

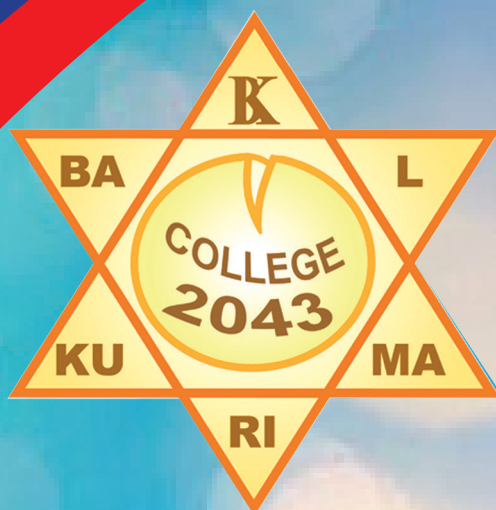
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# Journal of Balkumari College

*(Containing Research based Articles)*

Ashadh, 2079  
June, 2022

Volume- 11 Issue- 1 Peer Reviewed Journal



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## EDITORIAL NOTE

It is my immense pleasure and great privilege to present another volume of **Journal of Balkumari College**. It is an annual, multidisciplinary, peer reviewed journal that publishes original research as well as review in Management, Finance, Science, Health, Education, Literature, Information Technology and other related field. The objective of this journal is to include highest quality empirical, theoretical and methodological and original research papers alongside relevant and insightful reviews. It encourages interested professionals, academicians and research organizations working in the above field to share new idea or new perspectives on existing research. The essential purpose of this journal is to provide an opportunity to the faculty to publish their academic research work and make significant contribution in the above mentioned disciplines. I hope the academicians, researchers and practitioners will make good use of this valuable research finding for the publication in this journal.

At last but not least, on behalf of editorial team and myself, I am thankful to all who contributed to fulfill our dream. First and foremost, let me thank our Chairman **Mr. Jagannath Poudel** who was always with us, to provide a wonderful platform to nourish the talents. I extend my sincere thanks to our Principal **Mr. Jagadiswar Khanal** who is always in the forefront to encourage and inspire to execute wonderful ideas. It would be totally unfair if I am not mentioning the effort of editorial team who dreamt together to bring out Journal of Balkumari College tenth volume. I would like to extend my heartfelt thanks to contributors, advisors and peer review team for joining us in this fascinating and promising academic development.

**Dr. Guna Raj Chhetri**  
Chief Editor  
June, 2022

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## Status of Job Involvement in the Financial Sector of Nepal

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### ABSTRACT

The main objective of this study is to investigate how employees perceive their level of job involvement in the financial sector of Nepal. Descriptive and analytical research designs have therefore been used in this study. To achieve the research goals, a set of research questions are created to elicit the opinions of employees. A total of 240 questionnaires—40 in each of the 6 institutions, which include 3 commercial banks and 3 insurance companies—are distributed for this purpose. 193 (80.41%) of the copies of the survey are fully completed and returned. These questionnaires are used for the research's objectives. These responses have been gathered from the chosen financial institutions' corporate, branch, and head offices. Results show that most of the employees perceive a moderate level of job involvement toward their organizations. In the case of ownership pattern, the Nepalese public sector shows higher job involvement than that of the private sector. The results further show that perceived job involvement has significant associations with all demographic characteristics that have been analyzed. This means there are different demographic effects on employees' perceived job involvement. In the case of the banking and insurance sector, insurance sector employees hold a relatively higher level of job involvement than the banking sector employees. High-involvement workers struggle to keep work and personal life apart because they care so much about what they do. Employees' attitudes and behaviors, which in turn affect their work performance and the success of the company, are influenced by how involved they feel in their jobs. As a result, job involvement research is crucial for Nepalese workplaces.

**Keywords:** Employees, Financial sector, Job, Job involvement, Status

### Introduction

Job involvement is the psychological commitment or affiliation of a person with their job (Kanungo, 1982). The level of work involvement of employees has a significant impact on their mental and emotional health, which is a major factor in the lives of the majority of people. According to Lodahl and Kejner (1965), job involvement measures how much a person's job contributes to their sense of self and meets other significant needs. It is a viewpoint that describes how a person feels about their current position (Mathieu & Zajac, 1990). Job involvement primarily refers to an employee's level of engagement with the objectives, culture, and duties of a particular business (Joiner & Bakalis, 2006).

According to Rogelberg (2007), job involvement refers to a psychological state of identification with work, or the extent to which a person's employment is integral to their identity. It has been viewed as the key to unlocking employee motivation and boosting productivity from an organizational standpoint (Mase & Aondoaver, 2014). From a personal standpoint, job involvement is essential for fostering motivation, productivity, personal development, and job happiness (Kanungo, 1982). By including workers fully in their work and making it a meaningful and gratifying experience, job involvement significantly improves organizational effectiveness, productivity, and morale ([www.psychology.iresearchnet.com](http://www.psychology.iresearchnet.com)). When employees see that their work has the ability to satisfy important psychological demands, they get invested in them (e.g., for growth, achievement, meaning, recognition, and security). Job involvement improves workers' output by encouraging them to put in more effort, use their imagination to solve challenges, and work shrewdly (Rogelberg, 2007).

The degree to which a person mentally identifies with their work is known as job involvement (Kanungo, 1982). It means that a person who is actively interested in their job views it as "an important aspect of his/her self-concept" and that jobs "significantly define one's self-concept" (Lawler & Hall, 1970). The degree to which one's

current job can meet their current demands tends to determine how involved one feels in their work (Ojo, 2009 cited in Akintayo & Ayodele, 2012).

Job involvement is the level of a person's psychological identity with the job. The motivation a person has for their work at a job is relevant (Bashaw and Grant, 1994; Hackett, Lapierre, & Hausdorf, 2001; McElroy, Morrow, Crum, & Dooley, 1995; Blau, 1986; Blau & Boal, 1987). Likewise, Mathieu and Zajac (1990) assert that job involvement is a belief that characterizes a worker's relationship with their current position. According to Joiner and Bakalis (2006), job involvement refers to an employee's interest in, entanglement with, and immersion in the objectives, culture, and duties of a certain organization. Although the concept of job involvement is widely accepted in Western culture, its applicability in the Nepalese context is still debatable. The job involvement notion must therefore be mirrored in the Nepalese sample population. Furthermore, research from a Nepalese viewpoint needs to be done in order to confirm the validity of the employment involvement notion. Nepal is a country with little research done on organizational behavior. Therefore, it is necessary to look into the level of job involvement among Nepalese employees. The following are the precise research questions (RQ) that give direction for this research:

*RQ1: What is the level of job involvement in the financial sector?*

*RQ2: How do work involvement variations compare in terms of demographic traits?*

*RQ3: According to ownership pattern, what is the current state of work involvement?*

*RQ2: How do the banking and insurance sectors in Nepal differ in terms of job involvement?*

## **Literature review**

### ***Conceptual Review***

Lodahl and Kejner created the initial concept of job involvement in 1965 (as cited in Khan and Nemati, 2011). According to their definition, job involvement is the extent to which a person's work performance affects their sense of self-worth. Later, Kanungo (1982) developed this idea much more (as cited in Ho, 2006). He worked to improve the measurement flaws from the earlier studies and clear up any confusion surrounding the idea of job involvement. He added that job involvement serves as a catalyst to meet the demands of the individual in the present and that it is defined as the person's belief toward his or her current employment. He also defined the distinction between a job and work. He said that a job is a person's current employment, but a work is a work in general (as cited in Akhtar and Udham, 2010).

Khalid and Rashid Rehman (2011) defined job involvement as an incentive to perform work and it is very compatible with personal and organizational goals, which generates motivation among the employees to produce positive work outcomes. Contrarily, Hung (2008) claimed that job involvement satisfies an individual's cognitive demands, enabling him or her to work more and improve performance. In fact, increasing the level of job involvement among an organization's members is necessary to increase organizational effectiveness (Liao and Lee, 2009). In addition, there are four methods to categorize job involvement: (a) actively contributing to the job; (b) making work the center of one's interests; (c) having performance that is compatible with one's self-concepts; and (d) making performance the foundation of one's self-esteem (Ishfaq & Talat, 2011). Workers who see their jobs as the center of their lives will have a better chance of meeting their basic needs. Employees who take an active position in their work, which allow them to make decisions and contribute significantly to the organization's goals, will help them develop strong senses of self-worth and self-respect.

### ***Review of Empirical Studies***

Job involvement is the degree to which people are ego-involved in their work (Govender & Parumasur, 2010). According to Hung (2008), if their mental requirements are met, workers will be inspired to work harder and perform better. On the other side, Abinowitz, Hall, Moch, and Kanungo (as stated in Hung, 2008) noted that when employees' jobs interfere with their personal lives, their physical and mental circumstances will change. These would consequently have an impact on their performance and involvement at work. Job involvement, on the other hand, was seen by Freund (as cited in Hung, 2008) as a fixed variable that crucially controls the employees'



working attitudes, including job satisfaction, resignation propensity, and organizational commitment.

Additionally, Kanungo (1982) asserts that those who are deeply invested in their work will care deeply about it (cited in Chughtai, 2008). Furthermore, those who are deeply invested in their jobs are more likely to have higher self-esteem in their careers, according to Lodahl and Kejner (1965, cited Chughtai, 2008). Because the profession has already incorporated into their lives, these people want to do well. Sometimes it was claimed by Ishfaq & Talat, (2011) that workers who were very involved in their jobs would not be tardy or absent from work. Additionally, a person who is heavily invested in their job will use fewer excuses (such as illness or transportation issues) and focus more on it, which will lower absenteeism and turnover intentions (Shrestha, 2020).

Additionally, according to Preffer, Hackman, and Lawler's findings (cited in Chughtai, 2008), encouraging job involvement is a crucial organizational goal because many scholars think it is a major factor in both an organization's effectiveness and a person's motivation. In a similar vein, numerous studies conducted over a wide range of time periods discovered that job involvement keeps workers motivated (Bashaw and Grant, 1994; Hackett, Lapierre, and Hausdorf, 2001; Mcelroy, Morrow, Crum, and Dooley, 1995; Blau, 1986; Blau and Boal, 1987) and content with their jobs (Mathieu and Farr, 1991 as cited in Mohsan, Nawaz, Khan, Shaukat, and Aslam, 2011). Finally, Brown 1996, cited in Chughtai, (2008) asserted that job involvement is significantly correlated with factors like job autonomy, task identity, skill variety, task significance, feedback, and supervisory behaviors like participatory decision-making, leader consideration, and volume of communication.

## Research Methodology

### Research Design

Examining employees' perceptions of job involvement in Nepalese financial institutions is the primary goal of this study. Descriptive and analytical research designs have therefore been used in this study. To achieve the research objectives, a set of research questions are created to elicit the opinions of employees of Nepalese financial institutions.

### Sample and Sampling Procedures

The banking and insurance sectors of Nepal are both included in the financial sector. There are currently 27 commercial banks functioning in the country, 3 of which are taken into consideration. One such bank (Nepal Bank Ltd.) is the public bank chosen for this investigation. Two commercial banks that have been in business for at least five years and are considered private banks were chosen for this study. Below is a detail of the sampled banking industry organizations:

**Table 1: List of Selected Commercial Banks**

Commercial Banks	Establishment Date
1. Nepal Bank Ltd.	1937/11/15
2. Global IME Bank Ltd.	2007/01/02
3. Prime Bank Ltd.	2007/09/24

Presently, 41 insurance companies (including life, non-life, and reinsurance) are in operation in Nepal (<https://nib.gov.np/affiliated-insurers-2/>). Regarding the insurance sector, only life insurance companies, having at least 5 years of operation from their establishment date, are selected. A detail of sampled life insurance companies from the insurance sector is presented below:

**Table 2: List of Selected Insurance Companies**

Insurance Companies	Establishment Date
1. Rastriya Beema Santhan Ltd.	2024/09/01
2. Nepal Life Insurance Company Limited	2058/01/21
3. Asian Life Insurance Company Limited	2064/10/15

### Sources and Nature of Data

This study mostly makes use of primary data. The core data was gathered using a scientifically designed questionnaire that took into account a number of demographic criteria, including gender, marital status, education,

age, job level/designation, and years of work experience, as well as job involvement.

### ***Instruments and Measurements***

A total of 240 questionnaires—40 in each of the 6 institutions, which include 3 commercial banks and 3 insurance companies—are distributed for this purpose. 193 (80.41%) of the copies of the survey are fully completed and returned. These questionnaires are used for the research's objectives. These responses have been gathered from the chosen financial institutions' corporate, branch, and head offices. On a Likert style scale, all the items ranged from = strongly disagree (1) to = strongly agree (6).

### ***Profile of the Respondents***

The details of these demographic characteristics are discussed in this section:

**Table 3: Profile of the Respondents**

<b>Demographic Characteristics</b>	<b>Frequency</b>	<b>Percent</b>
<b>Name of Organizations</b>		
Nepal Bank Ltd.	33	17.1
Global IME Bank Ltd.	31	16.1
Prime Bank Ltd.	35	18.1
Rastriya Beema Santhan Ltd.	32	16.6
Nepal Life Insurance Company Limited.	35	18.1
Asian Life Insurance Company Limited	27	14
<b>Pattern of Organization</b>		
Pubic	99	51.3
Private	94	48.7
<b>Nature of Job</b>		
Permanent	171	88.6
Contract	22	11.4
<b>Gender</b>		
Male	118	61.1
Female	75	38.9
<b>Marital Status</b>		
Married	142	73.6
Unmarried	51	26.4
<b>Education</b>		
High School/SLC	1	0.5
Certificate (+ 2)	19	9.8
Bachelor	70	36.3
Masters	100	51.8
M.Phil	3	1.6
<b>Age Categories</b>		
Under 20	1	0.5
21 - 34	112	58
35 - 44	33	17.1
45 - 54	40	20.7
55 and above	7	3.6
<b>Job Level (Designation)</b>		
Clerical Level	113	58.5
Officer Level	78	40.4
Executive Level	2	1

Table 3 shows that out of 193 employees 33 employees are of Nepal Bank Ltd which is 17.1 percent of the total employees. We have collected the data of 31 employees of Global IME Bank Ltd and 35 employees of Prime Bank Ltd. which make up 16.1 percent and 18.1 percent in total respectively. Similarly, in the insurance sector, we have collected data from 32 employees of Rastriya Beema Sanstha, 35 employees of Nepal Life insurance Ltd. and 27 employees of Asian Life Insurance Company Ltd. which makes 16.6 percent, 18.1 percent, and 14 percent respectively. Regarding the pattern of organization, out of 193 employees, 99 employees are in the public sector and 94 are in the private sector which is 51.3 percent and 48.7 percent respectively. In total, 171 employees are permanent and 22 employees are working on a contractual basis. In terms of percent, 88.6 percent of employees are permanent and the rest 14.4 is in the contract. In terms of gender, 118 employees are male and 75 are female. In percentage, it shows that 61.1 percent are males, and the remaining 38.9 is females' percentage. As per the total data collected, 142 employees are married and only 51 employees are unmarried. In terms of percentage, 73.6 percent of employed are married and only 26.4 percent of employed are found unmarried. As we know, education highly influences job involvement; we found that 51.8 percent of employees have completed a master's degree. Out of 193 employees, 100 employees have completed their master's degrees. Similarly, 19 employees have only completed +2 levels which are 9.8 in percentage. 70 employees have only completed bachelor's degrees which is 36.3 percent in total. We found only 1 employee who has passed high school/ SLC which is 0.5 percent of the total sample. Also, we have found 3 employees who have passed M. Phil which is 1.6 percent of the total sample. The age factor is also one of the influential factors for job involvement. We have categorized age groups into 5 categories. Only 1 employee is found working under the age of below 20 years which makes 0.5 percent of total employees. We have found 112 employees working under the age group of 21-34, 33 employees under the age group of 35-44, and 40 employees under the age group of 45-54 which is 58.0 percent, 17.1 percent, and 20.7 percent respectively. Also, 7 employees are found working under the age group of 55 and above which makes 3.6 percent in total. Another factor that highly influences the job involvement of employees is the level of the job. As per our data collected, 113 employees are working at the clerical level, 78 employees are working under the officer level and 2 employees are working at the executive level which is 58.5 percent, 40.4 percent, and 1 percent in total. Concerning work experience or length of employment, the majority of the respondents (34.7 percent) have 0 - 4 years of experience. The second-largest groups of respondents have 5-9 years of experience, they are 60 respondents, and they cover 31.1 percent of the total. Moreover, 27 respondents have 10-19 years of work experience and they occupy 14 percent. Likewise, 33 respondents have 20-29 years of work experience and they occupy 17.1 percent of total respondents. Only 3.1 percent of total respondents have 30 years and more experience in their job.

## Results and Findings

### Level of Job Involvement

Table 4 shows the general description of perceived job involvement in the Nepalese context.

**Table 4: Employees' Perceptions towards Job Involvement**

S.N.	Job Involvement Scale	Mean	S.D.
1	The most important thing that happens to me is to involve in present job.	5.02	0.85
2	My job is almost all part of who I am.	4.85	0.86
3	I am very much involved personally in my job.	4.89	0.81
4	I live, eat, and breathe with my job.	4.86	0.80
5	Most of my interests are centered around my job.	4.61	0.59
6	I have very strong ties with my present job that would be very difficult to break.	4.69	0.74
7	Mostly I feel attached to my job.	4.75	0.72
8	Most of my personal life goals are job-oriented.	4.68	0.76
9	I consider my job is to be very central to my existence.	4.77	0.87
10	I like to be absorbed in my job most of the time.	4.65	0.89
<b>Average</b>		<b>4.78</b>	<b>0.13</b>

The average level of job involvement is 4.78, with a 0.13 standard deviation. This average falls within the 4.5 to 5 range. It indicates that the employees view their level of job involvement with their organizations to be moderate.

### *Differences in Job Involvement in terms of Demographic Characteristics*

Based on a variety of demographic factors, including organizational style, job type, gender, marital status, education level, age, job level (designation), and work experience, employee attitudes toward job involvement can vary. ANOVA is used to examine how these demographic factors affect job involvement. The link between organizational structure, job type, gender, marital status, education, age, job level (designation), and work experience and job involvement is shown in Table 5.

**Table 5: ANOVA Test**

Demographic Characteristics	Groups	Sum of Squares	df	Mean Square	F	Sig.
Pattern of Organization	Between Groups	64.20	26	2.47	39.34	0.00**
	Within Groups	46.33	738	0.06		
	Total	110.53	764			
Nature of Job	Between Groups	31.21	26	1.20	16.34	0.00**
	Within Groups	54.23	738	0.07		
	Total	85.45	764			
Gender	Between Groups	62.48	26	2.40	13.78	0.00**
	Within Groups	128.74	738	0.17		
	Total	191.21	764			
Marital Status	Between Groups	10.33	26	0.40	2.44	0.00**
	Within Groups	120.21	738	0.16		
	Total	130.54	764			
Education	Between Groups	85.52	26	3.29	6.23	0.00**
	Within Groups	389.77	738	0.53		
	Total	475.29	764			
Age	Between Groups	108.68	26	4.18	5.94	0.00**
	Within Groups	519.67	738	0.70		
	Total	628.35	764			
Job Level (Designation)	Between Groups	43.37	26	1.67	5.73	0.00**
	Within Groups	214.82	738	0.29		
	Total	258.19	764			
Work experience (in years)	Between Groups	212.25	26	8.16	7.55	0.00**
	Within Groups	798.53	738	1.08		
	Total	1010.78	764			

Significant at \* $p < 0.05$ , \*\* $p < 0.01$ .

The findings demonstrate the variation in the employees' viewpoints based on their demographic traits. The p-value of perceived job involvement based on all demographic factors is similarly discovered to be 0.00. It implies that there is a sizable difference in how employers view individuals based on these traits. Perceived job involvement has substantial relationships with all of the demographic parameters that have been examined, according to the ANOVA table's results. This indicates that diverse demographic influences exist on how involved individuals consider their jobs to be.

### *Job Involvement based on Ownership Pattern*

An additional issue for research is the difference in job involvement between the sample organizations from the public and private sectors. Therefore, based on ownership pattern, this section discusses how people perceive their level of job involvement (in terms of public and private sector organizations).

**Table 6: General Descriptive of Job Involvement in Nepalese Public and Private Sector**

Items on Job Involvement	Public Organization (N = 99)		Private Organizations (N = 94)	
	Mean	S.D.	Mean	S.D.
The most important thing that happens to me is to involve in present job.	4.88	0.86	5.04	0.85
My job is almost all part of who I am.	4.90	0.88	4.84	0.86
I am very much involved personally in my job.	5.19	0.58	4.83	0.84
I live, eat, and breathe with my job.	5.31	0.49	4.76	0.82
Most of my interests are centered around my job.	4.91	0.70	4.55	0.54
I have very strong ties with my present job that would be very difficult to break.	4.89	0.85	4.65	0.71
Mostly I feel attached to my job.	5.22	0.68	4.65	0.69
Most of my personal life goals are job-oriented.	4.96	0.76	4.62	0.74
I consider my job is to be very central to my existence.	4.89	0.87	4.74	0.87
I like to be absorbed in my job most of the time.	4.87	0.82	4.60	0.90
<b>Average</b>	<b>5.00</b>	<b>0.17</b>	<b>4.73</b>	<b>0.15</b>

Table 6 presents the mean and standard deviation. The average score for job involvement among employees of public organizations is 5.00, with a standard deviation of 0.17. On the other hand, the mean score for job involvement among employees of private organizations is 4.73, with a standard deviation of 0.15. This reveals that compared to the private sector, the public sector in Nepal has a higher level of job involvement.

#### ***Differences in Job Involvement Level in Nepalese Banking and Insurance Sector***

This section presents the opinion expressed by the employees of the banking and insurance sector about job involvement:

**Table 7: Sector-wise Perceptions on Job Involvement**

Items on Job Involvement	Banking Sector (N = 99)		Insurance Sector (N = 94)	
The most important thing that happens to me is to involve in present job.	4.92	0.89	5.32	0.64
My job is almost all part of who I am.	4.80	0.89	5.01	0.75
I am very much involved personally in my job.	4.82	0.83	5.11	0.71
I live, eat, and breathe with my job.	4.81	0.80	5.02	0.79
Most of my interests are centered around my job.	4.59	0.59	4.68	0.59
I have very strong ties with my present job that would be very difficult to break.	4.64	0.74	4.85	0.72
Mostly I feel attached to my job.	4.73	0.70	4.83	0.76
Most of my personal life goals are job-oriented.	4.66	0.76	4.76	0.75
I consider my job is to be very central to my existence.	4.72	0.89	4.90	0.81
I like to be absorbed in my job most of the time.	4.60	0.91	4.79	0.84
<b>Average</b>	<b>4.73</b>	<b>0.11</b>	<b>4.93</b>	<b>0.19</b>

Employees in the banking industry report a mean job involvement of 4.73, with a standard deviation of 0.11. The average level of job involvement for those working in the insurance industry is 4.93, with a standard deviation of 0.19. These findings demonstrate that personnel in the insurance sector engage in their jobs to a greater extent than those in the banking sector.



### **Major Findings**

One of the crucial elements of employee behaviour is job involvement. Job involvement illustrates how much an employee's workplace self-image and basic requirements are met. The following findings are drawn from an analysis of employee perceptions of job involvement:

- Most of the employees perceive a moderate level of job involvement (4.78) toward their organizations in Nepal.
- In the case of ownership pattern, the Nepalese public sector shows higher job involvement (mean: 5.00>4.73) than that of the private sector.
- The results of the ANOVA table show that the perceived job involvement has significant associations with all demographic characteristics that have been analyzed. This means there are different demographic effects on employees' perceived job involvement.
- In the case of the banking and insurance sector, insurance sector employees hold a relatively higher level of job involvement (mean: 4.93>4.73) than the banking sector employees.

### **Discussion and conclusion**

The most valuable resource for every firm is its workforce (Steen et al., 20019). This is because an organization's long-term viability and performance heavily depend on the knowledge, abilities, and proactive behaviors of its employees (Shrestha, 2013; 2016). Employees and the company need to work together for the goals of both to be met in the cutthroat business environment of today. The idea of "job involvement" describes how connected a person feels to their current position (Mathieu and Zajac, 1990). It describes the employee's level of involvement with the objectives, culture, and duties of a specific organization. People that are really involved in their jobs make their jobs an integral part of who they are as people. Additionally, those who are highly involved in their jobs devote the majority of their attention to it (Hackett et al., 2001).

High-involvement workers struggle to keep work and personal life apart because they care so much about what they do. Therefore, job involvement is crucial for both the employee and the business. It is a favorable state for people (Ahmadi, 2011). The conversations with managers also bring to light those workers who are very committed to their jobs and find it challenging to keep their personal lives and work separately. Long work hours can result in productive work that is both personally and professionally advantageous if they are put to fresh, innovative activities. To increase employee involvement in organizational tasks, modern Nepalese firms must concentrate on this component of employee behaviour (Shrestha, 2019).

In conclusion, the study's findings have shed a lot of light on how employees perceive their level of workplace involvement. The results of this study will aid in the formulation of strategies by managers and corporate organizations to enhance the management of human resource development. These tactics would aid in promoting positive employee behaviors, resulting in effectiveness and high productivity through the achievement of the employees' high work results. In order to help managers better understand how to improve job involvement, this study offers advice.

### **Implications**

This study suggests that more information should be known about how employees perceive their level of workplace involvement. Employees' attitudes and behaviors, which in turn affect their work performance and the success of the company, are influenced by how involved they feel in their jobs. As a result, job involvement research is crucial for Nepalese workplaces. Managers and scholars can both benefit from studies on job involvement. Future researchers may find academic interest in job involvement. Nepalese managers would be curious to discover the steps involved in building involvement among their staff members. They might also be curious to learn about some strategies for raising employee job involvement.

### **Future Research Agendas**

The following suggestions for future research have been made based on the study's findings:

- Due to the fact that this study is based on employees' perceptions of the banking and insurance sector, the results of this study hence might not apply to all business units. Therefore, future researchers should make

an effort to collect a larger sample in order to ascertain whether general conclusions hold true for a larger population sample size.

- It is also advised that future researchers look at how job involvement affects organizational outcomes including job satisfaction, intention to leave the company, absenteeism, engagement, employee motivation, and effectiveness, etc.
- Attempts to explore related variables in various groups, industries, cultures, or countries may be made in future studies.

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## **Impact of Relationship Marketing on Brand Loyalty with Reference to Nepalese Commercial Banks.**

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### **ABSTRACT**

In this study, the researcher makes the efforts to examine impact of relationship marketing strategies followed by Nepalese Commercial Banks make the customers brand loyal toward them. Primary data and secondary data are used for the study. After analyzing the data, Nabil bank ranked the 1st position. The most of the Chitwan customers are loyal towards the Nabil Banks due to good relation and trust of customers.

**Keywords:** Relationship Marketing, Brand Loyalty, Commercial Banks, Bank Strategy and Trust.

### **1.1. Introduction**

Relationship marketing is a philosophy of doing business, a strategic orientation that focuses on keeping and improving current customer rather than acquiring new customers. Relationship marketing has emerged from 1980s as a key concept in marketing literature due to realization of attracting a new customer may cost five times high than existing one. So; it has been widely adopted by the organizations in the contemporary marketing world.

Relationship marketing shifts attention from short-term transaction and immediate profits towards a process of creating customer value through building long term relationships with customers.

Relationship marketing's focus is not on immediate sales rather it is directed at building a large group of satisfied and loyal customers. Customer retention and winning back lost customers are the key strategy in relationship marketing. Relationship marketing uses sustained long-term efforts in delivering value to the customers and profit to the firm.

Relationship marketing has aim of building mutually satisfying long-term relation with key parties such as, customers, suppliers, distributors-in order to earn and retain business. In competitive market, it is not enough to build relationship only with customers; it is equally important to establish relationship with vendors, intermediaries and other influence groups. Relationship marketing is adopted by smart marketers who try to build up a long-term trusting win-win relationship with valued customers, distributors, dealers, suppliers and other stakeholders. This approach is directed at building strong economic, technical and social relationship with the parties concerned over a period of time. The objective of relationship marketing is to build a valuable company asset popularly known as marketing network. Today the real competition is not between companies rather it is between marketing network (Koirala K.D-2011).

### **1.2. Statement of problems.**

The main problem of this research is that whether relationship marketing makes consumer brand loyal towards Nepalese Commercial Bank or not. So, in this regards the researcher makes the efforts to examine impact of relationship marketing strategies followed by Nepalese commercial make the customers brand loyal toward them. So, following are the research questions.

- i) What is the impact of relationship marketing on brand loyalty?
- ii) What are strategies of relationship marketing to be followed by different Banks?
- iii) Which one strategies are most preferred for making brand loyal towards Nepalese commercial Banks?
- iv) What are the factors affecting brand loyalty?

### 1.3. Objectives

The main objective of this research is to analyze whether relationship marketing makes the customer brand loyal towards Nepalese commercial Banks or not. But specific objectives are as follows.

- i) To analyze the impact of relationship marketing on brand loyalty.
- ii) To evaluate strategies of relationship marketing in context of Nepalese commercial Banks.
- iii) To assess the most preferred strategies of relationship marketing in the context of Nepalese commercial Banks.
- iv) To explore the factors affecting brand loyalty towards the Nepalese commercial Banks.

### 1.4. Hypothesis

H0: There is association between relationship marketing and brand loyalty.

H1: There is no association between relationship marketing and brand loyalty.

H0: There is association between relationship marketing strategies and brand loyalty.

H1: There is no association between relationship marketing strategies and brand loyalty.

H0: There is association between most preferred relationship marketing strategies and brand loyalty.

H1: There is no association between most preferred relationship marketing strategies and brand loyalty.

H0: There is association between factors affecting brand loyalty and loyalty.

H1: There is no association between factors affecting brand loyalty and loyalty.

## 2. Literature review

### 2.1 Banking history in Nepal

The first commercial Bank in Nepal, Nepal Bank Ltd. was established in the year 1994 B.S. This is a major milestone in the history of Nepal as the country entered into official financial system. After the nineteen year of establishment of NBL, the Nepal Rastra Bank (NRB) was established in the year 2013 B.S.

Rastriya Banijya Bank and agriculture development ltd were established in the year 2022 and 2024 B.S. respectively. 47 years after the first privately owned commercial bank, Nabil Bank Ltd. was established in the year 2041 B.S. seven more commercial banks were added in a decade after 2041 B.S. only four commercial banks were established from the period of 2051 B.S. to 2063 B.S. Now, in Nepal there are 27 commercial Banks operating in case of Nepal Kumari Bank was the initiator of internet banking. It started its e-banking service in 2002. And soon was accompanied by Laxmi Bank with its mobile (SMS) banking in 2004. <http://www.sharesansar.com>

### 2.2 Market structure and performance of commercial banks in Nepal

Market structure of commercial banks in Nepal has monopolistic competitions. It is because, each Nepalese commercial bank markets same service product but charges different price for its service products. Among the private commercial banks NABIL Bank leads in as in Nepalese commercial banks industry, where government owned commercial Banks Rastriya Banijya Bank lead the market of banking sector. In Nepal there are 27 commercial banks including government, commercial banks till the 2021.

The history of modern banking practices in Nepal has started after the establishment of Nepal Bank Limited in 1937. Similarly, Nepalese financial system got the new dimension after the establishment of Nepal Rastra Bank as the central bank in the year 1956. With the limitation of financial sector liberalization process during 1980s many joint venture and local private banks entered into the market. Banking industry of Nepal has been characterized by strong competition with continual increase in the number of banks. After the entry of joint venture banks and then mushrooming of Nepalese private banks with the new definition of and approach to banking, the whole banking industry in general and the one-time monopolist government owned banks in particular are under the pressure to continue their competitive position (Thapa, 2010). As the apex body of financial institution, Nepal Rastra Bank (NRB) regulates the activities of financial institution; provide guidelines and suggestions to make

them more competitive and efficient. (Kunwar Krip -2018.)

### 2.3 Relationship marketing: Impact on Banks customer's satisfaction

Banks are considered as the key vehicle for the economic development of the country. They basically help the mobilization of unproductive capital to the productive area. They aim at providing banking facilities, in all parts of the countries has such rural and semi urban areas as well. The economic development of the country depends up on the succuss of its banking industry and success of the banks largely depends upon trust and satisfaction of its customers. The traditionally banking of India is only limited its transaction with depositing and lending activities. But the modern banking is a business which includes more activities than traditional banking. The major reforms is must is banking industry of India. Because target market of banking sector has become highly competitive, dynamic and fragmented. Hence, there is a need for a shift from transactional marketing strategy to relationship-based marketing strategy in all banks. Ajay Kelkar, co-founder and coo this company has come with the innovative suggestion to shift the marketing from power of brand to power of customers who contribute disproportionately to the company's profit. This strategies focuses on customer retention rather than new customer acquisition.

Over the last few years, the concept of relationship marketing is widely understood both academically and professionally. The goal of relationship marketing is to build strong relationship and to convert indifferent customers into loyal ones through commitment, trust, empathy, power, co-operation, financial bonds, social bonds, rapport etc. In today's business world implementation of relation marketing strategies is need of hour which creates mutual benefits to both the firm and the customers.

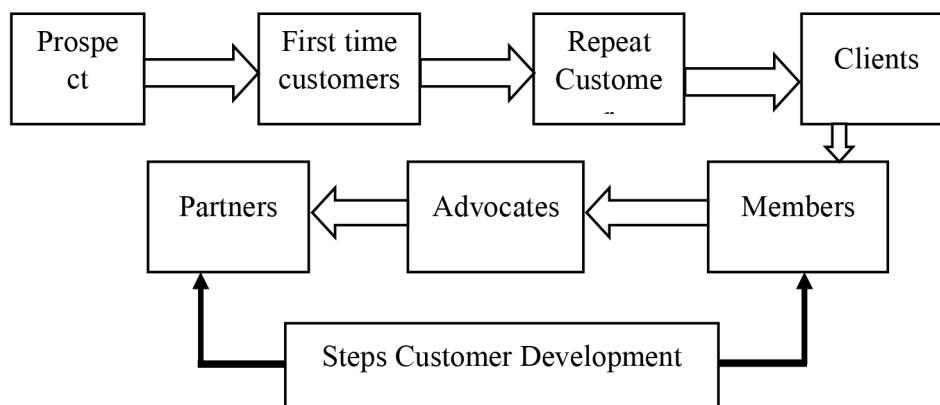
In this study concludes that relationship marketing dimension like quality service, tailored products, communication, trust, commitment, empathy, social bonding, financial bonding, co-operation and technology should be taken into serious consideration by banks to enhance the level of customer satisfaction in turn increases customer loyalty and retention rate. Consequently, both the parties get mutual benefits.

### 2.4 Concept of Relationship Marketing

Relationship marketing is building long term mutually satisfying relation with customers. It aims to gain and retain their long-term loyalty. The customer is regarded a partner in creating value. It focuses on knowing the customer and delivering high customer value and satisfaction. It is a method to retain customers by building one-to-one relationship. Relationship marketing is a long term partnership between marketer and customer. Both parties collaborate for identifying needs and developing and updating marketing mixes to satisfy needs. It creates customer loyalty to ensure that customers return time and time again. It converts customers into clients. Customer keep buying more and more. Customers are never forgotten. Agrawal Govind-2016 Pg. No. 398

### 2.5 Customer Development Process and Relationship Marketing

Relationship marketing involves customer development. The customer development process consists of the following stems.



**Prospects:** people who have interest in the product and ability to pay for it. They are likely to buy the product.

**First time customers:** prospects who buy a product for the first time. They can be defectors from other brands.

**Repeat Customers:** first time customers who repeatedly buy the product. They experience satisfaction with first time purchase.

**Clients:** repeat customers who are treated specially and knowledgeably by the organization. They are loyal and satisfied customers.

**Members:** clients who join membership program to take advantages of benefits.

**Advocates:** members who enthusiastically recommend the organization and its products to others.

**Partners:** advocates and the organization work together actively for mutual benefits for long term. Relationship develops into strategic partnership.

Relationship marketing aims to convert the prospect into partner. It is partnership marketing where organizations and customers work together to discover ways to build mutually satisfy relations. It implies common goals, mutual respect, ongoing trust, cooperation and long-term commitment.

Relationship marketing has been driven by technology especially the internet. Investment in time and money to build customer database is important for relationship marketing. It helps to be in touch with customers. Agrawal Govind-2016 Pg. No. 399.

## 2.6 Strategies for Relationship Marketing

The following strategies can be used for relationship marketing.

### 1) Quality Assurance

Markets promise and deliver high quality product at fair prices to customers. This promotes long term loyalty and relationships. Consistence and conformance to quality standard is ensured. Quality customer service is regarded as on obligation. Timeliness is ensured. Customers feel good.

### 2) Economic Benefits (Financial benefits)

Strong economic ties are built with customer to prevent competition. This can take in the form of:

#### i) Frequency Marketing programme:

Key customers who buy frequently are given attractive discount and rewards. Generally, 20% of customers account for 80% of the sales.

#### ii) Club membership:

Club membership is given to customers. Attractive discounts and other benefits are given to the members. Book club present an example.

#### iii) Gifts

Sending corporate memento, such as pen, clock, and calendar to customer as token of love.

### 3) Social Benefits

Organizations increase social bonds with customers by:

- i) Individualizing and personalizing customer relationship. They provide social recognition to the customer.
- ii) Organizing customer get together to meet and enjoy each other
- iii) Demonstrating care and concern; Emotional connections are established by sending newsletters, birth day and New Year card.

### 4) Technical Benefits

Organizations develop technical ties with their key customers. Such ties are mostly technology based. They help the customer to better manage their efforts they can be:

- i) Developing EDI (Electronic Data Interchange) capabilities to help customers manage orders, inventory, and shelves place etc.
- ii) Supplying computer linkages to customers, including software program.
- iii) Launching targeted customer loyalty programs for building customer relations to retain customer's long-term loyalty.
- iv) Pre-empting and preventing customer problems. Agrawal Govinda-2016 Pg. No.400-401

## **2.7 Relationship Marketing and Customer Loyalty**

(Hakins et. Al. 2001) listed five elements of relationship marketing; developing a core service or product around which to build a customer relationship; customizing the relationship to the individual customer, augmenting the core service or product with extra benefits, pricing in a manner to encourage loyalty and marketing to employees that they will perform for customers. The primary goal of relation marketing is to build and maintain a base of committed customers who are profitable for the organization. Relationship marketing recognizes that it is more profitable to retain and grow banking business with existing customers than to create new ones and main objective is to retain existing customer for building customer loyalty by bank it tries to improve customer satisfaction. As a result, it strengthen bonds of bank with customer through adding more value to the core product (The service product quality is improved, supporting services are include into offering and soon.

## **2.8 Relationship Marketing and Banking**

Today's world is one where customers have a lot of product vendors which makes for a very picky customer. This means that customers have an increasing rate of expectation and decreasing level of tolerance. Hence, banking industry traditionally offers product services that are simply commodities. Essentially there are little or no differentiation in products and services banks offer to their customers. However, there is keen competition among the Nepalese commercial banks so it is difficult for them to compete and Nepalese customers are picky or the choice of banks. So, large numbers of banks are going to be merged day by day to dominate in Nepalese commercial banks markets. In this conditions Nepalese commercial banks must embrace the customer relationship marketing strategy and to gain their trust and making them brand loyalty.

## **2.9 Research Gap**

However, research article does not spell out that how picky customers are made brand loyalty towards the Nepalese commercial banks. But this study makes efforts how to make the picky customers brand loyal towards Nepalese commercial banks through relationship marketing strategies.

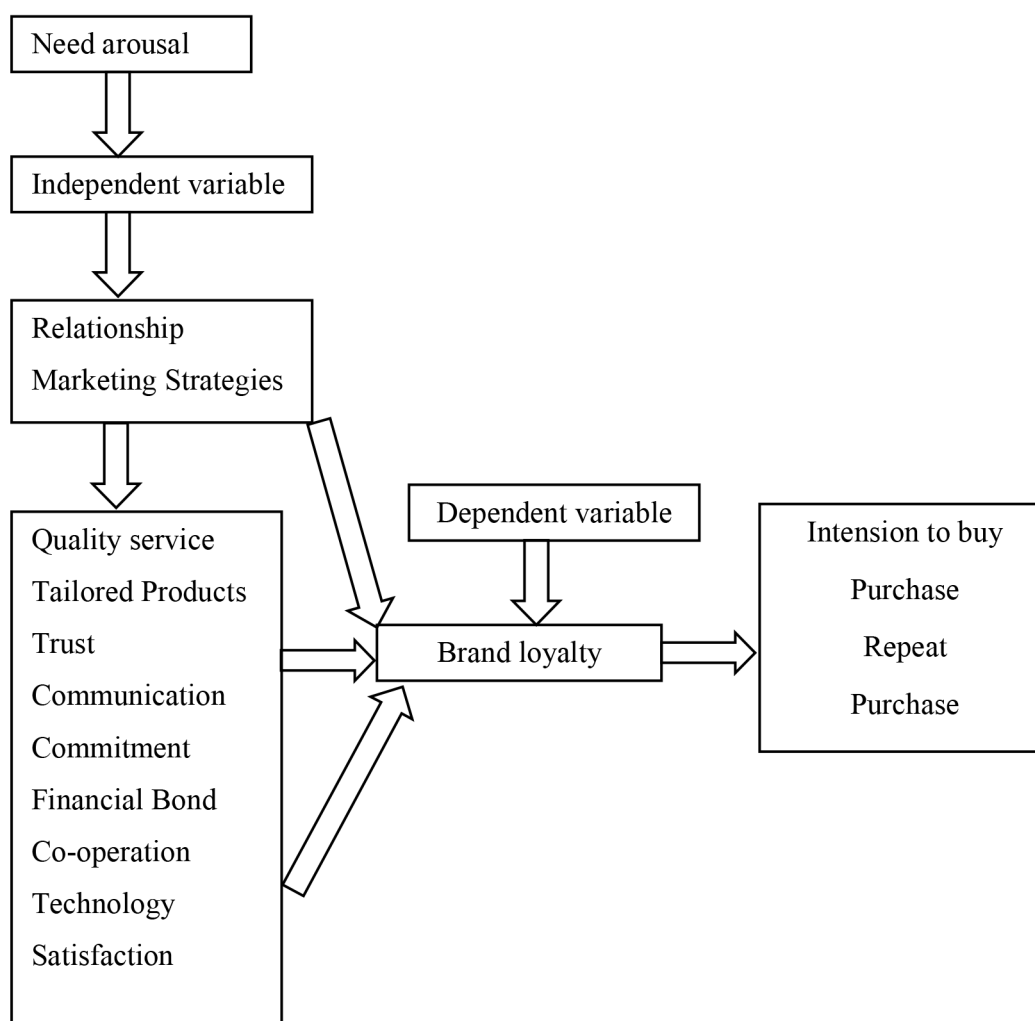
## **3. Research Methods:**

Both qualitative and quantitative research are used and survey research design is used as well. A self-administered questionnaires are used and some are used to examine the impact of relationship marketing for making brand loyal towards Nepalese commercial banks.

Sample size is 200 customers of different commercial banks in Chitwan and among them 102 customers are selected randomly because data are homogeneous in nature. It is noted that 105 questionnaires are distributed but 102 questionnaires are received having filled up. Primary and secondary data are used. The sources of data are primary and secondary. Primary data are collected from questionnaires and secondary data are collected from books, journals, article in google form.

Research design used in this study is both descriptive and quantitative. In this method percentage, pie chart, hypothesis, bar diagram are used for analysis of data through excel software program.

### Conceptual Framework



Sources: Chatterjee Doboshree, Kamesh AVS-2019

#### 4. Data Presentation and Analysis

Sample population is comprising of 102 students whose average age is found as 24. 97 where the age is found ranging from 20 years to 35 years. Out of 102 respondents 93 were being selected from master's degree, 6 were from Bachelor level whereas 3 had not mention their current educational status. Also 63 were students, 36 were engaged in private job and remaining 3 were working on government job.

Following is the table of bank on which respondents are transacting most in recent years.

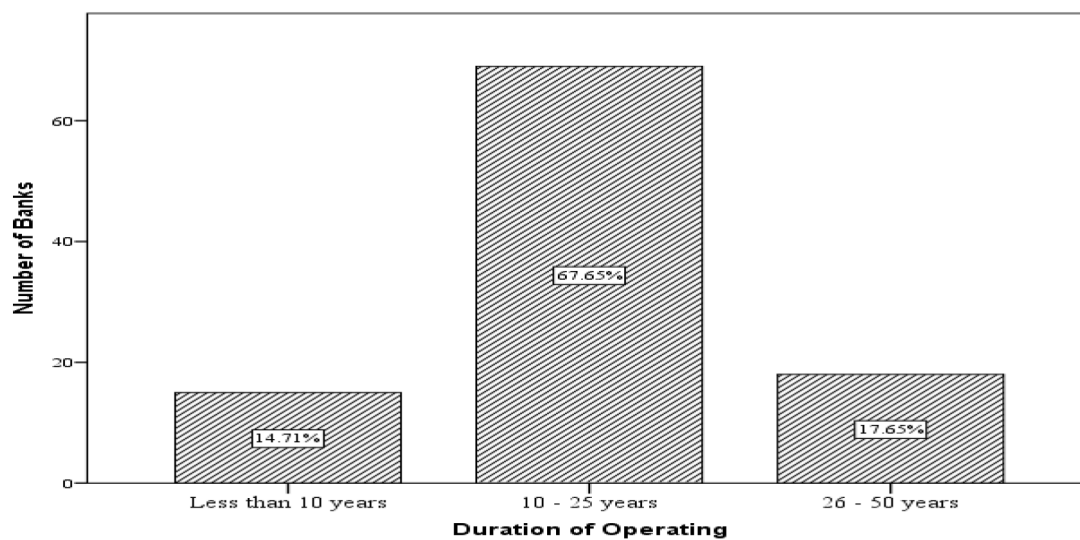
Banks	Frequency	Percent	Rank
Nabil	21	20.6	1
Global IME	18	17.6	2
Banijya	6	5.9	3
BOK	6	5.9	3
Citizen	6	5.9	3
Everest	6	5.9	3
NCC	6	5.9	3



Siddhartha	6	5.9	3
Sunrise	6	5.9	3
Agriculture	3	2.9	4
Investment	3	2.9	4
Mahalaxmi	3	2.9	4
Nepal Bank	3	2.9	4
NIC Asia	3	2.9	4
Prime	3	2.9	4
Sanima	3	2.9	4
Total	102	100	

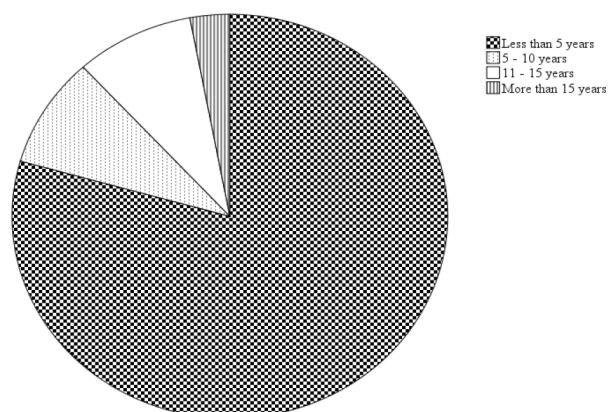
Above table shows that respondents are most loyal towards Nabil Banks, their preference for choosing bank is second for Gopal IME bank and other various banks are categorized in to ascending order.

### Ownership structure of Bank



Above shows the knowledge of respondents about the establishment of their currently most transacting bank. This figure shows that as per their knowledge most of the banks have been established in Chitwan by 10 to 20 years ago.

### Duration of transaction



Above figure shows the attachments of respondents with banks by years. Most of the respondents are transacting at their current bank by 15 years.

**Table indicating nature of transaction and loyalty status of customers**

Variable	Categories	Frequency	Percent
Types of Transaction	Deposit	96	94.1
	Loan	3	2.9
	Others	3	2.9
Frequency of Transaction	Regularly	60	58.8
	Occasionally	42	41.2
Loyalty status	Full loyal	75	73.5
	Divided Loyal	18	17.6
	No Loyal	9	8.8

Above table shows that 94.1% of customers take bank service for deposit purpose and 2.9% for loan purpose and 2.9% for other purpose. 59% of customers are transacting with banks regularly and 41% customer occasionally. 74% of customers are full loyal towards bank, 18% divided loyal and 9% no loyal

**Table showing relationship marketing strategies of Nepalese commercial banks**

Loyalty	frequency	percentage
Tailored product	48	14.2%
Trust	66	19.5%
Satisfaction	57	16.8%
Quality	57	16.8%
Fast Service	57	16.8%
Good Relation	54	15.9%

Above table indicates that 20% of customers are in favor of building trust of bank with the customer strategy of bank and 17% of customer are in favor of satisfaction, quality and fast service strategies respectively. And 16% of customers are in favor of good relation with bank and 14% are in favor of tailored product strategies.

**Table indicating most preferred banks' strategy of bank by customer**

loyalty	Number of Persons	Percent
Quality	54	12.8%
Price	54	12.8%
Helpful Employees	66	15.6%
Good Relation	72	17.0%
Fast Service	60	14.2%
Trust	54	12.8%
Satisfaction	63	14.9%

Above table shows that 17% of customers preferred towards good relation of bank with customer, 16% preferred



towards helpful employees, 15% of customer preferred satisfaction, 14% of customer preferred fast service and 13% of customer preferred quality, price, trust of customer with bank respectively.

**Table showing factors affecting brand loyalty**

<b>Factors affecting loyalty</b>	<b>Number of Persons</b>	<b>percentage</b>
Quality Service having cheap price	60	19.0%
Good relation with the bank	63	20.0%
Trust with the bank	66	21.0%
providing you satisfaction	72	22.9%
All of above	54	17.1%

Above table clarifies that 23% of customer viewed that providing satisfaction by banks to customer is main factor of making them brand loyal towards bank. And 21% of customer trust of customer with bank, 20% of customer good relation of customer with bank and 19% of customer viewed, that banks' quality of service having cheap price are factors of making them brand loyal towards banks.

## **5. Major findings**

- i) 1<sup>st</sup> rank commercial bank is Nabil bank and 2<sup>nd</sup> rank commercial bank is Global bank.
- ii) most of the commercial banks were established in Chitwan 10 to 20 years ago.
- iii) 94% of customers take the banking service for deposit purpose and 59% of customer transact with bank regular and 74% of customers are full loyal towards Nabil bank and Global bank IME respectively.
- iv) 20% of customer are in favor of building trust with bank strategy.
- v) most of customers i.e. 17% of customer preferred towards good relation of bank with customers strategy.
- vi) most of the customers i.e. 23% of customer viewed that providing satisfaction to customer by bank is main factor making them brand loyal.

## **6. Conclusions**

Actually, relationship marketing has a great impact on brand loyalty towards commercial banks in Chitwan. So due to the good customer relation and trust of customer towards Nabil bank and Global IME Chitwan customer are full loyal towards these banks.

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## Determination of Phenolic and Flavonoid Content, Antioxidant and $\alpha$ -Amylase Inhibitory Activity of Leaf and Flower Extracts of *Clerodendrum infortunatum* and *Hibiscus rosa sinensis* Growing in Bara Nepal

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### ABSTRACT

In the human body, oxidative stress imposed due to the increase in the concentration of free radicals such as reactive oxygen species (ROS) contributes to the initiation and progression of different diseases. The synthetic antioxidants have low efficacy with side effects, for that plant-derived natural antioxidant can prevent oxidative stress by reducing the risk of having these diseases. In the present study, the methanolic extracts of two traditionally used medicinal plants (leaf and flower) have tested for their antioxidant capacity,  $\alpha$ -amylase enzyme inhibitory activity and determination of total phenolic and flavonoid content in the plant extracts. The antioxidant activity was evaluated by a 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging assay. The highest DPPH radical scavenging was shown by *Clerodendrum infortunatum* ( $IC_{50} = 71.95 \pm 0.51 \mu\text{g/mL}$ ) whereas leaf and flower of *Hibiscus rosa sinensis* showed moderate antioxidant activity ( $IC_{50} = 98.74 \pm 1.91$  and  $117.23 \pm 7.72 \mu\text{g/mL}$ ) respectively. Among the tested plant extracts, the highest amount of total phenolic and flavonoid content was found in the methanolic extract of *C. infortunatum* with TPC of  $87.07 \pm 9.22 \text{ mg GAE/g}$  and TFC  $34.40 \pm 2.00 \text{ mg QE/g}$ . The antidiabetic activity of plant extracts was evaluated by the  $\alpha$ -amylase enzyme inhibition assay. The leaf extract of *C. infortunatum* showed moderate  $\alpha$ -amylase inhibition activity ( $IC_{50} = 118 \pm 4.80 \mu\text{g/mL}$ ) whereas the standard acarbose has ( $IC_{50} = 12.96 \pm 0.22 \mu\text{g/mL}$ ).

**Keywords:** Oxidative stress, antioxidant, *Hibiscus rosa sinensis*, *Clerodendrum infortunatum*, phenols, flavonoids

### Introduction

Varieties of free radicals are generated in the human body due to exposure to different environmental conditions. The reactive oxygen species such as hydroxyl ion, hydrogen peroxide, superoxide, singlet oxygen species and so on are normally generated in the cells during metabolism. These reactive oxygen species may cause severe oxidative damage to proteins, lipids, enzymes and DNA with subsequent tissue injury. The antioxidant compounds play a significant role to scavenge the reactive free radicals by the termination of chain reaction (Saeed et al. 2012).

The free radicals generated in our body may cause several diseases such as cancer, neurodegeneration and inflammation. The natural antioxidant found in plants as secondary metabolites (phenolics, flavonoids, tannins and proanthocyanidins) may protect against several diseases (Gulcin, 2012). In this way, medicinal plants could be good sources of such antioxidant compounds that can also be used as food preservatives (Peschel et al. 2006).

It has been reported that most medicinal plants which are rich sources of phenolic and flavonoid compounds are also potent antioxidants and  $\alpha$ -amylase enzyme inhibition (Shoib et al. 2015). Phenolic and flavonoid compounds are widespread in medicinal plants where they act as free radical scavengers and  $\alpha$ -amylase enzyme inhibitors (Shoib et al. 2015). Free radicals are generated in the cells of the human body known to be involved in many acute and chronic disorders such as diabetes, ageing, immunosuppression and neurodegeneration (Harman, 1998). The use of antioxidants contributes to the protection from diseases and reduces morbidity and mortality from degenerative disorders (Gulcin, 2012).

Alpha-amylase is a prominent enzyme found in the pancreatic juice and saliva which breaks down the large insoluble starch molecules into absorbable molecules. On the other hand, mammalian  $\alpha$ -glucosidase in the mucosal brush border of the small intestine catalyzes the end step of digestion of starch and disaccharides that are abundant in the human diet. Inhibitors of  $\alpha$ -amylase and  $\alpha$ -glucosidase delay the breaking down of carbohydrates in the small intestine and diminish the postprandial blood glucose excursion (Kazeem et al. 2013). An efficient means of lowering the levels of postprandial hyperglycemia has been offered by  $\alpha$ -amylase and  $\alpha$ -glucosidase

inhibitors. Several inhibitors of  $\alpha$ -glucosidase have been isolated from medicinal plants to serve as an alternative drug with increased potency and lesser adverse effects than existing synthetic drugs (Poovitha and Parani, 2016).

The plant *Hibiscus rosa sinensis* is a perennial shrub have been used as an ethnomedicine for the treatment of various diseases such as hypertension, wound healing, skin diseases, hair diseases, diabetes mellitus and cancer. The plant is reported as a good source of secondary metabolites such as polysaccharides, anthocyanins, flavonoids, polyphenols, pectin and organic acids (Dahia and Kaur, 2009). The plant *Clerodendrum infortunatum* Linn. is commonly known as bhat or hilly glory bower. It is reported that the plant is one of the most well-known natural health remedies in traditional practices and Siddha medicine (Rajurkar, 2010). Fresh leaves of the plants have been used for the treatment of diarrhoea, liver disorder and headache (Duke, 2010). The leaf and root of the plant have been reported to be used as antidandruff, antipyretics, ascaricide, antidiabetic, antimalarial, and skin diseases (Duke, 2010).

Although these two medicinal plants are widely used in traditional medicine, few studies have been conducted on the biological activities of the plants. The phenolic and flavonoid compounds are widespread in the plants where they act as an antioxidant and  $\alpha$ -amylase inhibition activity. The main objective of this research was to analyze the phytochemicals present in plant extracts, determine the total phenolic and flavonoid content, evaluate the antioxidant activity and  $\alpha$ -amylase inhibition activity of leaf and flower extracts of *Clerodendrum infortunatum* Linn. and *Hibiscus rosa sinensis* growing in Bara district of Nepal.



*Clerodendrum infortunatum* Linn



*Hibiscus rosasinensis*

**Figure 1: Photographs of plant sample used in the study.**

## **2. Materials and Methods**

### **2.1 Equipment**

The major equipment used in this research were a grinding mill, pipettes, micropipettes, weighing balance (Metler Toledo, ME 204), hot air oven (Yamato Scientific DF412), and rotatory evaporator (Buchi R200), water bath (Buchi R200), spectrophotometer. 96-micro-plate reader (Epoch2, BioTek, Instruments, Inc., USA)

### **2.2 Chemicals**

Most of the chemicals used in this research were of analytical grade and purchased from Sigma-Aldrich, New Delhi, India. Some important Chemicals and reagents used in this study were methanol, acetone, hexane, dimethyl sulphoxide (DMSO), Folin-Ciocalteu's phenol reagent (FCR), gallic acid, quercetin, ascorbic acid, 1,1-diphenyl-2-picrylhydrazyl (DPPH),  $\text{NaNO}_2$ ,  $\text{AlCl}_3$ , and  $\text{NaOH}$  were of Sigma Aldrich. The reagents used during phytochemical analysis were prepared by using solvents of analytical grade and double-distilled water. The working solution of  $\alpha$ -amylase and acarbose (Sigma Aldrich) in desired concentrations was prepared by successive dilutions of the corresponding stock solutions throughout the experiment.

### 2.3 Plant materials and preparation of extracts

The leaves and flowers of *C. infortunatum* Linn. and *H. rosa sinensis* were collected in Bara district of Nepal. The plants were identified at the Central Department of Botany, Tribhuvan University. The leaves and flowers were dried in shade at room temperature, then chopped and ground to a fine powder in a mechanical grinder. The dried leaves and flower powder (100 g) were dipped in 80% methanol (300 mL) for 72 h with frequent shaking. The mixture was decanted and filtered. The filtrates were concentrated by a rotatory evaporator. The extracts were dried and stored at 4 °C in storage vials for experimental uses.

### 2.4 Total phenolic content

The total phenolic content of the extracts was determined by the Folin-Ciocalteu phenol method (Ainsworthi, 2007). Briefly, different concentrations of 10, 20, 30, 40, 50, 60, 70, and 80 µg/mL gallic acid solution as standard were loaded on 96 well plate reader in triplicate by diluting stock solution with distilled water. Then 20 µL of plant sample (500 µg/mL) was loaded on 96 well plates in triplicates. Then to each well 100 µL, Folin-Ciocalteu phenol was separately added followed by 80 µL Na<sub>2</sub>CO<sub>3</sub>. The mixture was kept in dark for 15 minutes and the absorbance was measured at 765 nm. The phenolic content was calculated from the calibration curve, and the results were expressed as mg of gallic acid equivalent per g dry weight (mg GAE/g) (Lu et al. 2011).

The total phenolic content in all the samples was calculated by using the formula:

$$C = \frac{cV}{m} \dots\dots\dots (1)$$

Where, C = total phenolic content mg GAE/g dry extract, c = concentration pf gallic acid obtained from calibration curve in mg/mL, V= volume of the extract in mL and m = mass of extract in gram.

### 2.5 Total flavonoid content

The total flavonoid content of the crude extract was determined by the aluminium chloride colorimetric method (Chang et al. 2002). In brief, the solution of different concentrations of quercetin was prepared and loaded in a 96-well plate reader (n=3). Then the 20 µL of plant extract (500 µg/mL) was loaded into each well of the 96-well plate reader maintaining the final volume of 130 µL. To each well 60 µL ethanol, 5 µL AlCl<sub>3</sub> and 5 µL potassium acetate were added separately. The mixture was kept in dark for 30 minutes and the absorbance was measured at 415 nm. The total flavonoid content was calculated from a calibration curve, and the result was expressed as mg quercetin equivalent per g dry weight (mg QE/g).

### 2.6 Antioxidant properties

The antioxidant activity of the plant extracts was evaluated by the 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay as described earlier with a slight modification (Villano et al. 2007). In brief, the solution of plant extract and control (ascorbic acid) were mixed with DPPH solution and incubated in dark at room temperature for 1 h. The absorbance of the mixture was measured at 517 nm. The capacity of the plant extract to scavenge DPPH radical was determined from:

$$\text{DPPH scavenging effect (\% inhibition)} = \left( \frac{A_{\text{Control}} - A_{\text{Sample}}}{A_{\text{Control}}} \right) \times 100 \dots\dots\dots (2)$$

Where A<sub>control</sub> = absorbance of control, A<sub>sample</sub> = absorbance of sample.

### 2.7 Alpha amylase inhibition

The α-amylase inhibition was performed at 37 °C in which 2-chloro-4-nitrophenyl α-D-maltotriose (CNP3) was used as the substrate (Khadyat et al. 2020). In brief, 50 units of α-amylase was diluted to 3.75 unit by dissolving in 20 mM phosphate buffer (pH 6.95, containing 6.7 mM NaCl). The plant extracts dissolved in 50% DMSO and the solutions were prepared by serial dilution in 50% DMSO where acarbose was used as a positive control. In the 96 well plate reader, to the 80 µL of α-amylase 20 µL of plant extracts was added with a positive and negative control in triplicates (n = 3). The mixture was incubated at 37 °C for 15 minutes followed by the addition of 100

μL substrate. The progress of the reaction was measured at 405 nm.

$$\% \text{ Inhibition} = \frac{A_{\text{Control}} - A_{\text{Sample}}}{A_{\text{Control}}} \times 100 \dots\dots\dots (3).$$

The IC<sub>50</sub> was calculated by using Graph Pad Prism, a computer software.

### 3. Results and Discussion

#### 3.1 Phytochemical analysis

The results of the preliminary phytochemical analysis are shown in Table 1.

**Table 1: Phytochemical analysis of plant extracts.**

S.N.	Group of compounds	J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>
1.	Alkaloids	-	+	+
2.	Flavonoids	+	+	+
4.	Coumarins	+	-	-
5.	Glycosides	+	+	+
6.	Polyphenol	+	+	+
7.	Saponin	+	+	+
8.	Tannins	-	+	-
9.	Terpenes	+	+	+
10.	Quinones	+	+	+

+ = presence and - = absence

J<sub>1</sub> = *Clerodendrum infortunatum* leaf, J<sub>2</sub> = *Hibiscus rosa sinensis* leaf and J<sub>3</sub> = *Hibiscus rosa sinensis* flower.

The results showed that plant extracts are rich sources of plant secondary metabolites such as alkaloids, flavonoids, coumarins, glycosides, polyphenols, saponins, tannins, terpenes and quinones and the results seem to be more similar to the previously reported results (Hazarika and Saha, 2017, Tiwari et al. 2015). The few variations in the results may due to the different environmental conditions, methods and seasons of sample collection, and extraction procedures and also due to lab setup and chemical grades.

#### 3.2. Phenolic and flavonoid content

The total phenolic content of the methanolic leaf and flower extracts, calculated from the calibration curve ( $R^2 = 0.9746$ ) was  $87.07 \pm 9.22$  to  $54.75 \pm 1.93$  mg GAE/g and the total flavonoid content ( $R^2 = 0.9853$ ) was  $34.40 \pm 2.00$  to  $14.11 \pm 2.08$  mg QE/g (Table 2). The phenolic compounds present in the plant extracts have redox properties, which allow them to act as antioxidants (Soobrattee et al. 2005). Flavonoids including flavones, flavonols, and condensed tannins, are plant secondary metabolites and their antioxidant activity depends upon the presence of free OH groups. Flavonoids have antioxidant activity both *in vitro* and *in vivo* experiments (Geetha et al. 2003, Shimoi et al. 1996).

**Table 2: Total phenolic and flavonoid content of the plant extracts.**

Plant extracts	Total phenolic content (mg GAE/g)	Total flavonoid content (mg QE/g)
<i>Clerodendrum infortunatum</i> leaf	$87.076 \pm 9.229$	$34.40 \pm 2.00$
<i>Hibiscus rosa sinensis</i> leaf	$68.034 \pm 2.406$	$24.98 \pm 1.69$
<i>Hibiscus rosa sinensis</i> flower	$54.752 \pm 1.938$	$14.11 \pm 2.08$

Phenolic compounds have been known to possess high antioxidant properties due to their free radical scavenging properties. It has been reported that extract containing a large amount of polyphenol content possesses a greater antioxidant activity. The total flavonoid content in *Clerodendrum infortunatum* leaf was found lower than that of the previously reported value ( $64.56$  mg QE/g) (Ghosh et al. 2014).



### 3.3 Antioxidant activity

The results of DPPH radical scavenging against the different concentrations of plant extracts are shown in Figure 2. The antioxidant potential of plant extracts is expressed in  $IC_{50}$  and the plant extracts having lower  $IC_{50}$  show the greater antioxidant potential. The results of antioxidant activity in  $IC_{50}$  are shown in Table 4. The plant extract of *Clerodendrum infortunatum* showed moderate antioxidant activity ( $IC_{50} = 71.95 \pm 0.65 \mu\text{g/mL}$ ) whereas the plant extracts of *Hibiscus rosa sinensis* leaf and *Hibiscus rosa sinensis* flower showed poor antioxidant activity. The moderate antioxidant activity of *Clerodendrum infortunatum* is due to the high content of total phenolics and flavonoids.

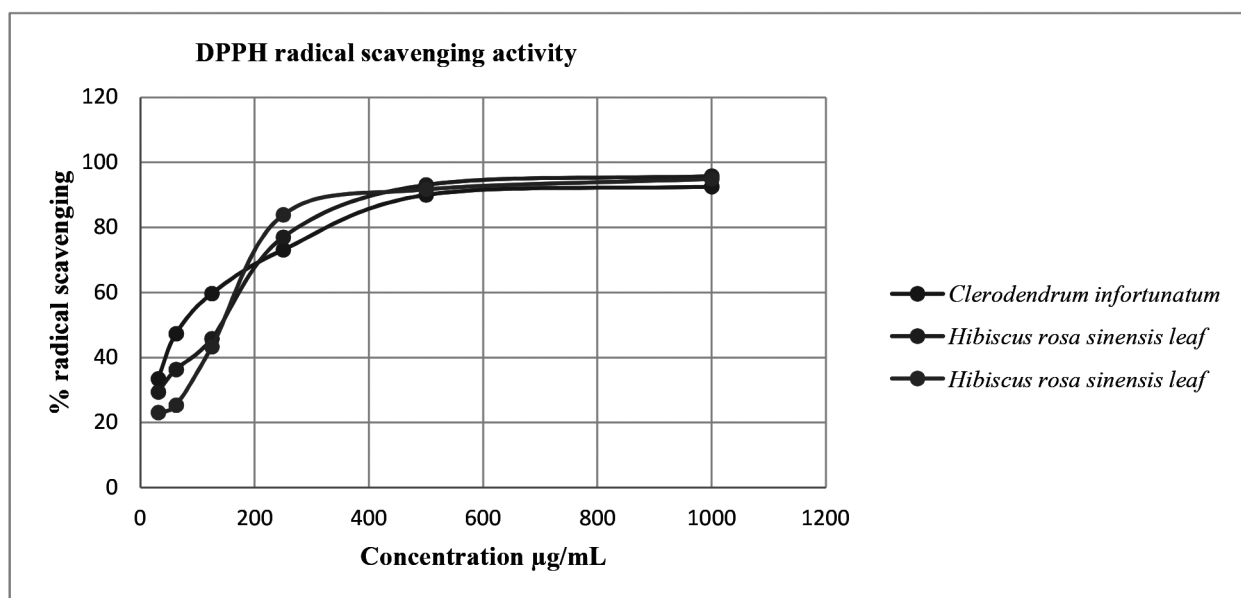


Figure 2: DPPH radical scavenging against the different concentration of plant extracts.

The antioxidant potential of plant extracts expressed in  $IC_{50}$  is shown in Table 3.

Table 3: DPPH radical scavenging activity ( $IC_{50}$ ) of plant extracts.

Plant extracts	$IC_{50}$ ( $\mu\text{g/mL}$ )
Quercetin	$3.49 \pm 0.15$
<i>Clerodendrum infortunatum</i>	$71.95 \pm 0.65$
<i>Hibiscus rosa sinensis</i> leaf	$98.74 \pm 1.91$
<i>Hibiscus rosa sinensis</i> flower	$117.23 \pm 7.72$

The leaf extract of *Clerodendrum infortunatum* behaves as moderate free radicals that may include therapeutic use against oxidative stress.

### 3.4 $\alpha$ -Amylase inhibitory activity

The plant extracts reduce postprandial hyperglycemia by suppressing the hydrolysis of polysaccharides and are found useful to control diabetes mellitus (Layer et al. 1986, Tundis et al. 2010). Many herbal extracts have been reported for antidiabetic activities and are used in Ayurveda for the control of diabetes. Due to the lack of sustained scientific evidence, these medicinal plants are not gaining much importance.

**Table 4:  $\alpha$ -amylase enzyme inhibitory activity ( $IC_{50}$ ) of plant extract and standard acarbose**

Plant extract	$IC_{50}$ ( $\mu\text{g/mL}$ )
<i>Clerodendrum infortunatum</i>	118.2 $\pm$ 4.80
Acarbose	12.96 $\pm$ 0.22

In this present study, three medicinal plant samples growing in Bara district of Nepal were analyzed for their  $\alpha$ -amylase enzyme inhibitory properties and the results ( $IC_{50}$ ) are shown in Table 4. The extract of *Clerodendrum infortunatum* showed moderate  $\alpha$ -amylase inhibition activity of  $IC_{50} = 118.2 \pm 4.80 \mu\text{g/mL}$  as compared to that of the standard acarbose  $IC_{50} = 12.96 \pm 0.22 \mu\text{g/mL}$ .

#### 4. Conclusions

In this study, three medicinal plant extracts revealed their phytochemical analysis, determination of total phenolic and flavonoid content, and antioxidant and  $\alpha$ -amylase inhibitory activity. Among the studied plant extracts, the leaf extract of *Clerodendrum infortunatum* was found rich in secondary metabolites. The plant extract of *Clerodendrum infortunatum* has the best antioxidant activity that plays a significant role to reduce the oxidative stress in the cells. The same plant extract showed high phenolic and flavonoid content. The plant extract of *Clerodendrum infortunatum* displayed moderate  $\alpha$ -amylase enzyme inhibition activity and could be used as the source to isolate the active compounds as the drug candidate in the future drug discovery process. So these plant parts could be the greater significance in preventing several harmful human diseases especially to manage oxidative stress and diabetes. Further studies should be directed towards the isolation and characterizations of natural compounds from these plant extracts and to perform *in vivo* and *in vitro* biological activities with their mechanism of action for validation of traditional uses of these plants in several medicinal practices.

#### Data availability

All data generated of analyzed during this study are included in this manuscript.

#### Conflicts of interest

All the authors declare that they have no conflicts of interest.

#### Acknowledgements

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## **Adoption of Social Media in Investment Decision At Stock Market: A Qualitative Analysis Among Nepali Investors**

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### **ABSTRACT**

The importance of social media has increased among investors due to the instant availability of information on a real-time basis. The adoption of social media even increased heavily during the COVID-19 pandemic. The reliability of the posts related to the stock market is the concern; nevertheless, follow them to track the stock market trend. The Nepalese stock market investors found to follow the posts, opinions, and views on social media but are reluctant to follow blindly. Similarly, the Nepalese investors have partial faith in the specialized group formed on social media, and found to be attached to the group to get information. But the investors filter the information as per their knowledge and necessity.

**Keywords:** Social media, stock market, investors, opinion, Nepal.

### **I. Background**

Social media cannot be understood without first defining Web 2.0: a term that describes a new way in which end users use the World Wide Web, a place where content is continuously altered by all operators in a sharing and collaborative way (Kaplan & Haenlein 2010). It is much more to do with what people are doing with the technology than the technology itself, for rather than merely retrieving information, users are now creating and consuming it, and hence adding value to the websites that permit them to do so. Web 2.0 has evolved from simple information retrieval to interactivity, interoperability, and collaboration (Campbell et al. 2011). Kaplan and Haenlein (2010) define social media as a group of Internet based applications that build on the ideological and technological foundations of Web 2.0, and allow the creation and exchange of user generated content.

Social Media has become a part of the life in the modern world. Hence, investors are also relying in information available at the various types of social media. In context to the feeds tweeted at Twitter, Bollen et al. (2011) studied whether the Twitter feeds influence in investors' behavior and mood in an investment decision process, where the paper concluded that the accuracy of DJIA predictions can be significantly improved by the inclusion of specific public mood dimensions but not others. The paper also found high level accuracy in predicting the daily up and down changes in the closing values of the DJIA and a reduction of the Mean Average Percentage Error (MAPE).

Hazari and Richards (2011) followed a qualitative inductive approach to get an insight on adoption of social media in personal investing, where the researchers found demographics, geographical location, and socio economic background, as well as multiple sources of data available at social media directly or indirectly influence in investment decision making process.

Devi and Bhaskaran (2015) found that the posted sentiments on social media sentiments had casual relationship with the investment decision of Indian investors. The paper concluded that sentiment analysis along with wisdom of crowds can automatically compute the collective intelligence of future performance in the stock market.

Ismail et al. (2018) studied impacts of social media on investment decision among the Malaysian investors,

where they found that the firm's image and quality of information uploaded in social media have a significant impact while the buying behavior or investor's investment behavior had no significant impact in an investment decision process.

Mistri and Japee (2020) found that investors from Gujarat, India whose age group is between 41 to 50 years having maximum experience i.e. around 15 years experience while respondents whose age is 60 or above are not having much experience about investment through social media platforms. The study also found that the respondents whose age between 41 to 50 year using social media apps frequently while respondents whose age is 60 or 64 above are using social media apps occasionally.

Tandon and Jain (2021) analyzed an impact of social media on investment decision among the young adults, where they found that the respondents agreed that they use social media to enhance new skills to handle personal investment portfolio. In case of Amman Financial Market, Atoom et al. (2021) found that the most of the investors relied on opinions, comments, and advice posted on Face book regarding investment decision-making.

Guan et al. (2022) found that market sentiments towards the pandemic have significantly impacted the price differences. More interestingly, the stock performance across sectors is characterized by the level of digital intensity, with the most digitally advanced sectors demonstrating resilience against negative market sentiments on the pandemic.

In context to Nepal also, Nepalese investors have become toxic towards the posts of social media regarding the stock market. The investors have developed a group to interact with each other and share information related to the stock market. Nevertheless, the number of social groups and their followers has increase; there has been an issue of credibility of the information. In this context, the paper tries to build generalized opinions of Nepalese investors on the adoption of social media in investment decision at stock market.

## **II. Methodology**

The paper has followed a concept of grounded theory where a researcher derives a general, abstract theory of a process, action, or interaction grounded in the view of participants. The multistage of data collection and interrelationship of categories of information involves in the research process.

The paper has been done in a friendly interaction setting of group of two to three investors at a time with the researchers. The informants or interviewees for the paper are the Nepalese investors who are also active in the social media. The interactions with interviewees took place at two main cities of Nepal, namely; Kathmandu and Chitwan.

The theoretical saturation sampling technique (Strauss & Corbin, 1998) has been followed to ensure the interviewees who had participated for the paper had adequate experience on the subject matter.

The steps of coding text, memoing and theorizing has been followed to integrate, refine and write-up the theories as defined by Glaser and Strauss (1967). Similarly, the paper transcript checking and member checking were conducted to maintain reliability and validity of the results.

## **III. Result And Discussion**

The section is divided into two sections, namely; the first covers the interviewee's profile and the second covers the theme-based analysis.

**Table 1: Interviewees' Profile**

Interviewee	Sex	Age	Investment Experience	Frequency of Using Social Media
PB-1	M	Below 25 years	2 years	High
OK-2	M	25-35	3 years	Frequently
NB-3	M	25-35	5 years	High
RA-4	M	Below 25 years	3 years	Daily
RC-5	M	45-55	5 years	Sometimes
BS-6	M	45-55	4 years	High
SP-7	M	25-35	4 years	Moderate
SB-8	M	25-35	1 year	Frequently
GB-9	F	25-35	1 year	Frequently
BS-10	M	Below 25 years	2 years	Frequently
IS-11	M	35-45	10 years	Frequently
SP-12	M	35-45	8 years	Frequently
VK-13	M	25-35	1 years	Quiet Often
NC-14	M	25-35	2 years	Quiet Often
TM-15	F	25-35	7 years	Quiet Often

*Source: Interview*

Table 1 elaborates the profile of 15 interviewees who participate in the interview. Of the fifteen (15) interviewees, only two (2) are female investors, and remaining are male investors. Most of the interviewees stated that the frequency of visiting social media is frequent having an investment experience from one year to a decade of experience.

#### **Theme I: Trust on Post related to Stock Market on Social Media**

Tham (2018) summarized that there is a correlation between stock market participation rate and this trust is not 'blind', but households still make decisions to invest according to prevailing news headlines available on social-media platforms. Doğan et al. (2020) found that without noise reduction, it was not possible to establish a correlation on individual tweets and their effects on the stock market and it was not possible to establish a correlation between the number of tweets and the volume of companies. The paper found that only the speculators and influencers were seen making profit by manipulating information through social media. In context to Nepalese investors, it was found that most of them do not believe or have trust on the post made at the social media related to stock market. They just take it as information but did not completely rely on the investment decision making process. The opinions forwarded below by interviewees also validate that the post on the social media regarding the stock market are not so reliable.

*Can't be trust on social media posts. [Interviewee NB-3]*

*I take it as knowledge enhancements only. [Interviewee SP-12]*

*I do have some issues on post related to stock market, especially from unauthorized news portal sites. [Interviewee VK-13]*

*Frankly speaking I completely ignore and have zero percent trust. [Interviewee TM-15]*

#### **Theme II: Helps to Understand the Trend of the Stock Market**

Rahman and Debrecency (2010) had assessed the impact of frequency of online material information on online social media on stock market prices. The paper found that the frequency of the posts related to accounting information of the listed companies had helped to enhance an efficiency of the stock market and also benefited to the investors. Similarly, Li et al. (2019) studied the social media users' moods and social influence among stock

market investors using Tencent Moods-based Stock Trend Analysis and social influence (SI) to model behavior diffusion in the stock market, where it was found that users who use financial terms to express their moods are likely to be real investors. A short and straight forward opinion were forwarded by most of the interviewees, i.e. 'Yes'. But three of interviewees stated they go through the posts not to understand the trend but see the investors' sentiments and see some technical aspects of market.

*I go for technical analysis and bonus history. [Interviewee NB-3]*

*Not trend but we can analyze the psychology of the investors. [Interviewee GB-9]*

*It helps to understand the trend to some extent but totally depending on it would be suicidal. [Interviewee TM-15]*

### **Theme III: Opinions, Comments and Advice at Social Media influence in an Investment Decision**

Devi and Bhaskaran (2015) found that the sentiment in Twitter, happy and calm by the online community had a high correlation with the stock market prediction. The online social media conversation caused investor's behavior biased in making investment decision especially during the periods of high volatility in stock market. Atoom et al. (2021) found that most of the investors of in Amman Financial Market used the social media sites to obtain opinions and comments about the confidence of investors in a particular institution in order to help them make their investment decision. All most all of the interviewees stated that they are not being influenced by the opinions, comments, and advice forwarded or posted on social media. The interviewees stated that they go through the posts, comments, and opinions which could not be ignored, but ultimately the final decision should be as on an individual's skills and efforts.

*Don't rely too much on social media. [Interviewee PB-1]*

*Listen to everyone, decide yourself. [Interviewee OA-2]*

*We shouldn't follow social media for quality investment. Investment decisions are to be taken based on several studies of company's financial information and quality analysis. [Interviewee SB-8]*

*Investment decisions depend upon my study and some trusted friends not the social media posts. [Interviewee SP-12]*

*I do not believe that these should influence in an investment decision, rather one should use their own understanding and conscience when it comes to investment. [Interviewee VK-13]*

*It's a matter to research. [Interviewee NB-3]*

*They should technical defend the opinion. [Interviewee GB-9]*

*The posts, comments and opinions are not seen effective but could not be ignored also. [Interviewee TM-15]*

### **Theme IV: Information provided at a Specialized Group (Community) related to Stock Market are valuable**

Ridings and Gefen (2006) found that the friendship and social support among the social media community have enhanced in the betterment of the virtual community. Kadous et al. (2019) identified how investors in securities respond to the advice provided through social media, and also to identify the impact of information provided by social media on the upward or downward situations of shares traded in the financial market on investment decision, in addition to identifying the source's credibility information in social media and to the degree of investor confidence in this information. Hence, the paper found that the social media platforms are of great importance in the process of influencing the investment decision of investors. In context to Nepal also, some of the investors have formed a specialized groups, where the group administrator manage the posts and few members post in the groups. Most of the interviewees gave a brief comment stating, 'Yes' and as stated below few partially believed on the posts made at the specialized groups.

*Yes, partially, but most of them are biased. [Interviewee OA-2]*

*Sometimes, they are quite valuable. [Interviewee SB-8]*

*Sometimes they are valuable. It depends upon the reputation of information provider. [Interviewee GB-9]*

*I consider it to be valuable for the amount of expertise the group holds in the stock market. [Interviewee VK-13]*

*I think the posts on these so called groups want to divert the market trend as per their own expectation and benefits only. They are not thinking for the generalize benefit while making a post. [Interviewee TM-15]*

#### **Iv. Conclusion And Implications**

Social media has been a part of life in the modern techno-based era. Information has become a lifeline. Westerman et al. (2014) stated that the gatekeeping function of that information also falls more into the hands of the page-users, rather than the page creators. The same principle applies for the specialized group of investors in social media as well.

The Nepalese investors do not rely on the posts at social media to make their investment decisions. The reliability of the posts is seen as a major concern. At the same time, the Nepalese investors used the posts at social media to find out the stock market's trend.

The Nepalese investors do not have a high faith on the comments, opinions and advice forwarded at the social media regarding the stock market. There is a trend of forming a specialized group among the Nepalese investors to make a posts related to Nepalese stock market. In this context, the Nepalese investors found the posts partially fruitful in the specialized group to make investment decisions.

Though the rise of the use and dependency of social media for information have heavily increased after the COVID-19 pandemic, the reliability of the information available at the social media is seen questionable. The Nepalese stock market investors are also found to follow the posts, opinions and views available at the social media but reluctant to follow blindly. This also shows that the investors should enhance their skills and knowledge and not just following the noise effects that are floated in the social media sites.

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## Computerized Accounting Information System in Nepalese SMEs

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### ABSTRACT

The conversion from a manual accounting system to a computerized accounting system blended accounting with information technology in recent decades. In the area of accounting and finance, the use of computer software enables SMEs quick reporting and easy processing and storage of financial information. To address the issue of whether Nepalese SMEs ready to adopt CAIS, this study aimed to examine the factors that influence Nepalese SMEs to adopt CAIS.

**Keywords:** Computerized accounting information system, decision maker's context, technological context, organizational context, environmental context, information technology.

### 1. Introduction

Accounting is the innovation of human beings to manage the economic life of the people in society, social science rather than natural science, unconsciously developed from the socio-economic and political needs of the society by tracking down the historical and current events in business and economics. Accounting being man-made system, need of mankind, not rigid as laws of natural science (Sehgal & Sehgal, 2008; Osmond, 2011). Accounting is several centuries old and that Luca Pacioli, an Italian friar from San Sepulcro, is the father of accounting. Accounting systems are responsible for recording, analyzing, monitoring and evaluating the financial condition of companies, preparation of documents necessary for tax purposes, providing information support to many other organizational functions such as production, marketing, human resource management and strategic planning (Amidu, Effah, & Abor, 2011). The evolution of computer technology has completely transformed accounting systems. Computerized accounting system based on information theory is a method or scheme by which financial information on business transactions are recorded, organized, summarized, analyzed, interpreted and communicated to stakeholders through the use of computers and computer-based systems such as accounting packages (Marivic, 2009).

There is no universally accepted definition of small businesses. The definition varies across countries and industries. However, the most common measures used include the number of employees, annual turnover, industry, ownership, and value of fixed assets (Agyei-Mensah, 2011). This study intend to examine the factors that influence the Nepalese SMEs to adopt IT in their accounting processes since effective financial management could easily be obtained today with the help of related IT such as computerized accounting information systems (CAIS), which increases competitive advantages

### 2. Literature Review

#### 2.1 Theories used in IT/ IS adoption

Liang et al., (2010)- Information technology is regarding IT adoption; many theoretical models have been used to examine the adoption of IT/IS innovations such as Technology Acceptance Model (TAM) (Vance et al., 2008; Grandon and Pearson, 2004; Igbaria et al., 1997), Theory of Planned Behavior (TPB) (Grandon et al., 2011; Harrison et al., 1997), Combined TAM and TPB (Riemenschneider et al. 2003; Chatzoglou et al., 2010); TAM2 (Venkatesh 2000), Diffusion of Innovation Theory (DOI) (PremKumar 2003), Resource-Based View (RBV) (Ramanathan et al., 2012; Jacks et al., 2011; Mehrstens et al. 2001), Stage Theory (Poon & Swatman, 1999), and Unified Theory of Acceptance and Use of Technology (UTAUT) (Kijasanayotin et al., 2009; Fowzia & Nasrin, 2011; Anderson & Schwager, 2003).

## **2.2 Technological-Organizational Environmental (TOE) framework**

Tornatzky and Fleischer (1990) are credited with being the first to develop the TOE framework to study the adoption of technological innovations. Tornatzky and Fleischer (1990) developed a framework for organizational adoption based on the Contingency Theory of Organizations (Arpaci et al., 2012). According to Arpaci et al. (2012), the former theory postulates that an effective organization should have a structure that is consistent with its environmental needs. The effectiveness of an organization is based upon its fitness towards both internal and external factors. Therefore, they developed the TOE framework to determine what factors influence a firm's adoption decision. Mehrtens et al. (2001) adopt the TOE framework for investigating the adoption of the internet in SMEs. Lertwongsatien & Wongpinunwatana (2003) show the suitability of the TOE framework for studying the e-commerce adoption study in Thailand SMEs.

## **2.3 Diffusion of Innovation Theory (DOI)**

DOI provides insights into the innovation or technological factors that influence the adoption of innovation (Rogers, 1995). Originally, innovation characteristics in DOI were presented in the context of the innovation adoption at the individual level, however, Rogers (1995) argued that the characteristics of innovations could also be applied to the innovation adoption models at the organizational level (Picoto et al., 2012; Hameed & Counsell, 2012). DOI is used in many studies to study innovation adoption issues by firms (Tan et al., 2009; Ramdani et al., 2009; Ramdani & Kawalek, 2007; Hussin & Noor, 2005; Seyal & Rahman, 2003; PremKumar & Roberts, 1999; Thong, 1999).

## **2.4 Computerized Accounting System**

Accounting Software is a class of computer programs that perform accounting operations. It is application software that records and processes accounting transactions within functional modules such as accounts payable, accounts receivable, payroll, and trial balance. Thus, these software packages allow the whole accounting system to be run on a computer hence the name Computerized Accounting System. CAS is an accounting information system that processes the financial transactions and events as per Generally Accepted Accounting Principles (GAAP) to produce reports as per user requirements. The primary purpose of an accounting information system (AIS) is the collection and recording of data and information regarding events that have an economic impact upon organizations and the maintenance, processing, and communication of such information to internal and external stakeholders (Stefanou, 2006).

## **2.5 Accounting Theories**

Accounting theory is that branch of accounting which consists of the systematic statement of principles and methodology, as distinct from practice (Most (1982). Accounting is what accountants do; therefore, a theory of accounting may be extracted from the practices of accountants. They are of the view that the roots of accounting theory are decision theory, measurement theory, and information theory (Glautier and Underdown, 1976).

Accounting discipline deals with the measurement of economic activities affecting inflow and outflow of economic resources to develop useful information for decision making. Accounting can be defined as The process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by the users of that information (Wood & Sangster, 2013). There are 3 main levels of accounting theory; namely (a) structured or syntactical theories, (b) interpretational or semantically theories, and (c) Behavioral or Pragmatic theories (Hendriksen, 1992). Hendriksen further observed that a useful frame of reference is to classify theories according to prediction levels. According to him, these levels are structural, interpretational, and behavioral.

## **3. Methodology and Methods**

Many studies exist on computerized accounting information systems. CAIS is also regarded as e-accounting by many researchers. Empirical studies on the intention of CAIS in SMEs of developing countries are scarce. This study adopts and extends the CAIS adoption model presented by Thong (1999). The study also integrates prior studies on CAIS in examining the intention of CAIS adaptation by SMEs. Past knowledge was used to recognize the relevant independent as well as dependent variables of the study.

### 3.1 CAIS Intention: The dependent variable

CAIS Intention is measured by four indicators (Willingness, fund management, supplier management, and employee development). All those indicators were measured by the following four items with 7 point answering scales (1= Strongly Disagree, 2 = Disagree, 3 = Somewhat disagree, 4= Neutral, 5= Somewhat agree, 6= Agree, 7= Strongly Agree.)

### 3.2 Decision Maker's context

IT adoption depends largely on the functional, and/or emotional feelings of decision-makers, which reflect their attitudes, perceptions, and motivations towards IT adoption (Awa et al. (2011).

H1: Decision maker's context assist to predict the intention of CAIS adoption among SMEs.

### 3.3 Technological context

Teo et al., (2004)-technological context refers to the innovation that is to be adopted by the organization. Its main focus is on how technology characteristics themselves can influence the adoption process (Chau & Tam, 1997).

H2: Technological context assist to predict the intention of CAIS adoption among SMEs.

### 3.4 organizational context

organizational adoption of technological innovation can be influenced by the organizational context. The organizational context refers to the characteristics and resources of the organization (Tan & Felix, 2010). Diffusion of Innovation Theory (DOI) in organizations suggests that organizational resource availability positively influences organizational adoption of innovations.

H3: Organizational context assist to predict the intention of CAIS adoption among SMEs.

### 3.5 Environmental Context

The environmental context is the area in which the firm does business (Tornatzky&Fleischer, 1990) or in other words concerns the surroundings of the organization, looking at how external influences affect the motivations or barriers to adopting an innovation (Teo&Ranganathan, 2004).

H4: Environmental context assist to predict the intention of CAIS adoption among SMEs.

### 3.6 Research Model

Components of computerized accounting information system: Decision-maker context, Technological context, Organizational context, and Environmental context in Nepalese SMEs are analyzed. This study surveys over 510 SEM owner-managers of Chitwan, Nepal. The dependent variable CAIS Intention was measured with four items. The proposed research model is given in figure 1.

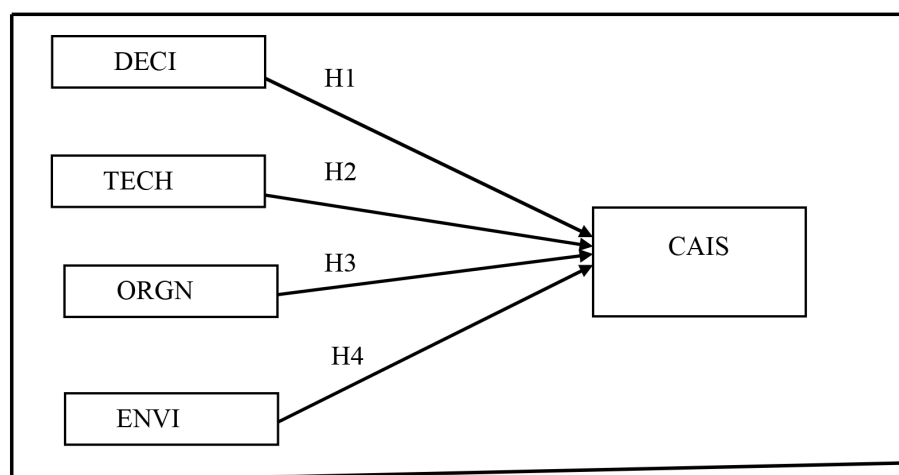


Figure 1: Research model (adopted & modified from Wan &Azwadi, 2013)

#### 4. Discussion and conclusions

The objective of the study was twofold. First, it provides an overview of the computerized accounting information system. Second, it builds on existing literature in the computerized accounting system (CAIS). This study aimed to examine the factors that influence the SMEs of Nepal to adopt IT in their accounting processes since effective financial management could easily be obtained today with the help of related IT such as computerized accounting information systems (CAIS), which increases competitive advantages. The framework was based on the TOE framework (Tornatzky & Fleischer, 1990) and DOI theory (Rogers, 1995). Prior researchers suggested to combine the TOE framework with other theories (Awa et al., 2011; Henderson et al., 2012; Chong & Chan, 2012; Alatawi et al., 2012).

The results of this study find a positive significant relationship between Decision Maker's context and CAIS intention. Adoption of CAIS depends on decision-makers level of IT knowledge, their attitude, and commitment to information technology, perception of decision-makers towards the advantages, compatibility, and complexity of new technology. IT adoption depends largely on the functional, and/or emotional feelings of decision-makers, which reflect their attitudes, perceptions, and motivations towards IT adoption (Awa et al., 2011). Firms where the CEO is familiar with computers and is involved in computerization, computer operations are more successful (DeLone, 1988). Failure to implement technological innovation was due to the lack of top management's commitment and support (Yang et al., 2012; Varukolu and Park Poaps, 2009).

The study revealed that there is a positive significant relationship between technological context organizational context, environmental context, and CAIS intention. Intention to adopt CAIS is affected by the technological context of the SME. Relative advantages of CAIS over manual system, compatibility, and complexity of CAIS are the predictors of technological context. This finding is consistent with the findings compatibility, relative advantage and complexity have consistent associations with innovation behaviors in the study of Innovation characteristics and innovation adoption-implementation by Tornatzky & Klein, 1982, PremKumar and Roberts (1999) in their study Adoption of new information technologies in rural small businesses found that organizations adopt the innovation technology because they perceive a relative advantage of the technology compared to traditional methods. Organizational readiness, employees' IT level, and satisfaction with manual system describes the organizational context of the firm regarding CAIS adaptation.

Environmental context mainly external environment: competition, government influence, and suppliers support describe the environmental context of the firm. In this empirical study environmental context was found as the strongest predictor of CAIS intention than other predictors. This finding is in line with Alatawi et al., (2012), the decision to adopt IT is depending on the owner-manager and internal organizational need, the actions and decisions of owner-manager would be affected by external environment and they make policy decision accordingly therefore, the adoption of IT can be the result of pressure exerted on the enterprise by its environment, government regulation can have a favorable or negative impact on organizations, depending on whether its policy encourages or discourages innovation, Ramdani et al., (2009) one of the important aspects of the IT adoption process is the assistance of external support such as IT/IS vendors, with increasing support from the third party, firms are more willing to adopt IS innovations, Nguyen (2009) quality advice from IT professional such as IT vendors is always useful for management or owner-manager as many of them do not have sufficient experience or understanding of IT, Ifinedo (2012) stressed that vendor support should be considered in the planning process and implementation of IT adoption, Yang et al. (2012) also supported the crucial role of external vendor for the implementation of IT innovations, especially when the organization is unfamiliar with the technology, Proudlock et al. (1999), the employment of such external support can overcome knowledge gaps and guide firms in implementing appropriate IT, Thong, 1999 & Yoon, 2009), This study focused on the intention of CAIS among Nepalese SMEs. Researchers may also consider mediating and moderators like owner/managers' age, education, software characteristics such as software adequacy, software security. which can be added in the model. It would be interesting to expand the research in this area linking Cloud computing as a service industry.

#### 5. Implications

This study contributes to the existing literature in the following ways. First, the study responds to the call for additional empirical research in CAIS. Second, CAIS is attracting a large number of SMEs and more Nepalese

SMEs are expected to use this technology in the future. Third Findings explore the dimensions of CAIS in the context of SMEs which blends accounting knowledge with information technology.

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## Determinant Variables Of Consumers' Preference Towards Patanjali Products

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### ABSTRACT

Patanjali Ayurveda is maker of ayurvedic consumer product and is one of the fastest growing consumer company. Consumers of Twenty-first Century are much more health conscious and are always inclined to maintain quality of life. So, people are moving towards herbal and ayurvedic products. In order to purchase a product, consumer will go through a process of buying behavior. The purchase decision of consumer is mostly affected by the quality, price, packaging, advertisement, brand image and benefits offered by the brand. This study elucidate about the consumer's preferences towards Patanjali products within Bharatpur Metropolitan city. Descriptive and casual comparative research design were used and the collected primary data via well-structured google form questionnaire were analyzed using both descriptive and inferential analysis. The major finding of this study shows brand image is the main reason that induces consumers to buy Patanjali products and it also reveals the level of satisfaction of consumers towards Patanjali products. Likewise, results reveals that the impact of quality, brand image, packaging and availability of products on consumers' preference towards Patanjali products is found positive with significant whereas the impact of price on consumers' preference towards Patanjali products is only positive with insignificant. Similarly, the influence of advertisement and offers on consumers' preference towards Patanjali products is found negative but that is also insignificant.

**Keywords:** Patanjali Products, Customers' preference, Brand Image, Advertisement and Price.

### 1. INTRODUCTION

Preference is termed as a greater liking for one alternative over another or others. Generally, well known or familiar brands or products are preferred by consumers in order to be on safe side. Brand name makes decision making process a lot easier. The consumer's decision to purchase a certain brand over time is mostly influenced by the benefits and quality the brand offers, particularly when it comes to the brand of food and cosmetics (Singh & Kaur, 2018). Brand preference is a measure of brand loyalty in which a consumer exercises his/her decision to choose a particular brand in presence of competing brands (Sthapit & Shakya, 2010). As the perception towards the same product or service by different consumers vary, consumer perception theory analyses what exactly motivates or influences a consumer behavior in purchasing or not purchasing a specific product (Lekshmi, 2020). Therefore, companies should understand the needs of customers and offer the products accordingly to retain the old customers and attract the new ones.

One of the herbals and Ayurvedic Company that has endeavored to take advantage of the market trend is Patanjali Ayurveda Limited which is one of the fastest growing FMCG firm. Swami Ramdev Ji and Acharya Balkrishna established Patanjali Ayurveda Ltd. In 2006 with vision and mission as Keeping nationalism, Ayurveda and Yog as pillars, they are committed to create a healthier society and country. Furthermore, they are prepared to help people by bringing the benefits of nature into their life in order to uplift the pride and glory of the globe (Singh, Mathur, & Subha, 2021). The company is different from a typical business and the stated philosophy is to plough back profits into the company or to be used for social causes (Raju & Rahul, 2016). In addition to more than 900 goods, the company also produces 45 different varieties of cosmetics and 30 different kinds of foods, of which Patanjali beauty products are incredibly well-liked and in high demand (Manivel, 2019). As they get their raw materials directly from farmers, Patanjali claims that their goods are 30% less expensive than those of other MNCs, benefiting both the farmers and the environment (Singh & Mehta, 2018). The primary reason why people are turning to Patanjali products is that they are created from raw materials that are directly obtained from natural plants, which means that there are no adverse effects after using this product (Nayak & Prabhu, 2020). As consumers are considered as king of any business, their expectations, product preferences, needs and desires

must be taken into consideration. No any company can sustain in the marketplace without a comprehensive understanding of consumer behavior. In this circumstances, what perception among Nepali consumers towards patanjali products? What are the relationship between the determinants factors (quality, brand image, price, packaging, advertisement or offers, availability) and consumers' preference towards Patanjali products? How impact of the independent variables on dependent variable (consumers' preference) towards Patanjali products? So, this study is to find out the answers of above queries in the way like to understand the status of consumers who preference patanjali products, the determinants factors of consumers preferences, their relationship and finally to identify the significant factors on consumers preference towards patanjali products. The consequence for the study is very crucial as the competition in the ayurvedic and herbal products is ever increasing and is at its extreme as consumers of Twenty-first Century are inclined towards Herbal based products. In order to compete with Patanjali brand, competitors are emerging with new sales promotion strategy and incentives to capture the market share.

## 2. LITERATURE REVIEW

Sthapit and Shakya (2010) found two main factors responsible for selection of brand by buyers-price and efficiency and also recommended strategies of advertising and brand promotion as well as of brand-tracking on critical KPIs of the brand and benchmarking.

Raju and Rahul (2016) set up that consumers of this millennium have become more concerned about their health which is reflected in their consumption of those products safeguarding their health as well as providing maximum satisfaction. Customer satisfaction is derived by the measurement of the extent to which the product is able to meet the consumers' expectations. It also indicates price to be a very important variable along with ayurvedic and herbal.

Singh and Mehta (2018) marked Patanjali as one of the great competitor in FMCG sector in Indian Market as their main concentration is on Ayurveda, Yog and Made in India (Swadeshi) as their main USP of the Brand. The study showed what consumers perceive about Patanjali products and the reason making them brand loyal. Finally, the study concluded that educated, low to middle income group and 18-35 age group are the major buyers of Patanjali products due to easy availability, better quality and quantity of these products.

Accordingly, Malarvizhi and Thayalan (2018) observed that when it is about the brand of eatable and cosmetics, consumer becomes brand loyal if and only that particular brand provides quality benefits. The study analyzed that this era's consumers are inclined towards healthy products and are satisfied, too. Customer satisfaction is attained by linking the present and the expected performance of the product.

Joshi and Sthapit (2018) examined the effects of many elements on consumers' preference for Patanjali products, including price, quality, availability, product diversity, packaging, brand awareness, brand name/value, and health consciousness. To an extent, the study detected that the strong influencing factor in shaping Nepalese consumers' fondness towards Patanjali products were price, quality and health consciousness since in the kingdom of FMCG, consumers choose herbal and health-conscious products.

Parimaladevi and Anitha (2018) examined the fact why consumers opt for Patanjali products and discovered the level of satisfaction of consumers with regard to Patanjali products. In industries including food, CPGs, and healthcare, Patanjali Ayurveda has emerged as a homegrown company.

Singh and Kaur (2018) found that the most significant influences on consumers' decisions to buy Patanjali products are communication strategy, product quality, pricing, and Baba Ramdev's brand image and consumer awareness of the items. Similar to this, Patanjali's goods' popularity can be attributed to their competitive pricing, high quality, and effective marketing strategies.

According to Manivel (2019), a consumer's decision to stick with a certain brand over time is influenced by the benefits it offers, particularly when it comes to brands of food and cosmetics. Customer satisfaction deals with the characteristics of human behavior. Keeping this in view, the study reflected that the consumer's personal factors, awareness level, and other factors affects their buying decision concerning Patanjali products.

Nayak and Prabhu (2020) viewed consumers of today's generation have become more attentive about their health and are also conscious to maintain a healthy life. So, they are preferring natural and ayurvedic products from

which they are gaining maximum satisfaction. In addition, the study declared that there are mainly two reasons that are inducing consumers to buy Patanjali products viz. Swadeshi brand and natural product. Further, majority of users were found satisfied with Patanjali products, which in turn, helped the company in consumer retention.

Lekshmi (2020) presented different elements together make up the purchasing decision of the product. The study manifested the consumer behavior and quality related issues of Patanjali products.

Singh, Mathur, and Subha (2021) showed that different factors influences consumers towards Patanjali products. Likewise, quality, freshness, flavor, color, brand image, advertisements or offers and packaging have more explanatory capacity to explain the impact on purchasing decision regarding Patanjali products. Similarly, factors altering trustworthiness of the product among respondents are product origin, lab recommendations and Baba Ramdev. Accordingly, the study disclosed that personal care products are the most practiced Patanjali products.

### **Variables**

Various variables are used in this study in the form of dependent and independent variables. The definitions of each variable used in the study are as follows:

#### **Quality**

Quality is the ongoing process of building and sustaining relationships by assessing, anticipating, and fulfilling stated and implied needs. Singh, Mathur and Subha (2021) found quality to have positive and significant impact on consumer preference.

#### **Brand image**

Brand image is the perception of the brand in the mind of the customer. Perceptions of a brand are a collection of their thoughts, perceptions, and beliefs. According to Singh, Mathur, and Subha (2021) brand image and consumer preference have a positive and significant association.

#### **Price**

A price is the quantity of payment or compensation given by one party to another in return for goods or services. Singh, Mathur and Subha (2021) observed there is negative and insignificant influence of price on consumer preference.

#### **Availability**

The quality or state of being available is defined as availability. The term availability indicates that something is easily obtainable and ready for use. Singh, Mathur and Subha (2021) showed that availability has no significant impact on consumer preference. Similarly, Singh and Mehta (2018) indicated the main reason behind buying Patanjali products is due to their availability.

#### **Advertisement or Offers**

An advertisement is the promotion of a product, brand or service to a viewership in order to attract interest, engagement and sales. Likewise, an offer is a conditional proposal made by a buyer or seller to buy or sell an asset, which becomes legally binding if accepted. The impact of advertisement or offers on consumer preference

is positive and significant (Singh, Mathur & Subha, 2021).

### Packaging

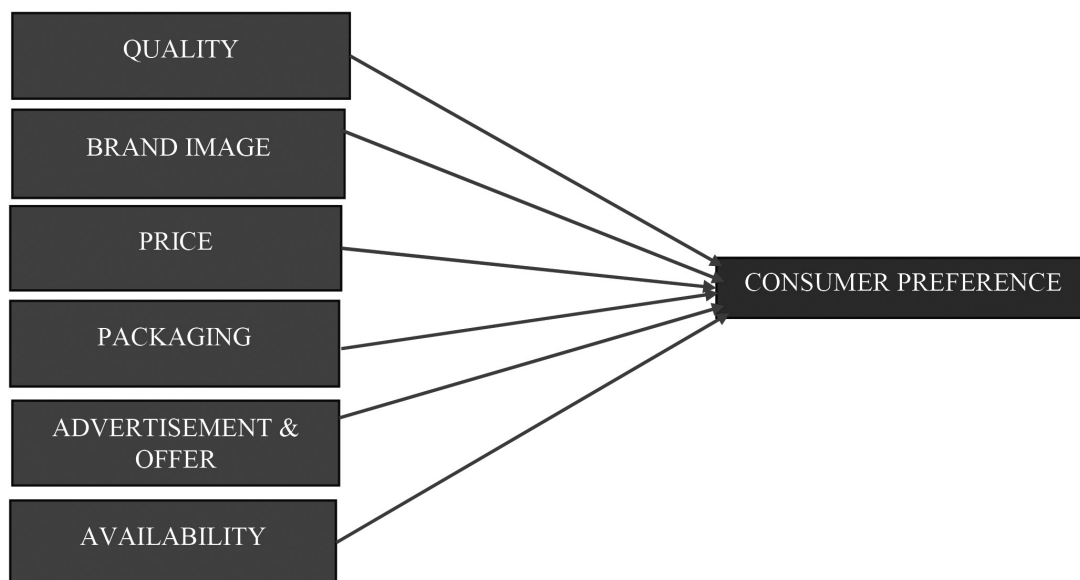
Packaging is the art, science, and technology used to enclose or safeguard things for use, sale, distribution, and storage. Packaging was shown by Singh, Mathur, and Subha (2021) to have a favorable and significant impact on consumer preference.

### Consumer Preference

Consumer preference is simply the subjective (individual) preferences for different product bundles as determined by their utility.

## 3. CONCEPTUAL FRAMEWORK

A conceptual framework was used to focus on the dependent and independent variables used in the study in order to examine consumers' preference towards Patanjali products. In the study, dependent variable is consumer preference which is the function of independent variables that includes quality, brand image, price, availability, advertisement or offers and packaging. Further, independent variables were taken from Singh, Mathur, and Subha (2021) whereas dependent variable was derived as per the purpose of the study.



Source: Singh, Mathur, and Subha (2021)

## 4. METHODOLOGY

This study was based on quantitative research approach for which the adopted research designs were descriptive and casual-comparative in nature in order to systematically describe consumers' preferences towards Patanjali products. The population selected for the study were local consumers of varied age groups and income level preferring Patanjali products as their daily essentials. Similarly, the sample was limited to those residents of Bharatpur Metropolitan City who had favored Patanjali brand at least once for their consumption by using judgmental sampling technique, a non-probabilistic sampling method. The questionnaire was administered on 150 respondents to determine the required sample among which 118 responses were collected, offering questionnaire success rate of 78.67 percent. Out of 118 responses, 101 responses were applicable in the study as they marked themselves as consumers of Patanjali products.

Primary data were derived via well-structured questionnaire survey. In the survey questionnaire, the respondents were requested to response in three ways: Yes or No option, ranking option, and Likert scale option, where one being strongly agree and five being strongly disagree. The questionnaire was developed on the basis of past studies including Singh, Mathur, and Subha (2021) and Parimaladevi and Anitha (2018). The response received from the respondents have been arranged, tabulated, and analyzed in order to facilitate the descriptive

analysis. The calculations of primary data were made by SPSS software version 25 and were edited in the excel before presenting in the study. It presents the results and findings based on descriptive analysis (Mean, Standard Deviation, Coefficient of Variation), and inferential analysis (Correlation and regression analysis).

### Model

$$Y = \beta_0 + \beta_1 Q_1 + \beta_2 BI_2 + \beta_3 Pr_3 + \beta_4 P_4 + \beta_5 AO_5 + \beta_6 A_6 + E_i$$

Where, Y=Consumer Preference

$\beta_0$ =Intercept

$Q_1$ =Quality

$BI_2$ =Brand Image

$Pr_3$ =Price

$P_4$ =Packaging

$AO_5$ =Advertisement or Offers

$A_6$ =Availability

$E_i$ =Error

### Limitations of the Study

The following are the major limitations of the study:

1. The coverage of the study is only limited to Bharatpur Metropolitan city.
2. The validity of the study depends on the accuracy of the information provided by the respondents has been covered on the study.
3. The study has been conducted among few consumers of Patanjali products resident in Bharatpur Metropolitan city. Thus the findings may not be generalize for the whole consumers of Patanjali products.

## 5. RESULTS AND DISCUSSION

Table 1 revealed that the total participants involved in the survey were 118 among which 101 were consumers of Patanjali products. So, they are chosen for the further study purpose while the remaining 17 were not consumers of Patanjali products. That's why, they are not selected for the study.

**Table 1 Products Knowing Consumers**

Respondents	Frequency	Percent
Yes	101	85.6
No	17	14.4
Total	118	100

Source: *Field Survey, 2022*

Table 2, describe the socio demographic variables of respondents. The majority of respondents were female covering 54.5%. Respondents from 20-30 age group representing the 77.2%. 73 respondent's i.e, 72.3% were having bachelor's degree. The highest percentage of participants in terms of occupational status were represented by student comprising 76.2 percent and the majority 66.3 percent of respondents had no any source of income.

**Table 2 Socio demographic characteristics of respondents**

Variable	Frequency	Percentage
Gender		
Male	46	45.5
Female	55	54.5
Age		
Below 20	11	10.9
20-30	78	77.2
30-40	8	7.9
40 and above	4	4
Educational Level		
No formal education	1	1
Up to class 10	2	2
Secondary Level (+2)	20	19.7
Bachelor's	73	72.3
Master's or above	5	5
Occupational Status		
Student	77	76.2
Employee	10	9.9
Professional	2	2
Entrepreneur	5	5
Unemployed	7	6.9
Monthly Income		
Up to 10,000	15	14.9
10,001 to 20,000	3	3
20,001 to 30,000	6	5.9
Above 30,000	10	9.9
No any source of income	67	66.3

Source: *Field Survey, 2022*

As evident from the Table 3, the great majority of respondents ranked advertisement or offers as their first choice and ranked one, showing the mean weight of 252. Packaging is ranked two by the respondents of the study with the mean weight of 221. Similarly, respondents ranked brand image and availability third important factor affecting consumers' preferences with mean weighted value of 204 and price is marked as fourth important factor having mean weight of 202. Quality is ranked as the least important factor among the five alternatives of factors influencing consumers' preferences with mean weight of 153.



**Table 3 Factors influencing consumers' preferences**

Factors	Rank 1		Rank 2		Rank 3		Rank 4		Rank 5		WM Rank	
	N	%	N	%	N	%	N	%	N	%		
Quality	68	67.30%	21	20.80%	7	6.90%	3	3.00%	2	2.00%	153	5
Brand Image	23	22.80%	58	57.40%	16	15.80%	3	3.00%	1	1.00%	204	3
Price	37	36.60%	35	34.70%	22	21.80%	6	5.90%	1	1.00%	202	4
Packaging	24	23.80%	43	42.60%	26	25.70%	7	6.90%	1	1.00%	221	2
Advertisement or offers	17	16.80%	36	35.60%	31	30.70%	15	14.90%	2	2.00%	252	1
Availability	38	37.60%	36	35.60%	17	16.80%	7	6.90%	3	3.00%	204	3

Source: Field Survey, 2022

Table 4 reveals the descriptive status for the whole sample. It is found that mean value for the dependent variable: consumer preference is highest among other variables with the mean of 16.83 followed by advertisement or offers with mean value of 7.79, availability with mean value of 7.26, price with mean value of 6.67, packaging with mean value of 6.27, brand with mean value of 4.36 and quality with mean value of 3.40. Standard deviation is also found to be highest for consumer preference with value of 6.15 followed by advertisements or offers with the value of 2.58 in standard deviation. Similarly, quality has highest coefficient of variation with value of 0.44 whereas price has lowest value of coefficient of variation of 0.31.

**Table 4 Descriptive Statistics for all Samples**

Variables/Statistics	N	Mean	S.D.	C.V.
Quality	101	3.40	1.50	0.44
Brand	101	4.36	1.62	0.37
Price	101	6.67	2.09	0.31
Packaging	101	6.27	2.19	0.35
Advertisement or Offers	101	7.79	2.58	0.33
Availability	101	7.26	2.46	0.34
Consumer Preference	101	16.83	6.15	0.37

Source: Field Survey, 2022

### Correlation Analysis

The Table 5 depicts the correlation analysis of the variables under study which is conducted for The whole sample. In the study, correlation analysis is done between independent variable (quality, brand image, price, availability, advertisement or offers and packaging) and dependent variable – consumer preference.

**Table 5 Relationship between variables for all samples**

Variables	Quality	Brand Image	Price	Availability	Advertisement or Offers	Packaging	Consumer Preference
Quality	1.000	0.615**	0.565**	0.498**	0.386**	0.643**	0.752**
		0.000	0.000	0.000	0.000	0.000	0.000
Brand		1.000	0.561**	0.484**	0.430**	0.551**	0.756**
Image			0.000	0.000	0.000	0.000	0.000
Price			1.000	0.598**	0.524**	0.528**	0.616**
				0.000	0.000	0.000	0.000
Availability				1.000	0.519**	0.449**	0.637**
					0.000	0.000	0.000
Advertisement					1.000	0.490**	0.418**

or Offers						0.000	0.000
Packaging						1.000	0.673**
							0.000
Consumer							1.000
Preference							

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

The Pearson correlation analysis in Table 5 indicates the relationship between quality and consumer preference towards Patanjali products is positive and significant at 5 percent level with the coefficient of 0.752 and p-value of 0.000. Similarly, the relationship between brand image and consumer preference towards Patanjali products is also found to be positive and significant at 5 percent level having coefficient of 0.756 and p-value of 0.000. Likewise, shows that there also exists positive relation between price and consumer preference towards Patanjali products i.e., 0.616. The p-value of 0.000 shows that there is significant relationship between price and consumer preference at 5 percent significance level.

Similarly the relationship between availability and consumer preference towards Patanjali product is positive and the result is significant at 5 percent level with the coefficient of 0.637 and p-value of 0.000. Likewise, the relationship between advertisement or offers and consumer preference is also found to be positive i.e., 0.418 and the p-value is 0.000 which indicates that the relationship between advertisement or offers and consumer preference is significant at 99 percent confidence level or at 5 percent significance level. Further, the table shows that the relation existing between packaging and consumer preference towards Patanjali products to be positive and it seems to be significant at 5 percent level with coefficient of 0.673 and p-value 0.000.

### Regression Analysis

Regression analysis is done in order to find out the impact of independent variables on the dependent variable. The regression analysis is conducted for the whole sample. In the study, regression analysis is carried out for the different variables affecting on consumers' preference towards Patanjali products among consumers of Patanjali of Bharatpur Metropolitan city. The factors influencing consumer preference under study are quality, brand image, price, availability, advertisement or offers and packaging. Table 6 and Table 7 presents the regression analysis.

**Table 6 Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	S.E.	F stat.	Sig.
1	0.879	0.773	0.759	3.021	53.395	0.000

In the Table 6, R<sup>2</sup> means the explaining power of independent variables on dependent variables in the regression model. The value of R<sup>2</sup> is 0.773 which indicates that 77.30% of the variations in the dependent variable, consumer preference towards Patanjali products is explained by six independent variables, quality, brand image, price, availability, advertisement or offers and packaging as included in the study.

Similarly, Table 6 also tests whether the model  $Y = \beta_0 + \beta_1 Q_1 + \beta_2 BI_2 + \beta_3 Pr_3 + \beta_4 P_4 + \beta_5 AO_5 + \beta_6 A_6 + E_i$  predicts the regression estimation significantly or not i.e., whether the model is fit or not. Since Table 6 depicts the significance value in ANOVA is 0.000 which is less than 0.01, it means that the regression estimation is significant or the regression model of the study is fit.

**Table 7 Impact of variables for all samples**

Model	Unstandardized Coefficients		T	Sig.
	B	Std. Error		
(Constant)	-0.310	1.188	-0.261	0.795
Quality	1.179	0.300	3.933	0.000
Brand image	1.389	0.258	5.380	0.000
Price	0.137	0.208	0.657	0.513

Packaging	0.560	0.196	2.862	0.005
Advertisement or Offers	-0.248	0.150	-1.657	0.101
Availability	0.634	0.165	3.839	0.000

Table 7 reveals that the impact of quality, brand image, packaging and availability of products on consumers' preference towards Patanjali products is found positive and significant whereas the impact of price on consumers' preference towards Patanjali products is positive but insignificant. Similarly, the influence of advertisement or offers on consumers' preference towards Patanjali products is found negative but insignificant.

## 6. FINDINGS AND DISCUSSION

On the basis of data analysis, the major findings of the study are as follows:

The relationship between quality and consumer preference towards Patanjali products is observed positive and significant at 5 percent level with coefficient of 0.752 and p-value of 0.00. It indicates when the quality increases, preferences of consumers towards Patanjali product also increases. Brand image have a positive influence on consumer preference indicating that increase in value of brand image results in increase in preferences of consumers and the relation between the variables is significant at 5 percent level having coefficient of 0.756 and p-value of 0.000. There exists a positive relationship between price and consumer preference with coefficient of 0.616 and is significant at 5 percent level with p-value of 0.000. This means price influences preference towards Patanjali products in a positive way. The relationship of availability with consumer preference is found to be positive and is significant at 99 percent confidence level with coefficient of 0.637 which shows higher the availability, higher is the decision of preferring Patanjali products by consumers. The relation existing between advertisement or offers and consumer preference is positive which means increase in advertisement or offers increases the preferring of consumers towards Patanjali products having coefficient of 0.418 and the p-value is 0.000 which shows the relationship between variables is significant at 5 percent level. The result showing the coefficient 0.673 and p-value 0.000 represents positive relation between packaging and consumer preference and the relation is significant at 5 percent level respectively. This explains that packaging influences consumers' preference towards Patanjali products positively.

## 7. DISCUSSION

According to the purpose of the study, variables such as quality, brand image, price, availability, advertisement or offers and packaging were identified as factors influencing consumers' preference towards Patanjali products.

Results obtained from the data analysis for quality has positive and statistically significant relationship with consumer preference towards Patanjali products and also has positive and significant impact on consumer preference. If quality of Patanjali products increases, consumers' preferring decision towards Patanjali products also increases. The result is consistent with Singh, Mathur, and Subha (2021) as quality is one of the major factor through which consumers' purchasing decision is influenced. Consumers prefer those products whose quality is superior.

Brand image is found to have positive and significant relationship with consumers' preference. The impact is also found to be positive and significant. Singh, Mathur, and Subha (2021) revealed positive and significant relationship and impact of brand image on consumer preference. When the brand image of the product is good, consumers find consuming such products as a matter of prestige and they are induced to purchase such products.

There is a positive and significant relationship of price with consumer preference. The result shows that the impact is positive but insignificant on consumer preference. The result is not consistent with Singh, Mathur, and Subha (2021) which observed there is negative and insignificant impact of price on consumer preference.

There exists a positive and significant relation between availability and consumer preference towards Patanjali products and the impact of availability on consumer preference is also found positive and significant. The result is not consistent with Singh, Mathur, and Subha (2021) which showed that there is no significant influence of availability on consumer preference. The result of the study confirms with Singh and Mehta (2018) indicating the main reason behind buying Patanjali products is due to their availability.

The relation existing between advertisement or offers and consumer preference towards Patanjali products is positive and significant but advertisement or offers has negative and insignificant impact on consumer preference. The finding of the present study matches with that of Singh and Mehta (2018). This means when Patanjali products are more promoted through advertisement or offers, consumers are more attracted towards them and their preferring behaviour is affected.

Packaging seems to have positive and significant relation with consumer preference towards Patanjali products and the impact of it on consumer preference is also positive and significant. The result matches with the findings of Singh, Mathur and Subha (2021). It indicates the more attractive and hygienic packaging is, the more it catches the attention of consumers.

## 8. CONCLUSIONS

Nowadays, consumers are more conscious about their health, which made them to shift towards herbal and ayurvedic products. Concerning on this, study has employed descriptive and casual-comparative research design to deal with the determinants variables of consumer preference. Quality, brand image, price, availability, advertisement or offers and packaging were taken as independent variables and consumer preference as dependent variable.

The data analysis shows the relationship between consumer preference and factors including quality, brand image, price, availability, advertisement or offers and packaging. The study reveals that the impact of quality, brand image, availability and packaging on consumers' preference towards Patanjali products is found positive and significant whereas the impact of price on consumers' preference towards Patanjali products is positive but insignificant. Similarly, the influence of advertisement or offers on consumer preference towards Patanjali products is found negative and insignificant. Factors based on a significant scale in a sequence level: brand image, quality, availability, packaging, price and advertisement or offers. This depicts that brand image the highest determining factor, quality is the second highest determining factor and availability as the third highest determining factor for consumer preference towards Patanjali products. Similarly, packaging is perceived as the fourth most influential factor, price as the fifth most impacting factor whereas advertisement or offers is regarded as the least important factor influencing consumers' preference towards Patanjali products.

The findings of the study will guide and support Patanjali in improving its quality, brand image, announcing reasonable price, making wide spread availability of its products, promoting its product through different ways, offering discounts on their products and maintaining attractive and hygienic packaging of its products considering 'Go Green' slogan by revealing the different factors impacting on consumers' preference towards Patanjali products.

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## Impacts of Foreign Direct Investment on Economic Growth of Nepal: A Johansen Co-integration Analysis

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### ABSTRACT

This research study analysed the impacts of FDI on Nepalese economy using data over the period of 1995-2020. The descriptive and analytical research design has been used. To quantify the effects of independent variables on the dependent variable, data are taken from secondary sources of Nepal Rastra Bank and ministry of finance were employed to measure the variables. In order to interpret the data, the acquired data were analysed by using E-views Statistical Package version 10. Augmented Dickey- Fuller Test is run to test stationary condition in the variables. As per the study, result of Johansen Co-integration Test supported the existence of co-integration in the model. The coefficient of VECM was positive and insignificant expresses that there was no evidence of long run relationship. However, there was found short run causality between GFCF and GDP. Granger Causality Test indicated the two way causality between GFCF and GDP, GFCF with FDI and one way causality from GDP to FDI. The finding shows that the overall model was statistically significant. Furthermore, the GDP was significantly associated with GFCF (p-value=0.0334). 78.53 % of the GDP as explained by the GFCF whereas there was no significantly associated with GDP on FDI.

**Keywords:** Unit root test, time series analysis, co-integration test, VECM, Granger Causality test

### 1. Introduction

Despite its modest size, Nepal has the potential to become a new FDI destination in South Asia. Nepal offers a number of benefits, including a stable population structure, improving business indices, a strategic geographic position, and improved legal conditions to attract the investors. To begin with, Nepal has a 56 % economically engaged population, which is increasing every year. Investors may be attracted by the availability of a low-cost labour force. Second, remittances have increased disposable income, which has led to the growth of economic activity and a shift in consumption patterns, resulting in new product markets. Third, according to the World Bank's Doing Business Report 2018, Nepal is ranked 105th in the world, second only to Bhutan in South Asia.

Nepal is potentially attractive location for foreign investors. It is located in between to two emerging economies of the world India in the South and China in the North. The varied climate, cheaper human resources, biodiversity, natural resources, and terrain provide greater opportunities to the Nepal. She has great prospect to invest in different sectors such as agriculture, tourism, manufacturing industry, hydropower, education, transportation, and communication etc. But till date many of which are barely being exploited at all. Nepal has been suffering from vicious circle of poverty, unemployment, low level of living standard, low level of human development index, poor technology, low per capita income, increasing inequality between haves and have not and investment saving gap, low level of economic growth rate etc.

The empirical results reveals that the impact of FDI in GDP growth rate is minimum and insignificant in case of Nepal. There are lot of research works conducted on study of trend, patterns, and composition and some are on problem and prospects of FDI in Nepal, but this paper trying to examine the relationship of GDP with Gross Fixed Capital Formation (GFCF) and Foreign Direct Investment (FDI).

But the economic growth of Nepal cannot be ignored so that this research study attempts to answer the question what relationship and impact can be found between GDP, GFCF and GDP Growth of Nepal. Based on this research question the objective of this study is to assess the contribution of Foreign Direct Investment and Gross Fixed Capital Formation on economic growth of Nepal. Johansen Co-integration Test is applied after Augmented



Dickey- Fuller unit root test. After that VECM and Granger Causality Test are conducted to find out the long run relationship and direction of causality of the variables.

## 1.2 Literature Review

A number of theories have been proposed by economists to explain FDI, but none of them has been able to adequately explain the true motivations behind the various types of FDI.

### 1.2.1 Industrial Organization Theory, (Hymer 1960)

Hymer makes the assumption that a company's decision to invest abroad is a move to take advantage of particular characteristics that its rivals in other foreign nations do not possess (monopolistic advantages). This flaw may firstly be found in the goods markets, where it may manifest as collusion in price, brand names, specific marketing techniques, or product differentiation. Second, it might be in the markets for factors like specialized managerial abilities, disparities in access to finance markets, and patent-protected technologies. Thirdly, the availability of internal or external economies of scale can be a sign of market failure. Finally, government policies like taxes, tariffs, interest rates, currency rates, and others can lead to market imperfections (Hood and Young 1979).

### 1.2.2 Product Life Cycle Theory, (Vernon 1966)

The Product Life Cycle (PLC) theory attempts to explain why businesses choose to establish operations in another nation by fusing the theory of comparative costs with the timing and location of new product innovation. It also examines how MNEs' location decisions are impacted by the advanced stages of the production life cycle, maturity, and standardization.

### 1.2.3 Internalization Theory, (Buckley and Casson 1976)

"The solution to an intellectual problem – in this case explaining the international expansion of a firm - is sometimes best achieved not by breaking down the problem into a set of smaller issues, but rather by raising the level of generality and subsuming the problem under a wider issue – in this case, the rationale for the firm itself," (Buckley and Casson 2009).

### 1.2.4 International Production Theory, (Dunning 1976)

Three requirements must be met, in accordance with the International Production Theory, for businesses to participate in FDI. First, a company must have comparative advantages, or an ownership advantage factor (O), over rival companies. These advantages result from the possession of certain intangible assets, such as patent rights for a specific technology, company size and monopoly power, raw material access, or affordable financing. Second, rather of selling or granting a license to other enterprises, it must be advantageous for the firm to utilize these advantages inside, or internalization factor (I). Thirdly, exporting will be more appropriate until it is more advantageous for the company to combine those benefits with some input components overseas, location factor (L)(Moosa,2002).

### 1.2.5 Positive Impacts

Pegkas (2015) uses completely modified OLS and dynamic OLS techniques to investigate the influence of foreign direct investment on economic development in Eurozone nations using time series data from 2002 to 2012. The findings reveal a long-term positive link between the stock of foreign direct investment and economic development.

FDI is thought to impact economic growth both directly and indirectly by contributing to gross fixed capital creation and knowledge stock. In the conventional paradigm, FDI is supposed to have a direct impact on economic growth since it is thought to complement domestic investments and serve as a critical supplement to capital and investment shortages. Further research revealed that foreign direct investment has a beneficial influence on economic growth in transition nations due to knowledge spill overs; technical and inventive initiatives are indicated to be an important component underlying growth performance (Silajdzic & Mehic, 2015).

According to Hussain and Haque (2016)'s empirical study of Bangladesh, there is a link between foreign direct investment, trade, and per capita GDP growth rate. The results also revealed that trade and foreign investment factors had a considerable influence on GDP per capita growth rates (Hussain & Haque, 2016). Through positive

spill over effects, FDI inflows to India do actually enhance TFP growth (Choi & Baek, 2017).

Sakyi and Egyir (2017) use the generalized method of moment (GMM) methodology to test the Bhagwati hypothesis for 45 African nations over the period 1990–2014. Their findings reveal that FDI inflows and trade (exports) have a big impact on these countries' economic growth. However, according to Zahonogo (2017), trade openness in Sub-Saharan African nations has a positive and substantial association with economic growth.

The rate at which FDI may promote a country's growth, on the other hand, is largely determined by the social and economic context of the host economy (Osabohien et al., 2020). In a similar way, several empirical research show that FDI increases economic growth (Nuzhat, 2009). According to Nuzhat (2009), foreign investment inflows can have a direct influence on an economy's growth by encouraging domestic capital formation, supporting domestic savings, and facilitating knowledge transfer in the host emerging nations. Using the fully modified ordinary least squares (FMOLS) method, Osabohien et al. (2020) proposed that FDI has a favourable influence on employment and economic growth. The results of Osabohien et al. (2020), using fixed and random effects regression analysis, reveal that governance and ACC issues have had a detrimental impact on FDI inflow and economic growth in Nigeria. Aside from the favourable relationship between foreign capital influx and economic growth, a number of studies have found that foreign capital inflow has an impact on economic growth in emerging countries.

Ingham et al. (2020) recognized the uneven sectorial growth effect of FDI in Egypt to investigate the significance of sectorial makeup of FDI. They discovered that the sectorial destination of FDI has a considerable impact on the economy's development. While FDI in the industrial sector contributed to Egypt's economic growth, FDI in service industries (such as banking, retail, and communications) had a negative influence. Khan and Khan (2011), on the other hand, discovered that the sectorial mix of FDI is also crucial in Pakistan. They discovered that FDI in the primary and service sectors resulted in economic growth, but that FDI in the manufacturing sector played a little contribution.

### **1.2.6 Negative Impacts**

Using OLS and GMM approaches, Anyanwu and Yameogo (2015) investigate the influence of FDI on economic growth in a sample dataset of West African nations from 1970 to 2010. FDI and economic growth have a negative connection, according to the study. For the period 1999-2013, Rahman (2015) studies the impact of FDI on Bangladesh's economic progress. The study indicates that FDI has a negative influence on economic development using multiple regression analysis.

Azam and Ahmed (2015) also empirically study the Commonwealth of Independent States-CIS (ten nations) from 1993 to 2011, using time-series panel data. They use Fixed and Random Effects Models to determine the impact of Human Capital and Foreign Direct Investment on economic growth in those nations. Human Capital (life expectancy and gross secondary school enrolment as proxies for health and education) has a considerable impact on economic growth, according to the study. FDI's influence in encouraging growth has also been demonstrated to have a negative impact on economic growth. Many CIS republics were unable to attract the FDI flows that they desired after becoming independence. These economies have also been hampered in the early phases by a lack of capital and the use of cutting-edge technologies in the manufacturing process. According to the findings, policymakers should examine the impact of FDI inflows on host country economic growth and development. The host economies should smooth up the business climate and attract potential investors by improving domestic circumstances and economic policies.

### **1.2.7 Long-run and Short-run Causality**

Sufian and Moise (2010) used data from 36 nations to examine the link between FDI, economic progress, and openness. The findings suggest that some of these characteristics, such as GDP and openness, have a favourable influence on foreign investment flow, while others, such as the corruption index, inflation rate, and government expenditure, have a negative impact.

According to Tiwari (2011), FDI accelerates the economic growth process in Asian countries. He went on to say that capital and labour are equally necessary for economic success. According to Mehic et al. (2013), there is a positive and substantial relationship between foreign direct investment and economic development in seven Southeast European nations. In 13 Middle East and North Africa (MENA) nations, Omri and Kahouli (2014)

found a bi-directional causal relationship between FDI and economic development. According to Pegkas (2015), foreign direct investment (FDI) is a key contributor to economic growth in Eurozone nations. According to Durmaz (2017), FDI has a spill over impact on the Turkish economy.

FDI allows a company in the home nation to purchase the assets of a company in the host country, allowing it to manage the company's production, manufacturing, distribution, and all other operations (Wajid & Zhang, 2017). Recent empirical studies have revealed that the availability of absorption capacities in the receiving nation is a necessary requirement for FDI to assist the achievement of targeted macroeconomic performance. Various studies on the relationship between FDI and economic growth in developing and emerging market nations, as well as industrialized countries, have shown varied conclusions (Abbas et al., 2011).

Sothan (2017) just published a research that demonstrates the link between FDI and economic growth in Cambodia. Using VECM, he looks at these two variables from 1980 to 2014. The empirical findings show substantial (uni-directional) causation between FDI and GDP in the long run, but no connection between FDI and Cambodian economic development in the short term. For the ASEAN5 (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) economies, Ahmad, Draz, and Yang (2018) investigate the causation between FDI, exports, and economic growth. For the 1981–2013 analytic periods, they employ Johansen co-integration and Granger causality. In the long run, FDI and growth are bi-directionally causative, but FDI and exports are uni-directionally causal in the short run, according to the study. In the long and short term, their findings show that there is export-led growth (ELG) and FDI-led growth.

Phuyal and Sunuwar (2018) discovered that FDI in all sectors had a favourable and significant impact on economic growth in Nepal. The research concluded that, in order to stimulate economic growth, the government should prioritize export-oriented FDI above domestic demand-oriented FDI, based on disaggregated sectorial data. Some studies have also concluded that there is no evidence of FDI having a substantial impact on economic growth. Lund (2010) looked at the data for both rich and developing countries and discovered that FDI did not function as a stimulant for developing country growth, as many previous studies have claimed. He also stressed that a certain degree of development is required in order to reap the full benefits of FDI.

## 2. Material and Methods Used

### 2.1 Research Design

The descriptive and analytical method was used in this research, which was designed as a quantitative study. To quantify the effects of independent variables on the dependent variable, secondary data were employed to measure the variables. In order to interpret the data, the acquired data were analysed using E-views statistical package version 10.

### 2.2 Conceptual framework and Variables

The host economy benefits greatly from foreign investment, according to classical economic theory. In other words, according to the classical economic theory, the economy where the investment was made was the only one to profit fully from it. Solow examines the impact of increased saving and investment on long-term economic growth. Higher saving and investment do, in the short run, accelerate the rate of growth of national income and output (Mukherjee, 2013).

$$GDP = \beta_0 + \beta_1 t + \beta_2 GFCF + \beta_3 FDI$$

Where FDI=FDI inflow-out flow of Dividend/share of FDI

GFCF=Gross Fixed Capital Formation

GDP= Gross Domestic Product at Producer's Price

In this paper researcher includes two types of variables viz. dependent variable and independent variables. Variable, their description and measurement are as follows:

**Table 2.1: Variable, their description and measurement**

Variables	Definition	Measurement
GDP	Gross Domestic Product	In Rs.Million
FDI	Amount of Net FDI	In Rs.Million
GFCF	Amount of Gross Fixed Capital Formation	In Rs.Million

Note: As per requirement of analysis measurement unit can be transformed into different forms.

### 2.3 Nature and Sources of Data

The data used in this analysis are secondary and time series data. Main sources of the data are Different Series of Economic Surveys published by Ministry of Finance, Industrial Statistics published by Department of Industry, Nepal Rastra Bank, Ministry of Commerce and Supply, Central Bureau of Statistics of Nepal and FNCCI.

### 2.4 Time Period

In order to analyse the relationship between GDP, FDI and GFCF researcher used 26 sets of time series data over the period of 1995-2020.

### 2.5 Data Processing

In this paper researcher uses secondary data. So, there is no need of that much processing of data as in case of primary data. For the simplification and easy to understand here researcher will use tabulation, Pie-chart, various graphs, bar diagram and charts etc. as per requirement.

### 2.6 Data Analysis

Major objectives of this paper are to examine the linkage between FDI, GFCF and GDP in Nepal. To fulfil the objectives of researcher time series data is analysed by using e-views.

### 2.7 Econometric Method

In time series method studies, the following procedures are frequently used to test for the impact of FDI on the Nepalese economy overall:

#### 2.7.1 Stationery Test

Since majority of time series econometric techniques are built upon that the time series variables are stationary, when we apply standard estimations and test procedures in the dynamic time series model, as the first step, it is necessary to examine the stationary property of a series.

A crucial concept in time series is a stationary series. Evidently, not every time series we come across is stationary. A stationary series is one whose fundamental characteristics, namely its mean and variance, remain constant over time. The series are considered to be integrated of order one  $I(1)$  with evidence of unit roots, suggesting that they need to be modelled in first difference ( $\Delta y_t = y_t - y_{t-1}$ ) to become stationary. The non-stationary data in this study are made stationary.

Steps in E-views: Quick/Series Statistics/Unit Root Test/ Series Name/Augmented Dickey Fuller Test.

#### 2.7.2 Autocorrelation Test

Because it analyses the correlation between a variable's present value and its historical values, autocorrelation is also known as lagged correlation or serial correlation. When autocorrelation is found in the model's residuals, it is likely that the model has been incorrectly specified (i.e., in some sense wrong). One reason could be that a crucial variable or set of variables is absent from the model.

The auto correlation test in this instance uses the Breusch-Godfrey Lagrange multiplier test.

Steps in E-views: "View" / "Residual Diagnostics" / "Serial Correlation LM Test".

#### 2.7.3 Test of Normality

Normality tests are used in statistics to examine whether a data set is well-modeled by a normal distribution and

to calculate the likelihood that a random variable underlying the data set will be normally distributed. The Jarque-Bera test is used to determine whether the data are normal. The Jarque-Bera test measures how well sample data fit a normal distribution in terms of skewness and kurtosis.

At the 5% significance level, a result of 1 indicates that the null hypothesis has been rejected. In other words, a normal distribution is not how the data are distributed. The data are said to be normally distributed if the value is 0.

Steps in E-views: "View/Residual Diagnostics/Histogram-Normality."

#### **2.7.4 Test of Heteroskedasticity**

Heteroskedasticity is a situation in which a variable's variability is unevenly distributed throughout the range of values of a second variable that predicts it. The validity of econometric analysis may be affected by this situation of assumption violation for linear regression modelling. Heteroskedasticity is a problem because ordinary least squares (OLS) regression assumes that all residuals are drawn from a population that has a constant variance (homoscedasticity).

Steps in E-views: "View/Residual Diagnostics/Heteroskedasticity Tests."

#### **2.7.5 Co-integration Test**

If we regress the non-stationary variables X on the non-stationary variables Y, the "Spurious Regression" may arise, which leads to incorrect estimation of result. However, there exists one exception that is if two or more than two time series variables are non-stationary themselves but a linear combination of them are stationary. In this case the series are said to be co-integrated. This technique examines the correlation between non-stationary time series variables. In practice, many economic time series variables which contains unit roots move together over time and the variable under consideration may drift away from equilibrium for a while, but there exist some forces on the series that make them convergence upon some long run value. Hence, the Co-integration test is conducted to know the nature and degree of long run relationship between the variables. There are various tests regarding co-integration such as Engle-Granger Residual based test and Johansen Co-integration test.

Engle-Granger Residual based test is not appropriate if there are more than two variable under the consideration or the multivariate time series model. Because, there may exist more than one co-integrating relationships in case of multivariate time series model. For such situation, an alternative multivariate technique of co-integration is Johansen Co-integration test. In this study there are four time series variable so Johansen Co-integration test is carried out.

Steps in E-views: /Quick/Group Statistics/Co-integration test intercept (no trend) in CE and Test.

#### **2.7.6 Vector Error Correction Model**

The co-integration test only consider the long-run relationship or long-run linkages between the level series of variables while the Vector Error Correction Model (VECM) is developed to measure any dynamic adjustment between the first differences of the variables. It is conducted to know the nature and degree of temporal causality between the variables. A vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be co-integrated.

Steps in E-views: Quick/Estimate VAR/Vector Error Correction/ (write the value-it automatically converts the variables into first difference.) /Proc/Make System/Order by Variable (copy one)/Quick/estimate Equation (Paste)/Ok

#### **2.7.7 Long Run and Short Run Relationship**

Since there is long run association between the variables the vector error correction model can be run.

Steps in E-views: Run VECR/ View/Coefficient Diagnostics/Wald Test

#### **2.7.8 Granger Causality Test**

The link between the variables is determined using the Pair Wise Granger Causality Test. If previous values of x can be used to predict future values of y given past values of y, then x is said to Granger-cause y. Regressing



y on both its own lagged values and the lagged values of x is a common way to assess Granger causality. The null hypothesis is that the estimated coefficients on the lagged values of x are all jointly zero. Rejecting the null hypothesis is equal to rejecting the null hypothesis that x does not cause y in Granger's model.

## 2.8 Econometric Results

### 2.8.1 Unit Root Test

The unit root test is used to determine whether stationary is present in the data. For the test of unit root, which confirms the stationary condition in the variables, the augmented Dickey Fuller Test is used.

**Table 2.2: Result of ADF Test on Level Series**

Variables	Intercept	Trend & Intercept	None
FDI	0.048477 (0.9547)	-1.746100 (0.6999)	0.851153 (0.8880)
GDP	4.589304 (1.0000)	-0.319972 (0.9852)	8.757020 (1.0000)
GFCF	2.081474 (0.9998)	-0.998045 (0.9263)	4.175184 (0.9999)

**Table 2.3: Result of ADF Test on First Differenced Series**

Variables	Intercept	Trend & Intercept	None
$\Delta$ FDI	-4.974421* (0.0006)	-5.361314* (0.0012)	-4.742128* (0.0000)
$\Delta$ GDP	-2.145053 (0.2301)	-4.214526* (0.0159)	-1.334182 (0.1637)
$\Delta$ GFCF	-3.551180* (0.0152)	-4.243018* (0.0150)	-1.345817 (0.1602)

### 2.8.2 Co-integration Result

If we have more than two variables in the model, then there is possibility of having more than one co-integrating vectors. By this we mean that the variables in the model might form several equilibrium relationships. To find out how many co-integrating relationship exists among K variables requires the use of Johansen's methodology. The Johansen's approach also requires all variables in the system are integrated of the same order.

When two or more than two time series variables are integrated of same order, there is possibility of co-integration between them. Since, FDI, GDP and GFCF are co-integrated conveys that they will retain a reasonable proximity to each other in the long run, i.e. they do have a long-run relationship.

There may be more than one co-integrating relationship among the co-integrated variables. Johansen test provides estimates of all such co-integrating equations and provides a test statistics for the number of co-integrating equations. Following table shows the result of the Johansen co-integration test:

**Table 2.4: Result of the Johansen Co-integration Test:**

Unrestricted Co-integration Rank Test (Trace)					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.665536	40.68849	29.79707	0.0019	
At most 1	0.324998	14.40309	15.49471	0.0725	
At most 2 *	0.187053	4.970146	3.841466	0.0258	



Trace test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Co-integration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigen value	Statistic	Critical Value	Prob.**
None *	0.665536	26.28541	21.13162	0.0086
At most 1	0.324998	9.432943	14.26460	0.2519
At most 2 *	0.187053	4.970146	3.841466	0.0258
Max-eigenvalue test indicates 1 co-integrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Rank test (Trace) indicates that there is one co-integrating equation at 0.05 level of significance and the maximum Eigen statistics also indicates that there is one co-integrating equation. The following table presents the normalized co-integrating coefficients:

**Table 2.5: Co-integrating Coefficients**

1 Co-integrating Equation(s):		Log likelihood	-795.0244		
Normalized co-integrating coefficients (standard error in parentheses)					
GDP	GFCF	FDI			
1.000000	-0.329696	-112.2664			
	(0.44129)	(27.7044)			

### 2.8.3 Vector Error Correction Model

Since there is long run association between the variables, we can run the vector error correction model. For this level data are used for calculation. The model automatically converts the variables at first difference. The long run relation is thus estimated as:

**Table 2.6: Vector Error Correction Model**

$D(\text{GDP}) = C(1) * (\text{GDP}(-1) - 0.3297 * \text{GFCF}(-1) - 112.2664$ $* \text{FDI}(-1) - 701826.708613) + C(2) * D(\text{GDP}(-1)) + C(3)$ $* D(\text{GFCF}(-1)) + C(4) * D(\text{FDI}(-1)) + C(5)$				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.023634	0.035921	0.657944	0.5185
C(2)	0.235876	0.132267	1.783329	0.0905
C(3)	1.424440	0.171413	8.310002	0.0000
C(4)	3.389959	4.181855	0.810635	0.4276
C(5)	45169.90	20399.33	2.214284	0.0392
R-squared	0.878121	Mean dependent var		150341.1
Adjusted R-squared	0.852462	S.D. dependent var		129109.7
S.E. of regression	49591.92	Akaike info criterion		24.64410
Sum squared resid	4.67E+10	Schwarz criterion		24.88952

Log likelihood	-290.7291	Hannan-Quinn criter.	24.70921
F-statistic	34.22299	Durbin-Watson stat	2.408678
Prob(F-statistic)	0.000000		

#### 2.8.4 Long Run Causality

C(1) is the error correction term or speed of adjustment towards equilibrium. Since the C(1) is positive in sign and insignificant, there is no long run causality running from independent variables to dependent variable.

#### 2.8.5 Short run causality

**Table 2.7: Wald Test: Null hypothesis: C(2) = 0**

Test Statistic	Value	df	Probability
t-statistic	1.783329	19	0.0905
F-statistic	3.180262	(1, 19)	0.0905
Chi-square	3.180262	1	0.0745

Since the probability value of Chi-square is greater than 5 percent, there is no evidence of short run causality running from lag of GDP to GDP.

**Table 2.8: Wald Test: Null hypothesis: C(3) = 0**

Test Statistic	Value	df	Probability
t-statistic	8.310002	19	0.0000
F-statistic	69.05613	(1, 19)	0.0000
Chi-square	69.05613	1	0.0000

Since the probability value of Chi-square is less than 5 percent, there is short run causality running from GFCF to GDP.

**Table 2.9: Wald Test: Null hypothesis: C(4) = 0**

Test Statistic	Value	Df	Probability
t-statistic	0.810635	19	0.4276
F-statistic	0.657129	(1, 19)	0.4276
Chi-square	0.657129	1	0.4176

Since the probability value of Chi-square is greater than 5 percent, there is no evidence of short run causality running from FDI to GDP.

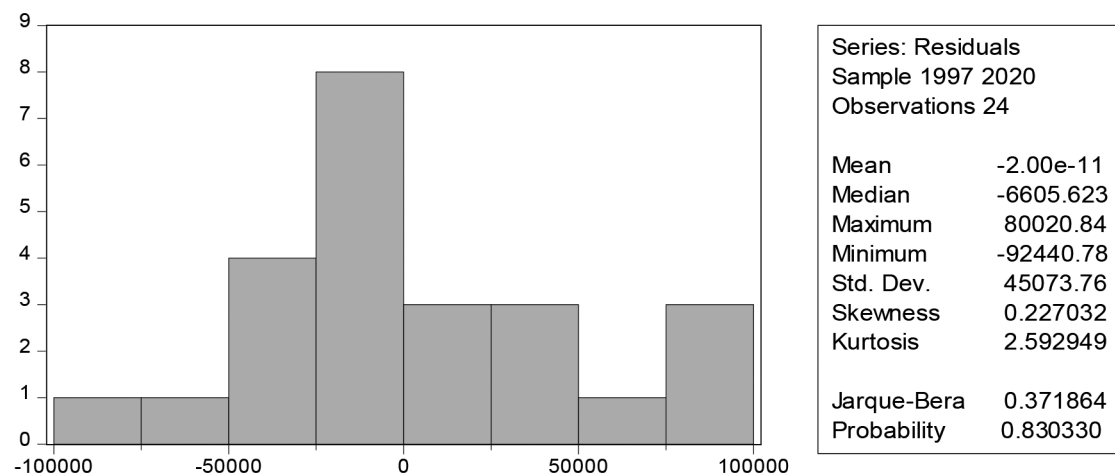
#### 2.8.6 Model Diagnosis

##### 2.8.7 F-Test

Since  $R^2$  is 87.81 percent and the p value of F-statistic is less than 1 percent, our model is fitted well. P value of f-statistic is significant in 1 percent.

##### 2.8.8 Normality Test

The Jarque-Bera test is used to determine whether the distribution of the model's variables meets the requirement for normality. This test's significance indicates that the variables are distributed normally. Below is a presentation of the test's results.



**Figure 2.1: Jarque-Bera Normality Test**

The result of the Jarque-Bera test indicates that the null hypothesis is accepted because the test's probability is larger than 5% level of significance. Since the probability value of Jarque-Bera(0.830330) is greater than 5 percent, the residual of the model follow the normal distribution.

### 2.8.9 Heteroskedasticity test

Bruesch-Pagan-Godfrey The test is designed to identify heteroskedasticity, a challenge in econometric regression analysis. The test's outcome is provided in the table below.

**Table 2.10: Heteroskedasticity Test: Breusch-Pagan-Godfrey**

F-statistic	2.959047	Prob. F(6,17)	0.0364
Obs*R-squared	12.26044	Prob. Chi-Square(6)	0.0564
Scaled explained SS	6.120158	Prob. Chi-Square(6)	0.4099

Table 2.10 displays the outcomes of the Breusch-Pagan-Godfrey heteroskedasticity test. The finding that the null hypothesis of homoscedasticity is not rejected at a level of significance of 5% denotes the model's lack of heteroskedasticity i.e. the p value of observed R-squared is greater than 5 percent, the data is homoscedastic.

### 2.8.10 Serial Correlation Test

To determine the serial correlation in the model, the Breusch-Godfrey LM test is run, and the test's outcome is provided as follows:

**Table 2.11: Breusch-Godfrey Serial Correlation LM Test**

F-statistic	1.347037	Prob. F(1,18)	0.2610
Obs*R-squared	1.670999	Prob. Chi-Square(1)	0.1961

The Breusch-Godfrey Serial Correlation LM Test result, which affirms the presence of autocorrelation in the model, is shown in table 2.11. As a result, the null hypothesis that there is no serial correlation is accepted because Fstatistic and Obs R-squared probability are both more than 5% level.

### 2.8.11 Granger Causality Test

The Granger Causality test is utilized determine if the relationship between the independent and dependent variables is causal. The test is run in order to identify the source of influences, which is crucial for influencing policy. The result of Granger Causality test is shown in the following table:

**Table 2.12: Pairwise Granger Causality Tests**

Null Hypothesis:	Obs	F-Statistic	Prob.
GFCF does not Granger Cause GDP	24	40.0362	2.E-07
GDP does not Granger Cause GFCF		4.18207	0.0313
FDI does not Granger Cause GDP	24	0.16660	0.8478
GDP does not Granger Cause FDI		11.1223	0.0006
FDI does not Granger Cause GFCF	24	3.92639	0.0374
GFCF does not Granger Cause FDI		10.1535	0.0010

Table 2.12 represents the pairwise granger causality between dependent and independent variables in the model.

- i. GFCF Granger causes GDP and GDP Granger causes GFCF. This means there exist bidirectional relationship between GDP and GFCF.
- ii. GDP Granger Cause FDI. This means there exist unidirectional relationship between GDP and FDI.
- iii. FDI Granger Cause GFCF and GFCF Granger Cause FDI This means there exist bidirectional relationship between GFCF and FDI.

This result is inconsistent to the theory. Because, according to the theory there should be positive relationship between FDI and gross domestic product.

### 3. Conclusion and Discussion

GFCF Granger causes GDP and GDP Granger causes GFCF. This means there exist bidirectional relationship between GDP and GFCF. GDP Granger Cause FDI. This means there exist unidirectional relationship between GDP and FDI. FDI Granger Cause GFCF and GFCF Granger Cause FDI This means there exist bidirectional relationship between GFCF and FDI. This result is inconsistent to the theory. Because, according to the theory there should be positive relationship between FDI and gross domestic product.

The inflow of FDI signifies boosting role of macroeconomic variables such employment, economic growth, GDP, foreign trade and as well as money supply. In the context of Nepal, the volume of FDI and GFCF have not found sufficient and investors do not fill comfort investing their capital due to policies hurdles and political instability. There needs investment friendly policy and environment for attracting FDI and GFCF.

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**Appendix**  
**Research Variables (*Rupees in Million*)**

FY	GDP	GFCF	FDI
1995	248913	56081	388
1996	280513	60794	1621
1997	300845	65375	685
1998	342036	65269	578
1999	379488	73324	232.6
2000	441519	89889	-33
2001	459442.8	98073	-282.3
2002	492231.3	109181	961.4
2003	536749	117539	0
2004	589412	135532	136
2005	654084	153337	-469.7
2006	727827	178446	362.3
2007	815663	211039	293.9
2008	988272	264890	1829.2
2009	1192774	292730	2852
2010	1366954	373940	6437.1
2011	1527344	421840	9195.4
2012	1758380	482070	9081.9
2013	1949290	563760	3194.6
2014	2232530	667800	4383.6
2015	2423640	748690	5920.9
2016	2608180	940850	13503.9
2017	3077140	1120860	17504.6
2018	3455950	1304900	13065.2
2019	3858930	1184860	19478.7
2020	3888700	1276860	19513

Source: MOF, Economic Survey (2010/11 and 2021/22) and NRB, QEB (2022).



## Determination of heavy metals in varieties of fresh and packaged fruit juices along with powdered fruit drink mixes in Kathmandu Valley

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### ABSTRACT

Analysis of heavy metals was performed in packaged and fresh fruit juices along with powdered fruit drink mixes (Tangs), purchased from different stores of Kathmandu Valley, using Flame Atomic Absorption Spectroscopy (FAAS). Selection of Fruit Juices and Tangs was done from five different fruits, viz., apple, orange, pineapple, pomegranate, and mango in an attempt to quantify four heavy metals, i.e., Zinc (Zn), Manganese (Mn), Iron (Fe) and Lead (Pb). The wet digestion technique was employed for the decomposition of samples. Variability in the concentration of heavy metals was observed in various types of fruit juices, thereby verifying that the levels of heavy metals are dependent on the types of fruits as well as fruit juices. The mean concentrations of all the investigated metals (Fe, Pb, Mn, and Zn) were below the maximum permissible limit in the selected juices and tangs. Irrespective of the types of fruits or nature of juices, i.e., either packaged or fresh fruit juices or tangs, the studied samples are safe for human consumption based on studied heavy metals toxicity.

**Keywords:** Fruit juices, powdered fruit drink mixes, Flame Atomic Absorption Spectroscopy, Maximum permissible limit, Heavy metals

### INTRODUCTION

Fruit Juices and powdered fruit drink mixes (Tangs) are among the most commonly consumed non-alcoholic beverages by different age groups in both developed and developing countries (Dosumu et al., 2009). Commercially available packaged fruit juices and powdered fruit drink mixes as well as freshly squeezed fruit juices consist of numerous physiologically and nutritionally pivotal compounds for human health such as bioactive phytochemicals, vital nutrients, vitamins, and various essential elements (Jalbani et al., 2010; Krjpcio et al., 2005). Apart from their use as thirst quenchers, fruit juices and tangs render a positive effect on promoting physical and mental well-being as well as preventing diet-related diseases owing to their antioxidant activity and other beneficial effects (Orak, 2009).

The effect of metals on human health depends on their types and concentrations. Essential heavy metals such as iron (Fe), zinc (Zn), and manganese (Mn), at optimum concentration, exert beneficial effects on human health due to their ability to participate in various biochemical processes in the human body; however, both low and high concentrations of these metals cause adverse health effects (Anastacio et al., 2018). For instance, iron deficiency in the human body leads to anemia while its excessive intake increases the risk of colorectal cancer. Zinc could lead to electrolyte imbalance, nausea, anemia, and lethargy if consumed in excessive quantities (Anastacio et al., 2018). Excessive consumption of manganese could lead to diseases such as gastrointestinal disorders, cancer, and respiratory problem (Powell, 2000). In contrast, a non-essential heavy metal such as Lead (Pb) imparts toxic effects on human health even when present at low concentrations (Houston, 2007; Hsu, 2002). The maximum permissible limit (MPL) of lead, zinc, iron, and manganese as recommended by WHO/FAO in fruit and vegetables are 0.3, 99.40, 425, and 100 mg/kg dry weight respectively (Banerjee et al., 2010).

Determination of heavy metals in varieties of fruit juices and powdered fruit drink mixes is of considerable importance because the information regarding the nutritional value and safety of these beverages could be ensured to consumers (Alwakeel et al., 2008). The matrix of fruit juices and tangs contains a surplus amount of organic compounds, which can cause interferences during heavy metals determination by atomic spectrometry methods (Pohl et al., 2013). Thus, it is essential to decompose fruit juices and tangs using different digestion procedures

to release metals into sample solutions as simple ions (Cindric et al., 2011). The most commonly used digestion technique for fruit juices and powdered fruit drink mix samples is the wet digestion method (Tormen et al., 2011). In the case of the wet-digestion technique, conducted in an open-vessel system, samples are treated with mineral acids or their mixtures followed by heating using hot plates or digestion blocks to digest and reduce the volume of sample solutions (Tufuor et al., 2011).

Atomic Absorption Spectrometric (AAS) method is used for the determination of heavy metals in fruit juices and tangs (Nascentes et al., 2004). AAS is an analytical technique that involves atomization of the elemental samples followed by absorption of radiation from a light source by the free atoms to obtain concentrations of heavy metals in unknown samples (Welz et al., 2008). Among different atomic spectrometry methods, flame atomic absorption spectrometry (FAAS) is the most commonly employed technique in elemental analysis of fruit juices and tangs owing to the relatively low costs of equipment, its operation, and maintenance (Ajai et al., 2014; Santos et al., 2014).

Although numerous researches have been performed for the determination of different heavy metals in various fruit juices, the studies including heavy metals estimation in powdered fruit drink mix in addition to its comparison with fresh and packaged fruit juices are lacking to date in Nepal. In an attempt to address this lacuna in research, the present study focuses on the determination of heavy metals, viz., Iron (Fe), Manganese (Mn), Zinc (Zn), and Lead (Pb) using Flame Atomic Absorption Spectroscopic (FAAS) technique in fresh/package fruit juices and powdered fruit drink mixes (Tangs) of five different fruits, including orange, pineapple, mango, apple and pomegranate available in Kathmandu Valley.

## **MATERIALS AND METHODS**

Analytical grade nitric acid ( $\text{HNO}_3$ ) and deionized water were used throughout the experiments. Certified Reference Solutions (1000 mg/L) of respective metal ions required for the Atomic Absorption Spectrometer were obtained from Sigma-Aldrich (Fluka Analytical), Germany.

### **Samples Collection**

Altogether ten fruit juices of two different varieties, i.e., freshly squeezed and packaged fruit juices, and five powdered fruit drink mixes (Tang) were collected from different shops in Kathmandu Valley. Fruit juices of five different fruits, viz., apple, pineapple, mango, pomegranate, and orange, were procured.

### **Digestion of fruit juice samples**

The fresh and packaged fruit juice samples were digested by the addition of 10 mL of concentrated nitric acid ( $\text{HNO}_3$ ) into 5mL of samples in a beaker followed by heating the solution on a hot plate for one hour to reduce the total volume of sample to one-third of its original volume. The digested sample was then allowed to cool, then filtered into a 50mL volumetric flask, and made up to mark with distilled water. The final samples were then stored in a refrigerator maintained at a temperature of 8°C before analysis. In the case of Tang, the powdered samples equivalent to 20 g were initially dissolved in 200 mL of deionized water, then 5 mL of the resultant solution was taken and similarly proceeded for digestion process as fresh and packaged fruit juice samples.

### **Instrumentation**

The digested fruit juice and tang samples were analyzed for the concentrations of heavy metals (Fe, Zn, Pb, and Mn) using Flame Atomic Absorption Spectrophotometer (FAAS), 240S AA (200 Series AA).

## RESULTS AND DISCUSSION

### Determination of heavy metals in fruit juices and tangs

The mean concentrations of various heavy metals obtained from the varieties of digested fruit juices and powdered fruit drink mix (tang) samples are presented in Table 1.

**Table 1: Concentration of heavy metals obtained in Packaged/Fresh Fruit Juices and Powdered Fruit Drink Mix (Tang)**

Fruit Juice Samples	Types of Fruits	Concentration (mg/L)			
		Iron (Fe)	Manganese (Mn)	Zinc (Zn)	Lead (Pb)
Packaged Fruit Juice	Orange	0.26	<0.01	0.19	<0.01
	Pineapple	0.1	0.03	0.55	<0.01
	Mango	<0.1	<0.01	0.39	<0.01
	Apple	2.91	0.15	0.78	<0.01
	Pomegranate	3.63	<0.01	0.19	<0.01
Fresh Fruit Juice	Orange	1.15	0.41	0.29	<0.01
	Pineapple	0.29	<0.01	0.05	<0.01
	Mango	0.27	<0.01	<0.01	<0.01
	Apple	<0.1	0.11	<0.01	<0.01
	Pomegranate	1.02	0.94	<0.01	<0.01
Powdered Fruit Drink Mix (Tang)	Orange	0.52	<0.01	<0.01	<0.01
	Pineapple	1.29	<0.01	<0.01	<0.01
	Mango	0.12	<0.01	<0.01	<0.01
	Apple	1.82	0.16	<0.01	<0.01
	Pomegranate	1.58	<0.01	<0.01	<0.01

### Determination of Iron (Fe) content in fruit juices and tangs

The variation of iron (Fe) concentration concerning different varieties of packaged/fresh fruit juice and powdered drink mix samples is depicted in Figure 1(a). Regarding packaged fruit juice, the iron content in the pomegranate sample was highest (3.63 mg/L) followed by apple (2.91 mg/L), orange (0.26 mg/L), and pineapple (0.1 mg/L) and mango (<0.1 mg/L) juice. However, in the case of fresh fruit juice samples, maximum and minimum iron content was found in orange (1.15 mg/L) and apple (<0.1 mg/L) respectively. Likewise, the powdered fruit drink mix sample showed maximum iron content for the apple-flavored sample (1.82 mg/L) and minimum for mango-flavored tang (0.12 mg/L). From the obtained results, it is evident that the concentrations of iron in all the investigated fruit juices and tangs are below the Maximum Permissible Limit (MPL) of 425 mg/kg as reported by WHO/FAO, thereby verifying the non-toxic level of iron in these beverages.

Although considered a trace mineral, diets lacking iron can contribute to the deficiency known as anemia, a condition with a reduced number of red blood cells (Scholl et al., 2000). In contrast, iron overload in the vital organs of the body may lead to liver disease, heart attack, diabetes, etc (Fleming et al., 2012). Regarding the resultant data, consumption of packaged pomegranate juice might be relatively beneficial for people suffering from diseases like anemia because the same juice showed the highest quantity of iron (3.63 mg/L) compared to

other types of juices and tangs.

### **Determination of Manganese (Mn) content in fruit juices and tangs**

The concentration of manganese (Mn) in all the samples is demonstrated graphically in Figure 1(b). The manganese content in packaged juice of orange, mango, and pomegranate was found less than 0.01 mg/L; in the case of apple and pineapple samples, it was obtained in the range of 0.15 and 0.03 mg/L respectively. Fresh fruit juice of mango and pineapple had manganese concentration below 0.01 mg/L while that of pomegranate showed the highest content of Mn (0.94 mg/L). In the case of powdered fruit drink mix, apple-flavored tang showed Mn concentration in the range of 0.16 mg/L while other fruit types had their concentration below 0.01 mg/L.

Manganese is a potent neurotoxin when accumulated in the human body at high concentrations (Eneji et al., 2015). However, evidence of Mn content below its maximum permissible limit, i.e., 100 mg/kg in the experimented fruit juice and tang samples excludes manganese toxicity. Based on data obtained from the present study, freshly squeezed pomegranate juice could serve as a useful beverage for people suffering from prolonged deficiency of manganese showing symptoms like retarded growth, digestive disorders, male and female sterility, etc (Eneji et al., 2015). The aforementioned inference is indicative of the highest manganese content of 0.94 mg/L for fresh pomegranate juice.

### **Determination of Zinc (Zn) content in fruit juices and tangs**

The differences in Zinc (Zn) content concerning various packaged/fresh fruit juices and powdered drink mix is represented in Figure 1(c). The concentration of Zn in powdered mix samples for all investigated fruit groups was below 0.01 mg/L. A similar observation in terms of Zn content was observed in fresh fruit juice samples of mango, apple, and pomegranate; however, Zn content of orange and pineapple fruit juice samples lay in the range of 0.29 and 0.05 mg/L. The concentration of Zn in packaged fruit juice samples was comparatively higher than in tang and fresh juice. Apple flavored packed juice showed a maximum (0.78 mg/L) concentration of Zn while orange and pomegranate juice showed Zn content in the minimum range of 0.19 mg/L.

Since the concentration of zinc is very less than its maximum permissible limit, i.e., 99.40 mg/kg, its overdose in all the fruit juices and tangs is ruled out. In comparison to other types, apple-flavored packaged juice might be more helpful for people suffering Zn deficiency symptoms which is due to the highest content of Zn (0.78 mg/L) in the latter sample. In addition, the obtained data demonstrate that the fresh fruit juices (except orange and pineapple) and tangs do not serve as useful beverages for the patients requiring zinc in their dietary supplements since these samples showed an insignificant quantity (<0.01 mg/L) of zinc.

### **Determination of Lead (Pb) content in fruit juices and tangs**

The concentration of lead (Pb) in all the varieties of fruit juices and tang was found below 0.01 mg/L which is demonstrated in Figure 1(d). This value is below the maximum permissible limit (0.3 mg/kg) for the lead which rules out the possibility of lead toxicity in the investigated fruit juice and powdered drink mix samples. Since lead is one of the most non-essential toxic elements, thus the exclusion of lead poisoning could ascertain the safety of these fruit juices and tangs in terms of human consumption.

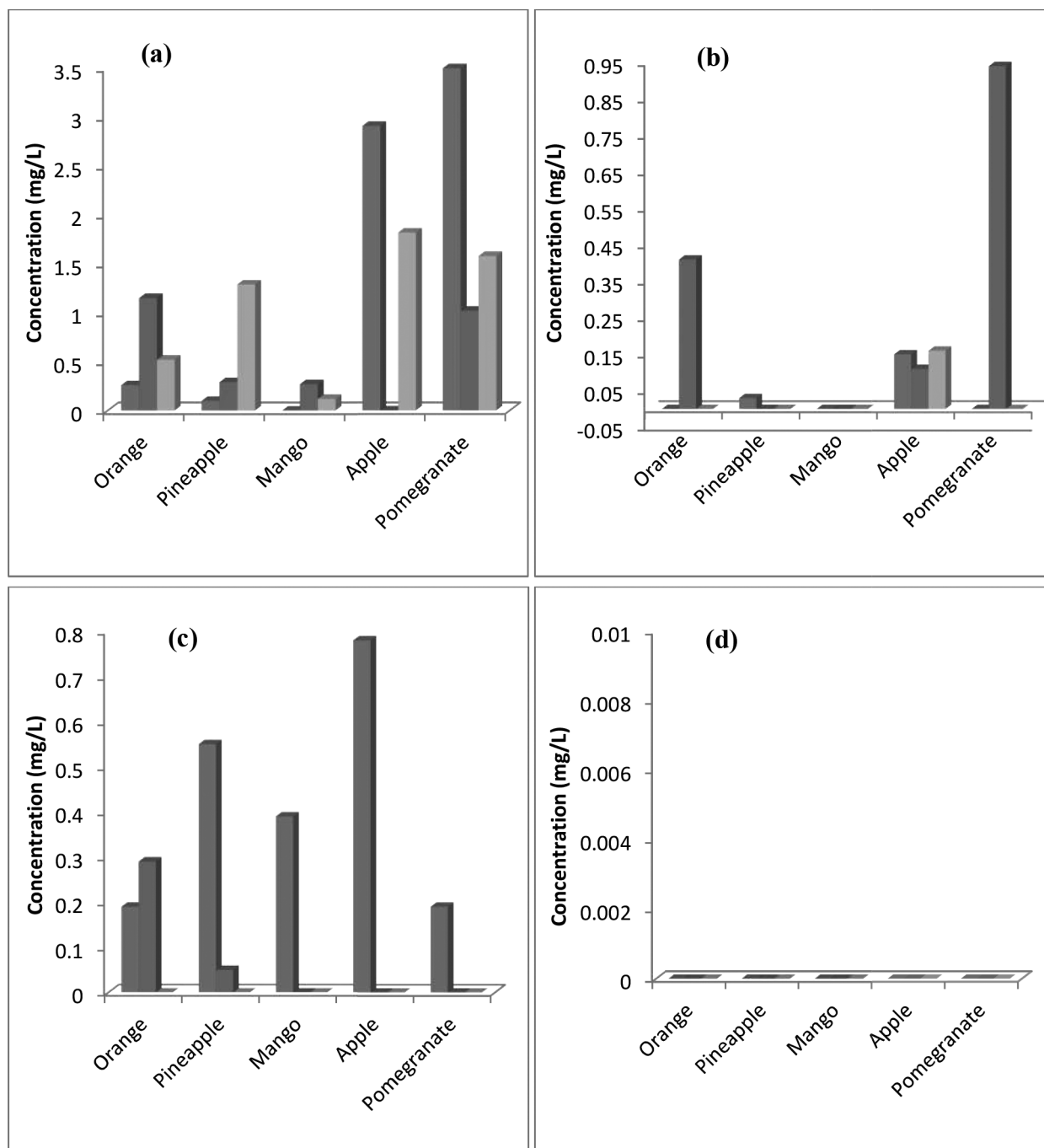


Figure 1. Variation in concentrations of heavy metals, including (a) Iron (Fe), (b) Manganese (Mn), (c) Zinc (Zn) and (d) Lead (Pb) in different fruits-flavoured packaged juices ( ), fresh juices ( ) and powdered fruit drink mixes, i.e., tangs ( )

## CONCLUSION

The concentrations of various heavy metals in fresh/package fruit juices and tangs of five different fruits, purchased from Kathmandu Valley, were successfully determined using Flame Atomic Absorption Spectroscopy (FAAS). The maximum concentration of iron (Fe) was observed in packaged pomegranate juice while fresh pomegranate juice showed the highest manganese (Mn) content. The highest value of Zn content was found in apple-flavored packaged juice. However, the concentration of lead (Pb) in all types of juices and tangs was observed below 0.01 mg/L. Although concentrations of heavy metals varied concerning different varieties of

fruit juices and tangs, none of the samples exceeded the maximum permissible limit for any of the studied heavy metals. The obtained results led to the conclusion that the studied fruit juices and tangs are free of toxic trace metals like lead and the contents of essential elements like iron, manganese, and zinc are within the safest limit for the consumer. Thus, the present study ascertains the fact that the studied fruit juices and tangs of Kathmandu Valley are safe for human consumption concerning the toxicity of investigated heavy metals.

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## Parental Raising Style, Personality and self-regard among School Adolescents.

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### ABSTRACT

100 adolescents (50 boy and 50 girls) Subjects were collected from various school in Bharatpur metropolitan city employed with Gerlsma Pecaived Parental Rearing Style (PPRSQ), Kellner Sympton Questionnaire (S.Q.) and Rosenberg Self-Esteem Scale. The results disclase that boys have notably more non acceptance from father ad compared to girls and girls and girls have shown outstandingly better emotional warmth in comparison to boys from father. The boy and girls did not differ significantly on the factors over protection and favoring subjects of PPRSQ for father. No dependable difference was discovered between boys and girls on all the factors of PPRSQ for mother. The differentiation of boys and girls on anxiety, depression, somatic problems, anger hostility and self-esteem pointed out significantly higher anxiety. More somatic problem and increased hostility among boys, and high self-regard in girls. The study highs of the received parental raising style and its effect on personality of adolescents and has educational implications for parents.

**Keywords-** Communication, Overlook, parental exception, Anxiety.

### Introduction:

Parent Participation is Prime to the educational accomplishment of a young adolescent and yet usually decrease when a child enters the middle grades (Epstein, 2005; Jackson & Andrews 2004; & Davis, 2000; NMSA 2003;). Parent participation is defined as having an Consciousness of and involvement in schooling, and a commitment to persistent communication with educators about student progress. The term “Parents” refers to biological parents, \_adoptive and stepparents, and primary caregivers (grandmother, aunt, brother). The research on parent association in the education of young adolescents point out parent’s activities in favor of learning at home, in school, and in the community. Joyce Epstein, a leading researcher in the field of parent participation, identified and studied multiple measures of parent taking part in the middle grades (Epstein, 1995; Epstein, Sanders, Simon, Salinas, Janson, & Van Voorhies 2002). As a result of this research, Epstein and her colleagues, using the methodology of meta-analysis (analyzing various research, studies) the researchers identified three constructs of parent involvement: i) Communication, ii) Super intend, and iii) Parental expectations and parenting style.

Parenting style has a vast impact on the growth of the child and there has been a increasing awareness of the importance. Unreasonable parental expectations, especially when tag along with faculty parental behavior motif adversely affect the child’s psychological wellbeing. According to Thergaonkar and Wadkar (2007), inculcating a democratic style of parenting and greater acceptance of parents among children may avert anxiety. Parenting style is acknowledge as the most successful style for developing skilled and confident children. Lung et al (2004) famed that a parental bonding directly affects personality characteristics. Emme Kamp (2006) suggested that a noteworthy amount of variance of Type A behavior can be reckon up for by perceived parental characteristics, mainly rejection and lack of emotional affection and negative evaluation of children by their parents may lead to an personalized maladaptive cognitive set in the children. Furnham and Cheng (2000) inspect the parental and maternal raising styles and found that a logical discipline exercised by mothers toward their children was particularly favourable in increasing the off-springs self-regard. A close inspection of the review of studies reveals that parenting raising style has greatest influence on the development of child personality and personality traits. Therefore, the present study was taken on to survey the parental raising style, personality and selfregard among adolescents.

Parental raising is not only explained as a predictor for self-regard (Liu, 2003; Restifo, Akse, Guzman, Benjamins, & Dick, 2009; Muris, Meesters, & van den Berg, 2003) but also as an affective factor for the

vulnerability to psychopathology (Baker & Hoerger 2012; Liu, 2003; Restifo et al., 2009).

Depressive symptoms are correlated with parental raising mediated by self-regard (Cheng & Furnham, 2003; Liu 2003; Restifo et al. 2009; Milevsky, Schlechter, Netter, & Keehn, 2007). The strongest mediating effect of self-regard was shown for the relationship of family factors (parental care and conflict with parents) and depressive symptoms (Restifo et al., 2009). On the one hand, self-regard mediates the relationship between maternal acceptance, psychopathological control, and depressive symptoms (Cheng & Furnham, 2003). On the other hand, the mediating effect of self-regard on parental psychopathological control and depressive symptoms was not copied by other investigations (Restifo et al., 2009). These varying results might be described by small and non-representative samples. In addition, a limitation in all of these studies might be that they solely evaluated depressive symptoms. However, there is a high comorbidity and intersecting symptomatology between anxiety and depression (Onken & Ströhle, 2005). In addition, Oliver and Paull proposed already in 1995 that these results may not be particular to depression but may also apply to anxiety since parenting behavior also has an impact on the development of anxiety disorders (Greco & Morris, 2002; Hudson & Rapee, 2001). It is already known that less emotional affection and greater control in parenting behavior is related with various types of anxiety disorders. (Bögels, Bamelis, & van der Bruggen, 2008; Greco & Morris, 2002). A higher degree of received parental control foretells a larger degree of impostor fears (Sonnak & Towell, 2001). Additionally, overprotection is also associated to anxiety disorders (Turgeon, O'Connor, Marchand, & Freeston, 2002). Although, it is still unknown how self-regard connects the relationship between parental raising and anxiety disorders. As a result, in the present study, depressive as well as anxiety symptoms are taken in for the first time in the calculations concerning the effects of parental raising styles mediated by self-regard. This way, the parallel examination of anxiety disorders and depression allows the analysis of the mediating function of self-regard specific to a certain disorder.

Based on the literature (Paulson et al., 1991) it can be hypothesized (1) that the effect of recalled parental raising measured by rejection/punishment, emotional affection, and control/extra protection on anxiety as well as on depressive symptoms is mediated by self-regard. More accurately, an authoritative parenting style providing emotional affection will lead to greater self-regard.

A greater rejecting and controlling parenting style will be correlated with lower self-regard. Relating the contrasting effect of a mother's and a father's parental raising style, based on the literature it can be hypothesized that (2) the mother's parental raising style might be more greatly associated with the self-regard and the psychopathology of the respondents than the raising style of the father. Consequently, the effect of recalled parental raising on self-regard decreases with increasing age. It can be hypothesized for adults that (4) the effect of recalled parental raising on self-regard is bottom most for the higher age groups.

### **Sample:**

100 adolescents (50 boys and 50 girls) were chosen from various schools in Bharatpur metropolitan city the age ranged from 14 to 17 years. Analysis of extraneous variables shows that the extraneous variables were almost homogeneously distributed across the samples (boys and girls).

### **Tools:**

Perceived Parental Raising Style Questionnaire (PPRSQ): It was developed by Gerstman, Arrindell, Van Dirven and Emme Kamp, (1971) and consists of 54 items with four different responses for 4

Primary Factor – Rejection (19 items), Emotional affection (19 items), Extra Protection (11 items), and Favoring Subjects Domain. It is a self-report measure intended to assess adolescents' recollection of their parental raising behaviors. Self-pride Scale (Rosenberg, 1965): This scale of great score indicates low self-regard while a low score indicates high self-regard.

### **Procedure:**

The subjects were approached personally in their schools for data collection. The subjects were provided with basic information for each test to make them understand how to perform.

## Results:

Analysis of the extraneous variables should that the variance are almost relatively homogeneously dispensed across the sample, and hence insuring the representativeness of the samples for the conduct of the study.

An examination of the table reveals remarkable difference between boys and girls students on the factors Rejection and Emotional affection of PPRSQ for father. The comparisons of boys and girls students on the factors Over Protection and Favoring Subject of PPRSQ did not exhibit noteworthy difference for father. No notable difference was found between boys and girls students of the factors of PPRSQ for mother. The greater of boys and girls students on the personality factors reveal remarkable greater anxiety, higher anger hostility, and more somatic concern in boys' students. The results also showed notable high level of self-regard in girl's student.

**Table 1: Mean, SD. and T-values on the factors of PPRSQ for father and mother and on the personality and self-regard factors for boys and girls:**

		Factors	Boys		Girls		T-Value
			Mean	SD	Mean	SD	
PPRSQ	Father	Non-acceptance	36.86	4.67	34.22	6.21	3.64**
		affection	53.56	9.57	55.00	3.53	2.17**
		Extra Protection	27.80	4.55	28.80	3.88	1.28
		Favoring	9.00	2.51	9.96	3.25	1.65
	Mother	Non Acceptance	33.67	6.78	32.88	5.56	0.25
		Emotional	51.92	10.72	53.42	7.77	0.52
		Extra Protection	29.24	4.94	29.84	4.89	0.75
		Favoring	9.00	2.54	9.44	3.21	0.77
Personality Factor		Anxiety	10.64	3.60	9.00	3.63	3.35**
		Depression	7.68	4.48	7.05	4.07	0.71
		Somatic Concern	9.90	3.75	6.90	3.70	3.67**
		Anger Hostility	10.80	3.72	7.61	4.10	4.32**
		Self-regard	24.54	1.77	20.90	2.90	6.70**

Results of the study make it apparent to conclude the trends of received Parental Raising Style and it's notable effect on the personality development in boys and girls students. The boys' students showed remarkable more rejection as compared to the girls' students while girls' students received better emotional affection in comparison to boys students from father. The results showed no reliable difference between boys and girls students on the factors of PPRSQ for mother. The finding is not persistent with that of an either investigation carried in Mizoram by Rai (2000) who reported great rejection in Mizo girls. The rejection in boys students and emotional affection in girls students.

## Conclusion:

In Short, the present results give indication for a positive correlation between the recalled authoritative parental style and self-regard which, in turn, foretells symptoms of anxiety and depression negatively. On the contrary, authoritarian parenting, which is defined by a more dictatorial contact to the child, a high degree of control as well as by less emotional warmth are associated with negative self-regard and more symptoms. More over, there were no differences to be found in these relationships in reference to the age and gender of the respondents, which typify the universality of the present results concerning these sociodemographic variables.

In future research, the major role of parental styles play in the occurrence of personality symptoms in every part of life need to be taken into account in prevalence studies as well as in studies examining therapeutic changes of these symptoms over time.

Here with, studies should include parental styles as covariates to therapy efficacy studies. Perhaps, existing models may be described better by including parental styles, hence reaching better effect sizes. Additionally, long-term developmental studies to tag along with children growing up with divergent parenting styles would also be of interest to counteract the problem of recall bias.

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## Active Librarian Saving Users' Time

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### ABSTRACT

A proactive librarian has a significant role to provide effective library service as well as saving users' time. This study aimed to explore the mechanism applied to save the time of the user, and to describe users' perspectives on time saving library services from Gyan Bikas Community library (GBCL). This research is based on primary data collected from the users, who had visited the library. The questionnaires and field observations tools were used. GBCL had provided different kinds of library services, particularly categorized as library service and community service. During both services, this study found that the time saving mechanisms of GBCL are proactive librarian, GBCL executive members along with field experts. The librarian was aware to internalize the value and importance of the Fourth Law of Library Science 'Save the time of the reader and practice them while offering the library services.

**Keywords:** Libraries and community, Time saving mechanism, Gyan Bikas Community Library & Learning Center, Proactive librarian

### Introduction

Gyan Bikas Community library and Learning Center has been providing different library services to peoples with reading materials, for instance providing informal education class, ICT training, skill development training, health camp, and agricultural training. Gyan Bikas Community Library aims to provide those library extension services for the community members to make them self-dependent and to utilize their leisure.

Time is a very important thing to every person. Therefore, librarians should care about library users' time. In the light of this argument, this study examined the ways to provide time saving, and effective services to the library patrons and community members. This study mainly focused on the time saving mechanism of the Panauti Community while using library services and library activities.

Students, teachers, scholars, scientists, business executives, government officials, farmers, housewives and others are users of community libraries. The large numbers of users come to the library to fulfill their information needs and to use their leisure time. GBCL is one of such community libraries that is providing varieties of information services and community services. It does not focus on gathering and storing resources but delivering information and social services to the community (Patil & Pradhan, 2014).

Library users have limited time within which they have to complete a lot of tasks. The GBCL is active in the community. This library's working principle is to provide different kinds of services. It provides services as per users' need and their time. Community libraries provide services to enthusiastic users at one hand and at other, it is playing a role in different social activities. It helped all members of the community.

Community's members are very busy with their own homely tasks, professional tasks, and so on. So to the community library, their prime concern was to receive required information promptly. In this condition, GBCL's service delivery is worth exploring on how promptly it is serving effectively to its community members like-professionals, students, group of farmers, group of women, housewife, child, youth, old people and others.

GBCL is saving the time of the users while providing documents and other services. Following are the tools of saving time applied by GBCL:

1. Quality service
2. Quick service
3. Self service
4. On time service
5. Service delivery out of library walls (Besides library hours)
  - a. Community's Professional need
  - b. Healthy environmental need
  - c. Public health
  - d. Agricultural needs, etc.

These are the tools of the methods applied by GBCL to save users' time. In the library field, saving time is recognized as one major law defined by Dr. S. R. Ranganathan. GBCL applied this law in providing other services for saving user's time (Dhiman, 2005).

### **Statement of the problem**

Community's members are very busy with their own work and they do not have leisure time. Therefore, their prime concern was to receive required information promptly. In this condition, GBCL's service delivery is worth exploring on how promptly it is serving effectively to its community members like- professionals, students, group of farmers, group of women, housewife, child, youth, old people and others. Since, the users are a variety of and so their needs are also different kinds of services. In such a diverse situation, how GBCL is providing services by saving their time. For the community library, users always come to the center. Similarly, the fourth law of library science, 'save the time of the users' also puts users at a nucleus position. This is why the study identified the research problem to find out how GBCL followed the fourth law of library science. Therefore, this study has focused on how the library's service is helping to save the time of their different users and what are the major methods applied to provide effective services. For finding out the solution of statement of problem this research questions are as following:

- a) What are the mechanisms applied to save the time of the user?
- b) How to provide varieties of services to the users effectively?
- c) What are users' feedback for the library's efforts in saving their time?

### **Objectives of the Study**

This research aims to examine the application of the fourth law of library science in GBCL. The specific objectives of the study are:

- i) To find out the mechanism to save the time of the user.
- ii) To evaluate users' perspectives on receiving prompt library services are satisfaction from GBCL service system.

### **Review of the Literature**

Time is the most important thing to people. Students or teachers, farmers or housewives, general daily waged workers and business people, are always busy with their work. For such a busy community, a library is supposed to provide service to them. Therefore, libraries should care about users' time while providing services (Connaway & Faniel, 2014). Connaway and Faniel (2014) research suggested that time is the most important thing to the users then other things. Therefore, researchers had reordered Ranganathan's five laws of library science and had shifted forth law 'save the time of user' in first.

Community people visit community libraries because they get information according to their needs. Gyan Bikas Community library provides different services to community people. The training programs were targeted for unemployed and at another hand, it was targeted to utilize the leisure time of the community people. Karmacharya (2018) said that people come to community libraries to keep interest to gain knowledge and to learn new things. Moreover, they come to the library to utilize their leisure time too. Thus, community libraries should provide information to users according to their need. Furthermore, she said that nowadays, some libraries provide different services except document services. It has managed different fruitful training and programs targeted housewives, farmers, and illiterate people of the community. Its aim is to utilize their leisure to enable them in their life (Karmacharya, 2018).

Community library's users are all members of the community. Many users cannot use library-opening hours but they need library's information. Therefore, the community library provides service except library opening hours (10 to 05 is usual working time in Nepal) and library open morning and evening time for these users. Public library is for the community. It fulfills the user requirements. So that the public library provides services according to users' demand and requirement, interest and library should open at a suitable time for the user. The opening time might be morning or evening according to the needs of community people. Its opening time of the library helps to save the time of community people and they get library service at their suitable time (Sharma, 2019).

Thus, Time is the most important thing to users. It is to clarify the article of Connaway and Faniel (2014). Those researchers shifted forth law 'save the time of the reader' as the first law. Therefore, after above different related literature reviewed, the researcher found that different time saving mechanisms of community library, like as the proper management of library, arrangement of library materials in scientific method (cataloging and classification), convenience to receive information, and library-opening hours as well service time of community service (service delivery out of library walls).

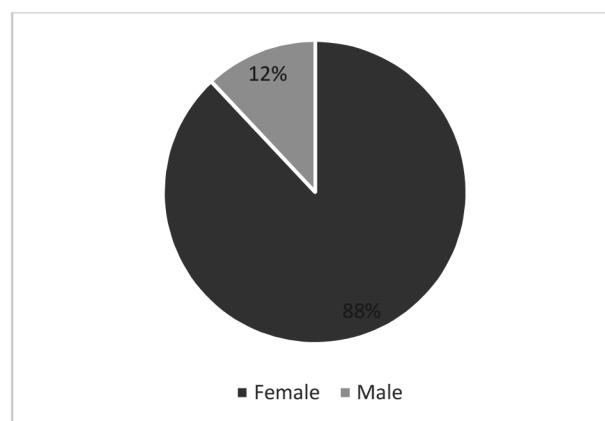
### Research Methodology

The purpose of this study is to find out what was the mechanism used to save the time of users to this community library. This research was based on quantitative analysis. The questionnaire was employed to collect data on Gyan Bikas Community Library. For this research purpose, the researcher had considered all library users who come to the library for information use and for evaluating time saving mechanisms during community service.

The researcher had categorized GBCL service into library service and community service and collected data users of both services separately. Total sample size of the study was 68 respondents. Among them 42 were in library service and 26 were in community service. After that, the researcher analyzed the data in table and graphic representation as well as interpreted the data of library services and community services comparatively.

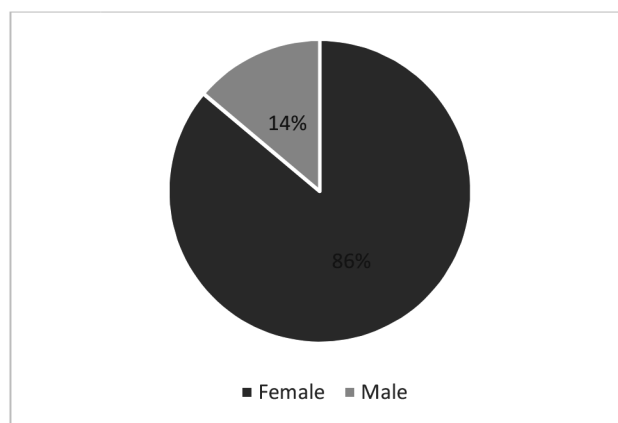
### Discussion and results

#### I. Demographic information



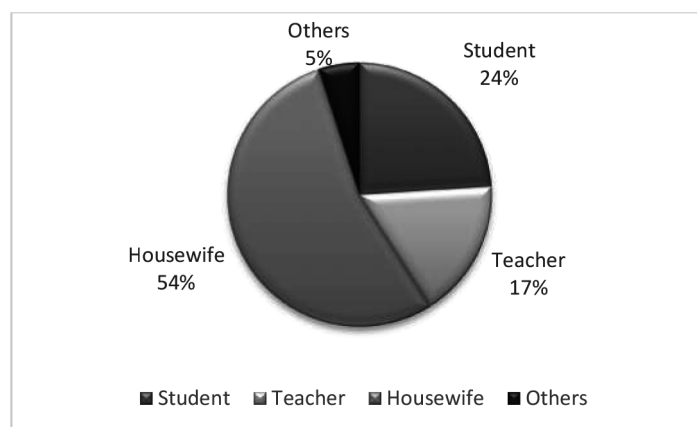
**Figure 1: Distribution of respondents by gender in library services**

Figure 1 showed that there were more female users visiting the library than male users. In this study, there are 42 respondents, among them 37 (88%) female and 5 (12%) male. The reason behind the higher number of female users is due to different library programs targeted to women, for instance, informal education class, skill development training, and ICT training. Besides book service, female users were more interested to take part in above-mentioned services and they wanted to use their leisure time and take benefit from these services. Hence, higher numbers of female users were interested to participate in other library services besides book service.



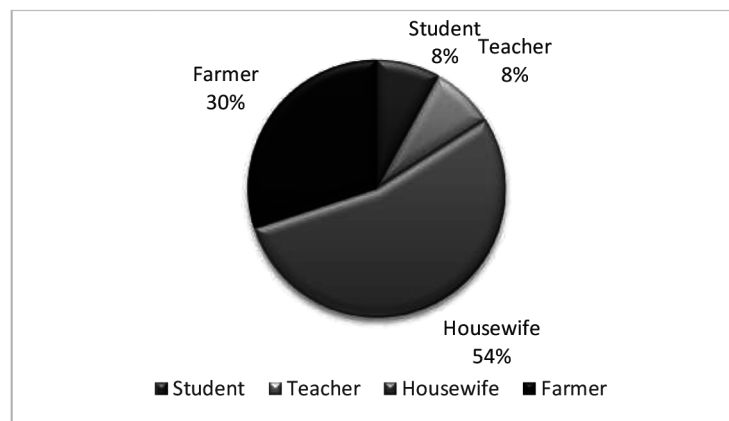
**Figure 2: Distribution of respondents by gender in community services**

GBCL organized different programs aimed to serve community service to the community people. In this study, 26 respondents were selected from users who have already participated in community services. Among them, 16 (62%) respondents were female and 10 (38%) were male, which was shown in figure 2. In community service, higher numbers of users were housewives and farmers; they were generally women. They wanted to use their leisure time meaningfully so they used the community services.



**Figure 3: Distribution of respondents by professional status in library services**

GBCL had provided different library services to community members, for instance book service, ICT training, skill development training, and informal class. Students, teachers, housewives and others users who belong to have participated in those services. Figure 3 showed that 24% were students, 17% were teachers, 54% were housewives, and 5% were others.



**Figure 4: Distribution of respondents by professional status in community services**

GBCL had organized a program to provide community service with social workers. It helped the GBCL to provide community service. Moreover, the librarian provided the community service to the community people as a facilitator. They had provided the right information at the right time to the community people. Figure 4 showed that 54% were housewives, 30% were farmers, 8% were students, 8% were teachers.

**Table 1. Availability of appropriate library services**

What is your main purpose of visiting the library?	
Book service	48%
Informal education class	24%
Skill development training	19%
ICT training	9%
42 respondents	

The library had provided different library services because its main objective is to let a higher number of community people in the library to visit and attempt the different library activities. It helped to utilize the leisure time of community people. In this work, GBCL had success in providing the right information at the right time to the users and the highest number of people visited to use the book service with other services. Table 1 showed that 48% of respondents visited the library for book service, 24% came to take informal education classes, 19% participated in skill development training, and 9% came to learn ICT.

**Table 2. Types of community services of GBCL**

Which community service have you mostly used from the GBCL?	
Health camp	54%
Agricultural training	30%
Programs and social gathering	8%
Animal farming	8%
26 respondents	

GBCL had served the different community services to the community. Such as training about agriculture, animal farming, and health camp etc. Only the executive person of GBCL did not provide community service to the community of Panauti. Therefore, GBCL cooperated with the community worker for provide its own community service. In addition, librarians had provided community service as a facilitator to provide right information at the right time to users. Table 2 showed that 54% of respondents participated in a health camp, 30% users founded an agricultural program, 8% visited a library to participate in a program about animal farming, and 8% involved different programs and social gathering. The health camps program seems to attract the majority of community people. Community people are interested in health related programs organized by the GBCL.



## II. Librarian's assistance to all library users

**Table 3. Getting right information at right time from the library service**

How often do you get right information at right time?	Most of the time	Sometime	Frequently
42 respondents	62%	24%	14%

Above table showed how often respondents got the right information at the right time in library services. Among the respondents, 62% of users got the right information at the right time most of the time, 24% said that they got it sometimes, and only 14% said they got information frequently. This study reveals that, highest number of users got the right information at the right time through library service. However, for the majority of users, the frequency of getting the right information happened to be most of the time. The frequent chance of getting the right information is only for 14% of respondents. However, it is notable that the majority of users got information most of the time. There is not any other mechanism developed to provide information. However, users are dependent on librarians' active support for providing right information to right users.

**Table 4. Frequency of respondents gets community services**

How often do you get right information at right time?	Most of the time	Sometime	Frequently
26 respondents	8%	69%	23%

In regards to community service of GBCL, the people of the community had participation from community people in different ways when, library had organized the training or programs, and they visited the library whenever they had some questions to ask. Otherwise, they were busy with their own daily work, for instance in agriculture farming, animal farming and other works apart from their daily jobs. Therefore, they participated in community services for some time, which they were getting through GBCL. It helped the user to increase the agricultural product and to be healthy. Table 4 showed that 69% of respondents answered they received community services sometime, which was according to their need, 23% told that they got information frequently, and 8% said they got information most of the time. This data indicated that the majority of community people did not participate in all the training programs rather they have participated in some of the training programs as per their needs. In other meaning, the information about all the training programs did not disseminate to all of the community people.

## III. Community workers' cooperation with the library/ Librarian as a facilitator for the community services

The service facilitator has a very significant role to play for providing either library services or community services. Nevertheless, this study showed the library visitors have already been well familiar with the library collections. Hence, they are able to help themselves in finding their needed books. While in the case of community services, experts and community service mobilizers have played an important role.

**Table5. Respondents get Librarian's assistance help during book service**

How do you get librarian's help during the book service?	
I can easily get book and retrieve self	40%
The Librarian helps me for choosing book	25%
The Librarian shows the rack for entire book	25%
The Librarian searches books for me him/ herself	10%
20 respondents	

Table 5 showed only 20 respondents had participated in this question because this question was related to book service and other users who participated in other library services did not respond to this question. The users, who participated in other library services, need not respond to this question. While in book service, the librarian assisted users to search and retrieve books. Due to the librarian's assistance, users got the right information at the right time. Librarian's active service is very important for users since there was no library technical system developed, for example cataloguing or any other information searching system. This data showed that 40% of respondents told could easily get book and retrieve self, 25% answered the librarian helps me for choosing book, 25% told the librarian shows the rack for entire book, only 10% said that librarian searches books for me him/herself.

**Table6.Method adopted by GBCL for providing community services to users**

How do you get social mobilizers' help during the community service?	Through the expert	Through home to home service
26 respondents	77%	23%

The aim of asking this question was to know how GBCL was giving service to the community. Library service had been broadened to community service. A community library, GBCL had a hybrid nature. Hence, GBCL had cooperated with the social workers and professional experts. The library provided different community service to community members. Some examples of community services are such as health camp, agriculture farming, and animal farming for the community. The specialist of related field and social mobilizer had direct contribution for these services. Table 6 showed that 20 (77%) respondents got help during community service time through the expert, and 6 (23%) said through home-to-home service. GBCL had organized a program to provide different community service with cooperation specialists of related fields. Thus, respondents got right information at time from GBCL.

**Table7. Impression of librarian on respondents**

How do you impress librarians/executive members/ social mobilizers?	
Most friendly and helpful for me	58%
They informed about programs timely	23%
They manages programs effectively	19%
68 respondents	

There is not any other mechanism developed to provide information. Users are depended on active and friendly librarians/executive members/ social mobilizers to support getting the right information at the right time. However, the results showed that 58% of respondents were friendly and helpful Librarians, 23% of respondents said they were informed about programs timely and 19% respondents said they managed programs effectively.

**Table 8. Time saving mechanisms adopted by GBCL**

How is your time saved through various services of the library?	
The services of library saved my time	42%
The Librarian/executive members/ social mobilize answered my queries	39%
The frequent gatherings helped them to fulfill my information needs	19%
68 respondents	

The Librarian and social mobilizer were active in a community to save time of users and to utilize their leisure time. The result showed different library services save the time of 42% users, Librarian/executive members/ social mobilizer answered users' queries to save the time of the 39% users and 19% respondents said the frequent gatherings helped them to fulfill my information.

## Conclusions

Gyan Bikas Community Library provided valuable services to community people in different ways. It provided information to users and learning opportunities for different skills. Likewise, it had properly maintained library spaces to serve different kinds of services to users comfortably. GBCL library collections had been classified and arranged properly to provide prompt services and save time of users, so GBCL users were satisfied with book service. In other library services and community services, GBCL provided quality service to users in cooperation with professional experts, quick service by proactive librarian and facilitator, service delivery beyond library walls except flexible library hours so that it could save users' time and to provide right information at right time. So, the huge part of responsibility fell upon the library staff and social facilitators rather than any system inside or outside of the library for fulfilling the need to save users' time. Hence, this study concluded the human factor is the main reason behind GBCL's time saving mechanism. But, there was no automated library system, nor any information system was brought into play for the community services. However, users were found satisfied for saving their time during their retrieval of information because of the prompt response of librarians and facilitators to them.

Users achieved benefits from services provided by GBCL. For instance, students from different faculties got their needed course books from the library. GBCL had changed illiterate women into literate people and women also benefited by skill development training. Which helped them to utilize leisure time as well as it also helped them to increase their income. Likewise, farmers were benefited by agricultural training, which helped them to increase the agricultural products, and health camps organized by GBCL served the whole community people, it helped community people to be healthy. Similarly, services of GBCL fulfilled the professional information needed to help community people to solve academic and professional problems, to be healthy and to increase agricultural products.

In the present situation of the GBCL, the collection size and the users' number are still small, that's why the librarian can memorize the locations of each source of information. While for community services, it has provisions of different groups formed which made the library work properly. As the social groups were formed, so do the broad classification of documents were categorized, but there was absence of cataloguing service. Although, most of the users were familiar with library documents. They could retrieve documents easily according to their own desires. Due to limited users' direct approach to the library, the present librarian's support is sufficient for giving prompt service, which can in future be insufficient. In addition, time is changing as well as this is the age of science and technology. Therefore, users wanted for technology-based services. Hence, Library services based on modern library technology provide pinpointed, exhaustive and expeditious library services in future, which will make GBCL a more popular library and role model library.

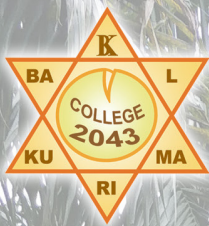
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## QUALITY INITIATIVES OF BALKUMARI COLLEGE

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- Strategic Planning
- Calendar of Events
- Publications and Paper presentations
- Seminars and Workshops from Departments
- Organizing Guest Lectures
- Student Counseling
- Organization of discussions, workshops, seminars, training programmes
- Organization of students orientation at the outset of Academic session
- Peer review for self-appraisal
- Academic Research Journal of Balkumari College
- Identifying departmental best practices
- Ex students, students & parents Feedback system and analysis
- Employment activities
- Establishment of Research Management Cell
- Developing national /international linkages
- Balkumari Manual to control all activities
- Self Study Report being prepared for reassessment by UGC, QAAC
- Educational Management Information System (EMIS) established
- Regular Mini-research Program
- Regular Internship Program
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