (रूप, रस, गन्ध, स्पर्श र शब्द) को र पञ्च तन्मात्रबाट पञ्च महाभूत पृथ्वी, जल, तेज, वायु र आकाशको उत्पत्ति भयो ।^१

यी तत्त्वहरूमध्ये साङ्ख्य दर्शनले प्रकृतिलाई केवल प्रकृतिका रूपमा, महत्, अहङ्कार र पञ्च तन्मात्रालाई प्रकृति-विकृतिका रूपमा लिएको छ ।^२ यिनीहरू अरूबाट उत्पद्य तथा उत्पादक भएकाले

^१ प्रकृतेर्महांस्ततोऽहंकारस्तस्माद् गणश्च षोडशकः । तस्मादपि षोडशकात् पञ्चभ्यः पञ्चभूतानि (२२ औं कारिका)

^२ त्रिगुणमविवेकी विषयः सामान्यमचेतनं प्रसवधर्मि । व्यक्तं तथा प्रधानं तद्विपरीतस्तथा च पुमान् (११ औं कारिका)

यिनीहरूलाई प्रकृति-विकृतिका रूपमा लिइएको हो । यसै गरी साङ्ख्यमा पञ्च ज्ञानेन्द्रिय, पञ्च कर्मेन्द्रिय तथा पञ्च महाभूत र मनलाई केवल विकृति वा अरूबाट जन्मिने तत्त्वका रूपमा र पुरुषलाई न प्रकृति न विकृतिका रूपमा लिएको छ । साङ्ख्य दर्शनले प्रकृतिलाई त्रिगुणात्मक, अनादि तथा अविनाशी तत्त्वका रूपमा र पुरुषलाई कुनै गुण नभएको निष्क्रिय शुद्ध चैतन्य मानेको छ । यस दर्शनअनुसार संसारको सृष्टि प्रकृति र पुरुषको मिलनबाट हुन्छ जसमा पुरुषले प्रकृतिको खेललाई केवल साक्षीका रूपमा मात्र देख्छ ।

साङ्ख्य दर्शनले यो सृष्टि तीन गुणको सन्तुलनबाट बनेको धारणा राख्छ । अर्को कुरा यसले जीवमा स्वतन्त्र आत्माको अस्तित्वलाई स्वीकार गर्दछ । यही कारणले यसलाई अनेकात्मवादी दर्शन मानिएको छ । यसले मान्छेलाई प्रकृति र पुरुषको संयोजन मान्दछ । मातापिताको रजबाट पुरुषको स्थूल शरीर र महत् तथा पञ्च तन्मात्राका योगबाट मान्छेको सूक्ष्म शरीरको निर्माण भएको हुन्छ । साङ्ख्य दर्शनले स्थूल र सूक्ष्म शरीरलाई जड पदार्थ मानेको छ भने त्यसमा रहेको चेतनतत्त्वचाहिँ पुरुष हो भन्ने मान्ता राखेको छ । यसले मोक्षलाई मूल साध्य मानेको छ । प्रकृति र पुरुषको भिन्नताको ज्ञानबाट मात्र मोक्ष सम्भव रहेको विचार यस दर्शनमा पाइन्छ । प्रकृति र पुरुषको योगबाट सृष्टिप्रक्रिया गतिशील भएकाले यसमा ईश्वरको अस्तित्व स्वीकार गरिएको छैन । यसरी साङ्ख्य दर्शन धेरै हदसम्म भौतिकवादी दर्शनका नजिकमा रहेको देखिन्छ ।

निचोडमा साङ्ख्य दर्शन प्रकृति र पुरुषको द्वैत अस्तित्वलाई स्वीकार गर्ने तथा ईश्वरीय तत्त्वलाई महत्त्व नदिने दर्शन भएकाले यो एक द्वैततावादी तथा निरीश्वरवादी दर्शनका रूपमा देखापरेको छ । त्रिगुण सिद्धान्तमा आधारित यस दर्शनले सत्त्व, रज र तम तीन गुणको साम्य र वैषम्य अवस्थाबाट नै सृष्टि गतिशील हुने मान्यता राखेको पाइन्छ । यस दर्शनले कुल २५ तत्त्वका माध्यमबाट सृष्टिको विकासप्रक्रियालाई विज्ञानसम्मत रूपले व्याख्या गरेको छ । सृष्टिको विकास प्राकृतिक तत्त्वकै खेल र संयोजनबाट हुने भएकाले यसमा ईश्वरको अस्तित्व खोजी रहनुपर्दैन भन्ने यो दर्शनको मान्यता छ । अन्ततः, यस दर्शनले मोक्ष प्राप्तिलाई

नै मानव जीवनको मूल उद्देश्य मानेको छ र यो सर्वोच्च अवस्था प्राप्त गर्नका लागि प्रकृति र पुरुषको यथार्थ रूपको बोध हुनुपर्ने मान्यता अघि सारेको देखन्छ ।

योगदर्शनमा तत्त्वमीमांसा

योगदर्शनका प्रतिपादक पतञ्जलि मानिन्छन् । यिनको समयका बारेमा मतभेद रहे पनि व्याकरणकार पतञ्जलि र योगदर्शनका प्रवर्तक पतञ्जलिलाई एउटै मानिएका आधारमा यिनको समय ई.पू. दोस्रो शताब्दी मानिएको पाइन्छ (वैद्य, २०७६, पृ. ६१) । पाताञ्जल योगदर्शन उनको योगदर्शनका बारेमा विवेचना गरिएको कृति हो । यसमा योगदर्शनका बारेमा व्यापक चर्चा भएको पाइन्छ । योगसूत्रको प्रतिपाद्य विषय यौगिक साधना भएकाले यहाँ दार्शनिक विचारहरू प्रासङ्गिक रूपमा मात्र आएका छन् ।

योगश्चित्तवृत्ति निरोध भनेर यसमा योगलाई चित्तवृत्तिको निरोधको अवस्थाका रूपमा चिनाइएको छ । चित्तवृत्तिलाई रोक्नु नै योग हो । यो सामान्य किसिमको निरोधको अवस्था होइन । जबसम्म चित्तवृत्तिहरूको निरोध हुँदैन, त्यतिन्जेलसम्म पुरुष आफ्नो शुद्धरूप मा स्थित हुँदैन । पतञ्जलिले चित्तका बारेमा धेरै व्याख्या नगरे पनि चित्तका वृत्तिहरूका बारेमा पतञ्जलिले स्पष्टसँग बताएका छन् । यी वृत्तिहरू चित्तका विभिन्न अवस्था भएको हुँदा यसैका माध्यमबाट चित्त के हो भन्ने कुरा पनि थाह पाइन्छ । पतञ्जलिका अनुसार चित्तका वृत्तिहरू पाँचवटा छन् - प्रमाण, विपर्यय, विकल्प, निद्रा र स्मृति । योगदर्शनमा प्रत्यक्ष, अनुमान र शब्द यी तीनओटा यथार्थ ज्ञानका साधनका रूपमा हुने चित्तवृत्तिको क्रियाशीलतालाई प्रमाण, आफूभन्दा भिन्न रूपमा रहेको वस्तुको ज्ञान, मिथ्या ज्ञान, जस्तै डोरीमा सर्पको ज्ञानलाई विपर्यय, वस्तुको अभावमा केवल त्यसको नामको ज्ञानलाई लिएर गरिने कल्पना, जस्तो आकास-कुसुमलाई विकल्प, कुनै अर्को किसिमको वृत्तिको अभावकै साथ चित्तको जुन अवस्था हुन्छ, त्यो मनको विकारलाई निद्रा र प्रमाण आदि वृत्तिहरूबाट जुन विषयहरूको अनुभव हुन्छ, ती चित्तबाट तिनको लोप नहुने अवस्थालाई स्मृति भनिएको छ

। यी पाँच वृत्तिहरूले मानव जीवनलाई सुख-दुःख एवं मोहको अनुभव गराउँदछन् । यिनै वृत्तिहरूको कारण नै जीवनले सांसारिक विषयहरूको अनुभव गर्दछ ।

पतञ्जलिले चित्तवृत्तिनिरोधका योगसम्बन्धी साधनाको अभ्यास, विषयहरूबाट वैराग्य अथवा ईश्वरको भक्ति भनेर तीनवटा साधनहरूको चर्चा गरेका छन् ।^३ यसबाट यो दर्शन ईश्वरीयवादसँग समेत सम्बन्धित रहेको देखिन्छ । योग दर्शनमा सङ्केत गरिएका अष्टाङ्ग योगका आठै चरण पार गरेर त्यो अवस्था प्राप्त गर्न सकिन्छ । पाताञ्जल योगदर्शनमा यम, नियम, आसन, प्राणायाम, प्रत्याहार, धारण, ध्यान र समाधिलाई अष्टाङ्ग योग भनिएको छ (मिश्र र अन्य मि.अ., १७५) । मिश्र र अन्यका अनुसार सत्य बोल्नु, हिंसा नगर्नु, चोरी नगर्नु, ब्रह्मचर्यमा रहनु र आवश्यकता भन्दा बढी धन सञ्चय नगर्नुलाई यम भनिएको छ भने शौच, स्नान, तप आदि नित्यकर्महरूलाई नियम, विभिन्न योगका शारीरिक व्यायाम र बस्ने तरिकाहरूलाई आसन, श्वास प्रश्वासलाई नियन्त्रयण गर्ने कामलाई प्राणायाम, इन्द्रियहरूलाई वासनाहरूबाट टाढा राख्ने कामलाई प्रत्याहार, मनलाई चञ्चल हुनबाट रोक्ने कार्यलाई धारण, स्वयंले चाहेको ईश्वरमा चित्त एकाग्र गर्ने कामलाई ध्यान र चित्त एकाग्र भई बाह्य वस्तुबाट टाढा रही मुक्त हुने वा आत्मसाक्षात्कार गर्ने कामलाई समाधिका रूपमा चिनाइएको छ ।

योगदर्शनमा तत्त्वमीमांसाका क्रममा भौतिक जगत् वा पदार्थ जगत्का बारेमा पनि विमर्श भएको छ । यो विमर्श साङ्ख्यदर्शनसँग पूर्ण रूपमा मिल्दछ । यही कारणले योगदर्शनलाई साङ्ख्य दर्शनसँगै राखेर विमर्श गरिएको पाइन्छ । यसमा साङ्ख्य दर्शनको पुरुषलाई द्रष्टा र भौतिक जगत्का लागि दृश्य शब्दको प्रयोग गरिएको छ । योग दर्शनमा सत्त्व रज र तम गुणका कारण प्रकाश, गति र स्थितिशील भएको पञ्चतन्मात्र पञ्चमहाभूत, पञ्चज्ञानेन्द्रिय तथा पञ्चकर्मेन्द्रिय एवम् बुद्धि, अहङ्कार र मन अन्तःस्करणस्वरूपको

^३ अभ्यासवैराग्याभ्यां तन्निरोधः १।१२ । समाधिसिद्धिरीश्वर प्रणिधानात् २।४५

तत्त्वलाई दृश्य भनिएको छ ।^४ योगदर्शनमा दृश्यसहितका २४ तत्त्वका बारेमा चर्चा गरिएको छ । यसअनुसार दृश्यबाट महत्को, महत्बाट तन्मात्रा र अहङ्कारको, तन्मात्राबाट महाभूतको, अहङ्कारबाट ज्ञानेन्द्रिय, कर्मेन्द्रिय र मनको विकास भएको धारणा राखिएको छ । यसमा साङ्ख्यमा यी २४ तत्त्वमा पुरुष थपेर २५ बनाइएकोमा यहाँ ईश्वरलाई थपेर २६ बनाइएको पाइन्छ ।^५ योग दर्शन मुख्यतः चित्तका वृत्तिहरूलाई रोकेर मनलाई पूर्ण रूपमा नियन्त्रण गर्ने र समाधितर्फ डोच्याउने साधनापद्धति हो । यसले अष्टाङ्ग योगको व्यावहारिक मार्ग प्रस्तुत गर्दै शरीर, मन र आत्माको सन्तुलनमा जोड दिएको पाइन्छ । ईश्वरको अस्तित्वलाई स्विकार्ने यो दर्शनले पुरुष वा आत्मालाई प्रकृति वा संसारको बन्धनबाट मुक्त गराई मोक्ष दिलाउनुलाई नै आफ्नो अन्तिम लक्ष्य मानेको पाइन्छ ।

वैशेषिक दर्शनमा तत्त्वमीमांसा

वैशेषिक महर्षि कणादद्वारा प्रतिपादन गरिएको दर्शन हो। कणादलाई काश्यप, उलूक, औलुक्य वा औलूक पनि भनिएको पाइन्छ । यस दर्शनलाई कणाद दर्शनका नामले पनि सम्बोधन गरिएको छ । कणादको समय ईसापूर्व तृतीय चतुर्थ शताब्दी मानिएको छ (शास्त्री वि.सं. २०२६, पृ. ६) । यो न्याय, बौद्ध र वेदान्तभन्दा पनि प्राचीन दर्शन मानिन्छ । कणादले वैशेषिक सूत्र ग्रन्थमा यस दर्शनको प्रतिपादन गरेका छन् । दश अध्यायमा प्रबन्धित यस ग्रन्थको मूल उद्देश्य तत्त्वज्ञान नै रहेको छ । यस दर्शनले आत्मतत्त्वको ज्ञानका लागि पदार्थतत्त्वको ज्ञानलाई अपरिहार्य मानेको छ । आत्मतत्त्वका ज्ञानका लागि पदार्थतत्त्वको ज्ञान गर्नुपर्ने विचार वैशेषिक सूत्रमा व्यक्त गरिएको छ । धर्मविशेषबाट उत्पन्न भएका द्रव्य, गुण, कर्म, सामान्य, विशेष तथा समवाय नामक पदार्थहरूको समान धर्म र विरुद्ध धर्मको तत्त्व ज्ञानबाट मोक्ष प्राप्त हुन्छ ।^६ यस दर्शनले पदार्थलाई नित्य मानेको

^४ प्रकाशक्रियास्थितिशीलं भूतेन्द्रियात्मकं भोगापवर्गार्थं दृश्यम् २।१८

^५ विशेषाविशेषलिङ्गमात्रालिङ्गानि गुणपर्वणि २।१९

^६ धर्मविशेषप्रसुताद् द्रव्यगुणकर्मसामान्यविशेषसमवायानां पदार्थानां साधर्म्यवैधर्म्याभ्यां तत्त्वज्ञानान्निःश्रेयसम् (शास्त्री, २०२६, पृ. १६)

पाइन्छ (शास्त्री, २०२६, पृ. २६५) । वैशेषिक दर्शनले तत्त्वमीमांसाअन्तर्गत मूलतः ढवटा पदार्थलाई राखेको छ । यस दर्शनले कर्म र गुणको आश्रय हुनु तथा समवायी कारणका रूपमा रहनुलाई द्रव्यको लक्षण मानी पृथ्वी, जल, तेज, वायु, आकाश, दिक्, आत्मा र मन गरी आठ तत्त्वलाई द्रव्य मानेको छ (शास्त्री, २०२६, पृ. ५०) । यसैगरी यो दर्शनले रूप, रस, गन्ध, स्पर्श, सङ्ख्या, परिणाम, पृथक्त्व, संयोग, विभाग, परत्व, अपरत्व, बुद्धि, सुख, दुःख, इच्छा, द्वेष, प्रयत्न, गुरुत्व, द्रवत्व, स्नेह, संस्कार, धर्म, अधर्म र शब्द गरी २४वटा तत्त्वलाई गुणलाई मानेको छ (शास्त्री, २०२६, पृ. ५०) । गुण भनेका द्रव्यहरूका धर्म हुन्; विशेषता हुन् । द्रव्यमा आश्रित हुनु गुणको लक्षण मानिन्छ (शास्त्री, २०२६, पृ. ५३) । यो दर्शनले उत्क्षेपण, अवक्षेपण, आकुञ्चन, प्रसारण र गमन पाँचवटा कर्मका बारेमा चर्चा गरेको छ (शास्त्री, २०२६, पृ. ३८) । कर्महरू द्रव्य तथा गुणहरूबाट उत्पत्ति हुनाका साथै द्रव्यमा समेत समवेत सम्बन्धले रहने हुनाले द्रव्य तथा गुणसँग सम्बन्धित रहेका छन् ।

वैशेषिक दर्शनले चौथो र पाँचौँ पदार्थका रूपमा सामान्य र विशेषलाई लिएको छ । सामान्य भनेको जाति हो जुन अनुगत बुद्धिद्वारा सिद्ध हुन्छ भने विशेष भनेको व्यक्ति हो जो व्यावृत्तिरूप बुद्धिद्वारा सिद्ध हुन्छ (शास्त्री, २०२६, पृ. ७८) । यसको तात्पर्य के हो भने विभिन्न व्यक्तिमा पाइने साझा धर्म सामान्य हो । दशजना केटामा जुन मान्छे भन्ने साझा जातिको बोध हुन्छ त्यसलाई सामान्य भनिन्छ । यस किसिमको जाति द्रव्य, गुण, कर्म यी तीन पदार्थमा रहेको हुन्छ । विशेष भनेको 'सामान्य' को विरोधी पदार्थ हो । जसरी दश जना केटालाई मान्छे मानिएका कारण सामान्य पदार्थको बोध हुन्छ, त्यसरी नै हरेक कटाहरू आफूमा अन्तर्निहित विशेषताका आधारमा भिन्न हुन् भन्ने कुराको बोध हुनुलाई विशेष भनिन्छ । यही विशेष विशेषताका आधारमा हरेक वस्तुहरू भिन्न भिन्न हुन्छन् । वैशेषिक दर्शनले हरेक पदार्थको पदार्थगत विशिष्टतालाई महत्त्व दिएकै कारण यसलाई वैशेषिक दर्शन भनिएको कुरा पनि यहाँ स्मरणीय छ । जति पनि वस्तुहरू छन् तिनका परमाणुहरूमा नै यस किसिमको विशेष गुण रहन्छ भन्ने वैशेषिक दर्शनको मान्यता रहेको छ । यस किसिमको

विशेष ज्ञानलाई प्रत्यक्ष रूपमा केवल योगीहरूले मात्र बोध गर्ने तथा सामान्य मान्छेले केवल अनुमान मात्र गर्न सक्ने मान्यता वैशेषिक दर्शनले राखेको छ ।

वैशेषिक दर्शनले छैटौँ पदार्थका रूपमा समवायलाई राखेको छ । समवाय भनेको नित्यसम्बन्ध हो । यसलाई अवयवी र अवयवहरूको सम्बन्धका रूपमा अर्थ्याउन सकिन्छ । उदाहरणका लागि कपडा र धागाको सम्बन्ध समवायी सम्बन्ध हो । वैशेषिक दर्शनमा भाव र अभाव गरी पदार्थलाई दुई भागमा विभाजन गरिएको छ । छवटा पदार्थहरू भाव अन्तर्गत पर्दछन् भने सातौँ पदार्थका रूपमा यस दर्शनमा अभावको परिकल्पना गरिएको छ । वैशेषिक सूत्रको नवौँ अध्यायको प्रथम आह्निकमा अभावका प्रकारहरूका बारेमा विस्तृत अध्ययन भए पनि कणाले अभावलाई पदार्थका रूपमा भने चिनाएका छैनन् । परवर्तीहरूले भने यसलाई पनि पदार्थका रूपमा नै चिनाएको पाइन्छ ।

परमाणुवाद वैशेषिक दर्शनको मूल चिन्तन हो । यो दर्शनले जति पनि पदार्थ छन्, तिनीहरू सावयव छन् भन्ने मान्यता राख्दछ । यी सावयव वस्तुलाई टुक्रा पादै जाँदा परमाणुमा रूपान्तरण हुन्छन् । वैशेषिक दर्शनका आधारमा जसलाई तोड्न सकिँदैन, त्यो परमाणु हो । पृथ्वी, जल, तेज, वायु यी भौतिक परमाणुबाटै सृष्टिको विकास भएको छ । वैशेषिक दर्शनले परमाणुलाई पार्थिव, जलीय, तेजस् र वायवीय गरी चार भागमा वर्गीकरण गरेको छ ।

वैशेषिक दर्शनअनुसार आत्मा नित्य र सर्वव्यापी द्रव्य हो । प्रलय कालमा काल्, दिक्जस्तै आत्मा पनि नष्ट नहुने वैशेषिक दर्शनको विचार छ । यो सबै चैतन्य वस्तुको आधार हो । यस दर्शनले बहुआत्मवादलाई स्वीकार गरेको छ । यस दर्शनअनुसार आत्माहरू अनेकानेक नै छन् । यस दर्शनले मनलाई पनि नित्य मान्दछ । मनद्वारा नै आत्माले वस्तुसँग सम्पर्क गर्दछ । मन परमाणु जस्तै सूक्ष्म हुन्छ । प्रत्येक आत्मामा एक मन हुन्छ । मन ज्ञानको आन्तरिक साधन हो, जसद्वारा आन्तरिक आत्माले विभिन्न विषयको ज्ञान प्राप्त गर्दछ ।

महर्षि कणादको यो दर्शन भौतिकवादी प्रवृत्तिको भएपनि यसको सारचाहिं अध्यात्म हो । न्याय-शेषिकका केही दार्शनिक पद्धति प्रायः मत मिल्ने हुँदा न्याय-वैशेषिकलाई संयुक्त नामबाट समेत चिन्ने चलन छ । कणादका परमाणुवादको सम्बन्ध युनानका डेमोक्रेटस (ई.पू. ४६०-३७० तिरका) सँग मिल्दछ (आचार्य, २०७६, पृ. १५३) । जगत्को निर्माण परमाणुहरू जोडिएर भएको मत ई.पू. ५७० देखि ५०० तिरै देखिएको मत पाइथागोरसका पनि देखिनाका साथै एरिष्टोटलले तर्कशास्त्रमा उल्लेख गरेका द्रव्य, गुण, परिणाम, सम्बन्ध, दिशा, काल, आसन, स्थिति, कर्ममध्ये द्रव्य, गुण, कर्म र समन्वय (समवाय) चार पदार्थ कणादका सूचिमा पनि देखिन्छ (कोइराला, सन् २०२३ पृ. १७-१८)। दिक् (दिशा) र काललाई द्रव्यमा र सङ्ख्या (परिणाम) लाई गुणमा राखेकाले पनि युनानी दर्शन र वैशेषिकका बिच निकट सम्बन्ध देखिन्छ ।

न्यायदर्शनमा तत्त्वमीमांसा

न्याय पूर्वीय दर्शनशास्त्रमध्येकै विशेष चर्चामा आएको दर्शन हो । यस दर्शनका प्रतिपादक ई.पू. दोस्रो शताब्दीतिरका महर्षि गौतम हुन् । उनलाई राहुल सांस्कृत्यायनले अक्षपादका नामले समेत चिनाएका छन् (घिमिरे, २०७३) । यो तर्कमा आधारित दर्शन भएकाले यसलाई तर्कशास्त्र, हेतुविद्या, वादविद्या, न्यायविद्या, न्यायशास्त्र, प्रमाणशास्त्र आदि नामबाट चिनाइएको पाइन्छ । प्रमाणद्वारा अर्थको परीक्षण गर्ने कार्यलाई न्याय भनिन्छ । अर्थको परीक्षण गर्नाका लागि पञ्चायवयव वाक्य (प्रतिज्ञा, हेतु, उदाहरण, उपनयन र निगमन) को प्रयोग गरिएकोले यसलाई न्याय भनिएको पाइन्छ (पौड्याल, २०७५, पृ. १४०) । यस शास्त्रमा कुनै पनि अर्थको परीक्षण गर्दा वा वस्तुसत्यको अभिव्यक्ति गर्दा यसरी गरिन्छ : पर्वतमा आगो छ (प्रतिज्ञा) । किन कि त्यहाँ धुवाँ छ (हेतु) । जहाँ धुवाँ रहन्छ, त्यहाँ आगो रहन्छ जस्तै भान्सा घर (उदाहरण) । पर्वतमा पनि धुवाँ छ (उपनय) । त्यसैले पर्वतमा आगो छ (निगमन) ।

न्याय शास्त्रमा साध्यलाई सिद्धि गर्न उल्लिखित पञ्चावयवको प्रयोग गरिने भएकाले यसलाई प्रमाणशास्त्रका रूपमा चिनाइएको छ । न्याय दर्शन पदार्थमीमांसा र प्रमाणमीमांसा दुई शाखामा विभक्त छ ।

पदार्थमीमांसा प्राचीन न्यायको विषय हो । यसका प्रवर्तक अक्षपाद गौतम हुन् । नव्य न्यायमा चाहिँ प्रमाणको बढी व्याख्या गरिएको छ । यस शाखाका प्रवर्तनमा १३ औँ शताब्दीका गङ्गेश उपाध्यायको भूमिका रहेको छ । तत्त्वमीमांसाका लागि प्राचीन न्याय बढी महत्त्वपूर्ण मानिन्छ ।

न्याय दर्शनले मोक्षलाई नै प्रमुख उद्देश्य बनाएको छ । गौतमका अनुसार तत्त्वज्ञानबाटै परम कैवल्य वा मुक्ति प्राप्त हुन्छ । न्यायसूत्रको पहिलो सूत्रमा नै गौतमले सोह तत्त्वको नाम लिँदै यी तत्त्वबाट निः श्रेयस अर्थात् परम कल्याण अथवा मोक्ष प्राप्ति हुने कुरालाई प्रस्तुत गरेका छन् ।⁷ यी तत्त्वहरू तत्त्वमीमांसा, ज्ञानमीमांसा एवम् मूल्यमीमांसासँग सम्बन्धित रहेका छन् । यी तत्त्वहरूमध्ये पहिलो तत्त्व प्रमाण ज्ञानमीमांसासँग सम्बन्धित छ । ज्ञानको प्राप्ति प्रत्यक्ष, अनुमान, उपमान र शब्द प्रमाणबाट हुन्छ भन्ने मान्यता यस तत्त्वले राखेको छ । प्रमाण भनेको तथ्यपुष्टिको साधन हो । प्रमातालाई प्रमेयको ज्ञान गराउने साधन नै प्रमाण हुन् । न्यायशास्त्र अनुमान प्रमाणमा केन्द्रित रहेकाले यसले अनुमान प्रमाणलाई मुख्य मानेको छ । अनुमानका लागि माथि उल्लेख गरिएका पञ्चावयवहरूको आवश्यकता पर्दछ ।

न्यायशास्त्रमा प्रमाणद्वारा सिद्ध गरिने विषयलाई प्रमेय भनिएको छ । यी प्रमेयहरू तत्त्वमीमांसासँग सम्बन्धित रहेका छन् । गौतमले न्यायसूत्रमा आत्मा, शरीर, इन्द्रिय, अर्थ, बुद्धि, मन, प्रवृत्ति, दोष, प्रत्यभाव, फल, दुःख र अपवर्ग बाह्य तत्त्वलाई प्रमेय भनेका छन् (राजाराम, सन् १९२१, पृ. ३६) । न्याय दर्शनमा यी बाह्य प्रमेयहरूमध्ये आत्मा र अपवर्गलाई मुख्य मानिन्छ । यहाँ आत्माका बारेमा सङ्क्षेपमा चिनाइएको छ ।

आत्मा भनेको ज्ञानको अधिकरण हो । न्याय दर्शनमा आत्मालाई द्रष्टा, भोक्ता, सर्वज्ञ नित्य तथा सर्वव्यापक मानिएको छ । बाह्य इन्द्रियद्वारा आत्मा प्रत्यक्ष हुँदैन । त्यसकारण इच्छा, द्वेष, प्रयत्न, सुख, दुःख

४ प्रमाणप्रमेयसंशयप्रयोजन दृष्टान्तसिद्धान्तावयवतर्क

निर्णयवादजल्पवितण्डाहेत्वाभासच्छलजातिनिग्रहस्थानां तत्त्वज्ञानान्निःश्रेयसाधिगमः (राजाराम, सन् २०२१, पृ. ५) ।

तथा ज्ञान, रूप लिङ्ग (हेतु) द्वारा आत्माको पृथक् अस्तित्वको अनुमान गरिन्छ । न्यायसूत्रमा इच्छा, द्वेष, प्रयत्न, सुख, दुःख, र ज्ञानलाई आत्माका लिङ्ग अर्थात् आत्मामा रहने धर्म वा चिह्न मानिएको छ (राजाराम, सन् १९२१, पृ. ३८) । न्याय दर्शनानुसार सुख-दुःखको विचित्रताको कारण प्रत्येक शरीरमा भिन्न भिन्न जीवात्मा हुन्छन् । त्यही नै शरीरको सुखदुःखको भोक्ता हो । मुक्त भएपछि पनि जीवात्मा एकअर्काबाट स्वतन्त्र रूपमा भिन्न नै हुन्छ । न्याय दर्शनका अनुसार ज्ञानको अधिकरण हुँदा पनि जीवात्मा स्वभावले ज्ञानरहित हुन्छ । स्वभावतः त्यो जड हो र यसमा स्वभावले चैतन्य हुँदैन । मनको विशेष संयोगबाट उसमा ज्ञान उत्पन्न हुन्छ । ज्ञान आत्माको आगन्तुक धर्म हो । ज्ञान सुख, दुःख, संस्कार, सङ्ख्या, परिणाम, पृथक्त्व, संयोग र विभाग जीवात्माका गुणहरू हुन् । यसरी न्याय दर्शन अनेकात्मवादी दर्शन भएकाले यस दर्शनअनुसार आत्मा नित्य र सर्वव्यापी छ । आत्मामा चेतनाको प्रवाह मनको सम्पर्कबाट हुन्छ । न्यायदर्शनका अनुसार आत्मा शरीर, इन्द्रिय र मनभन्दा पृथक्, नित्य, सर्वव्यापक एवं प्रत्येक शरीरमा भिन्न-भिन्न रूपमा रहने एक स्वतन्त्र सत्ता हो । यसलाई द्रष्टा, भोक्ता र सर्वज्ञका रूपमा चिनाउँदै इच्छा, द्वेष, प्रयत्न, सुख, दुःख र ज्ञानलाई यसका मुख्य लिङ्ग वा पहिचानका चिह्नहरू मानिएको छ । आत्माले नै विभिन्न इन्द्रियहरूबाट प्राप्त हुने ज्ञानलाई एकत्रीकरण गर्ने काम गर्दछ । साथै आत्माले एउटा शरीर छोडेर अर्को शरीरमा प्रवेश गर्छ भन्ने अवधारणाका आधारमा यसले पुनर्जन्मको सिद्धान्तलाई स्विकार्दै आफ्नो नित्यता र व्यापकतालाई पुष्टि गरेको पाइन्छ ।

न्याय दर्शनमा शरीरलाई चेष्टा, इन्द्रिय र अर्थको आश्रय मानिएको छ ।^४ यस दर्शनले प्राणीहरूमा घ्राण, रसना, चक्षु, त्वक् र श्रोत्र पाँच इन्द्रियहरू रहने धारणा राखेको छ । पृथ्वी, जल, तेज, वायु र आकाशलाई यस दर्शनले पनि पञ्च महाभूतका रूपमा व्याख्या गरी गन्ध, रस, रूप, स्पर्श र शब्दलाई पृथ्वी आदि पञ्च महाभूतका गुण तथा पाँच इन्द्रियहरूका अर्थ वा विषय मानेको छ । न्यायशास्त्रमा बुद्धिलाई ज्ञानका पर्यायका रूपमा लिइएको छ । मन एक सूक्ष्म, नित्य र अविभाज्य तत्त्व हो, जुन अणुका रूपमा स्थित

^४ चेष्टेन्द्रियार्थाश्रयः शरीरम् । १।१।११

हुन्छ । मनद्वारा आत्माले ज्ञान र सुखदुःखको अनुभूति गर्दछ । शरीरको निर्माण परमाणुहरूबाट भएको हुन्छ । बाह्र प्रमेयमध्ये मन, वाणी र शरीरबाट कार्यको आरम्भ हुनुलाई प्रवृत्ति, राग, द्वेष तथा मोहमा प्रवृत्त हुनुलाई दोष, मेर फेरि देहादिका साथ सम्बन्ध हुनुलाई प्रेत्यभाव, सुख आदि प्रवृत्ति र दुःख आदि दोषबाट उत्पन्न हुने भावलाई फल, पीडा तापआदिलाई दुःख, दुःखबाट अत्यन्त निवृत्तिलाई अपवर्ग मानिएको छ । न्याय दर्शनले मोक्षलाई मुख्य साध्य मान्दै मोक्ष हुनु भनेको दुःख तथा जन्मबाट मुक्ति हुने कुरालाई मानेको छ ।^९ यसरी न्यायशास्त्रमा उल्लिखित बाह्र प्रमेयलाई ज्ञान र मुक्तिको प्रमुख विषय मानिएको छ ।

न्यायशास्त्रमा माथि उल्लेख गरिएका प्रमाण र प्रमेय दुई तत्त्वका अतिरिक्त अन्य चौध तत्त्व रहेका हुन्छन् । न्यायदर्शनमा ज्ञान र तर्कको प्रक्रियालाई बुझ्न यी तत्त्वहरूको व्याख्या गरिएको पाइन्छ । यस अन्तर्गत संशय भन्नाले मनको अनिश्चित अवस्थालाई बुझाउँछ भने कुनै पनि वस्तु प्राप्तिका लागि गरिने कार्य प्रयोजन हो । ज्ञानलाई प्रमाणित गर्न अनुभव गरिएका उदाहरणहरूलाई दृष्टान्त र शास्त्रका आधारमा स्थापित गरिएका नियमहरूलाई सिद्धान्त भनिन्छ । अनुमानका पाँच साधनहरू प्रतिज्ञा, हेतु, उदाहरण, उपनय र निगमनलाई अवयव भनिन्छ भने सत्य प्रमाणित गर्न विपरीत पक्षको अप्रमाणिकता दर्साउने पद्धति तर्क हो । संशय हटाई निश्चित ज्ञानमा पुग्ने कामलाई निर्णय भनिन्छ । शास्त्रार्थ र बहसका सन्दर्भमा प्रमाणका आधारमा विपक्षीको मत काट्नु वाद हो भने केवल विजय हासिल गर्ने उद्देश्यले गरिने तर्क जल्प हो र आफ्नो मत स्थापना नगरी प्रतिवादीको विचारलाई मात्र काट्ने प्रयत्न गर्नु वितण्डा हो । त्यसैगरी अनुमानमा हेतु वा कारणको दोषलाई हेत्वाभास, शब्दको अर्थ बङ्ग्याएर दोष देखाउनुलाई छल र समानता वा असमानताका आधारमा असान्दर्भिक दोष निकाल्नुलाई जाति भनिन्छ । अन्ततः वादविवादको क्रममा वादी वा प्रतिवादी आफ्नो हार स्वीकार गर्ने स्थितिमा पुग्नु नै निग्रह स्थान हो । यस प्रकार न्याय दर्शनले तत्त्वमीमांसाका क्रममा सोह्रवटा तत्त्वहरूको विवेचनाका माध्यमबाट मोक्षको उपायलाई प्रस्तुत गरेको देखिन्छ ।

^९ तदत्यन्तविमोक्षोऽपवर्गः (राजाराम, सन् २०२१, पृ. ५१) ।

मीमांसा दर्शनमा तत्त्वमीमांसा

मीमांसा दर्शन वेदलाई ज्ञानको आधार मान्ने आस्तिक दर्शन हो । यसलाई कर्ममीमांसा, धर्ममीमांसा, मूल्यमीमांसा तथा यज्ञमीमांसा पनि भनिएको पाइन्छ । यस दर्शनको स्थापना महर्षि जैमिनीले गरेका हुन् । जैमिनी वैशेषिक दर्शनका प्रवर्तक कणाद र न्याय दर्शनका प्रवर्तक गौतमभन्दा पछाडिका ई. ३०० तिरका व्यक्ति हुन् (आचार्य, २०७३, पृ. ४४२) । कुमारिल भट्ट, प्रभाकर, शबर स्वामीलगायतका चिन्तकहरूले यस दर्शनका विकासमा महत्त्वपूर्ण योगदान पुऱ्याएका छन् ।

मीमांसा दर्शनले वेदनिर्दिष्ट कर्महरूको सम्पादनमा जोड दिन्छ । वेदलाई मूल आधार बनाएर विकसित भएको मीमांसा दर्शनमा यज्ञ र कर्मकाण्डको महत्त्व स्थापित गर्न तथा यज्ञ र कर्मकाण्डका लौकिक तथा पारलौकिक लाभका निम्ति वेदमात्र प्रमाण हो भन्ने कुरालाई स्थापित गर्न मीमांसा दर्शनको स्थापना गरेको देखिन्छ (आचार्य, २०७३, पृ. ४४३) । खास गरी वेदमाथिको अतिक्रमण रोक्न र कर्मकाण्डलाई प्रोत्साहित गर्दै धर्मको स्थापना गर्न मीमांसा दर्शनको स्थापना गरिएको पाइन्छ । त्यसैले मीमांसा दर्शनको मूल प्रतिपाद्य विषय धर्म नै रहेको देखिन्छ (वैद्य, २०७६, पृ. ६७) ।

मीमांसा दर्शन पूर्वमीमांसा र उत्तरमीमांसा गरी दुई किसिमको छ । वेदको कर्मकाण्डमा केन्द्रित जैमिनिको दर्शनलाई पूर्वमीमांसा वा मीमांसा मात्र भनिन्छ भने वेदको ज्ञानकाण्डसँग सम्बन्धित बादरायणको ब्रह्मसूत्रको व्याख्यासँग सम्बन्धित दर्शनलाई उत्तरमीमांसा भनिएको पाइन्छ । उत्तरमीमांसा उपनिषदसँग सम्बन्धित हुनाका साथै उपनिषद् वैदिक वाङ्मयका अन्त्यतिर लेखिएकाले उत्तरमीमांसालाई वेदान्तसमेत भनिएको पाइन्छ । धर्मशास्त्रमा कर्मकाण्डलाई ज्ञानकाण्डभन्दा अगाडि राखिने भएकाले मात्र मीमांसा दर्शनलाई पूर्वमीमांसा भनिएको पाइन्छ । वास्तवमा यी दुई दर्शन सँगै सँगै विकसित भएका देखिन्छन् ।

वैदिक युगमा वेद नै धर्मको प्राण मानिन्थ्यो भने वेदले यज्ञलाई बढी महत्त्व दिएको थियो । सूत्रात्मक रूपमा रहेका वेदका ऋचाहरूलाई विस्तार गर्नुपर्ने आवश्यकता देखापर्दै जाने सन्दर्भमा वेदभित्रको मन्त्रभाग

सूत्र रूपमा भएकाले यज्ञ र अनुष्ठानका निम्ति मन्त्रहरूको विस्तारपूर्वक वर्णन गर्न ब्राम्हण ग्रन्थहरू लेखिंदै गए । यसै क्रममा वेदको आशयलाई स्पष्ट पार्ने सन्दर्भमा मीमांसा दर्शनको विकास भएको पाइन्छ । नास्तिक दर्शनहरूको दबदबा रहेको अवस्थामा मीमांसा दर्शनले वेदको ज्ञानको महत्त्वलाई स्थापित गराउन महत्त्वपूर्ण भूमिका खेलेको देखिन्छ । जैमिनीको बाह्य परिच्छेदमा समेटिएको मीमांसा सूत्रहरूमा मूलतः धर्मलाई स्थापित गराउने काम भएको देखिन्छ । यसमा धर्मसँग सम्बन्धित पक्षको बाहुल्य छ भने दर्शनको पक्ष अत्यन्तै न्यून छ (आचार्य, २०७३, पृ. ४४८) ।

मीमांसा दर्शन मुख्य रूपमा महर्षि जैमिनीद्वारा रचित ‘मीमांसासूत्र’ वा ‘धर्मसूत्र’ मा आधारित छ । यस दर्शनले वेदविहित कर्म र कर्मकाण्डको संरक्षणलाई आफ्नो मूल प्राण मान्दछ । ‘अथातो धर्मजिज्ञासा’ र ‘चोदनालक्षणो ऽर्थो धर्मः’ जस्ता सूत्रहरूका माध्यमबाट यस दर्शनले वेदले निर्दिष्ट गरेका र प्रेरणा दिएका विषयहरूलाई नै धर्मका रूपमा परिभाषित गरेको छ । यहाँ कर्मलाई सर्वोच्च महत्त्व दिँदै ‘कुर्वन्नेवेह कर्माणि जिजीविषेत् शतं समाः’ अर्थात् कर्म गर्दै सय वर्षसम्म बाँच्ने इच्छा राख्नुपर्ने र वेदका मन्त्रहरूको अर्थ बुझेर गरिएका कर्महरू मात्र फलदायी हुने मान्यता राखिएको छ । यस दर्शनले शब्दप्रमाण (वेद) बाहेक प्रत्यक्ष, अनुमान, उपमान, अर्थापत्ति, सम्भव र अभाव गरी ६ वटा प्रमाणलाई स्विकारे पनि वेदलाई अनादि, अपौरुषेय र स्वतः प्रमाणको रूपमा सबैभन्दा बलियो आधार मानेको छ । वेदले इष्ट मानेको विषय धर्म र अनिष्ट मानेको विषय अधर्म हो भन्ने निष्कर्ष यो दर्शनमा पाइन्छ । श्रुतिप्रतिपादित यज्ञहरूबाट उत्तम फल प्राप्त हुने विश्वास राख्दै यस दर्शनले ‘अग्निहोत्रं जुहुयात् स्वर्गकामः’ जस्ता विधिवाक्यमार्फत स्वर्गको कामनाका लागि यज्ञ गर्नुपर्ने निर्देश गरेको छ । यसमा उल्लेखित २१ यज्ञहरूमध्येका ५ महायज्ञहरू प्रत्यक्ष रूपमा मानवको गृहस्थ जीवनसँग सरोकार राख्ने धारणा राखिएको छ । यस दर्शनअनुसार आफू र आफ्ना सन्तानलाई अज्ञानताको अन्धकारबाट मुक्त गराउनु ब्रह्म यज्ञ हो भने सूर्य, अग्नि, पवन, जल, र भूमि जस्ता प्राकृतिक शक्तिहरूप्रति कृतज्ञता र सम्मान प्रकट गर्नु देवयज्ञ वा अग्निहोत्र हो । त्यसैगरी समाजका आदरणीय एवं आफूभन्दा ठूला

मान्यजनहरूको आदरसत्कार गर्नुलाई पितृयज्ञ भनिन्छ । घरमा आएका अतिथिको निष्काम सेवा र सत्कार गर्नु मनुष्य यज्ञ वा अतिथि यज्ञ हो भने केवल आफ्ना लागि मात्र नभई सम्पूर्ण लोकको हितका लागि कर्म गर्दै सहकार्य र सहअस्तित्वको भावनालाई प्रवर्द्धन गर्नु भूतयज्ञ हो । यी पञ्चमहायज्ञहरूले मानिसलाई प्रकृति, समाज र परिवारप्रति जिम्मेवार बन्न सिकाउँछन् ।

मीमांसा दर्शनमा तत्त्वमीमांसाका बारेमा अत्यन्तै सीमित चर्चा भएको पाइन्छ । मीमांसमा न्याय र वैशेषिक दर्शनमा जस्तै जगत् र जगत्को कारण मानिएका पदार्थहरूको सत्तालाई स्वीकार गरिएको पाइन्छ । मीमांसा दर्शनले जगत्लाई मिथ्या नठान्ने भएकोले यो यथार्थवादी दर्शन हो । यसले जीव र जगत्को यथार्थसत्ताको समर्थन गर्दछ । यस दर्शन अनुसार जगत्को न त खास समयमा सृष्टि हुन्छ र न सम्पूर्ण रूपले लय नै हुन्छ । जगत् अनादि र अनन्त छ । यो दर्शनले बाह्य विश्व सत्य हो र यो जस्तो छ त्यस्तै देखिन्छ भन्ने धारणा राखेको छ । यस क्रममा मीमांसा दर्शनको शाम्बर भाष्यमा पदार्थका विवेचनका क्रममा द्रव्य, गुण, कर्म र अवयव यी चारथरी तत्त्वको चर्चा गरिएको पाइन्छ भने आचार्य प्रभाकरले द्रव्य, गुण, कर्म, सामान्य, समवाय, सङ्ख्या, शक्ति र सादृश्य आठ पदार्थलाई मानेका छन् (पौड्याल, २०७५, पृ. २५९) । कुमारिल भट्टले भाव र अभाव गरी पदार्थहरूलाई पदार्थहरूलाई व्याख्या गरेको पाइन्छ । पूर्ववर्ती दर्शनमा चर्चा भएका पदार्थहरूको विवेचनामा केन्द्रित रहनु नै यो दर्शनको तत्त्वमीमांसा हो ।

मीमांसा दर्शन वेदलाई प्रमाण मान्ने भएकाले आस्तिक दर्शन हो । वेदलाई निन्दा गर्ने नास्तिक हुन्छ भन्ने मान्यताअनुसार यसले वेदलाई सबैभन्दा बढी महत्त्व दिने भएकाले यसलाई आस्तिक दर्शन भनिएको हो । आस्तिक हुँदाहुँदै पनि यसले ईश्वरका बारेमा चर्चा गरेको छैन । जैमिनिले ईश्वरसिद्धका झमेलामा फस्नुभन्दा वेदलाई नित्य तथा अनादि र स्वतःप्रामाण्यका रूपमा सिद्ध गर्नु उपयुक्त देखे (आचार्य, २०७३, पृ. ४४८) । यसले केवल वेदको प्रामाणिकतालाई स्वीकार गर्दछ । वेदमन्त्र नै सबै कुरा हो । यस दर्शनमा कर्मको महत्त्वलाई प्रतिपादन गर्दै कर्मबाट फलको प्राप्ति हुने भएकाले कर्म र त्यसका प्रतिपादक वचनहरूको अतिरिक्त ईश्वरलाई

मान्ने आवश्यकता छैन भन्ने विचार राखिएको छ । यस दर्शनमा जीव, ईश्वर, बन्धन, मोक्ष र त्यसका साधनहरूको विवेचना नपाइने हुनाले यसलाई ईश्वरनिरपेक्ष दर्शनका रूपमा हेरिएको हो ।

वेदान्त दर्शनमा तत्त्वमीमांसा

युनानी तथा बौद्ध दार्शनिकहरूको तीक्ष्ण प्रहार हुनाका साथै कर्मकाण्डमा मात्र नभई उपनिषद्का प्रभावमा समेत न्यूनता देखिँदै गएपछि न्याय, वैशेषिक, योग र साङ्ख्य दर्शनले केही प्रतिक्रिया दिए तर वेदमूलक ज्ञान र कर्मकाण्डका सम्बन्धमा उत्पन्न भएका शङ्काको उत्तर दिन सकिरहेका थिएनन् । यही अवस्थामा बादरायण र जैमिनिले वेदका कर्मकाण्ड र ज्ञानकाण्डका विषयलाई दार्शनिक आधार प्रदान गर्न थाले । यसै क्रममा जैमिनिको याग तथा कर्मकाण्डसम्बन्धी मीमांसा दर्शनको विकास भएको हो । उत्तरमीमांसा नामले समेत सम्बोधन गरिएको वेदान्त दर्शनका प्रणेता बादरायण जैमिनिकै समकालीन ईसापूर्व ३०० तिरका मानिन्छन् (आचार्य, २०७३, पृ. ४८३) । यिनको ब्रह्मसूत्र वेदान्त दर्शनको प्राचीनतम उपलब्ध ग्रन्थ हो । बादरायणले आफूपूर्वका बादरी, आत्रेय, औडुलोमी, आश्वरथ्या, जैमिनि, काश्यप आदिका विचारहरूलाई समेट्दै उपनिषद्मा केन्द्रित रहेर ब्रह्मसूत्रको प्रणयन गरेका हुन् (पौड्याल, २०७६, पृ. २६९) ।

बಾದरायणका ब्रह्मसूत्रको विभिन्न व्यक्तिहरूले भाष्य लेखेका छन् । यस्ता भाष्यहरू विशेषतः शैव तथा वैष्णव धर्मसम्प्रदायसँग सम्बन्धित रहेका छन् । शङ्कराचार्य (६८८ - ७२०) द्वारा रचना गरिएको शारीरक भाष्य वेदान्त दर्शनको विशिष्ट कृति मानिन्छ । शंकराचार्यले उपनिषद्, गीता तथा ब्रह्मसूत्रको भाष्य लेखेका र उनको शारीरिक भाष्यमा पनि धेरै भाष्यहरू लेखिएको चर्चा पाइन्छ (पौड्याल, २०७६, पृ. २७४) ।

बಾದरायणको ब्रह्मसूत्रलाई वेदान्तसूत्र पनि भनिन्छ । यसलाई ब्रह्ममीमांसा नाम पनि दिइएको छ । अथातो ब्रह्म जिज्ञासाबाट सुरु गरिएको यस वेदान्त सूत्रमा उपनिषद्विरोधी विचारहरूको खण्डन गरिएको छ । यसको दोस्रो सूत्रमा यस जगत्को जन्म, स्थिति र प्रलय जेबाट भयो, त्यही ब्रह्म हो भन्ने विचार प्रस्तुत

गरिएको छ । यसमा उपनिषद्लाई प्रमाण मानेर ब्रह्मलाई जगत्का कारकका रूपमा चिनाइएको छ (आचार्य, २०७३, पृ. ४८६) । साङ्ख्यले प्रकृतिलाई र उपनिषदले आत्मालाई जगत्को कारण मानेको कुरालाई खण्डन गर्दै ब्रह्ममीमांसामा ब्रह्मलाई नै जगत्का आदि कारकका रूपमा सिद्ध गरिएको छ (आचार्य, २०७३, पृ. ४८६) । जीव र जगत्लाई ब्रह्मका शरीर र ब्रह्मलाई शारीरिक मानी तीनवटै तत्त्व मिलेर पूर्ण ब्रह्म बन्ने धारणा राखिएको छ (आचार्य, २०७३, पृ. ४८६) ।

बादरायणले उपनिषद्का विमतिहरूलाई समन्वय गरेर ब्रह्मसूत्रको रचना गर्न खोजे पनि उनको ब्रह्मसूत्रलाई समातेर द्वैत, अद्वैत, शुद्ध अद्वैत, विशिष्ट अद्वैत, त्रैत आदि थुप्रै वादहरू जन्मिएका छन् । वेदान्त दर्शनमा शङ्कराचार्यको अद्वैत वेदान्त, रामानुजाचार्यको विशिष्ट अद्वैत वेदान्त, माध्वाचार्यको द्वैत वेदान्त, निम्बार्काचार्यको द्वैताद्वैत वेदान्तलगायतका शाखाहरू विकसित भएका छन् । यी सबै दर्शनले मूलतः परमात्मा, जीवात्मा, जगत्जस्ता तत्त्वहरूकै विश्लेषण गरेका छन् । खास गरी वेदान्त दर्शनमा निम्न विषयका बारेमा दृष्टिगोचर भएको छ :

ब्रह्म नै परम सत्य

वेदान्त दर्शनका अनेक शाखाहरू देखिए पनि बादरायणको वेदान्त दर्शन मूलतः अद्वैतवादी देखिन्छ । यस दर्शनले ब्रह्मको सत्तालाई नै वास्तविक सत्ता मान्दै यसलाई एक मात्र परम सत्यका रूपमा स्वीकार गरेको छ । जसरी घडा आदिको उपादान कारण माटो हो, त्यसरी नै यो विश्वको उत्पादन कारण ब्रह्म नै हो । ब्रह्म मूल तत्त्व हो, जसको अस्तित्व देश र कालभन्दा पर हुन्छ । यो स्वतःसिद्ध हुने भएकाले यसलाई प्रमाणित गर्न कुनै बाह्य प्रमाणको आवश्यकता पर्दैन; यो निर्गुण, पूर्णतः सत्य, सर्वशक्तिमान र सर्वव्यापी छ ।

जगत्को मायिक स्वरूप र संरचना

वेदान्त दर्शन अनुसार ब्रह्मद्वारा नै सम्पूर्ण ब्रह्माण्डको संरचना हुन्छ । ब्रह्मले यो संसारको निर्माण आफ्नो 'माया' शक्तिद्वारा गर्ने भएकाले यो जगत् मायिक, अनित्य एवं असत्य (मिथ्या) छ भन्ने वैचारिक

निचोड यस दर्शनमा पाइन्छ । यसरी वेदान्त दर्शनले ब्रह्मलाई सत्य र जगत्लाई मिथ्या घोषित गरी ब्रह्माण्डका सम्पूर्ण चराचर कुराहरू अन्ततः ब्रह्ममा नै अन्तर्निहित रहने कुरा प्रमाणित गर्ने प्रयास गरेको छ ।

जगत् र जीवः ब्रह्मका अंश र शरीर

यो दर्शनले ब्रह्मलाई जगत्को सृष्टिकर्ता मानेर जगत्लाई ब्रह्मको शरीरका रूपमा व्याख्या गरेको छ । यस क्रममा पृथ्वी, जल, तेज, वायु र आकाश जस्ता पञ्चमहाभूतहरू ब्रह्मबाटै उत्पत्ति भएका हुन् भन्ने मानिन्छ । यस दर्शनले जीव र जगत् दुवैलाई ब्रह्मको शरीर तथा ब्रह्मलाई यी दुवैको अन्तर्यामी आत्मा स्वीकार गरेको छ । जीवात्मा ब्रह्मकै अंश र अणुस्वरूपको हुने भए तापनि यो परिवर्तनशील छ र एउटा शरीर नष्ट भएपछि अर्को शरीरमा प्रवेश गर्दछ ।

आत्मतत्त्व नै परम तत्त्व

वेदान्त दर्शन अनुसार आत्मतत्त्व नै सृष्टिको परमतत्त्व हो । यसले जीव र आत्माका बीचमा व्यावहारिक अन्तर हुने दृष्टिकोण राख्दछ । यस मान्यता अनुसार मूल आत्मा त एकै हो, तर जीव भने भिन्न-भिन्न शरीरहरूमा अलग-अलग रूपमा रहन्छन् । भौतिक शरीर नष्ट भइसकेपछि अन्ततः जीव अभिन्न रूपमा मूल आत्मामा नै लीन हुने भएकाले नै यस दर्शनमा आत्मतत्त्वलाई सर्वोपरि स्थान दिइएको छ ।

जीवका कर्म र ज्ञानका साधनहरू

यस दर्शनले संसारमा रहेका जीवका क्रिया र ज्ञान प्राप्तिमा निमित्त निश्चित साधनहरू निर्धारण गरेको छ । यसअन्तर्गत पाँच कर्मेन्द्रिय, पाँच ज्ञानेन्द्रिय, मन र प्राणलाई जीवका मुख्य साधन मानिएको छ । जीवले संसारमा भोग्ने र बुझ्ने प्रक्रिया यिनै माध्यमबाट पूरा गर्दछ । यी इन्द्रिय, मन र प्राण लगायतका सम्पूर्ण तत्त्वहरू भौतिक जगत् जस्तै अनित्य र नाशवान् छन् भन्ने वेदान्त दर्शनको दृष्टिकोण रहेको छ ।

ब्रह्मज्ञान र मुक्तिको अवस्था

वेदान्त दर्शनले ब्रह्मज्ञान (ब्रह्मविद्या) लाई नै मानव जीवनको चरम लक्ष्य अर्थात् मुक्तिको एकमात्र साधन मानेको छ । ब्रह्मज्ञान प्राप्त भइसकेपछि मानिसका सम्पूर्ण कर्मराशिहरू नष्ट हुन्छन् र पाप-पुण्यको भोग समाप्त भई जीवले मोक्ष प्राप्त गर्दछ । यो मुक्तिको क्रममा जीवले शरीर त्याग गर्दा उसको वाणी मनमा, मन प्राणमा, प्राण जीवमा र अन्ततः जीव महाभूत हुँदै परब्रह्ममा विलीन हुन पुग्दछ ।

समग्रमा वेदान्त दर्शन ब्रह्मलाई मात्र एकमात्र परम सत्य, निर्गुण र सर्वव्यापी मूल तत्त्वका रूपमा स्वीकार गर्ने एक उत्कृष्ट अद्वैतवादी दर्शन हो । यसले यो दृश्य जगत्लाई ब्रह्मको 'माया' शक्तिद्वारा निर्मित अनित्य र मिथ्या स्वरूप मान्दछ । यस दर्शन अनुसार सम्पूर्ण ब्रह्माण्ड, पञ्चमहाभूत, र अणुस्वरूपका जीवात्माहरू ब्रह्मकै अंश र शरीर हुन् । यी सबै चिजहरू अन्ततः भौतिक शरीरको विनासपछि मूल आत्मतत्त्वमा नै लीन हुन पुग्दछन् भन्ने मान्यता यो दर्शनले अगाडि सारेको छ । जीवले संसारलाई बुझ्न र भोग्नका लागि पाँच ज्ञानेन्द्रिय, पाँच कर्मेन्द्रिय, मन र प्राण जस्ता नाशवान् साधनहरूको प्रयोग गरे तापनि मानव जीवनको चरम लक्ष्य भनेको ब्रह्मज्ञान प्राप्त गर्नु नै हो भन्ने निष्कर्ष यो दर्शनले अगाडि सारेको छ । ब्रह्मविद्याका माध्यमबाट पाप-पुण्यको बन्धन र कर्मराशिहरू नष्ट भई जीवका सम्पूर्ण अवयवहरू परब्रह्ममा विलीन हुनु र मोक्ष प्राप्त गर्नु नै वेदान्त दर्शनको मूल निष्कर्ष रहेको पाइन्छ ।

निष्कर्ष

पूर्वमा चर्चा भएका यी षड्दर्शनमा विवेचना भएका तत्त्वमीमांसाको तुलनात्मक समीक्षा गर्दा पूर्वीय आस्तिक दर्शनमा सृष्टिको मूललाई तत्त्वलाई तत्त्वका रूपमा स्वीकार गरिएको देखिन्छ । दर्शनहरू आफ्नै दृष्टिकोणअनुसार विकास भएका हुँदा हरेक दर्शनहरूले आफ्ना दृष्टिकोणलाई मूल तत्त्वका रूपमा निर्धारण गरेका छन् । तत्त्वमीमांसाका सन्दर्भमा कतिपय दर्शनमा साझा मान्यताहरू पनि रहेका देखिन्छन् भने कतिपय दर्शनहरू विशिष्ट रूपमा तत्त्वहरूको मीमांसा गरेको पाइन्छ । षड्दर्शनहरूमध्ये वैशेषिक र न्याय दर्शनमा पदार्थ

मीमांसाका सन्दर्भमा साझा विशेषताहरू देखिएका छन् । यसैगरी सासांख्य दर्शन र योग दर्शनमा समेत समान किसिमका तत्त्वमीमांसागत विशेषताहरू रहेका छन् । मीमांसा तथा उत्तर मीमांसा अर्थात् वेदान्त दर्शनमा पनि यस किसिमका केही साझा विशेषता देखिन्छन् । वैशेषिक दर्शनमा द्रव्य, गुण, कर्म, सामान्य, विशेष, समवायलाई भावात्मक र अभावलाई अभावात्मक गरी सात पदार्थहरूको चर्चा गरिएको छ भने न्यायदर्शनमा प्रमाण, प्रमेय, संशय, प्रयोजन, दृष्टान्त, सिद्धान्त, अवयव, तर्क, निर्णय, वाद, जल्प, वितण्डा, हेत्वाभास, छल, जाति र निग्रहस्थान गरी १६ तत्त्वहरूको चर्चा गरिएको पाइन्छ । योग तथा साङ्ख्य दर्शनमा उल्लेख गरिएको २४ तत्त्वहरूलाई र योगमा थप विशेष पुरुष अर्थात् ईश्वरलाई समेत थपि २५ तत्त्वहरूको चर्चा गरिएको छ । यी तत्त्वहरूको मीमांसाकै कर्ममा षड्दर्शनमा पञ्चतन्मात्र, पञ्चज्ञानेन्द्रिय, पञ्चकर्मेन्द्रिय, पञ्चमहाभूतजस्ता तत्त्वहरूका साथै मन, बुद्धि, अहङ्कारजस्ता आत्मिक तत्त्वहरूको विवेचना गरिएको देखिन्छ । मीमांसा तथा वेदान्त दर्शनचाहिँ आत्मिक दर्शन भएकाले ब्रह्मतत्त्व वा परम चेतनालाई प्राथमिक स्थानमा राखी त्यसैबाट संसारको उत्पत्ति भएको धारणा राखिएको छ । भौतिक पदार्थका विवेचनाका क्रममा मीमांसा दर्शनमा जगत्को कारण मानिएका पदार्थहरूको चर्चा गर्दै द्रव्य, गुण, कर्म, अवयव, सङ्ख्या, शक्ति, सादृश्यजस्ता तत्त्वको उल्लेख गरिएको छ । यस दर्शनमा आत्माको अमरता र शाश्वततालाई पनि तत्त्वमीमांसको विषय बनाइएको पाइन्छ । वैशेषिक तथा न्यायादर्शनमा परमाणुका बारेमा जेजसरी चिन्तन गरिएको छ, त्यसले पनि आधुनिक विज्ञानमा ठुलो महत्त्व राखेको छ । आत्मसन्तोष तथा दुःख निवारणमा केन्द्रित रहेकाले सैद्धान्तिक कम र व्यावहारिकता बढी पाइनु, मोक्ष प्राप्तिलाई तत्त्वमीमांसाको मूल उद्देश्य बनाइनु, भौतिकताभन्दा आध्यात्मिकतालाई महत्त्व दिनु, कुनै न कुनै धर्मसँग जोडिनु, इहलोकभन्दा परलोकको चिन्तामा केन्द्रित रहनु, मोक्षप्राप्तिको साधनका रूपमा रहनु, जीवनसँग प्रत्यक्ष सम्बन्ध राख्नु, मोक्षलाई मूल ध्येय बनाइनु पूर्वीय आस्तिक तत्त्वमीमांसामा पाइने विशेषता हुन् । यी विशेषताहरू मानवीय जीवनसँग प्रत्यक्ष सम्बन्धित रहेकाले

मानवीय ज्ञान तथा चेतनाको विकास र मानजीवनको सञ्चालनका लागि यिनीहरूको महत्त्व निकै विशिष्ट रहेको छ ।

यसरी पूर्वमा आस्तिक दर्शनका रूपमा विकास भएका साङ्ख्य, योग, वैशेषिक, न्याय, मीमांसा र वेदान्त दर्शनहरूमा ब्रह्माण्ड तथा सृष्टिको निर्माण तथा विकाससँग सम्बन्धित भौतिक तत्त्वका साथै जीवन जगत्का परिचालनमा भूमिका निर्वाह गर्ने आत्मतत्त्वको विश्लेषण गरिएको छ । यहाँ तत्त्वमीमांसाका सन्दर्भमा भौतिक तथा आध्यात्मिक दुवै किसिमका तत्त्वहरूको विश्लेषण गरी तत्त्वमीमांसालाई अपवर्ग वा मुक्तिका साधनका रूपमा हेरिएको छ । यी सबै दर्शनहरू दुःखबाट निवृत्त हुन वा अपवर्गलाई प्राप्त गर्न पदार्थ चिन्तन हुनुपर्ने विचारलाई प्रस्तुत गरिएको छ । पदार्थबोध वा तत्त्वबोध भइसकेपछि जीवनमुक्त भई परमपद प्राप्त हुने मुख्य निचोड यी दर्शनमा पाइन्छ । त्यसैले पूर्वमा विकास भएका यी आस्तिक दर्शनहरू मानवजीवनको व्यावहारिक पक्षसँग सम्बन्धित रहेका देखिन्छन् । भौतिक विज्ञानका विकासका सन्दर्भमा पनि यी तत्त्वमीमांसाका यी निष्कर्षहरूले विशिष्ट योगदान पुऱ्याएको पाइन्छ ।

अहिले पूर्वमा विकास भएका यी दर्शनहरूका तुलनामा पश्चिममा विकास गरिएका भौतिकवादी सैद्धान्तिक दर्शनका पछि लाग्ने र पूर्वका दर्शनलाई केवल कर्मकाण्डसँग सम्बन्धित ठान्ने प्रवृत्तिको विकास भएको छ । मानवजीवनको शाश्वत् मूल्य भनेको आत्मिक शान्ति र अपवर्गबाट मुक्ति नै हो । यस किसिमको चेतना यी दर्शनहरूबाट प्राप्त भए पनि पूर्वका यी मान्यतालाई कम महत्त्व दिने प्रवृत्ति बढेको छ । ज्ञानको दिगो विकास गर्नका लागि पूर्वका यी तत्त्वमीमांसासँग सम्बन्धित विषयलाई विश्लेषण गरी तिनका शाश्वत मूल्यहरूलाई ग्रहण गर्नु अपरिहार्य देखिन्छ । पश्चिममा भएका तत्त्वमीमांसासँग संश्लेषण गरी भौतिक तथा आत्मिक संश्लेषणात्मिक ज्ञानको विकास गर्न सके ज्ञानको धरातल फराकिलो, थप वैज्ञानिक र व्यावहारिक हुने देखिन्छ ।

सन्दर्भसामग्री

आचार्य, दुण्डिराज (२०२६), विद्वच्चूडामणिश्रीशङ्करमिश्रवीरचितः वैशेषिकसूत्रोपस्कारः प्रकाशिका

हिन्दीव्याख्योपेत । https://archive.org/details/20200315_20200315_0731

आचार्य, नारायणप्रसाद (अनु.) (२०७३), दर्शनदिग्दर्शन (राहुल साङ्कृत्यायन, लेखक), अक्षरदीप

प्रकाशन ।

आचार्य, नारायणप्रसाद (२०७६), द्वन्द्ववाद र पौरस्त्य दर्शन (दर्शनावली-६), नेपाल प्रज्ञा-प्रतिष्ठान ।

ईश्वरकृष्ण (मि.अ.), साङ्ख्यकारिका साङ्ख्यदर्शनम् ।

<https://archive.org/search.php?query=creator%3A%22Ishvara+Krishna%22>

कोइराला, परशुराम (२०२३), पौरस्त्य परम्पराका केही दार्शनिक पद्धति, शिक्षासन्देश, १३(६), १४-१८ ।

<https://nepjol.info/index.php/shikshyasandesh/article/download/63111/47693/185528>

घिमिरे, घनश्याम(२०२१), पूर्वीय दर्शनमा तत्त्वमीमांसा र ज्ञानमीमांसा, *International Research*

Journal of MMC (IRJMMC), २(३), ७२-८९ ।

<https://doi.org/10.3126/irjmmc.v2i3.40086>

पौड्याल, कृष्णविलास (२०७५), पूर्वीय दर्शन, जिनिया एजुकेशन एन्ड रिसर्च प्रा. लि. ।

मिश्र, भगीरथ, अवस्थी, हरिकृष्ण र मिश्र, वज्रकिशोर (सम्पा.)(मि.अ.), पाताञ्जल योगदर्शन, लखनउ

विश्वविद्यालय ।

<https://ia601500.us.archive.org/0/items/in.ernet.dli.2015.483430/2015.483430.Patanjal-yogdarshan.pdf>

वादरायण, (मि.अ.), महर्षि वादरायणप्रणीतम् वेदान्तसूत्रम् ।

https://archive.org/details/20200314_20200314_1741

राजाराम (अनु.) (१९२१), श्रीमन्महामुनि गौतमप्रणीत न्यायसूत्रम् और श्रीमन्महामुनि वात्स्यायनप्रणीत न्यायभाष्यम्, रामराजा ।

<https://ia801408.us.archive.org/16/items/in.ernet.dli.2015.326333/2015.32633>

3.Nyayasutra-Of.pdf

वैद्य, मोहन किरण (२०७६), हिमाली दर्शन (दोस्रो सं.), अक्सफोर्ड इन्टरनेसनल पब्लिकेसन ।

शर्मा, उमाशङ्कर (भाष्य.) (मि.अ.), श्रीमन्माधवाचार्यकृतः सर्वदर्शनसङ्ग्रहः सपरिशिष्ट प्रकाश हिन्दीभाषाष्योपेत, चौखम्बा विद्या भवन ।

<https://archive.org/details/in.ernet.dli.2015.444543>



25943138 (Print)



021-547617, 021-547717, 9852045617



info@sukuna.edu.np
sukunamc2048@gmail.com
rmcsukuna1@gmail.com



ajos.editorial@gmail.com
www.sukuna.edu.np