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Tourism Trends and Analysis: Insights from Nepal Tourism Statistics 2021

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Abstract

Tourism is a cornerstone of Nepal's economy, contributing significantly to GDP and employment. This study investigates tourism trends from 1995 to 2021, focusing on tourist arrivals, demographics, and economic impacts using data from the "Nepal Tourism Statistics 2021" report. The study reveals a peak in tourist arrivals at 1.2 million in 2019, followed by a severe decline due to the COVID-19 pandemic, which saw arrivals drop to 230,000 in 2020 and 150,000 in 2021. Despite this downturn, there was an increase in the average length of stay, indicating a shift in travel behavior. The research also documents a decrease in holiday visits, trekking, and pilgrimage activities during the pandemic, while noting a relative increase in tourism-related enterprises. The findings highlight the need for sustainable tourism strategies and investments in infrastructure to revitalize the sector and support economic recovery. This study provides valuable insights for policymakers and industry stakeholders to navigate post-pandemic challenges and foster long-term growth in Nepal's tourism sector.

Keywords: Tourism trends, Economic impact, COVID-19 pandemic, Sustainable development, Tourism recovery

1. Introduction

Background

Tourism has long been a vital sector for Nepal, renowned for its unique blend of natural beauty and rich cultural heritage. The country is home to eight of the world's ten highest peaks, including Mount Everest, which has made it a premier destination for trekkers and mountaineers (Thapa, 2004). The Kathmandu Valley, with its ancient temples and palaces, is a UNESCO World Heritage Site that attracts cultural enthusiasts from around the globe (Pradhan, 2014).

The origins of Nepal's tourism industry can be traced back to the 1950s when the country opened its doors to foreign visitors. Since then, tourism has steadily grown, playing a significant role in the nation's development (Shrestha & Shrestha, 2012).

Additionally, Nepal boasts other significant attractions such as Lumbini, the birthplace of Lord Buddha, which draws pilgrims and history enthusiasts alike (Bhandari, 2019). The sacred temple of Pashupatinath is a major site for Hindu pilgrims (Dhakal, 2014). Janakpur, known for its connection to the Hindu epic Ramayana, is another cultural treasure. Beyond these historical and cultural sites, Nepal's abundant natural resources and breathtaking landscapes continue to captivate tourists from around the world (Gurung, 2017).

Importance of Tourism to Nepal's Economy

Tourism is a cornerstone of Nepal's economy, significantly contributing to foreign exchange earnings, employment, and regional development (MoCTCA, 2021). The sector supports a wide array of industries, including hospitality,

transportation, and local crafts, making it a crucial driver of economic diversification (MoCTCA, 2021). In 2021, despite the global impact of COVID-19, tourism remained a significant source of income and employment for many Nepalese (NRB, 2021). The industry's contribution to GDP and its role in infrastructure development, such as improved transportation networks and communication facilities, underscore its importance (WTTC, 2021). Additionally, tourism fosters cultural exchange and global awareness of Nepal's unique natural and cultural assets, further enhancing its international reputation (UNESCO, 2021).

Statement of Problem

Tourism is a significant contributor to Nepal's economy, providing employment, generating income, and promoting cultural exchange. However, the tourism sector has faced substantial challenges and fluctuations over the years, particularly due to external factors such as the COVID-19 pandemic. Despite its importance, there is a need for a comprehensive analysis of tourism trends to understand the evolving patterns of tourist arrivals, their behavior, and the economic implications for Nepal. The average length of stay of tourists in Nepal has fluctuated over the years, influenced by factors such as political instability, natural disasters, and global health crises. The tourism sector has had a profound economic impact on Nepal, with foreign exchange earnings being a major benefit. The average expenditure per visitor provides insights into the financial contributions of tourists (MoCTCA, 2021).The report indicates that the purposes of visits have evolved, with an increasing number of tourists coming for trekking and adventure activities, while pilgrimage and holiday visits have also shown significant trends. Analysis of international and domestic flight movements and passenger statistics reveals the critical role of transportation infrastructure in supporting tourism. These dynamics are essential for understanding how tourists' access and travel within Nepal (MoCTCA, 2021).

This study aims to fill this gap by analyzing data from the "Nepal Tourism Statistics 2021" report. Specifically, the study seeks to understand the trends in tourist arrivals, the length of stay, the purposes of visits, the economic impact, and the transportation dynamics related to tourism.

The study ponders over the following research questions:

Q1. How have the patterns and trends in tourist arrivals in Nepal evolved from 1995 to 2021, particularly considering the impact of the COVID-19 pandemic?
Q2. How have the average length of stay and primary purposes of visits (e.g., holiday, pilgrimage, trekking) of tourists in Nepal changed over time, and what factors have influenced these trends?
Q3. What has been the economic impact of tourism on Nepal in terms of foreign exchange earnings and average expenditures per visitor, and what insights can be drawn about trekking and expedition activities and trends in tourism-related enterprises?
Q4. How do the data on international and domestic flight movements and passenger statistics relate to tourism trends in Nepal, and what do they reveal about transportation dynamics in relation to tourism?

Objectives of the Study

This study aims to provide an in-depth analysis of tourism trends in Nepal, utilizing data from the "Nepal Tourism Statistics 2021" report. The primary objectives are:

1. To analyze patterns and trends in tourist arrivals from 1995 to 2021, with a particular focus on the impact of the COVID-19 pandemic.
2. To investigate the average length of stay of tourists and the factors influencing these trends over the years. Additionally, this objective seeks to examine the primary purposes of visits, such as holiday, pilgrimage, and trekking, and how these purposes have evolved over time.
3. To assess the economic impact of tourism on Nepal, focusing on foreign exchange earnings and average expenditures per visitor. This objective also aims to provide insights into trekking and expedition activities, and trends in tourism-related enterprises**.**
4. To evaluate data on international and domestic flight movements, as well as passenger statistics. This analysis will help understand the transportation dynamics and how they relate to tourism trends.

By addressing these objectives, the study aims to provide a comprehensive understanding of the current state and future prospects of tourism in Nepal. The insights gained will be invaluable for policymakers, industry stakeholders, and academic researchers, enabling informed decision-making and strategic planning for sustainable tourism development.

2. Literature Review

Conceptual Review: Sustainable Tourism Development

The concept of sustainable tourism, as outlined by the United Nations World Tourism Organization (UNWTO), emphasizes the need to balance economic, socio-cultural, and environmental sustainability. Bramwell and Lane (1993) discussed the principles of sustainable tourism, including minimizing environmental impacts, preserving cultural heritage, and promoting local economic benefits. Sustainable Tourism has long been a significant driver of economic development and cultural exchange. Research in this field spans various aspects, including economic impacts, socio-cultural effects, environmental consequences, and policy implications.

Economic Impacts

Studies highlight the role of tourism in economic growth, employment generation, and infrastructure development. For instance, the World Travel & Tourism Council (WTTC, 2020) reported that tourism accounted for 10.4% of global GDP and supported 319 million jobs in 2018. Moreover, tourism expenditure can have a multiplier effect, stimulating growth in related sectors such as retail, transportation, and hospitality (UNWTO, 2018).

Socio-Cultural Effects

Tourism can foster cultural exchange and understanding, but it can also lead to cultural commodification and loss of authenticity. Research by Smith (2009) emphasized the dual nature of tourism, where it promotes cultural preservation on one hand but may also lead to cultural dilution and commercialization. The impacts on host communities are complex, influencing social structures, lifestyles, and cultural expressions.

Environmental Consequences

Tourism's environmental footprint is substantial, including issues like pollution, resource depletion, and habitat destruction. Gössling and Peeters (2015) discussed how tourism contributes to carbon emissions, with air travel being a significant contributor. Sustainable tourism practices and eco-tourism have been proposed as solutions to mitigate these adverse effects (Weaver, 2006).

Policy Implications

Effective tourism policies are crucial for balancing the benefits and drawbacks of tourism. Dwyer et al. (2009) highlighted the importance of integrated tourism planning and management, involving stakeholders at all levels. Policies should aim at promoting sustainable tourism, protecting cultural heritage, and ensuring community involvement.

Theoretical framework

The analysis of tourism trends and impacts is underpinned by several theoretical frameworks. These frameworks provide a structured approach to understanding the complexities of tourism and its multifaceted impacts.

Butler's Tourism Area Life Cycle (TALC)

Butler (1980) proposed the TALC model, which describes the stages of tourism development in a destination: exploration, involvement, development, consolidation, stagnation, and potential decline or rejuvenation. This model helps in understanding the dynamic nature of tourism development and the need for strategic planning to sustain tourism growth.

Doxey's Irritation Index (Irridex)

Doxey (1975) developed the Irridex model to explain the social impacts of tourism on host communities. According to this model, residents' attitudes towards tourists evolve from euphoria to apathy, irritation, and antagonism as tourism development intensifies. This framework is useful for analyzing community responses to tourism and the importance of managing tourism growth to maintain positive host-guest relationships.

Tourism Systems Theory

Leiper (1979) introduced the tourism systems approach, which views tourism as an open system comprising generating regions, transit routes, and destination regions. This holistic perspective helps in understanding the interconnections between different components of the tourism system and the external factors influencing tourism dynamics.

3. Data and Methodology

Data collection

The report collected data from multiple sources to ensure its accuracy and comprehensiveness. Data on tourist arrivals, length of stay, and demographics were obtained from immigration records maintained at various entry points, including Tribhuvan International Airport and land border crossings. Surveys conducted among tourists provided additional insights into the purpose of visit, average expenditures, and satisfaction levels. Information on economic impact and revenue generation was compiled from official reports and records maintained by the Ministry of Culture, Tourism & Civil Aviation and the Nepal Rastra Bank. Data from hotels, travel agencies, and trekking companies were gathered to assess the operational aspects and trends within the tourism industry.

Methodology

The study on tourism trends in Nepal employs a variety of statistical methods and analysis techniques to delve into the dynamics of tourism in the country. Trend analysis is utilized to identify patterns and changes in tourist arrivals, length of stay, and other key indicators over the years 1995 to 2021, shedding light on significant trends and shifts in tourism dynamics.

Comparative analysis is also utilized, comparing different years, demographic groups, and purposes of visits to understand variations and similarities. For instance, the study examines tourist arrivals before and after the COVID-19 pandemic to assess its impact.

Basic statistical measures such as mean, median, standard deviation, and percentage changes are employed for descriptive statistics, providing a clear and concise representation of tourism statistics. This aids in summarizing and describing the data effectively.

Moreover, graphical representation through graphs, and tables plays a crucial role in visualizing the data, making it easier to interpret and analyze trends. Visual aids help in identifying patterns that may not be immediately apparent from raw data.

By utilizing these methodologies, the study aims to provide an in-depth analysis of tourism trends in Nepal, offering insights that can inform policy decisions and strategic planning for sustainable tourism development.

4. Results

Tourist arrival and average length of stay in Nepal (1995-2021)

Tourist Arrival

The trend analysis of tourist arrivals in Nepal from 1995 to 2021 reveals several significant patterns and shifts. Total tourist arrivals exhibited a steady increase from 1995 onwards, reaching a peak in 2019 with approximately 1.2 million visitors. However, the COVID-19 pandemic had a profound impact, leading to a sharp decline in tourist numbers in 2020 and 2021, with total arrivals dropping to approximately 230,000 and 150,000, respectively. Regarding arrivals by air and land, the majority of tourists arrived by air throughout the period, with air arrivals following a similar trend to the total arrivals. On the other hand, arrivals by land, though significantly lower in number, showed some fluctuations and also experienced a sharp decline during the pandemic years (Table 1).

The Average Length of Stay

The average length of stay for tourists in Nepal exhibits notable variations over time. Between 1995 and around 2002, the average length of stay fluctuated, with a notable dip to approximately 7.92 days in 2002. Subsequently, post-2002, the average length of stay increased, reaching a peak of 15.5 days in 2021. This increase indicates that while fewer tourists visited during the pandemic, those who did stay longer, possibly due to travel restrictions and quarantine measures. Before the pandemic, the average stay typically ranged from 12 to 13 days. The increase in the average stay during the pandemic years reflects a shift in travel behavior, likely influenced by the global health crisis. Overall, the trend analysis highlights significant growth in Nepal's tourism sector until the global COVID-19 pandemic, which led to a substantial decline in tourist numbers. Nonetheless, the increase in the average length of stay during the pandemic suggests changes in travel patterns, possibly due to travel restrictions, and provides a basis for further research into the factors driving these trends and the pandemic's lasting effects on Nepal's tourism industry.

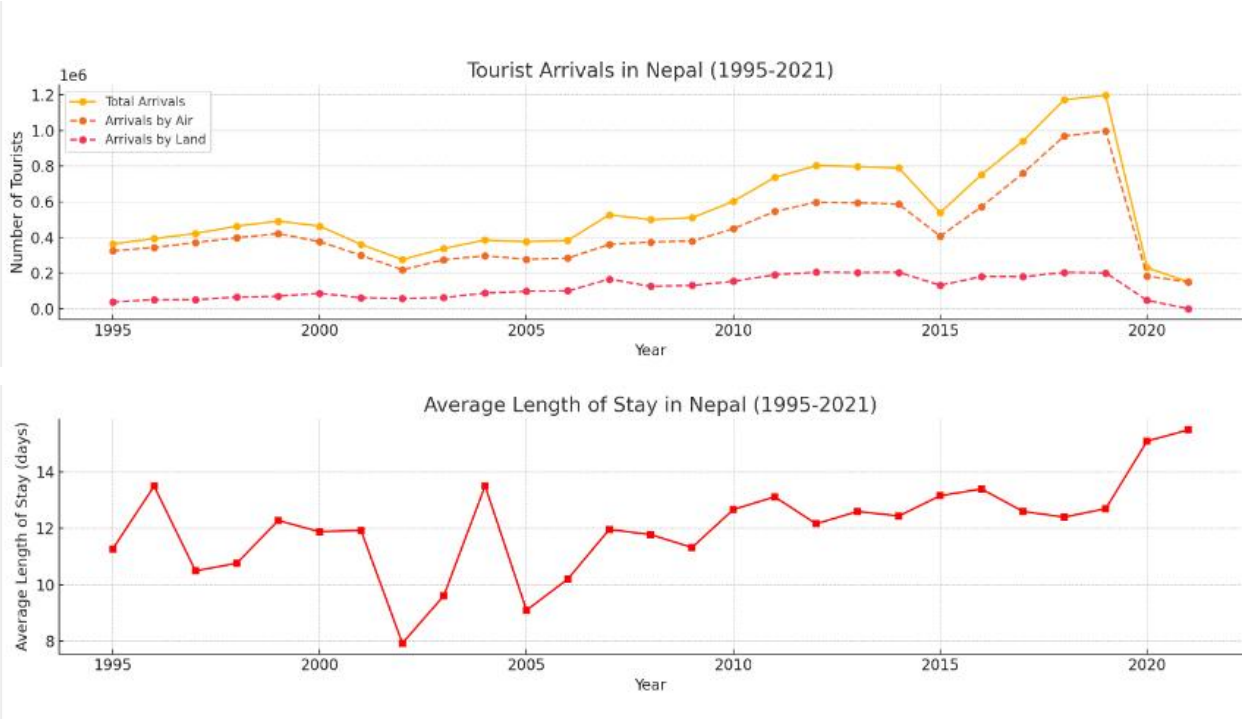

Figure 1: Tourist arrival and average length of stay

Analysis of tourist distribution by purpose of visit

The analysis of the distribution of tourists by purpose of visit provides valuable insights into the motivations driving tourists to travel to Nepal. This examination focuses on the distribution of tourists by purpose of visit over selected years, highlighting trends and shifts from 1993 to 2021.

Holiday/Pleasure Visits have consistently been the most common reason for visiting Nepal, accounting for 66.8% of all visits in 2021. This category witnessed fluctuations but remained dominant throughout the years. For instance, in 1993, 58.0% of tourists visited for holiday/pleasure, which slightly increased to 70.0% in 2017 before dropping to 66.8% in 2021 due to the pandemic's impact on global travel.

Trekking and Mountaineering, crucial components of Nepal's adventure tourism saw varying levels of interest over the years. In 2021, 10.3% of tourists visited for trekking and mountaineering, significantly lower than the 15.6% in 2020, attributed to the COVID-19 pandemic and related travel restrictions.

Pilgrimage visits also experienced notable changes. In 2021, 7.4% of tourists visited Nepal for pilgrimage, down from 12.4% in 2020. Notable pilgrimage sites include Lumbini, the birthplace of Lord Buddha, and Pashupatinath Temple, attracting both domestic and international visitors.

The 'other' category, which includes visits for business, official reasons, conventions/conferences, and unspecified reasons, constituted 15.5% of tourist arrivals in 2021. Business travel, official visits, and conventions/conferences have seen less fluctuation compared to holiday and adventure tourism but still contribute significantly to the overall tourism landscape.

Trends from 1993 to 2021 reveal that while the percentage of tourists visiting for holiday/pleasure remained high, there was a slight decrease in the pandemic years, reflecting the stability of leisure tourism as a significant draw for Nepal. Trekking and Mountaineering saw peaks and troughs correlating with global interest in adventure travel and external factors like natural disasters and global pandemics. Pilgrimage tourism has had a steady presence, though recent years showed a decline due to travel restrictions and health concerns during the pandemic. Business-related travel and other miscellaneous purposes have remained relatively stable, highlighting the diverse motivations of tourists visiting Nepal beyond leisure and adventure.

The analysis of the purpose of visit trends reveals the resilience and changing dynamics of Nepal's tourism sector. While holiday and leisure travel remains predominant, the adventure tourism sector experienced a significant downturn due to the pandemic. Pilgrimage tourism also faced challenges, while the 'Others' category saw an uptick, suggesting evolving travel motivations. Understanding these trends is crucial for developing targeted strategies to bolster tourism in Nepal, ensuring sustainable growth and diversification in the future.

Tourism Revenue

Gross Foreign Exchange Earnings from Tourism

Tourism has been a significant contributor to Nepal's economy, particularly through foreign exchange earnings. However, the COVID-19 pandemic severely impacted this revenue stream.

According to the Nepal Rastra Bank, foreign exchange earnings showed a consistent upward trajectory from 2000/01 to 2018/19. However, this trend sharply reversed in 2019/20 and 2020/21, largely due to the global pandemic. In 2020/21 alone, there was a significant decline of 88.2% in earnings, marking a substantial drop compared to previous years.

Table 1: Gross Foreign Exchange Earnings from Tourism (2000/01 - 2020/21)

Fiscal Year	Earnings (NRs. Mn)	Earnings (US $ Mn)	% Change US$
2000/01	11717.0	158.7	-
2001/02	8654.3	112.6	-29.1
2002/03	11747.7	151.0	34.2
2003/04	18147.4	245.9	62.8
2004/05	10463.8	145.2	-41.0
2005/06	9555.8	132.1	-9.0
2006/07	10125.3	143.6	8.7
2007/08	18653.1	286.9	99.7
2008/09	27959.8	363.7	26.8
2009/10	28138.6	377.5	3.8
2010/11	24610.7	340.5	-9.8
2011/12	30703.8	379.0	11.3
2012/13	34210.6	389.0	2.6
2013/14	46374.9	472.0	21.4
2014/15	53428.6	537.0	13.8
2015/16	41765.3	392.7	-26.9
2016/17	58526.9	551.0	40.3
2017/18	68521.7	656.5	19.1
2018/19	75374.1	667.7	1.7
2019/20	60885.0	523.5	-21.6
2020/21	7266.3	61.6	-88.2

Source: Ministry of Culture, Tourism and Civil Aviation (2021)

Average Expenses per Visitor per Day

According to the Nepal Tourism Statistics 2021, the average daily expenses per visitor were 65 USD in 2020, but this figure decreased to 48 USD in 2021. This data indicates a significant reduction in visitor spending, reflecting a year-over-year decline. The decrease from 65 USD to 48 USD per day suggests either a reduced spending capacity among visitors or shorter trip durations, likely influenced by the COVID-19 pandemic.

Trends in Tourism-Related Enterprises

The tourism sector in Nepal showed notable resilience and some growth amidst the challenges posed by the pandemic in 2020-2021. Despite the global downturn, star hotels in Nepal expanded significantly by 14.1%, indicating a robust recovery in the hospitality segment. Non-star hotels also saw a slight increase of 1.0%, albeit more modest compared to their star-rated counterparts. The total number of beds available across all types of accommodations grew by 5.5%, reflecting an increase in capacity to meet tourist demands.

Table 2: Number of Tourism-Related Enterprises (2020-2021)

Category	2020	2021	Percentage Change
Star hotels	142	162	14.1
Non-star hotels	1171	1183	1.0
Beds(Total)	45850	48412	5.5
Travel Agencies	3743	3801	1.5
Trekking Agencies	2797	2821	0.9
Tourist Guides	4241	4557	7.5
Trekking Guides	11766	19166	7.9

Source: Ministry of Culture, Tourism and Civil Aviation. (2021)

Travel agencies and trekking agencies experienced marginal growth rates of 1.5% and 0.9%, respectively. This suggests that despite initial setbacks due to travel restrictions and safety concerns, these sectors adapted and managed to attract visitors, contributing to the overall recovery. The number of tourist guides and trekking guides saw more substantial increases of 7.5% and 7.9%, respectively. This growth underscores the importance of guided tourism experiences in Nepal and their appeal to visitors seeking local expertise and adventure.

In conclusion, the tourism-related enterprises in Nepal demonstrated resilience and adaptability during the pandemic period of 2020-2021. The increases in hotel accommodations, travel services, and guiding personnel indicate positive momentum and readiness to capitalize on future tourism opportunities as global travel conditions continue to stabilize.

Trekking and Expedition

In 2021, Nepal's trekking tourism exhibited distinct seasonal patterns. April emerged as the peak month with 1500 trekkers, driven by optimal weather conditions and high tourist interest. Conversely, the monsoon months (May to July) recorded no trekkers due to heavy rainfall, which typically deters outdoor activities. Trekking activities gradually resumed post-monsoon in August, signaling a cautious return of tourists. The autumn months (September to December) experienced a resurgence, attracting substantial numbers of trekkers (675 to 1060), drawn to Nepal's clear skies and moderate temperatures. December closed the year strongly with 1060 trekkers, emphasizing Nepal's appeal as a premier trekking destination despite seasonal fluctuations.

Table 3: Number of Trekkers by Seasons Month (2021)

Month	Total trekkers
January	700
February	500
March	850
April	1500
May	0
June	0
July	0
August	285
September	675
October	1390
November	912
December	1060

Source: Ministry of Culture, Tourism and Civil Aviation. (2021).

Data from Nepal Tourism Statistics 2021 reveals significant trends in trekking and expedition activities. In 2020, Nepal recorded 153 expedition teams comprising 447 members. By 2021, these figures surged to 762 teams and 3446 members, indicating a substantial increase. This growth reflects a strong recovery and renewed interest in adventure tourism despite the ongoing challenges posed by the pandemic. The rise in expedition teams and members underscores Nepal's enduring allure as a top destination for adventure enthusiasts seeking trekking and mountaineering experiences.

Flight and Passenger Movement

The detailed analysis of international flight and passenger movements from 2011 to 2021 reveals clear seasonal trends and significant variations in monthly data. December consistently emerges as the peak month for both flight and passenger activity, recording the highest numbers with 891 departures, 893 arrivals, totaling 1,784 flights, and 143,277 departing passengers. The total passenger movements in December reach 219,325, indicating the substantial impact of holiday travel on airport operations.

In contrast, May and June represent the lowest points in the annual cycle. May records only 238 departures and 244 arrivals, totaling 482 flights, and has the least passenger traffic with 21,912 departures and 11,119 arrivals, summing up to 33,031 passengers. Similarly, June has the lowest flight movements with 157 departures, 156 arrivals, and a total of 313 flights. Passenger movements in June are notably imbalanced, with only 12,206 departures compared to 53,871 arrivals, reflecting potential variations in travel patterns such as an influx of tourists or specific international events.

Table 4: Number of International Flights and Passenger Movement (2011-2021)

Month	Flight movement			Passenger Movement		
	Departure	Arrival	Total	Out	In	Total
JAN	437	443	880	44,488	52,040	96,528
FEB	413	412	825	42,308	56,100	98,408
MAR	504	503	1,007	55,224	67,569	122,793
APR	554	555	1,109	65,731	76,205	141,936
MAY	238	244	482	21,912	11,119	33,031
JUNE	157	156	313	12,206	53,871	66,077
JULY	263	259	522	24,096	22,787	46,883
AUG	424	424	848	52,715	46,745	99,460
SEPT	548	545	1,093	77,786	65,109	142,895
OCT	687	691	1,378	89,502	104,973	194,475
NOV	762	757	1,519	119,082	76,036	195,118
DEC	891	893	1,784	143,277	76,048	219,325
Total	5,878	5,882	11,760	748,327	708,602	1,456,929

Source: ATSRO (ATS/SAR Division), Terminal Management Division, Air Cargo Service Division (TIACAO)

On an annual scale, the data shows a balanced overall flow of flights, with a near-equal split of 5,878 departures and 5,882 arrivals, totaling 11,760 flights over the period. Passenger movements also present significant figures, with a total of 748,327 departures and 708,602 arrivals, culminating in 1,456,929 passengers over the eleven years. However, the monthly analysis highlights discrepancies, such as the higher number of arriving passengers in certain months, suggesting that specific periods might attract more inbound tourism or international visitors.

Understanding these trends is vital for effective airport and airline management. The peak month of December requires enhanced resource allocation, including additional staff, increased operational capacity, and improved passenger services to handle the surge in travel demand. Conversely, the off-peak months like May and June offer opportunities for maintenance, strategic planning, and potential promotional activities to boost travel during these quieter periods.

Overall, the data provides valuable insights into seasonal travel patterns, helping optimize flight schedules, improve passenger experiences, and enhance the efficiency of international travel operations. By leveraging these insights, airports and airlines can better manage their resources, anticipate passenger needs, and maintain high standards of service throughout the year.

Passenger Movement Data

Table 5: Domestic Flight and Passenger Movement at TIA (2021)

Year	Flight Movement		Passenger Movement		
	DEP	ARR	TOTAL	IN	OUT
2011	39635	39625	79260	796992	796992
2012	35444	35433	70877	786694	788365
2013	34544	34532	69076	769100	773504
2014	34270	34266	68536	728857	721701
2015	32944	32921	65865	683130	680918
2016	36938	36938	73876	880895	876701
2017	46563	46534	93097	1250102	1138481
2019	47788	47779	95567	1472082	1375704
2019	47307	47396	94640	1711753	1595247
2020	19306	19292	38598	690419	715358
2021	40585	40587	81172	1797403	1779539

Source: Ministry of Culture, Tourism and Civil Aviation. (2021)

5. Discussion

The normative thesis addresses how tourism should be managed and developed sustainably to balance economic growth, socio-cultural integrity, and environmental preservation. The literature review emphasizes sustainable tourism development, outlining the principles of minimizing environmental impacts, preserving cultural heritage, and promoting local economic benefits (Bramwell & Lane, 1993). It suggests that effective tourism policies are essential for balancing the benefits and drawbacks of tourism, promoting sustainable practices, and ensuring community involvement (Dwyer et al., 2009).

In comparison, the results and findings section provides a real-world context, demonstrating the impacts of tourism on Nepal's economy and society. The sharp decline in tourist arrivals due to the COVID-19 pandemic and the corresponding decrease in foreign exchange earnings highlight the vulnerability of Nepal's tourism sector to external shocks (Nepal Rastra Bank, 2021). Despite these challenges, the sector showed resilience, with an increase in star hotels and bed capacity, indicating efforts to strengthen the infrastructure and capacity to meet future tourist demands. This aligns with the normative thesis that sustainable tourism development requires continuous investment in infrastructure and strategic planning to mitigate risks and enhance the sector's resilience.

The descriptive thesis focuses on providing an empirical analysis of the trends and patterns observed in the tourism sector. The literature review discusses the economic impacts of tourism, noting that it contributes significantly to GDP, employment, and infrastructure development (WTTC, 2020). It also highlights the socio-cultural effects, where tourism fosters cultural exchange but can lead to cultural commodification (Smith, 2009). Environmental consequences, such as pollution and resource depletion, are significant concerns, with sustainable practices suggested as mitigation measures (Gössling & Peeters, 2015).

The results and findings section offers detailed empirical data on these aspects. Tourist arrivals in Nepal showed a steady increase from 1995, peaking at 1.2 million in 2019, but the COVID-19 pandemic led to a drastic decline in arrivals to 230,000 in 2020 and 150,000 in 2021. This reflects the sector's susceptibility to global health crises. Interestingly, the average length of stay increased during the pandemic, reaching 15.5 days in 2021, suggesting a shift in travel behavior possibly due to travel restrictions and quarantine measures (MoCTCA, 2021). The analysis of the purpose of visits revealed that holiday/pleasure visits remained predominant, but trekking and mountaineering saw a significant downturn during the pandemic. Pilgrimage tourism also faced challenges, reflecting the broader trends discussed in the literature review regarding the socio-cultural impacts of tourism.

Economically, the pandemic caused a significant decline in foreign exchange earnings from tourism, with an 88.2% drop in 2020/21 compared to previous years. The average daily expenses per visitor decreased from 65 USD in 2020 to 48 USD in 2021, indicating either reduced spending capacity or shorter trip durations. This empirical data supports the descriptive thesis by providing a concrete analysis of how tourism trends and economic impacts unfold in response to global events.

6. Conclusion and Implications

The tourism sector in Nepal, historically a significant contributor to the nation's economy, has faced severe challenges due to the COVID-19 pandemic but continues to demonstrate resilience. Traditionally, tourism has been crucial for foreign exchange earnings, employment, and regional development, with major attractions like Mount Everest, the Kathmandu Valley, and Lumbini drawing global visitors. According to the "Nepal Tourism Statistics 2021" report, tourist arrivals peaked at 1.2 million in 2019 but droped to about 230,000 in 2020 and 150,000 in 2021 due to the pandemic. Despite this decline, the average length of stay increased during the pandemic, suggesting a shift towards longer stays amid travel restrictions.

In 2021, holiday and pleasure visits dominated the reasons for travel to Nepal, representing 66.8% of total arrivals, while adventure tourism like trekking and mountaineering saw significant declines. Conversely, the 'other' category, encompassing business and official visits, remained relatively stable, highlighting the diverse motivations behind travel to Nepal. The economic impact of tourism was also evident from a drop in foreign exchange earnings from 2000/01 to 2018/19 due to the pandemic, and a decrease in average daily visitor spending from 65 USD in 2020 to 48 USD in 2021.

Additionally, trekking and expedition activities showed clear seasonal patterns, with the peak season in April and a lack of trekking during the monsoon months from May to July. Passenger and flight data revealed that December is the busiest month, reflecting a consistent annual trend in travel activity. These insights underscore the importance of adapting to seasonal fluctuations and effective management of airport and airline services to accommodate peak periods.

Overall, despite the setbacks caused by the pandemic, the tourism sector remains a vital economic pillar for Nepal. The data from 2021 offers crucial insights for policymakers, industry stakeholders, and researchers to navigate the recovery phase and strategize for sustainable tourism development. The sector's adaptability and the potential for future growth underscore the importance of continued investment and strategic planning in Nepal's tourism industry.

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A Basic Analysis of Tax Revenue and GDP in Nepal: Exploring the Correlation Dynamics

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Abstract

This study investigated the correlation of tax revenue on the economic development of Nepal, focusing on its GDP. To achieve the objective, by utilize time-series macroeconomic data, specifically focusing on GDP and tax revenue from 2000 to 2001 fiscal year to 2020/2021. This descriptive study employs ordinary Least Square regression and correlation coefficient analysis. Data is collected from the Economic Survey Ministry of Finance. The study proposes a model where GDP is a function of tax revenue. The hypothesis suggests a positive relationship between tax revenue and GDP in Nepal. The regression model indicates significance, rejecting the null hypothesis. Tax revenue plays a crucial role in Nepal's GDP. The findings reveal that the P-value is extremely low ($p<0.001$), indicating that the direct tax revenue and indirect tax revenue are highly statistically significant. There is the existence of both a positive and robust relationship between tax revenue and GDP. Hence, the Government of Nepal should search for a way to boost the revenue from tax revenue by primarily supporting the configurations of networks among all the agencies of government and taxing authorities of the federal level, each province, and local bodies to meet the growth and to facilitate public services for the country.

Keywords: Gross domestic product, tax revenue, growth, direct tax, indirect tax

1. Introduction

The main responsibilities of the government involve ensuring peace, safety, and economic stability while maintaining a balance, in finances and debt sustainability. It focuses on investing in infrastructure to support development objectives and cover expenses while also serving as a provider and facilitator. The government's ability to allocate funds for capital needs relies on its capabilities. Economic progress is an advancement that enhances the economy's productivity resulting in increased output and income levels. This in turn contributes to poverty reduction and enhances living standards. Factors such as taxation, investments, and consumption play roles, in influencing growth (Todaro & Smith 2006). Gross Domestic Product (GDP) represents the value of all goods and services produced within a country's borders during a timeframe (Adhikari et al., 2021).

The Government needs funds to facilitate public services for the country and its administrative activities. The government collects required funds through revenue and debt. Taxes are the most critical source of government revenue (Bhatia, 2009). The objective of taxes is to generate revenue to sustain government operations while minimizing adverse effects on the economy (Gentry & Hubbard, 2000). Taxation is a levy imposed by the Government on the income, goods, services, and property of individuals and communities to generate funds for public services and the functioning of administrative activities in the country (Kandel, 2010). Taxation is the primary source of income for the Government, enabling it to fulfill the needs of the citizens (Chinwe, 2013). Taxation is a powerful tool to control a country's economy. The primary objectives of taxation include raising revenues, regulating the economy, stimulating economic growth, ensuring equal distribution of national income, and eliminating inequalities between provinces (Dhakal et al., 2021).

Tax revenue plays a crucial role in the economic growth of a country (Myles, 2000). Taxes are compulsory contributions collected by the country, representing a mandatory and unpaid transfer of financial resources from the private to the public sector for the economic development of the country (Jakir, 2011; Alowosheable et al., 2017). Tax can be categorized into two distinct classifications: direct tax and indirect tax. Direct tax pertains to levies directly imposed on income, whereas indirect tax relates to impositions on the cost of consumption. It is noteworthy that indirect tax, despite being initially imposed on one individual, possesses the capability to transfer its burden onto another individual (Chapagai, 2021).

The role of tax revenue as a significant source of Government revenue in Nepal has been grown over the years particularly event in increased the government expenditure. To address this rise in expenditure, the focus has shifted towards emphasizing tax revenue. This sets the stage for the central question: Is there a connection between tax revenue and GDP in Nepal?

The motivation of this study is to contribute fresh insights into the intricate relationship between tax revenue and GDP, bridging the existing gap in the literature. This study aims to enhance understanding of the dynamics between tax revenue and GDP in the Nepalese economy and to inform future research and policy decisions in this specific context. The primary objective of is to assess the impact of tax revenue on GDP in Nepal and elucidate how tax revenue influence the overall economic growth of the country.

2. Literature Review

The existing body of empirical studies on the relationship between tax revenue and GDP has primarily focused on derives on diverse global contexts, including Nepal. Gupta (2007) found that the countries that depend on taxation on goods and services have less successful income generation. Countries that prioritize taxation on income, profit, and capital gain tend to experience higher performance. Ghimire (2019) found that GDP and government revenue in Nepal were strongly related to direct tax and indirect tax. Shrestha & Kautish (2020) investigated the impact of Government revenue on the economic growth in Nepal. The results show a positive relationship between government revenue and economic development. Further, Dahal, (2020) and Kharel (2021) analyzed the economic impact of tax revenue on economic growth in Nepal. The findings show that tax revenue has a positive significance on GDP.

Korkmaz et al.(2019) investigated the effects of taxation on economic growth in Turkey by using the autoregressive distributed lag approach. The result shows a positive and significant impact of indirect taxes on economic growth and a negative impact on direct tax revenue. Turkey. In Nigerai, Nwamuo (2019) employed the rood test to analyze the effect of tax revenue on economic growth in Nigeria. The results indicate that profit tax, corporate income tax, custom duty, and excise duty have a positive yet insignificant impact on economic growth, while oil revenue exhibits a positive and significant effect on the economy. Omodero (2019) analysis yields empirical findings that demonstrate the detrimental effects of both the shadow economy and corruption on tax revenue performance in Nigeria. However, it is worth noting that the negative impact of corruption on tax revenue is more pronounced and considerable compared to the influence of the shadow economy.

The existing body of empirical studies on the relationship between tax revenue and GDP has primarily focused on derives on diverse global contexts , the results reveal that tax revenue has a positive significant impact on GDP (Okafor, 2012; Jalata, 2014; Ugwunta & Ugwuanyi, 2015; Njindan Iyke & Takumah, 2015; Takumah & Iyke, 2017; Ali et al., 2018; Odhiambo & Olushola, 2018; Oboh et al., 2018; Basheer et al., 2019; Oluwatobi et al., 2021; Zahra et al., 2021. Ssome research found that tax revenue and GDP have a negative (Marire & Sunde, 2012; Keho, 2013; Delessa, 2014 & Saibu, 2015).

However, the literature review indicates a dearth of specific studies analyzing the contribution of tax revenue to GDP of Nepal. This research aims to address this gap by providing a focused analysis of the intricate relationship between tax revenue and GDP in the Nepalese economy.

3. Methods and Procedures

This comprehensive investigation employs a descriptive approach to analyze the contribution of tax revenue to GDP in Nepal based on time series data covering the periods from 2000/2001 to 2020/2021. Such quantitative data were sourced mainly from the economy survey of the Ministry of Finance in Nepal. The study applies the Ordinary Least Square (OLS) regression and correlation coefficient to empirically estimate the relationships between GDP and indirect tax revenue. The data was analyzed using the SPSS statistical package version 23. Therefore, descriptive statistics was employed to present the data through percentages and ratios. Additionally, the independent t-test and F-test were employed to validate the research hypotheses and interpret the result obtained from the OLS analysis

Model Specification

This paper explores the correlations between GDP and tax revenue to ascertain contributions of tax revenue to Nepal's GDP from 2000/2001 to 2020/2021. In pursuit of this objective, it was imperative to construct a statistical model that delineates relationships among the variables under the study. The examination of various empirical literatures on the scope of tax revenue and GDP across different countries shows that the analysis of selected variables has a linear functional form. Thus, guided by the perceived functional relationship between the matrix of GDP and tax revenue, a connection is established between these two variables. From both sub-macro and micro-economic perspectives, the model proposed in this study posits that GDP is contingent on the revenue collected from tax revenue. Accordingly, the purposeful relationships and resulting models are specified as follows:

GDP = f (Tax revenue) …… ……(1)

From the above functional relationships, the working model of the paper is specified below

$GDP = \beta_0 + \beta_1 (\text{Tax revenue}) + \mu$ ……..(2)

Where;

GDP= Gross domestic product, β_0= Autonomous (Intercept)

β_1= Coefficient of tax revenue, μ = error term

As the GDP is expected even when no revenue was collected from tax revenue, the 'priori' expectation is that the model parameter will be positively signed.

Research Hypothesis

The examination of various empirical studies in the field reveals consistent positive associations between tax revenue and GDP across diverse national economics. In light of this observation, the current research endeavors to assess this relationship quantitatively through the formulation of the following hypothesis:

H_o = There is no statistically significant correlation between tax revenue of Nepal's GDP.

H_1 = There is statistically significant correlation between tax revenue of Nepal's GDP.

4. Results and Discussion

The result reveals that GDP has gradually increased over the study periods, with a minimum of Rs. 44, 151.90 million in 2000/2001 and a maximum of Rs. 435,255 million in the year 2020/2021. The mean GDP over this period is Rs. 178,023.35 million, indicating overall economic growth during the study period (Table 1).

Direct tax revenue has also increased over the period, from Rs. 1,015.49 to Rs. 22,827.7 million. The mean value of direct tax revenue is Rs. 7883.67 million. The ratio of direct tax to GDP has varied over the study periods. This percentage increases from a low of 2.14 percent to a high of 5.65 over study periods. The mean value of the direct tax to GDP ratio is 3.6 percent, reflecting a positive trend in direct tax collection and indicating the proportionate contribution of direct tax revenue to the overall economy.

Indirect tax revenue has also increased from Rs. 2,870.6 to Rs. 64, 183 million the mean indirect tax is Rs. 20,515.07. The ratio of indirect tax to GDP has varied over the study periods. This percentage increased, from a low of 6.10

percent to a high of 14.75 percent. This means the indirect tax to GDP ratio is 9.66 percent, reflecting a positive trend in indirect tax collection and indicating the proportion of indirect tax revenue relative to the overall economic output.

Table 1: GDP, Direct Tax Revenue, Indirect Revenue and Total Tax Revenue

"In Ten Million"

Year	GDP (Expenditure method) at current price	Direct tax revenue	Indirect tax revenue	Total tax revenue	Direct tax revenue to GDP	Indirect tax revenue to GDP	Total tax revenue to GDP	Percentage increase in total tax revenue
2000/2001	44,151.90	1015.49	2870.6	3886.06	2.3	6.5	8.8	0
2001/2002	45,944.23	1060.63	2872.4	3933.06	2.31	6.25	8.56	1.21
2002/2003	49,223.13	1088.19	3001.4	4089.6	2.21	6.1	8.31	3.98
2003/2004	53,674.90	1191.26	3626	4817.3	2.22	6.76	8.97	17.79
2004/2005	58,941.20	1307.18	4103.3	5410.47	2.22	6.96	9.18	12.31
2005/2006	65,408.40	1396.81	4346.2	5743.04	2.14	6.64	8.78	6.15
2006/2007	72,782.70	1898.03	5214.6	7112.67	2.61	7.16	9.77	23.85
2007/2008	81,566.30	2308.77	6206.8	8515.55	2.83	7.61	10.44	19.72
2008/2009	98,827.20	3432.07	8273.1	11705.19	3.47	8.37	11.84	37.46
2009/2010	119,277.40	3584.19	12045	15629.49	3	10.1	13.1	33.53
2010/2011	136,695.40	4118.3	13159	17277.76	3.01	9.63	12.64	10.55
2011/2012	152,734.40	5644.64	15528	21172.18	3.7	10.17	13.86	22.54
2012/2013	169,501.10	7140.29	18781	25921.49	4.21	11.08	15.29	22.43
2013/2014	223,253.00	8473.47	22771	31244.13	3.8	10.2	13.99	20.53
2014/2015	242,364.00	9849.08	25746	35595.57	4.06	10.62	14.69	13.93
2015/2016	260,818.00	13155.7	28954	42109.66	5.04	11.1	16.15	18.3
2016/2017	307,714.00	16726.7	38659	55385.65	5.44	12.56	18	31.53
2017/2018	345,595.00	17922	48027	65949.15	5.19	13.9	19.08	19.07
2018/2019	385,893.00	19442	54418	73860.4	5.04	14.1	19.14	12
2019/2020	388,870.00	21974.6	48031	70005.55	5.65	12.35	18	-5.22
2020/2021	435,255.00	22827.7	64183	87010.66	5.24	14.75	19.99	24.29
Mean	178023.35	7883.67	20515.07	28398.79	3.60	9.66	13.27	17.3
Minimum	44151.90	1015.49	2870.60	3886.06	2.14	6.10	8.31	-5.22
Maximum	435255.00	22827.70	64183.00	87010.66	5.65	14.75	19.99	37.46

Sources: Economy survey, Ministry of Finance, Government of Nepal 2003/2004, 2008/2009, 2013/ 2014, 2017/2018 and 2020/2021)

Total tax revenue has increased from Rs. 3,886.06 million to Rs. 87,010.66 million. The mean total tax revenue is Rs. 28,398.79 million. The ratio of total tax to GDP has varied over the study periods. This percentage increases from a low of 8.31 percent to 19.99 percent. The mean value of the total tax to GDP ratio is 13.27 percent, reflecting a positive trend in overall tax collection and indicating the overall tax burden on the economy. The percentage increase in tax revenue ranged from a decrease of 5.22 percent to a significant increase of 37.38 percent. The mean growth rate of indirect tax is 17.3 percent (Table 1). The results reflect a positive impact on economic growth. Direct tax and indirect tax revenue have increased, contributing to a rising GDP.

The correlation coefficient (R) is 0.994; this indicates a solid positive relationship between tax revenue and GDP in Nepal during the study periods. The coefficient of determination (R^2) is 0.989, and the adjusted R^2 is 0.988, indicating a high goodness of fit (*this paper does not consider other relevant variables, the reason which the R^2 is higher*). The standard error in the estimated value is Rs. 14370.20; a lower value indicates a better fit for the data. R^2 change is 0.989. The F change value is 810.792, its associated p-value is 0.000 ($p<0.001$) (Table 2). The low p-value for the F change test indicates that the tax revenue and GDP is the statistically significant table.

Table 2: Correlation coefficient Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.994[a]	.989	.988	14370.20	.989	810.792	2	18	.000

Predictors: (Constant), Direct tax revenue and indirect tax revenue; Dependent variable: GDP

The intercept is 42220.622, representing the estimated GDP when both tax revenues are zero. The direct tax revenue has positive coefficients (9.148), implying that one unit increase in the direct tax revenue is associated with an approximately 9.695 unit increase in GDP. The coefficients are statistically significant (p=0.001), and indirect tax revenue also has positive coefficients (3.104) implying that one unit increases the indirect tax revenue associated with an approximately 2.842 unit increase in GDP, the coefficients are statistically (p=0.009). Direct tax revenue has a higher standardized coefficient (Beta = 0.536) compared to indirect tax revenue (Beta = 0.462) (Table 3), indicating that, on a standardized scale, direct tax revenue has a relatively more potent impact on GDP in Nepal.

Table 3: Standard coefficient Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	42220.622	4637.156		9.105	.000
	Direct tax revenue	9.148	2.712	.536	3.374	.003
	Indirect tax revenue	3.104	1.068	.462	2.907	.009
Dependent Variable: GDP (Expenditure method) at current price						

The F-test statistic is 810.792 .and the p-value is shallow (p<0.001), indicating that the tax revenue is statistically significant. The null hypothesis, stating that all coefficients in the regression model are equal to zero, is rejected in favor of the alternative hypothesis, which is accepted that tax revenue plays a crucial role in Nepal's GDP.

Table 4: ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	334861500555.382	2	167430750277.691	810.792	.000[b]
	Residual	3717050623.368	19	206502812.409		
	Total	338578551178.750	21			
a. Dependent Variable: GDP (Expenditure method) at current price b. Predictors: (Constant), Indirect tax revenue, Direct tax revenue						

Trend Analysis of Tax Revenue and GDP

The time series nature of the variables examined illustrates the trend of tax revenue and GDP in Nepal. A diagrammatic representation of the dataset is shown in Figure 1. The trend analysis reveals that all variables used in the study exhibit a gradual upward trend, indicating tax revenue helps to grow the Nepalese economy.

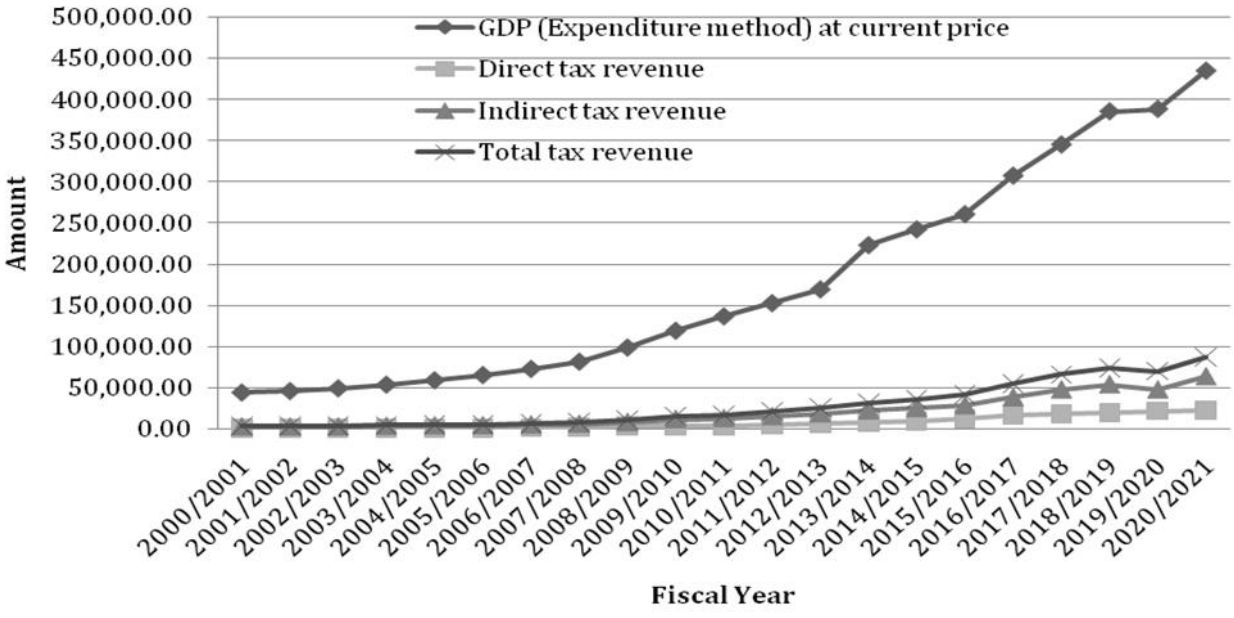

Figure 1: Trend Analysis

The findings of this study are in contrast with the studies carried out by Okafar (2012), Jalata (2014), Ugwunta & Ugwuanyi (2015) Njindan Iyke & Takumah (2015) Takumah & Iyke (2017) Ali et al. (2018) Odhiambo & Olushola (2018) Oboh et al. (2018) Basheer et al. (2019) Korkmaz et al. (2019) Myles (2000) Oluwatobi et al. (2021) Kautish (2020) Dahal, (2020) and Kharel (2021) but Ilabora & Mgbame, (2012), Gbata (2017), Adhikari (2019), Zahra et al. (2021) and Abd Hakim et al.(2022) does not consist with the finding of the study. Finally, the result indicates a positive significant correlation of tax revenue on Nepal's GDP.

5. Conclusion and Implications

This study examines the relationship (correlational) between tax revenue and GDP in the Nepalese economy. The study shows that both direct tax revenue and indirect revenue have increased, contributing to the overall growth in GDP. GDP has a consistent upward trend, indicating overall economic growth. The ratio of direct tax to GDP and indirect tax to GDP has a positive trend. The correlation coefficient indicates a solid positive relationship between tax revenue and GDP. The regression analysis shows that tax revenue significantly impacts the GDP in Nepal. Policymakers, businesses, and academic institutions can benefit from these insights to formulate effective strategies for economic development in Nepal. The study contributes to the existing knowledge on the relationship between tax revenue and GDP, providing a more micro understanding. The study demonstrated that both direct tax and indirect tax revenue have increased, contributing to the overall growth in GDP.

6. Implications for Future Research

Additional studies have yielded numerous implications basing to this research. This paper has exclusively examined the correlation, rather than causation, to evaluate the dynamics of correlation. Specifically, it analyzes the direction of movement of tax revenue and GDP in Nepal. Future researchers may explore novel dynamics by employing impact evaluation techniques to investigate causation.

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An Analysis of Fiscal Policy and Wagner's Law in the Context of Nepal

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Abstract

There is a lot of discussion among economists about the relationship between expenditure of the government and gross domestic product (GDP). The paper seeks to examine the association between GDP and government expenditure by utilizing the concept of Wagner's Law. Both long run and short run relationships are examined by use of popular econometric techniques. From the result of Engle-Granger test the significance of Wagner's law is found in the context of Nepal when taking governance and government capital expenditure as the independent variables of economic growth. It has been found that when GDP increases by one percent, capital spending rises by 0.4 percent in the long run. However, the Granger causality test does not reveal any causal relationship between the variables of interest.

Keywords: Government expenditure, real GDP growth, governance, co-integration

1. Introduction

Fiscal policy is an important instrument for addressing short-term changes in output and employment. Public expenditure, as a key component of fiscal policy, not only influences the sustainability of public finances through its impact on fiscal balances and government debt, but it can also pursue other goals such as increasing output, employment, and income redistribution, all of which contribute to overall economic well-being. The relationship between government spending and economic development is complex and multifaceted. While government spending can stimulate economic growth through investment in infrastructure, education, healthcare, and research and development, excessive spending without proper fiscal management can lead to inflation, debt accumulation, and crowding out of private investment. Moreover, the effectiveness of government spending in promoting economic development depends on various factors such as the quality of spending, institutional capacity, and the overall economic environment. When allocated efficiently and directed towards productive activities, government spending can enhance long-term productivity, innovation, and competitiveness, thereby fostering sustainable economic development. However, it's essential for governments to strike a balance between spending to stimulate growth and maintaining fiscal discipline to ensure macroeconomic stability in the long run.

Wagner's law is one of the most widely held hypotheses on the relationship between government spending and economic development.

Despite the pivotal role of government expenditure in Nepal's economic development, there has been limited research dedicated to the study of government expenditure in the Nepalese context. Despite a consistent allocation of government expenditure in Nepal since 1952, the country has experienced a prolonged period of sluggish economic growth. Notably, between 1974 and 2017, Nepal's nominal GDP increased by nearly 183 times, while government expenditure rose by approximately 329 times (MoF, 2017).

This significant difference between government spending growth and GDP expansion emphasizes the importance of investigating the relationship between public expenditure and real GDP in Nepal. Public spending is critical in fostering economic growth, particularly in sectors that prioritize social well-being, such as infrastructure, education, and healthcare.

The discussion on how public spending affects economic growth is an ongoing global debate, with some economists proposing a favorable impact, while others explore potential adverse effects.

Furthermore, in addressing macroeconomic challenges such as high unemployment, insufficient national savings, excessive budget deficits, and significant public debt burdens, fiscal policy has widely been recognized as the central focus of policy discussions in both developed and developing countries. This study tries to analyze the application of Wagner's law to Nepal from 1974 to 2017. A time-series analysis is used to determine whether Wagner's law is applicable in Nepal. The research methodology used in this study consists of several major steps: doing unit-root tests to assess stationarity, using the Johansen cointegration approach, developing an error-correction model, and performing Granger causality tests. The data provide solid evidence of a long-term relationship between GDP and government spending. Furthermore, the causal link was found to be bidirectional. As a result, this study offers credence to the validity of Wagner's law in the setting under consideration.

2. Review of Literature

The different research mentioned above, both theoretical and empirical, have shed insight on the relationship between public spending and growth. But the results are not similar in different countries. The variation in the result shows that there are inherent limitations in both Keynesian and Wagnerian theory of public spending while applying across countries and within countries over a period of study. It reveals that government expenditure is growing due to a rise in the national income of the country. The various studies have contradictory results of public spending on growth. In some studies, government expenses cause the growth of the economy. But in some study no causality between government expenditure and growth.

Attari and Javed (2013) had established the association between government expenditure and economic growth in the context of Pakistan using time series data from 1980 to 2010. Similarly, Atesoglu (1998) and Malik and Chaudhury (2002) used real GDP as the explained variable and the corresponding explanatory variables are rate of inflation and real government expenditure. They further took the natural log of each variable under consideration. They decomposed the government expenditure into current expenditure and development expenditure. To evaluate co-integration, they used the autoregressive distributed lag (ARDL) approach to estimate coefficients in both the long and short runs. In addition, they performed the Granger Causality test to confirm the direction of causality between the variables under investigation. The findings revealed a one-way causal relationship between the rate of inflation and GDP, government spending and GDP, and government capital expenditure and GDP. They utilised the LM test to test for serial correlation and discovered that there is none. Finally, the model has passed the stability tests. CUSUM and CUSUMSQ tests were used to evaluate the model's stability. Because of these tests, they discovered that the model is stable. They reported that the coefficient of current spending is statistically low.

Shrestha (2009) used Nepal’s data from 1982 to 2007 to examine the association between government spending and economic growth. The study used a model based on Devaranjan et al. (1996) and Semmler et al. (2007) to investigate the link between public spending and economic growth. The data showed that public expenditure has a favourable impact on Nepal's economic growth. Furceri (2007) conducted a cross-country analysis to investigate the effects of government spending on economic growth. The purpose of this article is to investigate the relationship between public expenditure business cycle volatility and long-run growth.

In a similar line, Acharya (2016) examined the relationship between governmental expenditure and economic growth in Nepal from 1975 to 2015. The study used a variety of dependent variables, including trade openness, government revenue, government revenue-to-GDP ratio, government expenditure-to-GDP ratio, and average annual rainfall. To determine causality between these variables, the Granger Causality test was used. The findings demonstrated a favourable link between government spending and growth in Nepal during the study period.

Barro (1990) has developed theoretical mathematical form for public spending and growth, and he concluded basically that production- enhancing public expenditure fosters the endogenous growth and whereas utility-enhancing expenditure reduces the growth. It shows the causality of productive government expenditure runs to economic growth.

Olayungbo and Olayemi (2018) explored the relationship between non-oil revenue, government spending, and economic growth in Nigeria from 1981 to 2015. They followed Okoro (2009), dividing capital into non-oil revenue and government spending. They expanded Johansen ML to test impulse response and Granger causality. They used the error correction model (ECM) and impulse response shock to investigate short and long run dynamics. They found the presence of co-integration among the variables in the long run. The findings revealed that government

expenditure has a negative impact on economic growth in both the long and short run, whereas non-oil revenue had a favourable impact on growth. For example, they discovered that a 1% increase in public spending reduces GDP by 3.26% over the research period, whereas a 1% increase in non-oil revenue results in a 0.35% increase in GDP. In contrast, non-oil revenue shocks have a negative influence on economic growth, but government spending shocks have a positive impact on growth during the research period. Unidirectional causality exists between government spending and economic growth, as well as between government spending and non-oil earnings. The results support the Keynesian hypothesis while rejecting Wagner's theory.

Ejaz et al. (2017) published a paper using Pakistan's time series data spanning 1982 to 2017. The growth rate is the explained variable, while the explanatory variables are development, health, defence, and education spending. The authors utilised the ordinary least squares test to verify the association, and the CUSUM square test to assess stability. They employed the ADF test to determine the stationary of variables. The research stated that public outlays have an important influence in Pakistan's overall economic growth. However, not all components of governmental expenditures had the same impact on economic growth in Pakistan.

From a critical examination of existing literature pertaining to public spending across various economies, it becomes apparent that both directly and indirectly, the discussions gravitate towards the complex dynamics of public expenditure. Within this discourse, despite the abundance of literature exploring Wagner's law and its implications, a noticeable gap exists in the examination of the interplay between government expenditure, economic growth, and fiscal policy. While numerous econometric models have been proposed to elucidate different facets of Wagner's law, there remains a dearth of studies addressing the multifaceted relationship between these variables.

3. Research Methodology

Research design: The paper utilized the econometrics and analytical research design to meet the objective of the paper. This paper utilized Peacock-Wiseman (1961) Version of Wagner's Law. It has two variables such as real government expenditure and real GDP. But capital expenditure is used in this paper instead of using overall public spending. The paper employed the following statistical techniques viz i) Stationarity test; ii) Co-integration test; iii) Causality test; iv) Diagnostic test (both coefficient diagnostics and residual diagnostics) and v) Stability test.

Sources of Data: Secondary data has been applied for this paper. The data of government finance has taken through 'Handbook of Government Finance Statistics 2017', published by NRB and Economic Survey published by Ministry of Finance of Nepal. And the data for GDP and population have extracted from the World Bank. Initially, both nominal and real GDP series in local currency have taken out. The nominal figure of government expenditure has taken out from NRB's publication 'Handbook of Government Finance the paper analyzed the significance of Wagner's Law in context of Nepalese economy from 1975 to 2019 and to examine the nexus among growth, government expenditure and fiscal policy.

Model Specification: The majority of the macroeconomic variables are non-stationary series. After conducting unit root test, the Engle-Granger Co-integration Test is used in the study to evaluate the Wagner's Law.

$$y_t = \alpha + \beta x_t + \varepsilon_t \quad \text{..... (1)}$$

Where,

y_t = Real Government Capital Expenditure and it indicates real government per capita expenditure too.

x_t = Real Gross Domestic Product, it indicates real government per capita expenditure too.

α = constant term,

β = Coefficient or estimating parameters,

ε_t = error term,

The Engel-Granger co-integration test involves two steps:

a. Using OLS, estimate equation 1 to obtain the residual series.
b. Test the residual series' stationarity.

In economic terms, two variables are cointegrated if they have a long-run (equilibrium) relationship. If there is a long-run equilibrium, the model's long-term dynamics must be measured. Co-integration indicates that the data are

linked using an Error Correction Model (ECM). The principles of co-integration and error correction mechanism are extremely similar.

If government expenditure (y_t) and GDP (x_t) are integrated, the relationship between remittances (y_t) and inflation (x_t) in an ECM can be written as -

$$\Delta y_t = \alpha_0 + \beta_1 \Delta x_t + \pi \widehat{\mu_{t-1}} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots (2)$$

Equation (2) incorporates both long-run and short-run data. In this model, coefficient 'β_1' is the impact multiplier (short-run effect) that assesses the immediate impact of a change in inflation on remittances.

4. Analysis and Findings

Procedures of analyzing the relationship

The first step is the summarization of statistics of the variables. It is followed by the line graphs of the variables under study. Afterward, unit root tests are taken in order to assure the elimination of spurious regression. Then after that, different econometric techniques are treated as per the demand of unit root test. This procedure is followed by diagnostic and stability tests. Finally, the Granger causality test is used to detect a causal relationship between variables.

Table 1: Summary Statistics

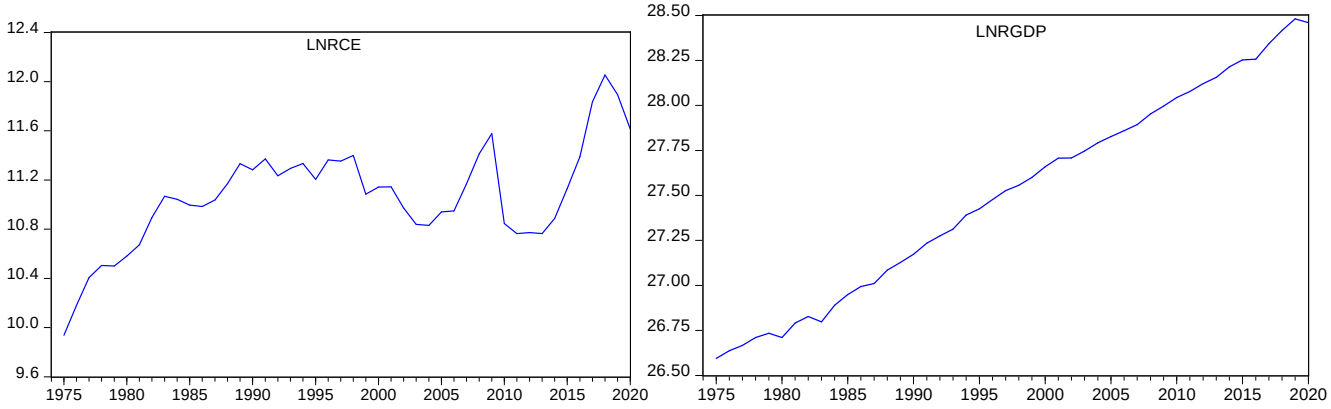
	LNRCE	LNRGDP	LN(RGDP/P)	LN(RGE/P)
Mean	11.06884	27.51005	10.65269	8.952065
Median	11.07640	27.54158	10.61986	8.909737
Maximum	12.05426	28.48106	11.32993	10.12570
Minimum	9.938166	26.59458	10.20407	7.811040
Std. Dev.	0.416325	0.576203	0.338131	0.523670
Skewness	-0.185076	0.003190	0.407166	0.355656
Kurtosis	3.598371	1.759913	2.057668	3.017831
Jarque-Bera	0.948864	2.947558	2.972993	0.970376
Probability	0.622238	0.229058	0.226164	0.615581
Sum	509.1668	1265.462	490.0237	411.7950
Sum Sq. Dev.	7.799683	14.94044	5.144965	12.34036
Observations	46	46	46	46

Source: Author's estimation

Note: RCE= Real Government Capital Expenditure, RGDP= Real Gross Domestic Product, RGDP/P= Per capita Real GDP, RGE/P= Per capita Real Government Expenditure

The Line Graph of the Variables

The line sketch of the variables shows the trends. By observing the graph, nature of data can be known. The line graph of the variable under study is presented below.



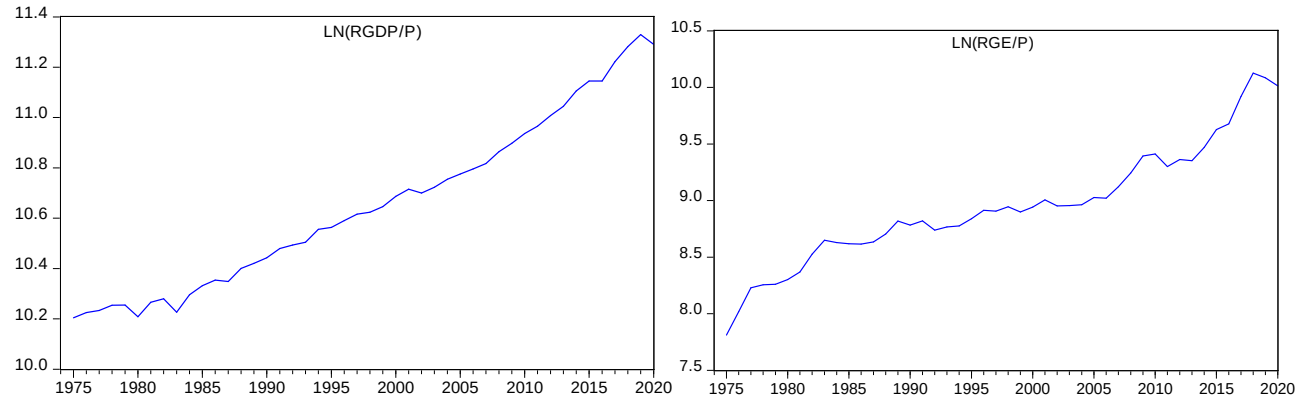


Figure 1: Line Graphs of the Variables
Source: Author's estimation

From the study of line graph, it is summarized that all the data are trended and also upward slope against time reference. We can infer that the data do not have mean zero and constant variance. It means the data are not stationary at level. It may be stationary at first difference or second difference. But the final decision of whether the variables are stationary or not would be checked by unit root test.

Unit Root Test

The unit root test is the most effective approach to check for stationarity. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are used in this investigation. In both test statistics, the null hypothesis indicates the presence of a unit root. If the p-value is less than 0.05, we can reject the possibility of a unit root and conclude that the variable is stationary. Because we saw both the trend and the intercept in the graphical picturing, the test is performed in intercept and trend mode. The test results are presented in the following tables.

Table 2: Augmented Dickey-Fuller (ADF) Test Results

Null Hypothesis: the variable has a unit root					
	At Level				
		LNRGEP	**LNRGDPP**	**LNRGDP**	**LNRCE**
With Constant	t-Statistic	-0.8646	1.5195	0.1808	-2.7928
	Prob.	***0.7903***	***0.9991***	***0.9683***	***0.0675***
		n0	n0	n0	*
Both constant and Trend	t-Statistic	-2.0942	-1.8997	-3.3518	-3.0271
	Prob.	***0.5349***	***0.6382***	***0.0711***	***0.1367***
		n0	n0	*	n0
	At the first difference				
		d(LNRGEP)	d(LNRGDPP)	d(LNRGDP)	d(LNRCE)
With Constant	t-Statistic	-4.9354	-6.8669	-4.4012	-4.8826
	Prob.	***0.0002***	***0.0000***	***0.0011***	***0.0002***
		***	***	***	***
Both constant and Trend	t-Statistic	-4.8827	-7.6641	-4.4797	-4.8551
	Prob.	***0.0015***	***0.0000***	***0.0047***	***0.0016***
		***	***	***	***
Notes:					
c: Probability based on MacKinnon (1996) one-sided p-values.					

Source: Author's estimation
Note:(*) indicates significance at 10 percent level, (***) shows 1 percent level of significance, Lag length criterion is SIC.

The table above displays the results of the ADF unit root test with intercept, as well as the intercept and trend. All variables at the level with both intercept and trend have a lower absolute t-value than the crucial value of MacKinnon (1996) at the 5% level of significance. At the same time, the p-value for each variable is greater than 0.05. However, the situations alter when the initial difference between each variable is calculated and stationarity is checked. In the first difference situation, all of the variables under investigation are stationary. It demonstrates that all of the variables are in the same order as I(1) at the 1% level of significance.

Table 3: Unit Root Test Result by Phillips-Perron Method

Null Hypothesis: the variable has a unit root					
At Level					
		LNRGEP	**LNRGDPP**	**LNRGDP**	**LNRCE**
With Constant	t-Statistic	-0.8999	2.3527	0.3723	-2.7091
	Prob.	***0.7793***	***0.9999***	***0.9795***	***0.0804***
		n0	n0	n0	*
Both constant and Trend	t-Statistic	-2.3153	-1.8128	-3.1890	-2.7605
	Prob.	***0.4174***	***0.6819***	***0.0996***	***0.2188***
		n0	n0	*	n0
At the First Difference					
		d(LNRGEP)	d(LNRGDPP)	d(LNRGDP)	d(LNRCE)
With Constant	t-Statistic	-4.7652	-6.8652	-7.9695	-4.6004
	Prob.	***0.0003***	***0.0000***	***0.0000***	***0.0006***
		***	***	***	***
Both Constant and Trend	t-Statistic	-4.7013	-8.0189	-7.9928	-4.6271
	Prob.	***0.0024***	***0.0000***	***0.0000***	***0.0030***
		***	***	***	***
Notes:					
b: Lag Length based on SIC					
c: Probability based on MacKinnon (1996) one-sided p-values.					

Source: Author's estimation

Note:(*) indicates significance at 10 percent level, (***) shows 1 percent level of significance, Lag length criterion is SIC.

The table shows Phillips-Perron's unit root test with intercept and trend. The findings indicate that all variables are stationary at the first difference level of significance. Because all of the variables are stationary at first difference, we cannot apply ordinary least squares (OLS), which is false regression. If all of the variables are stationary at first difference, the Engle-Granger cointegration test is applied. However, if the model's variables are mixed in the correct sequence, the ARDL model is adequate for integration. The Engle-Granger co-integration test is used in this case study.

Engle-Granger's Cointegration Test

As the variables of both Peacock-Wiseman (1961) and Gupta (1967) are I (1) so the best model of co-integration in Engle-Granger Model (EGM). It is very useful for two variables and both versions have also two variables. After finding appropriate lag length it has to follow four steps. In the first step check the variables are integrated in same order or not. If they are integrated in same order then the co-integration test can be applied. In second step, ordinary least square (OLS) is estimated. In third step, residuals are extracted and checking its stationarity at level. If the stationarity is found the variables of the models are said to be co-integrated. And it can be said that the variables have the long-run relationship. The last step is to operate error correction model (ECM) to diagnose the short-run and long-run coefficient as well as estimate error correction factor.

Lag Selection Criterion

The Engle-Granger cointegration test is quite sensitive to the ideal lag. (Agunloye, Shangodoyin, 2014). To capture the long-run link between the variables, the research must employ the variable's lag value. To accomplish this aim, the study used an unrestricted VAR. There are several criteria for selecting the appropriate lag, including FPE (Final Prediction Error), Akaike Information Criterion (AIC), Shwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ). FPE and AIC outperform the other criteria for small samples (Liew, 2004). The following tables carry the suitable lag length for Peacock-Wiseman (1961) and Gupta (1967) versions of Wagner's law.

Table 4: VAR lag order selection criteria

Endogenous variables: LNRCE LNRGDP						
Sample: 1974 -2020						
Included observations: 42						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-42.02005	NA	0.027888	2.096193	2.178939	2.126523
1	106.8101	276.3989	2.82e-05	-4.800482	-4.552244*	-4.709493
2	112.2680	9.616331	2.64e-05	-4.869907	-4.456176	-4.718258
3	120.6657	13.99613*	2.15e-05*	-5.079320*	-4.500097	-4.867012*
4	122.3721	2.681446	2.41e-05	-4.970100	-4.225384	-4.697132

* informs lag order selected by the given criterion				
LR: sequential modified LR test statistic (each test at 5% level)				
FPE: Final prediction error				
AIC: Akaike information criterion				
SC: Schwarz information criterion				
HQ: Hannan-Quinn information criterion				

Source: Author's estimation

As the variables of Peacock-Wiseman (1961) are co-integrated at I (1), Engle-Granger co-integration test is applied. Engel-Granger suggested for checking residuals of the model. The residuals series of the above model is shown in appendix. The ADF test result for the residuals series are shown below.

Table 5: ADF Test Result of Residuals

Null Hypothesis: RESID02 has a unit root				
Lag Length: 1 (Automatic - based on AIC, maxlag=3)				
			t-Statistic	**Prob.***
Augmented Dickey-Fuller test statistic			-2.999369	0.0036
Test critical values:	1% level		-2.618579	
	5% level		-1.948495	
	10% level		-1.612135	
*MacKinnon (1996) one-sided p-values.				

Source: Author's estimation

By using optimal lag 3 as suggested by the lag selection criterion, the absolute value of ADF test statistic in the above table is 2.99. This statistic is not compared with the critical value given in the table. Engle-Granger (1987) provided their own critical values which are shown below.

Table 6: Engle-Granger Critical Values

Lags	**1%**	**5%**	**10%**
No lags	-4.07	-3.37	-3.3
Lags	-3.73	-3.17	-2.91

Source: Engle-Granger (1987)

As the calculated ADF statistic is more than critical values of Engle-Granger (1987) at 10 percent level of significance, the variables lnRCE and lnRGDP are co-integrated each other. From table 4.6, as the coefficient is 0.42, it indicates that when 1 percent rise in real gross domestic product there will be 0.4 percent rise in real government capital expenditure. From this it can be inferred that the government capital spending increases due to more demand of infrastructure development which is resulted from the rise in real GDP.

Error Correction Model

it is the final step of co-integration by EGM model is to estimate error correction model (ECM). The table below shows the result of ECM.

Table 7: Result of Error Correction Model

Dependent Variable: D(LNRCE)				
Method: Least Squares				
Sample (adjusted): 1976 2020				
Included observations: 45 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.022961	0.050936	-0.450785	0.6545
D(LNRGDP)	1.435377	1.046721	1.371308	0.1776
E(-1)	-0.223009	0.080320	-2.776493	0.0082
R-squared	0.168868	Mean dependent var		0.037244
Adjusted R-squared	0.129291	S.D. dependent var		0.191280
S.E. of regression	0.178486	Akaike info criterion		-0.544268
Sum squared resid	1.338011	Schwarz criterion		-0.423823
Log likelihood	15.24602	Hannan-Quinn criterion.		-0.499367
F-statistic	4.266755	Durbin-Watson stat		1.442133
Prob(F-statistic)	0.020562			

Source: Author's estimation

From the above table it is clear the error correction term (ECT) (coefficient of E(-1)) has negative sign and also significant which is desirable. It hints that the ECT corrects the disequilibrium of system at the speed of 22 percent

annually. But the coefficient of LNRGDP is insignificant as its p-value of coefficient is more than 0.05. It suggests that there may not be short run relationship between the variables under study. It demands further research.

Residual Diagnostic and Stability Test

Even though there is not short-run relationship between the variables, there is co-integration since residual series is stationary. In this reason, the in this section, residual diagnostic and stability of the model is going to check. Under residual diagnostic serial correlation, heteroskedasticity test and normality test are competed. Under stability test Ramsey RESET, CUSUM and CUSUMQ tests are contended.

Serial Correlation LM test

Table 8: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	38.11414	Prob. F(2,42)	0.0000
Obs*R-squared	29.65873	Prob. Chi-Square(2)	0.0000

Source: Author's estimation

From the above table it is found that there is problem serial correlation in the model because the p-value of F-statistic is less than 0.05 and the null hypothesis states the presence of serial correlation.

Heterskedasticity Test

Table 9: Breusch-Pagan-Godfrey Heteroskedasticity Test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.798952	Prob. F(1,44)	0.3763
Obs*R-squared	0.820372	Prob. Chi-Square(1)	0.3651
Scaled explained SS	0.399029	Prob. Chi-Square(1)	0.5276

Source: Author's estimation

The above test result indicates that the F-statistic is not significant at the 5% level of significance, as the p-value is greater than 0.05. It suggests the series is not heteroskedastic, implying that the disturbance factor in the model is homoscedastic.

Normality Test

The Jarque-Bera normality test checks whether the residuals of the model are normally distributed or not. The test result is shown below.

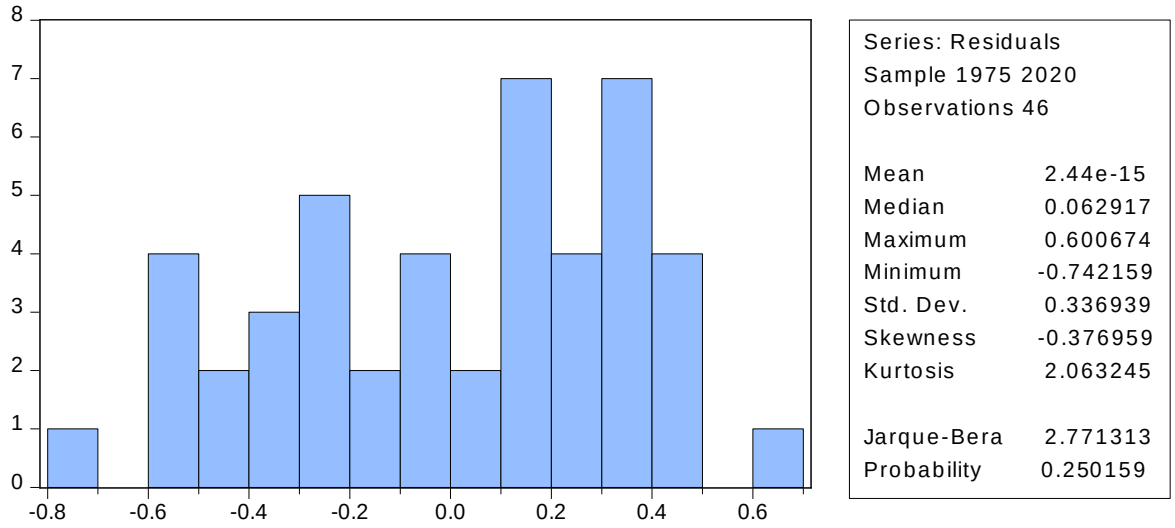


Figure 2: Normality test

The above table shows that the probability value for the Jarque-Bera statistic is more than 0.05 so that the residuals of model are normally distributed.

The overall result of diagnostic test of residual of the model shows that residuals are serial correlated, they are normally distributed, and they are free from heterskedasticity.

Ramsey Reset Test

Since the calculated T-value and F-value is more than 0.05, so we can accept the null hypothesis that the model of Peacock-Wiseman (1961) is correctly specified (Table 10).

Table 10: Test Result for Ramsey RESET Test

Ramsey RESET Test			
Specification: LNRCE LNRGDP C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	1.326976	43	0.1915
F-statistic	1.760865	(1, 43)	0.1915
Likelihood ratio	1.846168	1	0.1742

Source: Author's estimation

CUSUM and CUSUMQ test

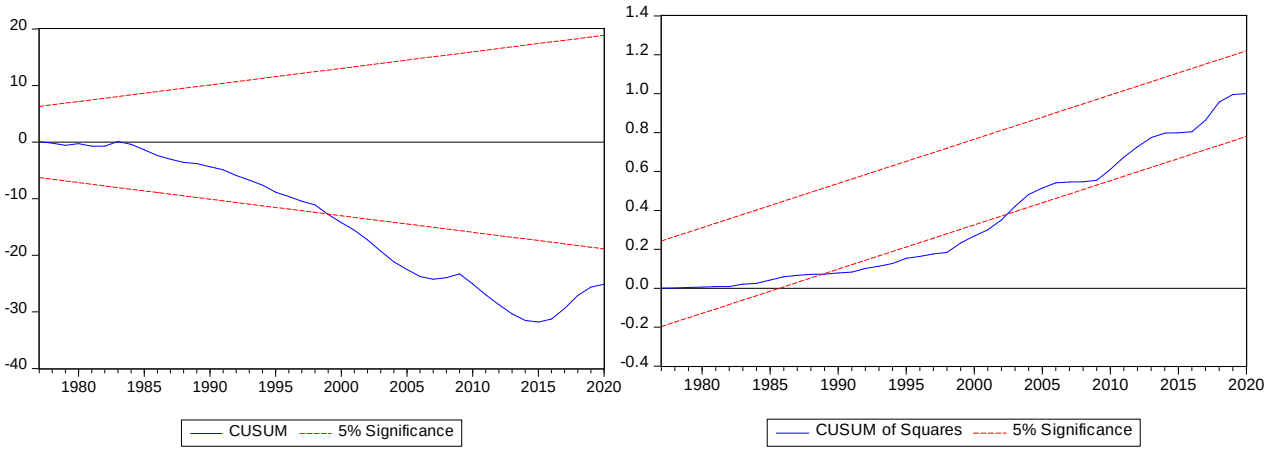


Figure 3: CUSUM and CUSUMQ plot

From the above figure, the CUSUM plot is deviated from the 5 percent level of significance from 2000 and it shows the instability in the model.

Granger Causality Test

Now the next step is to check the causality between the government expenditure and real GDP. In order to check the causality, the research has taken the pairwise Granger-causality test. To do this, the first difference of each variable is calculated.

Table 11: Granger Causality Test

Pairwise Granger Causality Tests			
Sample: 1975 2020			
Null Hypothesis:	Obs	F-Statistic	Prob.
DLNRGDP does not Granger Cause DLNRCE	42	1.32342	0.2823
DLNRCE does not Granger Cause DLNRGDP		0.51373	0.6755

Source: Author's estimation

As shown in the data, the P-values for both null hypotheses are more than 0.05, indicating that there is no causal association between government capital expenditure and real GDP. It concludes that both are independent variables.

Discussion and conclusions

The primarily concern of this paper is to seek the relationship between the government expenditure and GDP.In this regard, the paper has taken the different variables such as real GDP, capital expenditure, per capita GDP, and per capita government expenditure to use the Engel-Granger co-integration test. The result has suggested that there is a long run relationship between capital expenditure and real GDP as well as per-capita government expenditure and per capita GDP are co-integrated. It has indicated that when real GDP is increased by 1 percent there will be 0.4 percent rise in capital expenditure at 10 percent level of significance. Besides, ECM has suggested that the deviation will be corrected annually at the rate of 22 percent annually. Although the model has some problem of auto correlation and instability the residuals are normally distributed, homoscedastic and model is specified. Similarly, when per capita GDP increases by 1 percent, per capita government expenditure is increased by 1.48 percent in long run 0.7 percent increase in short-run. The dis equilibrium is corrected annually at the rate of 26 percent. Finally, the model is qualified in the residual diagnostic, specification and stability test except auto correlation.The Granger causality test resulted that the variables are independent to each other.

Even though there are differences in the elasticity the result for both versions are similar for some reviewed literature such as Acharya (2016), Pryol (1968), Musgrave and Peacock (1969), and Mann (1980). On the other hand, the

results are opposite for some literature like Olayungbo and Olayemi (2018), Menyah and Rufael (2013), Kaur (2016), Jena (2017). The result for the second objective is basically different from most of the previous studies because it has established the relationship between growth with public expenditure and governance. Incorporating with good governance the result of this thesis is akin to Bahaddi and Karim (2017). But there is the absence of a causal relationship between the variables of both versions which is also different from the previous studies.

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Opportunities and Challenges for Official Statistics in a Digital Age

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Abstract

Official statistics play a crucial role in informing policy decisions, monitoring societal trends, and facilitating evidence-based decision-making. In the digital age, these statistics face both opportunities and challenges that need to be addressed to ensure their continued relevance and accuracy. Governments, corporations, and the general public are expected to receive information from national systems of official statistics concerning the economic, demographic, social, and environmental situation. It has been suggested that digitizing data collection for government statistics could have a significant social impact. Government administrative data is being used more, although slowly. There is little proof, but big data access via satellites, point-of-sale systems, and social media is being investigated and tested. New requirements for official statistics as well as challenges in conventional data collecting from families and businesses are what are driving these initiatives. The final evidence basis for policies meant to enhance lives might be created by the government using new data sources effectively, and anonymized data are also being made available to other academics. The essay describes how the big data evidence-to-policy process is supposed to function in that setting and evaluates the difficulties encountered in making it function as planned using the UK, Netherlands, and UN. We come to the conclusion that technology advancements require constant attention to the promotion of official statistics and interaction with all users and potential users. The objective is to produce trusted as well as reliable statistics.

Keywords: UN fundamental principles, Evidence-based policy, Big data, Administrative data, Research ethics

1. Introduction

The evidentiary foundation for society is well-established and includes official statistics. They are described as "an indispensable element in the information system of a democratic society" in the fundamental principles for official statistics promoted by the United Nations (UN), and they are created to give governments, businesses, and the general public "data about the economic, demographic, social, and environmental situation" (UN Statistics Division, 2014, pp. 1-2). At first glance, official statistics appear to be a natural part of the digital age. Nearly every nation has a national statistics website listed on the UN website (https://unstats.un.org/home/nso_sites/), and outputs are increasingly digital by default.

Statisticians utilize social media to inform consumers of updates, formal consultations, and freshly published summaries. For these formal consultations, replies are gathered online. But rather than making a concentrated effort to increase interaction and reach out to new people, it appears that they are mostly employing new digital media to mimic established methods of consulting well-known stakeholders. With the exception of when using new technology to assist in interviewing survey respondents (for instance, Hand & Vichi, 2017), messages are frequently broadcast rather than attempting to engage in discourse.

This article contends that the digital age presents both enormous potential and challenges for official statistics. According to the core principles of the UN, official statistics must always have "practical utility," which is where the biggest issue lies. Codes of conduct aim to implement the practical utility test. We suggest that in order to make statistics as useful as feasible in the modern information landscape, where potential users can easily turn to other sources of evidence, official statisticians should also make greater use of well-known marketing concepts as they interact with digital society. Building trust in official statistics and creating statistics that are meant to be reliable due to their technical merits are both goals of this approach.

In terms of opportunities, we look at how official statisticians are starting to rely more on external big data sources to produce pertinent official statistics, building on their use of administrative data held by governments. A collection of big data is viewed as a complete set of a very large number of persons, transactions, or observations, despite the fact that the term "big data" is difficult to define accurately. Official statisticians are now examining the potential of sources like satellite imaging, mobile phone meta-data (data about phone usage), and other sources, in addition to administrative datasets, which frequently serve as the testing ground for procedures and processes for accessing and analyzing new sources. Then, using a case study that looks at current UK legislation to understand the objectives of new data gathering systems for creating official statistics, we show these potential and limitations. We examine the Office for National Statistics' (NSO) current plans for the 2018 census, which will pave the way for administrative data censuses moving forward, and then talk about how big data sources are starting to be gathered more broadly for UK statistics.

2. Using Official Statistics as Evidence

Although the guiding principles mentioned above would seem to indicate that everyone in society has equal access to official data, in fact, there are customs, procedures, and cultures that might give government users preference. The demand for information about the state, for use by state officials and supported by them dates back many centuries, predating the consolidation of the current official statistics system, which occurred in the second part of the 20th century. Official statistics still use administrative systems of government as data sources.

In order to ensure that the fundamental principles are applied uniformly, codes of practice, statutory foundations, and other measures must take into account the complexity of the use of official statistics and the sources of the data. For instance, the same facts should be made available for those outside of government to evaluate its performance in addition to directly influencing policy-making. Furthermore, while it is known that official statistics are used in a variety of contexts, such as business decision-making, the evaluation of policy alternatives, and within educational curricula, little is known about the specifics of how or by whom they are employed. Invariably, descriptions of the user base include a list of people that the producers are aware of, as well as some information about the target user demographics that the producers hope to reach. Business, research, and education communities, the media, and the general public use the National Accounts to provide a basis for analyzing the UK's economic performance, and causal mechanisms at work within the economy, according to the UK Statistical Authority's (UKSA) report on its assessment of the state of UK National Accounts (UKSA, 2015). 'Large elements of the National Accounts have legal standing in the European Union' is one statement that suggests more precision (UKSA, 2015). In order to distinguish between institutional and non-institutional users, as well as to account for heavy, light, or no usage, and whether institutional users have a general, specific, or research interest. Vichi, Valente Rosa, and Ruane (2015, p. 4) develop a schematic table of user type. However, no information is accessible on other users or any indication of the relative number of each user category, with the exception of European institutions with a legal interest in European-wide statistics. Users can and do rely on a wide range of sources to build their total evidence base, for instance when evaluating a nation's economic success, which is something that is specifically measured by government data. To evaluate the status of the economy, policymakers, business decision-makers, journalists, analysts, and the general public will rely on a variety of data, viewpoints, personal experiences, and other experiences. According to reports, a top member of the UK administration said, "Never mind the figures, the economy is "healing"." (Helm & Wood, 2012) may or may not have had information that was better or more current than that found in the official figures, but he was emphasizing the opinions of the business community.

In making decisions about monetary policy, the central bank also consults its own polls and contacts in addition to official data (Bank of England, 2019).In the digital age, there is unquestionably more information available than there was back when official statistics were printed on paper and reported through a limited number of media channels. According to Livingstone, Blum-Ross, Pavlick, and Lafsson (2018, p. 1), rather "displacing" traditional home

interactions, games, and communication methods, digital media "sit alongside" them. This also occurs during the formulation of governmental policies.

While measurement is important, "it does not in itself automatically translate into policy," according to Mayer (2013, p. 2), a member of the independent group advising the UK Government on natural capital. Inputs to policymaking go beyond official data, and regardless of the degree of digitization, there is no assurance that policymakers will have access to all pertinent statistics. The gold standard might be interpreted to suggest that building and using a strong evidence basis, being aware of and managing the political environment, and beginning with delivery are all necessary for good policy outcomes. There are obvious possibilities to use statistical evidence throughout the policy-making process.

The importance of shifting policy analysis "away from incredible certitude and towards the honest portrayal of partial knowledge" has been demonstrated by several examples given by Manski (2013, p. 3). Politicians, auditors, and the general public will all be required to express an opinion on the degree to which pertinent evidence has been used sensibly if policymaking is inspired by evidence rather than just reliant on it. Rutter (2012, p. 7) summarizes how the use of evidence and assessment might be more effectively integrated into the policymaking system while reporting on "positive developments" in evidence-based policymaking. However, she also notes that "there remains a gap between aspiration and practice." One such trend is the establishment of "what works" centers, which are centers for evidence-informed policy and practice, in the UK, other countries in the EU, the US, and Australia. Official statistics' future function is far from certain. We haven't gone into much detail here on possible cultural and other obstacles to a wider acceptance of public discourse and policy procedures that are based on or guided by systematic research. For instance, it may be argued that politicians, journalists, decision-makers, and the general public all need to become more adept at discovering, comprehending, and utilizing official statistics.

3. Taking a Marketing Approach in Official Statistics

If the objective of practical utility is to be achieved, it could be reasonable to begin the development of official data by identifying users and their requirements. In reality, figuring out user requirements is rarely done precisely. Instead, it appears that the official statistics approach is to first offer a body of data that broadly reflects the scope of the guiding principles for official statistics, and then to collaborate with users and user groups to address requirements using the statistics that are now available.

All official statistics could be viewed as products that must go through a rigorous marketing procedure in order to fulfill the whole objective of official statistics. This would include understanding the demand for data and how they might fit in, or even shape, a market, in addition to advertising and availability enhancements. The problem would therefore be how to get relevant rather than general data and better answer particular questions by first identifying what those questions are. Official statistics are public goods that are generally distributed for free, not market items, which is an obvious argument against marketing. Specific data requests may be answered by official statistics offices for free if they require little work, or otherwise for a fee. these requests often depend on users knowing how to invoke such a service.

Consider the four questions Collins (2010) initially presented to creators of any good or service in order to shift to a more open mindset. What are customers' demands, asks the first inquiry, reflecting the requirement for utility in official statistics? It requires active and ongoing user interaction, collaboration, and iteration between producers and users to respond to this question. Beyond connecting with key consumers, this approach does not generally appear to be carried out in the creation of official data. The inherent trade-offs between technical characteristics of quality, such as accuracy, timeliness, and depth of information, can then be made with at least some understanding of how they will affect the overall value of the statistics, which is a benefit of engaging with users. The Statistics User Forum (2019, GOS0024) provided testimony to a Parliamentary enquiry into UK official statistics, making the case for a renewed emphasis on the full use of official data as well as providing instances of encouraging advances and areas that still require more attention. The second two of Collins' marketing questions are about competition and understanding the market. National statistics offices do not have a monopoly on the publication of data and statistics. The need to understand the competition and to brand official statistics clearly and distinctively has become more important. Market research should help not only with understanding requirements but also how best to reach potential users.

The product's value proposition is the topic of the last marketing query. Along with taking into account the costs associated with data collection and processing, official statistics offer value to society that should be acknowledged.

It has been emphasized by the United Nations Economic Commission for Europe (UNECE, 2018) how important having official statistics is. It offers suggestions on how statistics agencies should promote, quantify, and share this value. While noting that the "few" attempts to determine the monetary value of official statistics so far "have demonstrated that Official Statistics bring net benefits," UNECE (2019) notes that seven countries are pilot-testing the proposals.

4. The Need for Big Data in Official Statistics

We identify three main pressures on the official statistics' current data sources that are driving the quest for new, big data sources. First, users' rising expectations. To considerably enhance the availability of "quality, accessible, timely, and reliable disaggregated data," it is necessary to develop an evidence foundation for policy and for wider usage (UN, 2015, p. 48). The ability of statistics to be substantially disaggregated, enabling sub-sectors of the population of people or resources at risk to be monitored, is the defining characteristic of many developing requirements. Second, fewer households and businesses are willing to participate in official polls. Third, government finances, including international development aid, are almost often the sole source of funding for official statistics organizations, and these budgets are under strain.

There are various ways to combat these influences, not the least of which is by arguing for the importance of official data, as was mentioned above. In this paper, we focus on the potential for cost savings and increased timeliness of official statistics through data collecting that embraces the digital society and makes extensive use of already-existing big data sources, such as official administrative data. In 2015, Goal 17.18 and Resolution 76 of the United Nations called for the development of new data sources for official statistics, particularly through "appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, including earth observation and geospatial information." This is more of a change in the mix of data types than a revolution in data, including census and survey data, data from administrative systems, big data from unofficial, transnational, or observational systems, and data joinedup in ways that protect the privacy of specific individuals and companies.

5. Developing the Use of Digital Data in UK Official Statistics

Even though the UK has an official statistics system that is well advanced, the need to find new data sources still exists. According to documents made public by ONS (2015), the official survey response rates for the UK have decreased in the past. For instance, in one of the largest household surveys conducted by the ONS, the response rate decreased year over year from 79% in 1993 to under 48% in 2014, the most recent data at the time. Obtaining a response from less than half of the respondents chosen is bound to undermine the survey team's and users' confidence, despite all the care taken to create representative samples and, where possible, identify the characteristics of non-respondents. Unsurprisingly, the National Statistician stated, "I fully expect that, in five years' time, what we will be doing will be radically different," while proposing a strategy for UK official statistics just before the complete evidence on response rates was published. Our services will be delivered digitally by default, and more data will be in real-time (UKSA, 2014).

For the first time, a strategy for the creation and release of results was outlined as official government policy in the census preparation White Paper for England and Wales in 2001. The idea that "the investment of time and resources in a national census is only justified if the results are made accessible to users quickly and in a clear and usable form" was at the center of the analysis. In order to accomplish this, "technological developments should be harnessed in order to improve the accuracy, timeliness, accessibility, and user-friendliness of published output" (ONS, n.d.). The census was processed by an outside service provider (ONS, 2013). Over 24 million census forms were scanned utilizing digitization, and replies were then electronically coded using automated and computer-assisted techniques. In the previous census, manual coding of occupation and industry was undertaken and restricted to a 10% sample of forms.

It affects more than only the gathering of government statistics and research; a stronger evidence base can be developed by using administrative data more frequently. Following a report stating that administrative data in research needed to be used more efficiently throughout the UK "for public and policy benefit," the Administrative Data Research Network (ADRN) was established in 2013. According to the network, "the UK is falling behind other developed nations and other European countries" (ADRN, n.d.).

There are approaches and cultural differences between the devolved administrations and the UK government. However, in the UK as a whole, the use of administrative data for statistics and research has often only advanced

slowly. By 2017, it was clear that greater law was required, and there was a chance for this issue to be covered by what would eventually become the Digital Economy Act (UK Parliament, 2017). The head of the UKSA observed in a letter to the appropriate Minister that the current legislative structure governing access to data for official statistics is convoluted and time-consuming. The recommendations in the Bill would improve access to administrative data for statistical and research purposes by utilizing data that is already maintained by the government and other organizations. This would result in considerable efficiency and savings for people, households, and businesses. Dilnot (2016, P.1).

The modernization of the census serves as the focal point for subsequent innovations and is the most visible official statistics project in the UK to make more use of big data. 'Unlocking data' through the legal change was noted as a success in a progress report on the strategic development of UK official statistics (UKSA, 2017), though 'much better use of data and clearer assurance for the public on how it is being used' was still awaiting the Digital Economy Act's entry into force the following year. Another significant breakthrough was the conversion of various business surveys to online data collection. In order to investigate new data sources and methodologies, ONS launched a data science campus in 2017 (https://datasciencecampus.ons.gov.uk/). More is promised, including monitoring the UK progress towards the UN sustainable development goals. While what is sometimes called a data revolution is clearly underway in the UK, development plans stretch forward into the next decade.

6. Challenges and Implications for Official Statistics

Since the UK, like many other nations with official statistics based mostly on censuses and surveys, is entering the digital society from a different position than nations with register-based systems. The essential tenets of official statistics promote global collaboration and the sharing of best practices. In addition to having a center for big data statistics, Statistics Netherlands (2014, pp. 153–160) has produced recommendations on quality assurance for administrative data and registers. According to Young, Hyman, and Rater's paper (2018, p. 337), "Web scraping, technology, and secondary data sources may be tools that are used increasingly" in compiling a registry of agricultural land holdings inside a city. In this case, some of the activities of interest had no direct online presence, confirming the need to combine data from a variety of sources, including administrative data and social media. Many official statisticians have important concerns about the technical quality, timeliness, and reliability of the data when they are presented with a potential source of administrative statistics. In his assessment of the difficulties associated with administrative and transaction data, Hand (2018, p. 555) urged statisticians to "approach the analysis of such data with the same cautious and critical eye as they approach the analysis of data from any other source." For instance, a database's record set "might not be representative of the population to which one wishes to draw an inference" or the level of information "might prove insufficient for all possible analyses" (Hand, 2018, pp. 557–558).

However, when seeking for high-quality, timely, and dependable big data sources, one can fall into the trap of only considering the sources rather than the uses when considering quality. 'Explore how adequate the administrative data are for answering the questions' is Hand's ninth task in his list of 15 big data challenges (Hand, 2018, p. 569). Bean (2016) proposes that ONS should redirect its culture "towards better meeting user needs" as one of the strategies to improve UK economic statistics. When interacting with people and responding to their demands, staff should be proactive rather than reactive. In this respect, the culture in Statistics Netherlands offers some lessons, since relationships, communication and agreements with users form the opening part of its quality assurance framework (Statistics Netherlands, 2014, pp. 31–40).

It might be argued that policymakers' requirements should not be the only ones taken into consideration when identifying the needs of users. Policymakers are expected to consider evidence before selecting an acceptable set of policy outputs, which could include legislation or more subtle methods of behavior modification. The majority of policy outputs are top-down. Top-down policies must be matched by bottom-up commitment to addressing the same concerns by businesses, civil society, and local government if true social change is to be achieved. One objective of the official statistics system should be to provide all stakeholders with access to the same body of evidence, which will hopefully result in a shared comprehension and description of the problems. However, this method results in a complex web of interconnected standards for official statistics.

There aren't any solid models for how official statistics, and evidence in general, factor into society decision-making for policy and other matters. An "evidence-informed policy and practice pathway" is laid out in Bowen & Zwi's (2005) approach for how evidence should be used. The three stages of the pathway include gathering the evidence, using the evidence, and putting the evidence into practice. The pathway also 'involves decision-making components and a process which we have named "adopt, adapt, and act" (Bowen & Zwi, 2005, p. 0600)”. Many "what works"

centers have embraced this method of operation, which encourages the use of pertinent evidence by working alongside policymakers and serving as a channel for connecting evidence suppliers and policy consumers. But it's not entirely apparent if this has resulted in a major increase in the use of evidence. Understanding the competitors, including through market research, is another aspect of a marketing strategy. Because users of all types can and frequently do utilize other sources of information as evidence, competition for the provision of statistics has increased. The providers of these additional sources might be commercial and place more emphasis on marketing their content. A monopolistic source of data may be forced to open up via new routes due to the disruptive nature of digital technology, or different value-added services may transform the data into new types of evidence. When consumers desire information, the digital society increasingly means "self-service." ONS recognizes "inquiring citizens" as one category of website visitors and aims to make its website accessible to this group of users in addition to standard data users and analysts. These users, along with "policy influencers," frequently repurpose ONS statistics in their own, online reports, creating yet another form of competition.

Greater awareness of how official statistics fit into and stand out in the marketplace for proof should result from their marketing. Finding the correct key to open new data sources is not the only step toward using them more effectively. Even with a stronger legal foundation, it takes the ONS months, if not years, to negotiate access and convert new data into statistics that are published. Other providers may enter the market sooner and their real-time data may not be guaranteed to meet the quality standards of official statistics, therefore the real-time statistics the UK National Statistician has in mind may still be published after their reference period. Information may be the life-blood of a market economy, but the market in information itself raises questions about the skills and competencies in handling information, and how these skills can be honed.

Trust, or "confidence in the people and organizations that produce statistics and data," is another factor to take into account when analyzing the market for evidence (Office for Statistics Regulation, 2018, p. 14). Sometimes people consider trust to be the 'unique selling point' of official statistics. Recent data suggests that the public continues to have faith in official UK statistics and that this confidence is being maintained (Morgan & Cant, 2019). This evidence, however, was gathered prior to any significant usage of personal information from commercial organizations in the creation of official statistics. The only big data initiative by ONS yet that has garnered public interest was its investigation into the potential applications of web-scraped prices and point-of-sale-scanner-price information.

Instead, then gaining access to sources that contain personal information, this application is for experimental assessments of consumer inflation. We are still a long way from regular statistics derived from commercially available sets of personal data, and ONS has only lately begun to issue experimental statistics based on information about where mobile phones are used. Developments outside the realm of official statistics, such as the growing usage of data from smartphones to power new applications that can compromise privacy, may have an impact on how this plays out in terms of trust. Researchers can increase confidence by adhering to a code of ethics that is intended to show that they are reliable. The intergovernmental Organisation for Economic Co-operation and Development (OECD) has released a version of research ethics appropriate for the digital society in which it is recommended that "Data should be shared as openly as is feasible within the relevant legal and ethical constraints" (OECD, 2016, p. 6). But what exactly are these restrictions, who make them, and do the individuals whose data is being used, know about and accept them? The ethical gathering, sharing, and use of novel kinds of data for research are covered by the OECD recommendations.

They support the establishment and disclosure by data owners/controllers of procedures for the secure and accountable sharing of personal data, including measures for the privacy protection of data subjects and for public input and responsibility. Although doing so would appear to be crucial for winning public support for research and statistics in the digital age, it is unclear whether it will be done.

7. Conclusion

Official statistics are expected to play a significant role in the digital society, and cutting-edge technologies are being used to compile and disseminate them more often. Digital technology may be assisting in the creation of a better evidence basis or the better use of the evidence base, although this is not yet obvious. There are chances and difficulties. The difficulties already, but they might become more severe as a result of digital technology used with new sources of commercial and personal data. In addition to supplying statistics, national statistics offices ought also to respond to queries from the public because they are in a competitive market for users' attention. They will be able

to demonstrate the importance of official data to society if they are successful. With prospective data sources and technologies far beyond most of those currently covered by national statistical offices, big data are likely to offer creative solutions.

It's obvious that we need new data sources like this one, but the information it contains is not yet suitable for routine use in the creation of official statistics. Before being used to inform an evidence-based environmental policy, research findings regarding the viability and utility of new data sources must be sent along the type of channel envisioned by Bowen & Zwi (2005). Official statistics should seek to maintain its fundamental principles as an essential component of the information system of a democratic society in light of the appetite for evidence and new demands. Delivering new items and creating digital technologies is only a small portion of what will be required. We argue that the degree to which the creators of official statistics interact with users including those in the media, policy, and politics, as well as the general public will ultimately determine the success of these advancements. If official statistics are to fulfill their potential, three major issues must be resolved: creating reliable, valuable, and assured-quality official data that are of benefit to society.

All three areas might be facilitated by adopting a more marketing-oriented strategy in addition to the more conventional emphasis on data quality and technique. Statistics and data are always in demand. The ultimate "evidence base" for policies meant to enhance lives might be produced by effectively using new data sources. Although new data sources and statistics may be required, they are insufficient to change the way we live, eradicate poverty, protect the environment, and ensure that no one is left behind in our economic and social development. To do all of this, it is necessary, among other things, to significantly increase the use of official statistics in decision-making across all spheres of society, including industry and public policy. With its top-down approach to behavior change, official statistics are not just for policy; they also serve to keep governments accountable by assisting citizens and corporations in taking action.

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The Quest for Optimal Capital Structure

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Abstract

This aims to determine an optimal capital structure (CS) and profitability in Nepalese commercial banks over ten years spanning from 2008/09 to 2017/18. The study utilizes 10 sampled banks and employs statistical techniques such as correlation analysis and regression analysis, along with descriptive statistics. The findings reveal that the debt assets ratio is inversely proportional to net profit but directly proportional to return on equity (ROE). It is observed that the average debt/equity ratio of Nepalese commercial banks over the past decade was 0.103551, indicating a high reliance on debt. Correlation analysis demonstrates that capital structure decisions significantly impact net profit but not ROE, except for paid-up capital. Regression analysis further confirms the negative impact of bank size and paid-up capital on profitability. The study concludes that Nepalese commercial banks prefer equity financing and should carefully consider capital structure decisions to maximize profitability. Additionally, it suggests further research on variables such as capital adequacy ratio, growth, tax, and market value of paid-up capital to better understand the relationship between capital structure and profitability. The article recommends stakeholders to focus on equity financing and analyze all factors impacting bank profitability. Optimal capital structure decisions based on study-based findings are crucial for the long-term survival of Nepalese commercial banks.

Keywords: Optimal capital structure, Banks, Profitability, Return on equity

1. Introduction

The relationship between capital structure and profitability has been a subject of significant interest in research studies. Numerous studies conducted in various countries have explored capital structure, its determinants, and its impact on the profitability of banks (Addae, Nyarko-Baasi, & Hughes, 2013). In the context of commercial banks, capital structure decisions hold great importance due to their direct influence on profitability. Commercial banks play a crucial role in the national economy by attracting substantial deposits and generating substantial profits. However, despite the uniform increase in paid-up capital to 8 billion by all Nepalese commercial banks, variations in profitability among these banks raise important questions. The change in capital structure, whether through debt or equity capital, is a primary factor driving the disparity in profitability among commercial banks. This research study aims to examine how changes in the capital structure, particularly the level of debt, affect the profitability of commercial banks. Additionally, the study investigates the impact of increased capital requirements on profitability, following the mandated 8 billion paid-up capital for each commercial bank.

Numerous studies have highlighted the significance of optimal capital structure in maximizing a firm's value and profitability. The addition of debt in the capital structure, due to its tax deductibility and the associated improvement in profitability, is often considered a favorable option for firms. However, excessive debt increases default risk and the likelihood of bankruptcy. Therefore, firms must strive for an optimal capital structure (Gill, Biger, & Mathur, 2011). Previous research has also emphasized the impact of capital structure on profitability in various sectors, such as the cement industry in Pakistan (Ahmad, 2014) and banks in India (Pinto et al., 2018). These studies have demonstrated that profitability is significantly related to capital structure, with higher debt levels negatively

impacting earnings. Furthermore, the level of risk generated by different strategies has been found to correlate with their return rates (DeYoung & Rice, 2004).

In the Nepalese banking context, the recent increase in capital requirements aims to strengthen the financial health of banks and ensure their sustainability. Consequently, capital structure decisions have gained even greater importance, given their direct link to bank profitability and long-term viability. This research study aims to present a comprehensive analysis of the capital structure and its effects on the profitability of Nepalese commercial banks.

The decision to raise capital structure, whether through debt or equity, poses challenges for commercial banks. Debt is often considered a cost-effective option compared to issuing equity, primarily due to tax advantages and the absence of ownership dilution. However, excessive debt increases the risk of bankruptcy due to the burden of interest payments. Determining the optimal capital structure that maximizes bank profitability remains an unanswered question. Therefore, all stakeholders must understand the relationships between capital structure and profitability to make informed financing decisions. This study addresses the need for comprehensive research on the relationship between capital structure and profitability in Nepalese commercial banks. It also examines the effects of changes in debt-to-assets ratio, debt-to-equity ratio, paid-up capital, and bank size on profitability.

2. Review of Literature

The topics of capital structure and profitability have been extensively examined on a global scale. According to Myers (2001), three conditional models are supported, namely the tradeoff theory, the pecking order hypothesis, and the free cash flow theory. These theoretical frameworks elucidate the mechanisms through which firms manage the trade-off between the advantages derived from debt tax benefits, the potential risks associated with financial distress, and the imperative of securing external funding. In his study, Abor (2005) delves into the examination of the capital structure and performance of Ghanaian corporations. The findings of the study propose a positive correlation between profitability and borrowing tendencies among these companies. According to the research conducted by Iannotta, Nocera, and Sironi (2007), it was observed that mutual and government-owned banks tend to have reduced profitability despite their comparatively lower costs. On the other hand, mutual banks demonstrate superior loan quality and decreased asset risk. The concentration of ownership has a significant impact on loan quality, asset risk, and insolvency risk within banks, while it does not appear to have a direct effect on bank profitability.

Antoniou, Guney, and Paudyal (2008) conducted a comprehensive analysis of the factors that determine capital structure in the United States, the United Kingdom, France, Germany, and Japan. Their study revealed that various factors, including economic conditions, corporate governance practices, tax regulations, and exposure to capital markets, exert significant influence on a firm's capital structure. In a study conducted by Salawu (2009), it was observed that Nigerian firms exhibited a significant reliance on short-term debt and external financing, accounting for approximately 60% of their overall financial structure. In their seminal work, Shleifer and Vishny (2010) put forth a financial intermediary hypothesis that establishes a connection between the leverage of banks and the fluctuations observed in loan and investment cycles, ultimately resulting in increased market volatility. The model posits a pervasive vulnerability in the banking sector and underscores the significance of mitigating banks' protracted debt to facilitate economic recuperation.

Chen and Chen (2011) provided empirical evidence in support of capital structure theories, emphasizing the influence of firm size and industry characteristics on firm valuation. According to the pecking order theory, highly profitable firms tend to depend less on external investment, resulting in a decrease in leverage and accompanying costs. In their study, Fan, Titman, and Twite (2012) conducted an analysis of capital structure and loan maturity on a global scale. Their findings shed light on the significant impact of legal systems, corruption levels, and the preferences of capital suppliers in shaping these financial aspects. In a study conducted by Kusi, Yensu, and Aggrey (2012), it was discovered that there exists a negative correlation between leverage and the performance of banks in Ghana. This finding emphasizes the advantages associated with banks that maintain low levels of debt. Boahene, Dasah, and Agyei (2012) presented findings that challenge previous research by demonstrating the existence of profitability in Ghanaian banks, even in the face of considerable credit risk. In a study conducted by Goyal (2013), the author emphasized the significance of capital structure concerning Indian listed public sector banks. The findings revealed that the utilization of short-term debt had a positive effect on specific performance indicators.

In their research, Yegon et al. (2014) examined the relationship between capital structure and firm profitability within the banking sector of Kenya. Their findings suggest that an optimal capital structure for banks in Kenya involves a combination of debt and equity, rather than relying solely on debt financing. The study concludes that a complete

reliance on debt financing, up to 100% of the capital structure, may not be advantageous for banks in terms of maximizing profitability. The strategy aims to decrease the capital expenditure and mitigate the likelihood of insolvency. In their study, Kodongo, Mokoaleli-Mokoteli, and Maina (2015) analyzed the capital structure, profitability, and firm value in the context of Kenya. They observed a rise in debt financing and restricted utilization of the corporate bond market. The profitability of a firm is influenced by several factors, namely tangibility, sales growth, and firm size. Among these factors, tangibility has been observed to hurt profitability, while the effects of sales growth and firm size on profitability remain to be further explored. In their study, Saputra, Achsani, and Anggraeni (2015) employed panel data analysis to examine the relationship between capital structure and the return on assets (ROA) of Indonesian firms. Their findings indicated a negative association between capital structure and the ROA of firms in the funding, securities, and insurance sectors. According to the Pecking Order theory, it is recommended that companies with high profitability prioritize the utilization of internal financing. The capital structure of banking and insurance industries has been found to positively impact their return on equity (ROE), primarily due to the advantageous debt-to-asset ratios prevalent in these sectors.

The significance of bank capital in augmenting profitability was underscored by Mutua (2016), who emphasized that long-term funding for banks primarily stems from equity rather than debt. In a study conducted by Yakubu et al. (2017), it was observed that there exists an inverse association between short-term and long-term debt and bank performance in the context of Ghana. Conversely, a positive correlation was identified between total debt and bank performance. According to the findings of Musah (2018), it was observed that the profitability of banks in Ghana was negatively impacted by both short-term and long-term debt ratios. The study conducted by Pinto et al. (2018) demonstrated a significant relationship between capital structure and the financial performance of banks in India. In the context of Nepal, the finance literature has shown significant interest in the performance of the banking sector and stock market due to their crucial role in the economy (Karki, 2018). Numerous studies have been conducted, particularly focusing on identifying the factors that influence the financial performance of banks.

Despite numerous studies, the results remain inconclusive, necessitating further investigation. This study is particularly relevant as the Nepal Rastra Bank has mandated commercial banks to increase their paid-up capital to 8 billion as part of its monetary policy (FY 2015/16) to strengthen their capital base and build investor and depositor trust. In this concern, this study aims to delve deeper into capital structure concerns and profitability within the Nepalese context and purposes to test the following hypotheses:

H_1: A significant relationship exists between capital structure's leverage factors (D/A, D/E) and the profitability (ROE, NP) of Nepalese commercial banks.

H_2: A significant relationship exists between capital structure's scale factors (size, paid-up) and the profitability (ROE, NP) of Nepalese commercial banks.

Conceptual Framework

The profitability of commercial banks depends on capital structure. It can be represented as a function:

$P = f(CS)$, *Where, P= Profitability and CS= Capital Structure*

Based on the literature review, a conceptual framework is developed as in Figure 1:

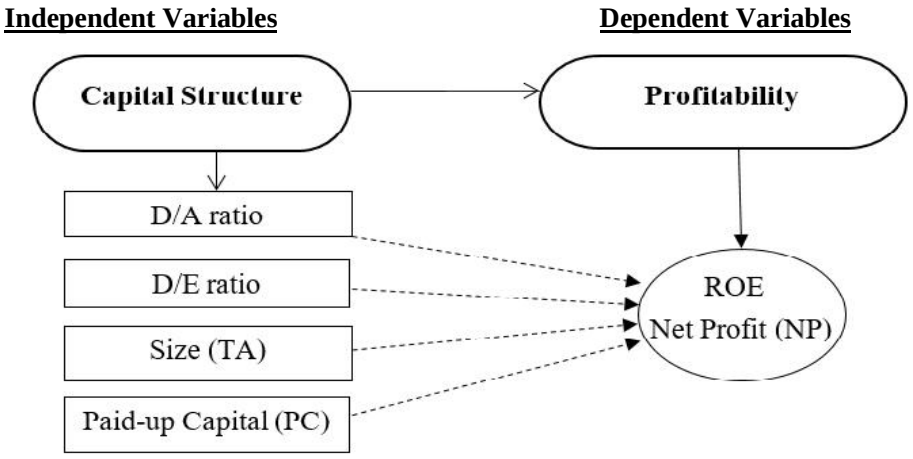

Figure 1: Theoretical Framework of the Study

3. Research Methods

The research employed a quantitative approach, specifically utilizing a descriptive and causal-comparative design. Descriptive data analysis was chosen to provide an overview of the current situation and key issues. The study aimed to examine the relationship between capital structure and profitability, with profitability measured through two variables: Return on Equity (ROE) and Net Profit. Capital structure was assessed using four variables: Debt-to-Equity ratio (D/E), Debt-to-Assets ratio (D/A), Capital Adequacy Ratio (CAR), and Paid-up Capital.

The research analyzed the impact of debt financing on profitability by studying changes in commercial banks' profitability resulting from variations in the debt component of their capital structure. Similarly, the relationship between paid-up capital and profitability was investigated by comparing changes in commercial banks' profitability associated with increased capital. Hypotheses were formulated and tested accordingly.

A sample size of 10 commercial banks, representing 36% of the total population of 28 banks, was selected using stratified sampling. The banks were divided into three strata based on their net profit, and a simple random sampling technique was employed within each stratum. Almost 45% of banks have a net profit of $1 to $2 billion on average. As a result, four samples were taken from the average group and three from each of the lower and greater profit categories.

Table 1: Sample Size Determination

Net profit (in Million**)**	**No. of samples taken**	**Names of selected banks**
Greater than 2000	Three	ADBL, NIBL, EBL
Between 1000 and 2000	Four	SCBNL, NSBI, PBL, SBL
Below 1000	Three	MBL, KBL, LBL

Secondary data spanning from 2008/09 to 2017/18 were collected from the Nepal Rastra Bank as of mid-July 2018. Descriptive, correlation, and regression methods of analysis were employed. Descriptive statistics were used to characterize the commercial banks' features during the reference periods, including measures such as minimum, maximum, mean, and standard deviation. The Pearson Correlation Coefficient was utilized to determine the direction of relationships between the dependent and independent variables. Regression analysis was employed to assess the magnitude of the impact of independent variables on dependent variables. The model specifications for this study are based on and adjusted from two influential research works by Pinto, et. al. (2018) and Yegon, et. ql. (2014). The resulting regression models, developed specifically for this study, are as follows:

$ROE_{it} = \beta_0 + \beta_1 D/A_{it} + \beta_2 D/E_{it} + \beta_3 SIZE_{it} + \beta_4 PC_{it} + \epsilon_{it}$ ---------- ---------- (i)

$NP_{it} = \beta_0 + \beta_1 D/A_{it} + \beta_2 D/E_{it} + \beta_3 SIZE_{it} + \beta_4 PC_{it} + \epsilon_{it}$ ---------- ---------- (ii)

ROE_{it} & NP_{it} = Dependent Variables; return on equity and log of net profit for bank 'i' during the period 't'

D/A_{it} = Debt to assets ratio for bank 'i' during the period 't'. The debt ratio can help investors determine a company's risk level.

D/E_{it} = Debt to equity ratio for bank 'i' during the period 't'. Debt equity ratio greater than one indicates that a firm is using more debt for financing operations.

$SIZE_{it}$ = Size of the bank measured by the log of total assets for bank 'i' during the period 't'.

PC_{it} = Paid up capital measured by the log of promoters' equity for bank 'i' during the period 't'.

β_0 = Constant

β_i = Regression coefficients for respective independent variables

ϵ_{it} = Error component

The formulated hypotheses were tested using correlation and regression analysis. Significance tests and multicollinearity assessments were conducted at a 95% confidence level to ensure the validity of the results. The research adhered to a systematic procedure in data analysis, ensuring the reliability and validity of the findings.

4. Data Analysis and Results

The proposed models were used to analyze the data, which includes information gathered from ten sample banks that were chosen from a population of 28 institutions. The short descriptions of the dependent and independent variables, along with their mean values and standard deviations, are given in Table 1.

Table 2: Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation
Debt/Asset ratio (D/A)	0.0466	0.9449	0.889826	0.0917485
Debt/Equity ratio (D/E)	0.0029	0.4476	0.103551	0.0566856
Total Assets (SIZE)	13456	170495	59350.48	34024.219
Paid-up Capital (PC)	874	13938	4357.8	3335.831
Return on Equity (ROE)	0.0055	0.3662	0.19479	0.0704524
Net Profit (NP) in million	8.92	3696.27	1068.617	787.9625

For the study, the descriptive statistics presented in Table 2 indicate that the profitability ratios, as measured by Return on Equity (ROE) and Net Profit, exhibited an average value of 19.479% and 1068.617 million, respectively. The variables related to capital structure, namely the ratio of debt to assets, the ratio of debt to equity, total assets, and paid-up capital, were observed to be 0.8898, 0.1035, 59350.48, and 4357.8 respectively. This finding suggests that debt accounts for approximately 89% of the total assets, thereby affirming the notion that banks are institutions with a high degree of leverage. The capital structure and profitability variables components exhibit simultaneous variation across Nepalese commercial banks, with minimum and maximum values being observed.

Table 3: Correlation of Independent Variables on Bank's Profitability

Variables	D/A ratio	D/E ratio	ln_size	ln_PC	ROE	ln_NP
D/A ratio	1	0.361**	-0.266**	-0.426**	0.108	-0.268**
		0.003	0.007	0.00	0.284	0.007
D/E ratio		1	-0.293**	-0.524**	0.147	-0.269**
			0.003	0.00	0.146	0.007
ln_size			1	0.832**	0.206*	0.864**
				0.00	0.04	0.00
ln_PC				1	-0.187	0.682**
					0.063	0.00
ROE					1	0.491**
						0.00
						100
ln_NP						1

*. *Significant at the 0.05 level (two-tailed).*
**. *Significant at the 0.01 level (two-tailed).*

The correlation coefficients between the dependent variables (Return on Equity - ROE and Net Profit - NP) and independent variables (Debt-to-Assets Ratio - D/A, Debt-to-Equity Ratio - D/E, Firm Size - SIZE, and Paid-Up Capital - PC) are presented in Table 3 using Pearson correlation coefficient. These correlations reveal important insights into the relationships among these variables.

The correlation coefficient of 0.108 between the D/A ratio and ROE indicates a weak positive correlation. Although the correlation is weak, it suggests that as the debt-to-assets ratio increases, there is a slight tendency for ROE to increase. However, the p-value indicates that this association is not statistically significant. On the other hand, the correlation coefficient between the D/A ratio and NP is -0.268, indicating a negative correlation. This implies that higher debt-to-assets ratios are associated with lower net profit. The statistically significant p-value supports the reliability of this relationship. These findings suggest that higher debt levels can potentially impact both ROE and NP, but other factors may also influence these performance measures.

Similarly, the D/E ratio shows a negative correlation with NP, as indicated by a correlation coefficient of -0.269. The statistically significant p-value suggests that higher debt-to-equity ratios are associated with lower net profit. However, the correlation between the D/E ratio and ROE is 0.147, suggesting a modest positive correlation. The p-value indicates that this association is not statistically significant. These results imply that the impact of the D/E ratio on performance measures may vary, and it is essential to consider other factors alongside debt-to-equity ratios.

The study also reveals a positive correlation between firm size (total assets) and ROE, with a correlation coefficient of 0.206. This implies that as the total assets of a company increase, there is a tendency for ROE to increase as well. The statistically significant p-value supports the reliability of this relationship. A larger asset base can provide more opportunities for generating profits and improving ROE. Similarly, a significant positive correlation exists between firm size (total assets) and NP, with a correlation coefficient of 0.864. This indicates that as the size of banks (measured by total assets) increases, their net profit tends to increase as well. This relationship is statistically significant, suggesting that a larger asset base can contribute to higher profitability.

Regarding paid-up capital (PC), there is a negative correlation with ROE, as indicated by a correlation coefficient of -0.187. However, the p-value suggests that this association is not statistically significant. Conversely, a positive correlation exists between paid-up capital (PC) and NP, with a correlation coefficient of 0.682. The statistically significant p-value supports the reliability of this relationship. These findings suggest that higher levels of paid-up capital can positively influence net profit.

Two regression models, as described in the methodology section, were utilized to assess the statistical robustness and reliability of the obtained results. The objective of the regression analysis was to ascertain the potential influence of capital structure variables on the banks' performance.

Table 4: Multivariate Regression Analysis of ROE and Independent Variables

Variables	Beta	t	Sig	VIF
(Constant)	-0.344**	-2.753	0.007	
D/A	-0.056	-0.869	0.387	1.283
D/E	-0.211	-1.854	0.067	1.546
ln_SIZE	0.152**	9.062	0.000	3.631
ln_PC	-0.128**	-8.405	0.000	4.859
Adj. R^2	0.463			
F	22.308			
Sig	0.00			

*. *Significant at the 0.05 level (two-tailed).*
**. *Significant at the 0.01 level (two-tailed).*

Based on the findings presented in Table 4, a regression equation was formulated to analyze the relationship between ROE (Return on Equity) and the independent variables. The equation is represented as:

$$ROE_{it} = -0.344 - 0.056\, D/A_{it} - 0.211\, D/E_{it} + 0.152\, SIZE_{it} - 0.128\, PC_{it} \quad \text{---------- ---------- (iii)}$$

The regression coefficient of the D/A ratio is -0.056, indicating that a one percent change in the D/A ratio leads to a 5.6 percent negative change in ROE. However, the corresponding p-value of 0.387 is greater than the significance level of 0.05, suggesting that there is no significant relationship between ROE and the D/A ratio of the selected Nepalese commercial banks. Similarly, the regression coefficient of the D/E ratio is -0.211, meaning that a one percent change in the D/E ratio results in a 21.1 percent negative change in ROE. The p-value of 0.067 is also higher

than the significance level, indicating no significant relationship between ROE and the D/E ratio of the selected banks. On the other hand, the bank's size, represented by the variable SIZE, has a regression coefficient of 0.152. This implies that a one percent change in total assets leads to a 15.2 percent change in ROE. The p-value (0.00) is less than the significance level of 0.05, indicating a significant relationship between ROE and the total assets of the selected Nepalese commercial banks. Similarly, the regression coefficient of paid-up capital (PC) is -0.128, indicating that a one percent change in paid-up capital results in a 12.8 percent negative change in ROE. The p-value (0.00) is less than the significance level, signifying a significant relationship between ROE and the paid-up capital of the selected banks.

The variance inflation factor (VIF) of each variable considered is less than 5, suggesting no multicollinearity issues among the independent variables. The adjusted R-square value is 0.463, meaning that one percent change in the independent variables leads to a 46.3 percent change in the dependent variable (ROE). The corresponding F value of 22.308 and a p-value of 0.00, which is less than 0.05, indicate a significant relationship between ROE and the independent variables (D/A ratio, D/E ratio, size, and paid-up capital). These results demonstrate the influence of these variables on the ROE of the selected Nepalese commercial banks.

Table 5: Multivariate Regression Analysis of NP and Independent Variables

Variables	Beta	t	Sig	VIF
(Constant)	-8.33**	-7.045	0.00	1.283
D/A	-0.748	-1.234	0.22	1.546
D/E	-1.081	-1.003	0.318	3.631
ln_SIZE	1.669**	10.496	0.00	4.859
ln_PC	-0.287*	-1.991	0.049	
Adj. R^2	0.747			
F	74.155			
Sig	0			

*. *Significant at the 0.05 level (two-tailed).*
**. *Significant at the 0.01 level (two-tailed).*

Based on the findings presented in Table 5, a regression equation was formulated to examine the relationship between NP (Net Profit) and the independent variables. The equation is represented as:

$$NP_{it} = - 8.33 - 0.748\, D/A_{it} - 1.081\, D/E_{it} + 1.669\, SIZE_{it} - 0.287\, PC_{it} \quad \text{---------- ---------- (iv)}$$

The regression coefficient of the D/A ratio is -0.748, indicating that a one percent change in the D/A ratio leads to a 74.8 percent negative change in net profit. However, the corresponding p-value of 0.22 is higher than the significance level of 0.05, suggesting no significant relationship between net profit and the D/A ratio of the selected Nepalese commercial banks. Similarly, the regression coefficient of the D/E ratio is -1.081, implying that a one percent change in the D/E ratio results in a 108.1 percent negative change in net profit. The p-value of 0.318 is also greater than the significance level, indicating no significant relationship between net profit and the D/E ratio of the selected banks. On the other hand, the bank's size, represented by the variable SIZE, has a regression coefficient of 1.669. This indicates that a one percent change in total assets leads to a 167 percent change in net profit. The corresponding p-value (0.00) is less than the significance level of 0.05, signifying a significant relationship between net profit and the total assets of the selected Nepalese commercial banks. Similarly, the regression coefficient of paid-up capital (PC) is -0.287, indicating that a one percent change in paid-up capital results in a 28.7 percent negative change in net profit. The corresponding p-value (0.049) is equal to the significance level of 0.05, suggesting a significant relationship between net profit and paid-up capital of the selected banks.

The variance inflation factor (VIF) of each variable considered is less than 5, indicating no multicollinearity issues among the independent variables. The regression model produced compelling results, demonstrating a robust and significant association between the variables studied. The model's adjusted R-Square of 0.747 implies that the independent variables in the model explained 74.7% of banking performance. Adjusted R-Square values consider the model's predictors and provide a conservative estimate of explanatory power. The strong adjusted R-Square value further confirms the strong link between the dependent and independent variables, enhancing the reliability of the model's conclusions. Based on these findings and statistical analyses, the study concludes the hypotheses testing as follows:

Table 6: Summary of Hypothesis Testing

Hypothesis	Contents of Hypothesis	Findings
H_1:	A significant relationship exists between capital structure's leverage factors (D/A, D/E) and the profitability (ROE, NP) of Nepalese commercial banks	Rejected
H_2:	A significant relationship exists between capital structure's scale factors (size, paid-up) and the profitability (ROE, NP) of Nepalese commercial banks.	Accepted

Table 6 presents intriguing and coherent results from the hypothesis testing. Notably, there is a disparity in the findings between correlation analysis and regression analysis. As opposed to correlation analysis, Regression analysis indicates that there is no significant impact of capital structures' leverage factors (D/A & D/E ratios) on the profitability (ROE & NP) of Nepalese commercial banks. On the other hand, the regression analysis demonstrates a significant relationship between the scale factors of capital structure (SIZE and PC) and the profitability measures (ROE and NP) of Nepalese commercial banks. The results indicate that the size of a bank has a noteworthy negative impact on its profitability. Additionally, an increase in paid-up capital leads to a decrease in a bank's profitability. These findings shed light on the importance of managing capital structure scale factors to optimize profitability, highlighting the potential challenges faced by Nepalese commercial banks in this regard.

5. Conclusion

This study aimed to explore the impact of capital structure on the profitability of commercial banks in Nepal, focusing on leverage factors (D/A: debt-to-assets ratio & D/E: debt-to-equity ratio) and scale factors (SIZE & PC: paid-up capital). The research successfully addressed all initial inquiries and provided insightful findings. Correlation analysis revealed that the debt-equity ratio, debt-asset ratio, and total assets did not show a significant relationship with return on equity (ROE), while they exhibited a significant association with net profit. This finding supports the previous research conducted by Abor (2005) in Ghana, which also found a positive correlation between profitability and borrowing tendencies among companies. However, the regression analysis results diverge from expectations and contradict some prior studies. The leverage factors of capital structure (D/A & D/E ratios) do not demonstrate a statistically significant influence on the profitability of Nepalese banks. This finding differs from the commonly perceived pattern observed in foreign banks, where leverage is often considered crucial for profitability. Equity financing emerges as a crucial factor in shaping the profitability of Nepalese banks, highlighting the need for stakeholders to prioritize equity while not neglecting debt financing entirely. This finding aligns with the research conducted by Myers (2001), who proposed the tradeoff theory, pecking order hypothesis, and free cash flow theory, emphasizing the mechanisms through which firms manage the trade-off between debt tax benefits, financial distress risks, and securing external funding.

Examining the relationship between capital structure and profitability, the study found a significant decline in profitability as the size of commercial banks increased. Increased paid-up capital also had a significantly negative effect on profitability. These findings resonate with the research by Antoniou, Guney, and Paudyal (2008). The findings indicate that commercial banks in Nepal focus on establishing a strong financial position and earning customer trust, prioritizing these outcomes over maximizing profits. Consequently, there exists a clear and meaningful correlation between capital structure scale variables and profitability. The sampled period showcased improved profitability for Nepalese commercial banks, driven by a preference for equity financing over debt financing among financially successful banks. This finding is in line with the study conducted by Yegon et al. (2014) in Kenya, which concluded that an optimal capital structure for banks involves a combination of debt and equity rather than relying solely on debt financing. Additionally, bank size exerted a substantial influence on profitability, with larger banks experiencing reduced profitability. This aligns with the research conducted by Chen and Chen (2011), which emphasized the influence of firm size on profitability and firm valuation. Hence, managing the capital structure effectively to optimize profitability poses challenges for commercial banks in Nepal.

Completing this research study raises an intriguing question regarding why paid-up capital in the balance sheet is presented at its book value rather than its market value. Future researchers could further investigate the effects of additional variables such as capital adequacy ratio, growth, tax, and market value of paid-up capital to explore the relationships and impacts between capital structure and profitability. Understanding the optimal capital structure that maximizes profitability is crucial for investors, shareholders, employees, and customers within the banking sector.

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Understanding the Ethical Attitude-behavior Gap in Consumption: A Shred of Empirical Evidence from Nepal

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Abstract

This paper explores factors impeding the ethical consumption of grocery products in the Nepalese context, which will enhance our understanding of various socio-psychological aspects of consumer behavior. Moreover, this paper explores the existing cavity between ethical consumption intentions and consumers' actual purchasing conduct. This study is based on an explanatory research design, including both primary and secondary data. In this study, the population represents consumers' shopping grocery products in Big Marts, and 270 consumers have been selected as the sample. We have used the awareness index to study the ethical consumption of grocery products in Nepal to reduce the errors associated with lying. Empirical results reveal that the surveys and research on value-based consumption, constructing an instrument of questions, socio-political statements, and behaviors that, through item analysis and data reduction, can categorize a respondent as an "ethical consumer," or a "utilitarian consumer" could reduce the loopholes created by respondent lies in the studies. Results of the awareness index depicts that more than ninety percent Big Mart's grocery consumers are moderately aware about ethical consumption. The regression result indicates that random product selection is an impending factor towards ethical consumption. Respondents were found to be less concerned about ethical consumption towards a certain brand. The result of this study will help to enhance our understanding on various socio-psychological aspects of consumer behavior. From the policy prescription standpoint, this study provides direction for the researcher to conduct analyses related to consumer understanding of ethical consumption and their purchasing behavior in Nepal.

Keywords: Ecological, Ethical product attributes, Big Mart, Buying behavior, Ethics, Ethical consumption.

1. Introduction

Consumers' activities directed towards purchasing goods and services responsibly and avoiding the purchase from unethical companies refer to a form of ethical consumption (Giesler and Veresiu, 2014). Ethical consumption is bounded with five steps (i.e., need recognition, information search, judging options for buying conduct (Akehurst et al., 2012). Earlier, the consumers' primary focus was price and quality, but at present, it has shifted towards ethical values. Also, firms these days have started regarding ethical behavior crucial factor for their survival and gaining a competitive advantage in the market (Oh & Yoon, 2014). Ethical consumption is an emerging global issue in today's context. Hines and Ames (2000) mentioned that 46 % of the consumers were willing to pay for products produced and sold ethically (MORI, 2000). In contrast, McGillivray (2000) and Boulstridge and Carrigan(2000) provide evidence that ethical concern like organic, ethical labeling, child labor free products only covers less than 1% market share which is similar to the attitude-behavior gap of Robert (1996) and Simon (1995) and also the complex consumer purchase behavior of Folkes and Kamins (1995).

Moreover, as ethical consumption deals with ethical production, consumption, and activities concerning less harm to society and the whole environment, it has been emerging as a matter of study. With the advancement of information and communication technologies, consumers' awareness of ethical consumption has also increased, which has encouraged them to move towards ethical consumption to a greater extent (Carrigan & Attalla, 2001). Today, organizations engage themselves concerning ethical management and distribution of the products to survive and gain a competitive advantage in the long run (Oh & Yoon, 2014). According to Pelsmacker et al. (2007), not only businesses or consumers benefit from ethical consumption, but the whole community and natural environment are witnessing the positive side. However, Baseline Study Report (2013) presented that politics and corruption affected ethical consumption. As Ramya & Ali (2016) stated, consumption activities can differ and be mainly influenced by various factors. Likewise, multiple factors like quality goods and product price obstruct consumers while opting for ethical products (Bray et al., 2010). Rather than giving preference to other ethical consumption factors, consumers tend to provide more choice to the factors associated with their health and well-being (Burke et al., 2014).

Nepal ranks 125th out of 144 economies for ethical behavior in business activities according to the 2013 Global Competitiveness Index published by the World Economic Forum (WEF, 2013). Despite the buzz concerning ethical consumption practices globally, its understanding and implementation in developing countries like Nepal are still slow-paced. Factors like political instability, increasing corruption, lack of implementation of laws encouraging a healthy business environment have proved to be an obstacle towards ethical production, consumption, and disposal of products (Baseline Study Report, 2013). According to the report published by National Business Initiative (2013), ethical production and consumption of products through goodwill to the society and environment results in increased benefits to the producers and consumers. It is an essential element for the sustainability and development of business. In Nepal, various research concerning business ethics in pharmaceutical companies, medicine distributors, and the private sector has been conducted. The Baseline Study Report (2013) findings indicate that 79 percent of respondents from 29 different companies of Nepal possessed a basic understanding of the ethical business approach. Further, 21 percent of respondents did not have a clear understanding of business ethics and its practices. However, research in the area of ethical consumption from the consumers' perspective was not found to be conducted in the context of Nepal.

Similarly, various other drivers such as price and self-identity are influential factors of ethical consumption (O'Connor et al., 2017). Consumers have to be aware of its benefits and misconceptions related to removing the attitude-behavior gap (Wiederhold, 2018). Unlike developed nations, it is still in the primitive phase in developing countries. The knowledge of consumers on ethical consumption is not generally reflected in their purchasing behavior through the implementation of ethical consumption has been an emerging issue in the global context. In Nepal, various research concerning business ethics in pharmaceutical companies, medicine distributors, and the private sector has been conducted. However, research from the ethical consumption of customers' perspective is rarely conducted in Nepal's context to date, and several questions related to ethical consumption are unanswered. A proper study is required to explore these questions in the context of ethical consumption in Nepal. Therefore, this study offers an improved understanding of ethical consumption and factors impeding ethical consumer behavior in the context of Nepal. This study analyzes the factors restraining the ethical consumption of Big Mart grocery items in Kathmandu, Nepal.

The contribution of this study is that it helps to understand the ethical attitude-behavior gap in consumption that enhances our understanding of various socio-psychological aspects of consumer behavior. It further explores the existing cavity between ethical consumption intentions and consumers' actual purchasing conduct. This analysis used utility maximization theory to understand consumers’ perception of grocery buying, which was not attempted in any previous studies on ethical consumption. It also used the consumers’ awareness index to study the ethical

consumption of grocery products in Nepal to reduce the errors associated with lying. Therefore, it has produced more information on ethical behavior, which can contribute to policy formulation. This study finds that if producers, retailers, and the government encourage ethical consumption behavior, proper attention should be given to assisting such consumers who cannot decide on the ethicality of the product themselves. Similarly, producers should educate the consumers on the ways to practice ethical consumption behavior more effectively vis-à-vis to discourage unethical production and consumption activities, the government should introduce alterations in old acts and policies according to the need of time and situation.

2. Data and Methodology

Theoretical debates on ethical consumption

For this research, reasoned action, planned behavior, norm activation, and ethical consumerism theories are applied. Consumers' attitudes, subjective norms (Macovei, 2015) in reasoned action, a cognitive progression lead by attitude and behavior (De Pelsmacker & Janssens, 2007; Chatzidakis et al., 2007) and self-identity for ethical purchasing intention (Shaw et al., 2000) are pretty important. Similarly, consumers like demographics, outlooks, and psychographics also affect ethical consumption, linked to ethical consumerism. (Cho & Krasser, 2013; Bliesner et al., 2013). Again, after reviewing various scholars' conceptual reviews, the vital dependent and independent variables are identified with ethical consumption. The dependent variables important for these studies are consumers' understanding of ethical consumption, ethical motives, brand loyalty, and random product selection. Likewise, the independent variables are considered for bio-degradable and environment-friendly products (Budhathoki et al., 2019). Hence, we assume that these dependent and independent variables are essential for studying factors that impede ethical consumption.

The awareness level of customers regarding ethical consumption has focused on labor rights, organically produced food products based on social norms, attitude, and controlled behavior (Bray, 2010; Shaw, 2002; Zollo, 2018; Macovei, 2015; Ajzen & Fishbein, 1980) Likewise, Harrison et al. (2005) similar to the theory of planned action assert that the factors like beliefs, intention, obligation and self-identity influence ethical consumption behaviors. In the decision-making process, product price, post-purchase consequences, and brand choice are less significant than consumers' value (Vermeir & Verbeke, 2006; Vitell et al., 2001). Benevolent and self-directed consumers are more ethical than consumers relied on power and hedonism (Vermeir & Verbeke, 2004). Truthful communication keeps tremendous importance in the consumer's purchasing decision (Dickson, 2001). Also, according to the consumers' background, the purchase and consumption are affected (Essoo & Dibb, 2004; Shaw et al., 2010).

The model

Ethical consumption is a behavioral science that depicts that consumer behavior is subject to change and is dependent on several socio-psychological, moral, behavioral factors which cannot be predicted.

Suppose j and k are two goods and $Y_j$and Y_k are consumers' purchasing decision for j and k denoted by U_j and U_k, respectively. Following utility maximization theory, the perceived benefits derived from the goods chosen j are higher than benefits acquired from selecting other options (i.e., k) if the consumer decides to use option j, which is explained as follows:

$$U_{ij}(\beta_j' X_i + \varepsilon_j) > U_{ik}(\beta_k' X_i + \varepsilon_k), k \neq j \quad (1)$$

Where, U_{ij} denotes perceived benefits for consumer goods j and $U_{ik}$for perceived benefits by goods k to the consumers, $X_i$represents a vector of explanatory variables, $\beta_j$and $\beta_k$are regression the parameters, and ε_j and $\varepsilon_k$are errors term, respectively, which follow the normal distribution. The probability that a consumer will consume ethical commodity j from the set of available commodities could then be defined as follows:

$$P(Y = 1/X) = P(U_{ij} > U_{ik}/X) \quad (2)$$

Qualitative choice models are commonly used in previous studies to capture the probability of the respondents' choice. In this case, logistic regression is usually used to measure peoples' perceptions (Devkota & Paudel, 2018).

Binary logit model

Following the prior empirical literature (Paudel & Devkota, 2018; Rai et al., 2020), the binary logit regression model has been used in this study, which identifies significant variables determining consumers' ethical behaviors while purchasing Kathmandu valley and its important determinants factors as explanatory variables. Let us assume that 0 is assigned for consumers' who do not purchase ethically; 1 involves consumers who buy ethically. Y represents a

dichotomous variable, and the sets of explanatory variables denote the socio-cultural and economic factors, X. Using binary logit model, estimating the effect of X on the response probability, $P(Y^i/X)$ as:

$$P\left(\frac{Y^i}{X}\right) = F(Z_j) = \beta_0 + \beta_1 X_{1i} + \cdots + \beta_n X_{ni} + \mu_i \quad (3)$$

Eq. (3) used to estimate factors influencing ethical consumptions in Kathmandu Valley. The dependent variable is the consumer's ethical consumption, separated into six separate headings and measured based on 34 independent variables undertaken as factors. The independent variables undertaken are presented in Table 1.

Table 1: Description of the variables

Variables	*Details of the variables*	*Hypothesis*
Socio-Demographic Characteristics		
Age (age)	Respondent's age (In years)	±
Sex (sex)	Respondent's sex (Dummy 1=male)	+
Education (edu_lvl)	Formal education (Dummy, 1=above SEE)	+
Marital Status (marital_stat)	Respondent's marital status (Dummy, 1=married)	±
Ethical Product Attributes		
Safe and healthy *(avoid_harm~t), (Dont_buy_~ls)*	Give importance to health and safety component in products (Dummy, 1=yes)	±
Organic *(prefer_sho~s)*	Prefer organic products (Dummy, 1=yes)	+
Ecological *(buy_reusab~s), (consider_b~s), (buy_nonbio~s), (consider_p~y)*	Give consideration to bio-degradable and environment-friendly products (Dummy, 1=yes)	+
Consumer's Ethical Motives		
Personal factors		
Random selection *(random_sel~n), (location_c~e)*	Select products randomly (Dummy, 1=yes)	-
Product labeling and information *(buy_prdt_n~g)*	Do not purchase products without labeling and information (Dummy, 1=yes)	-
Brand loyalty *(give_imp_b~g), (brand_loya~y), (consider_e~s)*	Loyal towards a brand (Dummy, 1=yes)	±
Preference for stores promoting fair-trade *(fair_trade)*	Prefer fair-trade products (Dummy, 1=yes)	±
Environmental factors		
Product disposal *(dispose_pckg), (Dont_recycle)*	Dispose of product packaging properly through reuse and recycle (Dummy, 1=yes)	+
Eco-labeling *(buy_ecolab~s)*	Give importance to eco-labeled products (Dummy, 1=yes)	+
Social factors		
Social responsibility *(avoid_comp~v), (aviod_prdt~k), (buy_prdts_~s), (buy_soc_ir~p), (Dont_buy_~es), (Dont_hesit~k)*	Avoid products from companies that discriminate against minorities, operate outside the legal framework, and are socially irresponsible (Dummy, 1=yes)	+
Sustainable consumption factors		
Intention to change buying habits *(Dont_chang~l), (diff_bm_lo~s), (local_shop~m), (necessity_~g)*	Change buying habits to be more ethical (Dummy, 1 = yes)	±
Concern *(awareness~12), (consider_i~n), (govt_role_~t)*	Concern for ethical consumption (Dummy, 1 = yes)	+

Source: Authors' calculation based on the assumptions.

Note: Short form in parenthesis represents variables for inferential analysis

Study area, population, and data

This research employs an explanatory design using primary data. Based on the study's objectives, primary data are obtained from Kathmandu valley to investigate factors impeding ethical consumption. Kathmandu valley, which is 899 square km in area, is the country's capital city covering three districts, Kathmandu, Lalitpur, and Bhaktapur. Its latitude and longitude are 27°32'13" and 27°49'10" north 85°11'31" and 85°31'38" east respectively(Paudel & Devkota, 2020). The valley lies above 1300 meters from average sea level (Mohanty, 2011; Paudel et al., 2020). There is a large number of supermarkets in the Valley (Yuvaraja & Dulal, 2012). In total, there are 25 outlets of Big

Marts in Kathmandu Valley. It becomes popular by creating its unique identity and most desirable service provider in the valley, especially grocery items. Karna (2019) finds that Mart currently has 45000 customers who are from the high-income group. Most of the Big Mart outlet is located near foreigners' tourist center place, ex-pats high-income groups, and the VIP area in the valley.Under this study, all individuals purchasing grocery items from Big Mart within the valley, i.e., Kathmandu, Lalitpur, and Bhaktapur, are considered the study population.

As there are 25 Big Mart outlets within the valley, individuals only within the valley have been considered for the study. For selecting the sample for the analysis, following Singh (2007) and Paudel and Devkota (2018), purposive sampling has been chosen. This sampling method is best suited when the researcher needs to reach the target sample quickly, and the sample is not the main concern (Paudel & Devkota, 2018). Factors impeding the ethical consumption of Big Mart's customers are estimated through interviews by using a structured questionnaire. The total number of customers for the sample was determined using the following formula as mentioned by Panta (2016) and Karki et al. (2021) which is as follows:

$$n = Z^2pq/l^2$$

where$n$ represents the sample size required for study, standard tabulated value for 5% level of significance = z,p represents the prevalence or proportion of an event (More et al., 2012), $q = 1 - p$, the allowable error that can be tolerated = e.This study also undertakesa 6% non-response error, allowinga sample size of 280 for considerable analysis. Though the study intended to collect data from 280 respondents, in the final data collection, only 270 respondents could be reached for collecting data for several reasons, such as time limitation for data collection, repetition of same customers daily, and respondent errors. Data analysis is performed using descriptive and inferential statistics. For inferential statistics, the STATA computation software is used.

Empirical Results and discussion

Socio-demographic characteristics of respondents

The sex composition of the respondents is 48 percent male and 52 percent female. This shows that the number of female consumers shopping in Big Mart is slightly higher than that of male consumers in Kathmandu valley. The result shows that most respondents (35.63%) lie in 21-30 age groups. Further, the survey reveals that most respondents (68%) were below Secondary level while only 14.4% of respondents have completed their masters and education higher than master level. Similarly, the marital status of respondents shows that 43.7% of them are married, and the rest (56.29%) are unmarried. Regarding the occupation of consumers, the survey suggests that the majority of the respondents (21.11%) are industrial workers, followed by businessmen (16.29%), farmers holding agriculture (17.03%), and bankers (12.2%). Other working groups are teachers, health workers, and NGO/INGO workers are very few.

Regarding the understanding level of respondents, in the personal dimension, most of the respondents (87.4%) prefer to buy products that are involved in corporate social responsibility. Other categories as mentioned in the Table 2 cover 62.5 %, 70.7%, 75.0% and 79.2%, respectively. So, the result shows corporate social responsibility of the products/companies places great value on the consumers for purchasing the brands. Similarly, in respect to the environmental dimension, most consumers (60.2%) express that they are buying products packaged in reusable or recyclable containers, suggesting that consumers are becoming more conscious of the products' recyclable containers in the environment. Other respondents also show their intention to protect the environment by following different categories of environmental concern. In the context of the social dimension, most consumers (89.6%) do not prefer to buy the products from the socially irresponsible company, i.e., they do not take any responsibility for societal welfare are unlikely to overcome social problems caused by them.

Table 2: Socio-demographic characteristics

Field		*Number (N) = 270*
Gender	Male	130 (48.2%)
	Female	140 (51.8%)
Age (in years)	Below 21	47 (17.4%)
	21-30	113(41.8%)
	31-40	37 (13.7%)
	41-50	50 (18.51%)
	50 above	23 (8.51%)
Education	Below SLC/SEE	68 (25.18%)
	Upto SLC/SEE	62(22.9%)
	Higher Secondary Level	51(18.8%)

	Bachelors	50(18.51%)
	Masters and Above	39(14.4%)
Marital Status	Married	118(43.7%)
	Unmarried	152(56.29%)
Occupation	Business	44(16.29%)
	Industrial Worker	57(21.11%)
	Agriculture	46(17.03%)
	Banker	33(12.2%)
	Teacher	21(7.7%)
	Health worker	30(11.11%)
	NGO/INGO	25(9.25%)
	Others	14(5.18%)

Understanding the level of customers concerning ethical consumption

Next, concerningthe ethical dimension, as shown in Table3, most of the respondents (89.2%) explain that they are reluctant to buy products from the companies that are not paying to their workers. Like in other dimensions, in the ethical dimension, consumers prefer and do not like to buy the product due to various ethical reasons (see Table3).

Table 3: Customers Understandings on Ethical Consumption

Dimensions	*Items*	*Male*		*Female*		*Total*	
		Yes	%	Yes	%	Yes	%
Personal Dimension	I make my purchase decisions based on location and convenience.	83	30.9	85	31.6	168	62.5
	I prefer to purchase from brands involved in corporate social responsibility.	122	45.4	113	42.0	235	87.4
	I like to do my purchasing from stores that help in promoting fair trade	99	38.1	96	36.9	195	75.0
	I give importance to brand image before making a purchase decision.	101	38.8	105	40.4	206	79.2
	I avoid purchasing products that have negative impacts on health.	84	32.4	99	38.2	183	70.7
	I dispose of my product packaging properly after usage.	66	24.7	58	21.7	124	46.4
Environmental Dimension	I reuse or recycle plastic containers.	61	22.7	52	19.3	113	42.0
	I purchase products with eco-labeling.	11	4.1	13	4.8	24	8.9
	I avoid products from companies that negatively impact the environment.	54	20.1	92	34.2	146	54.3
	As far as it is possible, I want to buy recyclable- container- packed products.	80	29.7	82	30.5	162	60.2
	Despite the non-biodegradable products being authorized by the government, it is not fair to buy them.	79	29.4	83	30.9	162	60.2
	I avoid products from producers that operate outside the legal framework.	98	36.4	81	30.1	179	66.5
Social Dimension	I prefer to buy locally produced food products to support local farmers.	119	44.2	107	39.8	226	84.0
	As far as I know, the product is not socially responsible. I will not buy it.	126	46.8	115	42.8	241	89.6
	I do not buy products from companies that discriminate against minorities.	113	42.0	118	43.9	231	85.9
Ethical Dimension	I want to buy the products from the shops which provide products of ecological or organic nature	131	48.7	122	45.4	253	94.1
	I do not purchase products without product information and labeling.	121	45.0	113	42.0	234	87.0
	I look at the manufacturing and expiry date of products before making a purchase.	98	36.7	91	34.1	189	70.8
	I get inconvenience to buy the products produced by unpaid workers, despite this is the government's responsibility to make the company pay to their workers	126	46.8	114	42.4	240	89.2

	reasonably.						
	I do not purchase products with contaminants (exposed to chemicals and additives).	121	45.0	110	40.9	231	85.9
Sustainable Consumption Dimensions	I want to change my buying behavior for ecological concern, despite its role in making companies follow the environmental standard of products.	38	14.1	51	19.0	89	33.1
	I prefer to buy those products which do not use child labor.	139	51.7	130	48.3	269	100.0
	I take care of whether the products use green energy or not.	41	15.2	21	7.8	62	23.0
	I am aware of SDG Goal 12: Responsible consumption and production.	22	8.2	23	8.6	45	16.7
	I am concerned about the environmental implications of my product disposal.	92	34.2	98	36.4	190	70.6

The result suggests that more consumers feel bad about buying products made by those who used underpaid workers. In addition, Sustainable Consumption Dimension covers 100% of respondents who prefer to purchase those products that do not use child labor, followed by the respondents (70.6%) concerned about the environmental implications of their product disposal. Out of 25 items within five dimensions' malesshow a greater percentage in responding to 14 items, whereas females show more rate in giving 11 items. This indicates that males are more sensitive to relate to themselves to different dimensions in purchasing the products.

Factors impeding ethical consumption

In the context of shopping frequency, it is found that 57.67 percent of respondents only shop sometimes in Big Mart, and their monthly spending on Big Mart's products lies between Nrs.1001 and Nrs.5000. Likewise, the proportion of respondents who always shop in Big Mart is 14.60 percent. Among various reasons to purchase from big marts, most male and female customers choose Big Mart as it is near their home and the least number of customers choose Big Mart as it provides various offers and discounts (See Figure. 1).

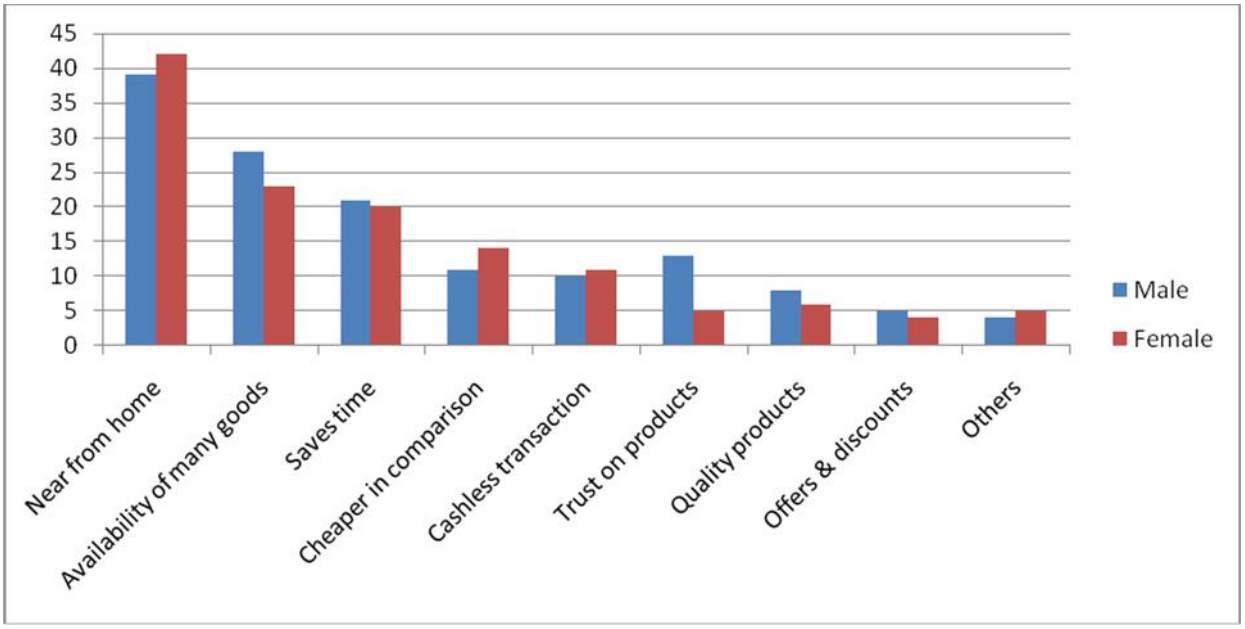

Figure 1: Respondents' choice for Big Mart

Fifty percent of respondents look at the brand name of the product before the purchase decision. This is followed by price at 21 percent, expiry date at 13 percent, product ingredients at 12 percent, and certification at 4 percent. A high proportion, i.e., 79.48 percent of respondents, do not give importance to bio-degradable products, citing that they give more importance to the price and quality of the products. Likewise, 53.73 percent of respondents do not dispose of their product packaging properly.Fifty-five percent of respondents give importance to environment-friendly products, and the rest of the consumers express that they have lack information about environment-friendly products.

Table 4: Factors impeding ethical consumption

Field		*Number (N)*
Shopping Frequency	Always	39 (14.44%)
	Sometimes	154 (57.40%)
	Very often	77 (28.5%)
Product Details	Certification	11 (4%)
	Product Ingredients	32 (12%)
	Brand Name	135 (50%)
	Price	57(21%)
	Expiry Date	35(13%)
Consideration for Bio-degradable Products	Yes	125(46.29%)
	No	145(53.71%)
Consideration for Environmental Friendly Products	Yes	149(55%)
	No	121(45%)

The notable findings from the survey, presented in Table 4, reveal that 87.03 percent of respondents feel the difference in purchasing at Big Mart and other local shops. The highest numbers of respondents, i.e., 39.57%, find shopping difference in Big Mart due to the availability of various national and international brands, which is not readily available at local shops, followed by 25.53% of respondents responding that they purchase due to the ease in finding products and due to proper organization of products. During the survey, 78.88 % of respondents answered that local shops could learn from Big Mart, whereas 21.12% responded that local shops could not learn from the big mart. According to the 40.84% of respondents, local shops can learn to organize their products to become less time-consuming and easy for customers. Likewise, 28.16% responded that having products from multiple national and international brands is another lesson that could be learned, despite some of them disagree with it, referring to the causes like over price and no bargaining and no credit at the big mart.

Regarding the question for management of local shops to be integrated like big mart, 91% respondents agreed that shopping should be managed in an integrated way whereas 9 percent did not agree with the same. 39.13 % responded that integrated markets like Big Mart have costlier products that would not be affordable by customers of all economic sections of the society. So managing shopping in a completely integrated manner would not be viable for all. Similarly, 30.43% responded that as it is not possible to bargain in integrated markets like Big Mart, it is unnecessary to manage shopping in a completely integrated manner. The 57.40% of respondents expressed that government can play a vital role in enhancing the integrated market in their area. The rest of them disagreed with it. 47% of respondents believe that government can play a vital role by promoting a good business environment. The majority of respondents, i.e., 39.67%, responded that the way to encourage effective and easy shopping is by ensuring the availability of goods, i.e., national and international brands, whereas 16.84% responded that practical and easy shopping could be promoted by providing consumers assistance in shopping.

Managerial solution

The majority of respondents believed that government has a role in enhancingthe integrated market in their area. They suggested various ways how it can be possible. Figure 2 entails these reasons cited by the respondents. During the survey, respondents asked about their opinion on the ways to promote effective and easy shopping. The majority of respondents, i.e., 39.67 percent, responded that the way to encourage effective and easy shopping is by ensuring the availability of goods, i.e., national and international brands. In contrast, 16.84 percent responded that practical and easy shopping could be promoted by providing the consumers' assistance in shopping.

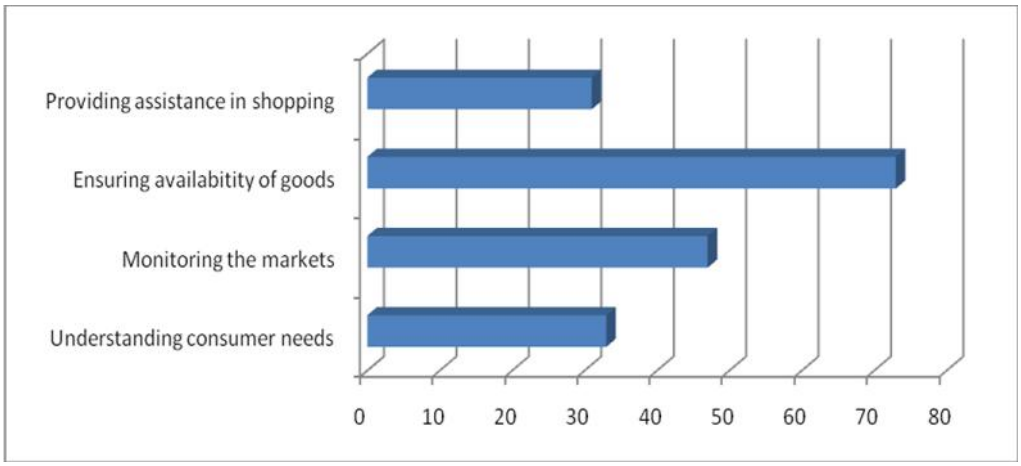

Figure 2: Managerial solutions

Big Mart's customers' awareness index

Under this study, the overall awareness level of Big Mart's grocery consumers was also ascertained and analyzed with the help of an awareness index. For the awareness index, four socio-demographic characteristics – sex, age, marital status, and experience of the consumers are taken into consideration. The results presented in Table 5 show that 4.07 percent are less aware of ethical consumption among the total respondents. The proportion of highly aware respondents of ethical consumption was even lower at 2.22 percent. Likewise, the results of the awareness index indicate that 93.70 percent of respondents are moderately aware of ethical consumption.

Table 5: Overall awareness level

Subject	*Less Aware*	*Moderately Aware*	*Highly Aware*
Sex (Total)	18	240	11
Male	9	125	5
Female	9	115	6
Age	11	232	18
Education	16	198	9
Marital Status (Total)	18	240	11
Married	9	102	4
Unmarried	9	138	7
Overall	11	253	6

Econometrics estimation

Further, correlation analysis was performed where the existing positive or negative correlation between dependent and independent variables was ascertained. Similarly, binary logistic regression was analyzed with an odds ratio to make the interpretation more effective. Further, various post estimation tests like multicollinearity and heteroscedasticity were performed to determine any existing repetitions or similarities between multiple data sets and ascertain whether the data sets are free from multicollinearity. The data set was found to be free from multicollinearity, butheteroscedasticity was found in the first, third, and fifth models of the study. Concerning this, after rectifying the problem of heteroscedasticity, final regression results have been ascertained (seeTable 6).

Table 6: Binary regression result

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Variables	*random_ selection*	*brand_ loyalty*	*consider_ bioprodts*	*consider_ envifr_prodts*	*diff_bm_ local_shops*	*govt_role_ intg_market*
Sex	-0.239	0.700	-0.505	-0.317	0.00532	0.0417
	(0.485)	(0.462)	(0.457)	(0.357)	(0.559)	(0.376)
Age	0.0340*	0.00429	0.00525	0.0107	0.0590**	-0.00328
	(0.0190)	(0.0170)	(0.0153)	(0.0149)	(0.0291)	(0.0184)
edu_lvl	-0.647	0.252	-1.187**	-0.425	-1.057	-0.449
	(0.491)	(0.504)	(0.482)	(0.388)	(0.910)	(0.464)
marital_stat	-0.456	-0.742	-0.274	-0.0582	-0.276	0.913**
	(0.469)	(0.517)	(0.518)	(0.363)	(0.497)	(0.400)
location_convenience	-0.410	-0.783	0.361	0.402	-0.181	0.842*
	(0.503)	(0.643)	(0.496)	(0.423)	(1.026)	(0.449)
fair_trade	-0.0998	-0.459	0.0904	-0.735*	0.824	-0.0759
	(0.531)	(0.610)	(0.547)	(0.398)	(0.849)	(0.420)
give_imp_brand_img	0.564	-0.105	-0.593	0.168	-0.175	-0.586
	(0.710)	(0.626)	(0.545)	(0.454)	(1.131)	(0.467)
dispose_pckg	-0.472	0.609	0.0928	-0.278	-0.696	0.0101
	(0.585)	(0.425)	(0.413)	(0.315)	(0.683)	(0.389)
dont_recycle	1.354**	0.449	-0.395	-0.332	-0.741	1.246***
	(0.620)	(0.464)	(0.427)	(0.335)	(0.825)	(0.410)
avoid_comp_impact_env	-1.632**	0.686	0.313	1.009**	0.674	-0.632
	(0.671)	(0.602)	(0.508)	(0.432)	(0.828)	(0.493)
buy_reusablypckgd_prodts	1.180**	-0.840	0.0784	-0.0226	-0.843	1.619***
	(0.568)	(0.578)	(0.554)	(0.339)	(0.727)	(0.461)
buy_nonbiodegd_prodts	0.539	-0.116	-0.155	-0.0473	-0.289	1.192***
	(0.514)	(0.568)	(0.491)	(0.395)	(0.605)	(0.438)
aviod_prdts_out_legfmwk	-0.422	3.071***	-0.204	-0.180	0.227	-1.193**
	(0.569)	(0.615)	(0.668)	(0.421)	(0.867)	(0.491)
buy_prdts_supp_framers	1.562*	0.651	1.102	0.557	1.608**	0.0850
	(0.835)	(0.663)	(0.779)	(0.467)	(0.818)	(0.528)
buy_soc_irresp_comp	0.0743	0.448	-1.621**	0.889	1.631	0.0204

	(0.796)	(0.660)	(0.701)	(0.636)	(1.000)	(0.655)
dont_buy_prdts_discrminorities	0.169	0.0338	0.103	-0.469	0.250	0.164
	(0.611)	(0.619)	(0.615)	(0.475)	(0.780)	(0.525)
prefer_shop_organic_prdts	1.283	0.824	1.443	0.599		0.458
	(1.122)	(0.856)	(1.746)	(0.757)		(0.657)
consider_prdts_green_energy	-0.143	-0.752	-0.374	-0.165	-1.729**	0.606
	(0.510)	(0.619)	(0.561)	(0.395)	(0.728)	(0.424)
avoid_harmful_prodt	1.872**	0.532	0.357	0.528		-0.0166
	(0.731)	(0.560)	(0.508)	(0.413)		(0.474)
dont_buy_prdts_chemicals	-0.486	0.0700	0.514	0.0827	0.705	-0.308
	(0.593)	(0.723)	(0.530)	(0.468)	(0.701)	(0.589)
buy_prdt_no_labeling	1.631**	0.940	0.369	0.581	0.604	0.517
	(0.700)	(0.773)	(0.659)	(0.494)	(0.721)	(0.607)
buy_ecolabeled_prodts	0.160	0.792	0.391	0.283		-0.317
	(0.783)	(0.771)	(0.516)	(0.536)		(0.597)
dont_hesitate_buy_underpaid_work	-0.369	-0.697	0.00643	0.150	1.135	-0.179
	(0.868)	(0.668)	(0.588)	(0.469)	(1.656)	(0.596)
dont_change_habit_be_ecological	-0.602	-0.865*	-0.256	0.525	1.086	-0.0917
	(0.494)	(0.485)	(0.499)	(0.392)	(0.714)	(0.455)
awareness_sdg12	-0.411	-0.907	0.189	-0.0480	-0.874	0.136
	(0.613)	(0.575)	(0.642)	(0.493)	(0.768)	(0.604)
consider_impact_prdt_disposal_en	0.505	0.286	-0.149	-0.432	0.971*	0.637
	(0.532)	(0.467)	(0.542)	(0.383)	(0.560)	(0.435)
local_shops_lesson_bm	-0.0911	0.134	0.572	0.0286	1.683*	1.739***
	(0.568)	(0.478)	(0.587)	(0.384)	(0.880)	(0.447)
necessity_manage_intg_shopping	-0.531	-0.334	-0.514	-0.113	-3.473	-0.738
	(0.698)	(0.727)	(0.602)	(0.564)	(2.183)	(0.616)
Constant	-7.956***	-3.376	-2.064	-1.518	-0.824	-2.838*
	(2.541)	(2.532)	(2.540)	(1.723)	(2.812)	(1.681)
Obs.	201	191	201	200	125	201

Note: *The numbers in parentheses show standard errors. *** indicates significance at a 1% level of significance. ** and * indicates significance at 5% and 10%, respectively.*

The binary logistic regression result reveals the significance between the dependent variables, random product selection, brand loyalty, consideration for bio-degradable products, concern for environment-friendly products, government role in enhancing integrated markets, and difference felt by consumers while purchasing at Big Mart as compared to local shops with several independent variables.

Model 1 is related to a random selection of goods by consumers and obstruction in ethical consumption. The result reported in Table 5 illustrates that age, not recycling and reusing plastic containers, buying reusable packaged products, buying products that support local farmers, avoid purchasing products, and purchase products with no labeling significantly affect ethical consumption by consumers in Big Mart. It also indicates that buying products without labeling increases due to random goods selection by consumers, which impedes ethical consumption. The odds ratio of buying products without labeling is 4.21 times higher. Hence, ceteris paribus, the probability of purchasing products without labeling is four times higher when consumers randomly select goods. The model also depicts the likelihood of avoiding companies that impact the environment decreases with random product selection. This signifies that when consumers ignore product details like eco-labeling and purchase randomly, there are fewer chances of avoiding companies that might impact the environment. The model also shows that obstruction in ethical consumption due to a random selection of goods increases 3.51 times with not reusing or recycling plastic containers.

In model 2**,** the relationship between brand loyalty and obstruction in ethical consumption was observed where two out of twenty-eight variables were substantially significant. The model indicates that due to brand loyalty, avoiding products from producers that operate outside the legal framework increases by 0.41 times. Likewise, when there is a presence of brand loyalty, consumers are less concerned about changing their habits to ecological (0.63 times). This hints towards consumers' constant preference towards a brand despite it not being ecological. Model 3 observed the relationship between consideration for bio-degradable products and obstruction of ethical consumption. The model reveals other variables than the above two models are significant to the dependent variables, i.e., concern for bio-degradable products. The model depicts that the probability of avoiding products from socially irresponsible companies decreases due to consideration for bio-degradable products. In Model 4, the relationship between contemplation for environment-friendly products and ethical consumption was captured, where only two out of twenty-eight variables were found substantially significant. It indicates that the probability of evading consequences from socially reckless enterprises increases by 1.07 times due to having consideration for environment-friendly

products. This signifies that other things remaining the same; the probability of avoiding products from socially irresponsible companies is 1.07 times higher when we consider environment-friendly products.

In model 5, the association between the difference found by consumers between local shops and Big Mart and obstruction in ethical consumption has been observed. The model illustrates that buying products to support local farmers, avoiding buying from socially irresponsible companies, and lessons that local shops can learn from Big Mart significantly affect ethical consumption. The odds ratio of buying products to support local farmers is 4.96, which signifies that the probability of buying products to support local farmers is almost five times higher when consumers find the difference in purchasing at Big Mart in comparison to local shops. Likewise, the odds ratio of lessons that local shops can learn from Big Mart is 1.11. This indicates that ceteris paribus, the probability of lessons that local shops can learn from Big Mart, increases by 1.11 times when consumers find a difference in purchasing at Big Mart compared to local shops. Finally, Model 6observes the relationship between government role to enhance integrated market and ethical consumption. The result presented in Table 5 suggests that marital status, not recycling or reusing plastic containers, buying products packaged in reusable or recyclable containers, buying non-biodegradable products substantially affect ethical consumption. It also indicates that the probability of purchasing non-biodegradable products increases when consumers feel that government has to play a vital role in enhancing the integrated market. The odds ratio for buying non-biodegradable products is 1.85, which signifies that ceteris paribus, probability of purchase non-biodegradable products increases by 1.85 times when consumers feel that government has a vital role in enhancing integrated market. Likewise, the odds ratio of purchasing decisions based on location and convenience is 0.55. This indicates that the probability of purchasing goods based on location and convenience increases by 0.55 times when consumers feel the government needs to play a vital role in enhancing the integrated market. The odds of not reusing and recycling plastic containers increases by 3.51 times, buying reusable packaged products increases by 3.23 times. The model indicates that with the rise in government role to enhance the integrated market, the probability of avoiding products from producers operating outside the legal framework decreases.

4. Discussion

The development of ICTs has proliferated the consciousness on ethical consumption (Carrigan & Attalla, 2001). Many organizations are considering ethical consumption as a management policy (Oh & Yoon, 2014). Also, Pelsmacker et al. (2015) opined that community and the natural environment get direct benefits from ethical consumption. Yet, Baseline Study Report (2013) added that ethical consumption is affected by political instability, shameful corruption, and an inability for law enforcement and implementation in developing countries. Ramya & Ali (2016) explained that the situations of ethical consumption in developing countries are not unanimous due to diverse socio-cultural setup. Bray et al. (2010) argued that consumers primarily emphasize product price and brand image rather than environment-friendly and biodegradable products. O'Connor et al. (2017) also clarify that ethical consumption behavior is affected by price, the credibility of information, and moral values.

Again, Wiederhold (2018) significantly emphasized the advancement and promotion of the correct information flow to consumers to mitigate the attitude-behavior gap for ethical consumption. Sharma et al. (2016) discussed that consumers are considerably exhibiting their interest in consuming high nutritional products with no harm to society and the environment in today's society. In this context, Kraus et al. (2017) have shown that in case the product's label is provided by the producers, the rate of the product purchasing will increase. Also, Asioli et al. (2017) focused that consumers' intolerance towards unhealthy food products has made consumers more conscious about selecting healthier and environmental food products. This viewpoint is substantially bolstered by Rana & Paul's (2017) argument that increasing health consciousness and sustainability trends on consumers have led them to know and consider food products' components. Furthermore, Sebastiani et al. (2013) highlighted two factors- products organically produced and environmentally sustainable products- which help increase ethically concerned consumers in deciding on purchasing the product. However, Ghvanidze et al. (2016) have also stressed the brand image and price factors to determine the consumer behavior for the consumption of the product.

The study focuses on identifying the understanding level of consumers regarding ethical consumption of Big Mart's grocery products within Kathmandu valley, Nepal. Despite the employment of various measures to attain these objectives, certain areas need further research. Although this study has also used the awareness index to study ethical consumption to help reduce the errors associated with lying, the results are undoubtedly impacted by some respondents who have not been truthful. Categorizing respondents as an "ethical consumer," a "political consumer," or a "utilitarian consumer" with a future survey on value-based consumption by constructing an instrument of socio-political behaviors can reduce the ambiguity created by respondents and biasness developed in the study. This effort will help in refining further the methodological procedures and studying such activities as ethical consumption. Likewise, the present study was conducted only in Big Marts located within Kathmandu valley. Therefore, the results

might not represent the consumption behavior of all the consumers of Big Mart throughout Nepal. Future studies could be carried out for more representative results by considering at least one Big Mart from each province of Nepal. This would help in generating results that would be more representative of the consumption behavior of Nepali consumers. In the same way, only limited variables are included in the present study, which may have or have not served their purpose effectively. This is why it would be better if future researchers include many other variables that have a role in encouraging or impeding ethical consumption.

5. Conclusion

This paper explored the consumers' level of understanding concerning ethical consumption and the causes for hindering the exhibition of ethical consumption behavior in the milieu of Big Mart grocery shopping. The respondents' answers on ethical consumption based on personal dimension indicate that 76.29 percent give importance to brand image before making a purchase decision. Concerning environmental dimension, 91.11 percent do not purchase products with eco-labeling. Under the social dimension, 60.37 percent of respondents find nothing wrong with buying non-biodegradable products, and 85.92 percent are reluctant to purchase products from those companies, which showed discriminatory behavior against minorities. Likewise, under the ethical dimension, 87.03 percent do not accept products without product information and labeling. Still, only 70.74 percent look at the manufacturing and expiry date of products before purchasing decisions.

In sustainable consumption, the survey result shows that 67.03% of consumers do not want to change their purchasing habits in promoting environmentally friendly behavior. They argue that such task of protecting the environment lies under the government's jurisdiction. In this regard, Dickson & Littrell (1996) argued that societal-based collective personal attitude makes the consumer purchase any products from those companies that perform the more responsible business activities. Most consumers choose to shop in Big Mart due to its location from their homes, and the least number of consumers prefer it because of the offers and discounts provided. Half of the respondents emphasize brand name while purchasing and most minor give importance to product certification. The study also concludes that 79.48 percent of consumers do not consider consuming bio-degradation products because they feel that such products are highly priced and cheaper in quality than non-biodegradable products. Likewise, more than half of the respondents give importance to environment-friendly products. The remaining respondents emphasize such products due to a lack of proper information regarding availability and use and time constraints in searching for such products.

So, the results obtained from the study indicate that consumers guided by ethical motives become more loyal towards companies producing their products ethically. A negative correlation between brand loyalty and purchase decisions based on location and convenience has observed, indicating that consumers do not base their purchase decisions on factors like location and comfort when they are loyal to a brand. Likewise, according to the results, consumers do not feel the necessity to manage shopping in an integrated way like Big Mart when loyal to a particular brand. Brand loyalty has emerged as a decisive variable responsible for impeding ethical consumption behavior. A strong correlation between consideration for bio-degradable products and buying eco-labeled products explains that consumers who purchase eco-labeled products have a significant concern for bio-degradable products. Concerning differences in purchasing at Big Mart and local shops, consumers who avoid buying products from socially irresponsible companies feel the difference while purchasing from Big Mart. Thus, the research result has provided strategically significant perceptiveness for business people who want to perform their business with CSR as one of their business activities. In addition, the survey result can also be helpful for grocery shopkeepers who rather incline to follow CSR with the thought of enhancing their company image and promoting their brand equity.

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