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VAT Productivity in Nepal: A Study of C Efficiency in Nepal

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Abstract

As of 2018 out of 193 un member countries of the UNO there are 176 countries in the world which have enacted the VAT legislations and Nepal was 107 th country in the list of countries which implemented it in 1997. (ITD, 2023) During this time the Nepalese economy has undergone significant changes in terms of size and structure. The VAT productivity is measured by using different types of ratios and C efficiency ratio is the major one. The value of c efficiency ratio of Nepal is greater than the ratios of sub-Saharan Africa and other African countries but lower than all other parts of the world. There is a weak positive correlation between increase in share of service sector in the GDP, increase in per capita income, urbanization, trade competitiveness and decrease in the share of agriculture in the GDP. Due to lockdown during COVID-19 Pandemic 2019, both Tax GDP ratio and VAT GDP ratio decreased. As a result of this the value of C efficiency also decreased. The number of non-filer tax payers, outstanding amount of VAT dues and zero return shows the ineffectiveness of the VAT administration. So, it is recommended to set up a separate department for VAT administration and an expert committee to study impact of macroeconomic variables in the performance4 of VAT in Nepal

Keywords: Value Added Tax, C Efficiency Ratio, GDP, compliance, non-filer, outstanding, credit, debit, zero returns,

Introduction

As part of the economic reform programme launched in 1990s, Nepal implemented Value Added Tax (VAT) in 1997 by embedding five other taxes namely contract tax, entertainment tax, and hotel tax and sales tax. As of 2018 out of 193 non-member countries of the UNO there are 176 countries in the world which have enacted the VAT legislation and Nepal was 107 countries. in the list of countries which implemented it. (ITD, 2023) After 25 years of its implementation it has become the main stay of the tax revenue of the government. During this time the Nepalese economy has undergone significant changes in terms of size and structure. When VAT was introduced in Nepal, GDP of the country at market price amounted to less than NR 4 billion and the size of today's GDP is more than eleven times than that of 1997. In the same manner in the time of introduction of VAT the share of agriculture in the total GDP turned out to be 42 percent and service sector contributes 25 percent in the GDP. In 2020 the share of agriculture came down to 27 percent and share of

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service sector surged to 55 percent (NPC, 2019) It has definitely affected the revenue performance of the VAT in Nepal. As happened in other developing countries with the implementation of VAT, Nepal has been able to divert the reliance on trade taxes to the VAT.

If a country has adopted a single VAT rate and all transactions are covered by the VAT regime then the figures of all ratios turn out to be 100. In many countries investment and public consumption are excluded from VAT base and in this case also VAT gross collection ratio comes to near 100 than C efficiency ratio and VAT efficiency ratio because it is dependent on the GDP of the country. According to Richard Bird and Vanquez (2005) the simple correlation between VAT efficiency and C efficiency turns out to be 0.92 and VAT efficiency and VAT gross collection ratio turns out to be 0.89. These ratios advise the tax administration to improve VAT productivity in the country. The ratios have been affected by many factors like rate of VAT,To increase the VAT productivity, VAT structure should be enhanced by augmenting tax base, compliance and improve the tax administration. Developing countries like Nepal is facing the problem of improving tax administration and compliance. Most of the study in this field are done in the European Union (Permuda & Wijaya, 2022). Some of the studies were undertaken in some countries of East Asia and south African countries like Nigeria and South Africa. In case of Nepal, it was done in 2013 for the IRD which was not published. There is dearth of literature in this regard. The study is expected to fulfil following objectives : Establish relation between tax collection, GDP, change of the structure of economy (urbanization, increase in share of service sector in GDP, decrease of agriculture in GDP, increase in per capita income and trade competitiveness) and to assess the extent of the effect of COVID-19-19 pandemic on the value of this ratio.

Similarly, the study is based on the secondary data. The data regarding Gross Domestic Product, Total Consumption, Private Consumption and the VAT Revenue all have been collected from the Economic Surveys and the ratios have been calculated. Data on the share of agriculture in the GDP and openness of the trade have also been collected from the economic survey. The data on urbanization has been assembled from the periodical plan documents of the Nepal Government. A comparative study of value of these ratios before and after the pandemic will be studied. A detail study of exemptions and other provisions of VAT Act and Regulations will also be studied and correlate with the values of these efficiency ratios.

In this study C efficiency is taken as the dependent variable and urbanization, increasing share of service sector, change in per capita income etc. are taken as independent variable.

Simple descriptive statistics is used to establish the relationship between C efficiency ratio and urbanization, increasing share of service in GDP, decreasing share of agriculture in GDP, GDP per capita income and trade competitiveness. There are differences in figures of GDP, Total Consumption, VAT Revenue and Private Consumption in the publication of national and international agencies. This has been ignored in this study. For the accuracy purpose the publication of government data has been used. The first part deals with the introduction, methodology and limitations of the study, the second part deals with the literature review and the last part have drawn the conclusion and tables regarding the data have been provided in the appendix.

Ebril et.al (2001) found that the C efficiency ratio has a bold connection between the trade and GDP, high literacy and length of VAT application. It is also calculated as the ratio between actual revenue collection to the potential collection and is regarded as similar to the revenue gap in the tax literature. The effectiveness of VAT system is measured by the C efficiency ratio.

Vanquez & Bird (2012) believe that the Value Added Tax circulates downwards or upwards. The highest efficiency ratio of 77 percent was found in Brazil followed by 65 percent in New Zealand. There are also marked regional differences in the efficiency ratio. The small island nations have a higher efficiency ratio than the countries of the Sub Saharan region. The Philippines and Fiji have implemented a 10 percent VAT rate but Fiji collected 6 percent of GDP from this rate whereas the Philippines could collect only 3 percent of the GDP. There are three ratios namely VAT efficiency ratio, C efficiency ratio and VAT gross collection ratios to measure the efficiency of VAT system. They have calculated these ratios of 140 countries from 1990 to 2014 . One can find the the figure of Nepal regarding the VAT efficiency. They have also concluded that the larger the share of agriculture in the economy lower will be the VAT efficiency.

Antic (2014) has also conducted an empirical study of VAT in the European Union. The highest efficiency ratio was found in Croatia and the lowest was found in Romania. All countries which increased the VAT standard rate could mobilize less revenue than the low rate of VAT. This has reduced the size of the C efficiency ratio in these countries.

Nepali Context:

Bodin & Acharya(2015) states that VAT was undertaken for the IRD and it has also calculated efficiency ratios of the country every years. The report has identified the reasons for variations in C efficiency ratio as indicated by Marquez and Bird. The study has covered the 17 years of VAT implementation in Nepal from 1997 to 2014. The study had adopted the regression analysis to see the impact of trade openness, urbanization, decreasing share of agriculture on GDP on the C efficiency ratio

IMF Working Paper WP /17/158(2018) : International Monetary Fund (IMF) had published two occasional papers regarding C efficiency ratio of VAT. The first one is related to the structural changes in the economy and its impact on the C efficiency ratio and the second one is the pattern of C efficiency ratio in different phases of the business cycle. The second study has concentrated its scope of study in the developed countries of Europe. In an economy shift of economic activities from the manufacturing to the service sector tends to undermine the efficiency of VAT collection. The efficiency is evident in the long run only. In an expanding economy when transportation, storage, communication activities surge the C efficiency in the economy also surges because these sectors contribute to expand the VAT base. In contrast to this when the role of food accommodation increases in an expanding economy then the VAT base squeezes and C efficiency also becomes weaker . Increase in the role of wholesale and retail trade also increases the size of VAT efficiency ratio. Non tradable services can exert more negative influence than the tradable services.

IMF Working Paper Structural Transformation and Tax efficiency Working paper number WP/19/20 (2021): According to the IMF increase in the share of the service in the aggregate value added reduces the size of the c efficiency ratio.The effect is more evident in developed countries than in the less developed countries. It is due to an increase in the non tradable services like accommodations and food services, health care, social service and public administration and security related services.

Similarly, Coffey & Doorley (2019) used the micro data from Central Statistics Office and Household Budget Survey. During the pandemic it was estimated that household spending lies between 12 to 20 percent lower than it would have been in the absence of pandemic. In the normal period they estimated that every household contributed Euro 111 as a VAT to the government but during the pandemic it came down to Euro 54 per household per week. It was attributed to the reduction in the consumption due to lockdown during the pandemic.

Different Ratios used to measure the VAT Productivity

Gendron and Bird (2007) explain the uses of VAT as following ratios :

VAT revenue to total revenue
VAT revenue to total consumption
VAT revenue to GDP
VAT buoyancy
VAT elasticity
VAT expenditure

These measures are useful to understand revenue performance of different tax jurisdictions but these ratios do not provide any clue on the poor performance of the tax administration. It is also felt that the governments have access to the detail data from tax administration and can analyse the causes of poor performance. They should analyse qualitatively and quantitatively.

Under the intellectual leadership of International Monetary Fund a new performance measure was introduced. (Bird and Gendron, 2007) It is called C efficiency Ratio and it is expressed as :

V/Y= yEc(C/Y) where y denoted standard rate, C denotes consumption and Ec denotes C efficiency. It is also expressed in another form as

Ec=V/ys C

The C efficiency ratio compares the revenue an actual VAT raises the revenue it would have raised if it had been perfectly enforced and levied at a uniform rate equal to the standard rate on all consumption with no exemption. A close to 100 percent suggest strong revenue performance and C efficiency close to zero suggest a poor performance.(to be paraphrased). Another formula has also been developed by Organization of Economic Development (OECD) which is akin to C efficiency ratio. This is VRR which is explained as VAT Revenue Ratio. Here VAT revenue collection is compared to potential VAT collection if the standard VAT rate is applied to the final consumption (including government consumption) in the national accounts less than actual VAT collection. In different countries a common

methodology is used to measure gap in VAT revenue collection like VAT efficiency or VRR ratio. It has assisted to compare performance level of VAT revenue in different countries.

Jorge Mortinez and Richrard M. Bird have suggested following ratios to measure the effectiveness of VAT

VAT efficiency Ratio
C efficiency Ratio
VAT Gross Collection Ratio

In the first ratio VAT revenue is divided by the multiple of standard VAT rate and GDP and second is as proposed by the IMF. In the third ratio-VAT revenue is divided by the multiple of standard rate and private consumption expenditure.. They also found that correlation between VAT efficiency and C efficiency ratio is 0.92 and between VAT efficiency and VAT Gross collection Ratio is 0.89. A study done in the low income African countries has also shown the low VAT efficiencies (Matinez and Bird, 2001). They have used these ratios to assess the performance of VAT in 74 countries

According to these writers a single rate VAT, no exemption and full compliance would result the number close to 100. In practice it is very difficult to find because in many countries not only exemptions and given the public consumption and investments are exempted from the VAT base. They also opined that C efficiency ratio is closer to the VAT efficiency because it is based on GDP. The use of standard rate ignored the multiple rate and zero rating. They also expressed their opinion that the determination of the VAT base id a political one. So the actual collection of VAT depends on two factored namely compliance level and effectiveness of the tax administration.

Economists have differed opinions regarding the factors that affect the effectiveness of C efficiency ratio. In 1996 Agha and Haughton opined that the number of years of VAT implementation has a significance bearing on the efficiency of VAT ratios but other economists do not agree with this findings They view that VAT rate does not have any impact on the VAT expediency but other economists do not agree with it.

Efficiency Ratio and Final Consumption

In this chapter the composition of GDP from the expenditure side is taken into consideration and among the four components namely personal co0nsumption expenditure, gross private investment, government purchase of goods and services and net exports , personal consumption expenditure accounts the highest in all over the world . For example in 2005 in the United States of America this heading accounted 70 percent (Rodiger et.al 2013) In developing countries the ratio turns out to be more than this. VAT is an indirect tax on consumption and in most of the countries public expenditure and investment are exempted from the VAT. So there should be positive co-relation between size of the personal consumption expenditure and VAT efficiency ratio. Many empirical studies have shown that in many countries Vat revenue increases along with the increase in GDP because increase in GDP entails increment in the per capita income. Ebril et.al (2001) points out that the

appropriate benchmark should be total consumption. Higher level of income is related with higher VAT collection efficiency. Economists opine that compared to other components of GDP the consumption remains more or less stable . So the unlike business income VAT does not fluctuate more often.

How consumption has been taxed under the VAT regime has been clearly explained by the Irish Revenue Administration. In their article (Coffey et al., 2020) classified the consumption basket into six groups and how much VAT is owed by each person in the economy and how much VAT the tax department can expect from each consumer unit. They found that each household owes Euro 111 as Vat to the government. On the basis of this the Irish tax administration estimates the VAT efficiency in Ireland (Coffey et al., 2020)

Similarly, Emmanuel (2015) investigated the effects of VAT on economic growth. He analyzed the time series data on GDP of Nigeria from 1994 to 2010 and found that a one percent rise in VAT revenue could stimulate 1.47 percent surge in GSP. For the last ten years the following table shows the collection of VAT and total consumption expenditure of the private sector in Nepal. The ultimate base of VAT is the final consumption . In Nepal the ratio of personal consumption expenditure turns out to be 92 percent . Consumption level both government and private and level of exports and imports have impact on the VAT receipt of EU countries . Also the prevailing rate of unemployment which reduces the consumption level also affects the VAT yield of the government.

Table 1

GDP and VAT Revenue of Nepal for the last ten years (figures in billion)

Fiscal Year	GDP at market price	VAT Revenue	C Efficiency Ratio
2071/72	24.23	1.13	0.45
2072/73	26.08	1.22	0.59
2073/74	30.77	1.61	0.71
2074/75	34.55	2.06	0.82
2075/76	38.58	2.40	0.85
2076/77	38.38	2.24	0.71
2077/78	43.52	2.82	0.63
2078/79	49.76	3.14	0.84
2079/80	53.48	2.86	0.69
Mean		2.16	
Standard Deviation		2	
Mini/ Max		1.13/3.14	
Correlation factor		0.029	

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Table 2

GDP, consumption and VAT revenue of Nepal for the last ten years (figures in billion)

Fiscal Year	Final Consumption Expenditure	VAT Revenue	C Efficiency Ratio
2071/72	22.38	1.13	0.45
2072/73	25.13	1.22	0.59
2073/74	26.77	1.61	0.71
2074/75	29.44	2.06	0.82
2075/76	32.68	2.40	0.85
2076/77	36.66	2.24	0.71
2077/78	40.75	2.82	0.63
2078/79	46.48	3.14	0.84
2079/80	49.52	2.86	0.69
Mean	34.42	2.16	
Standard Deviation	37.6	2	
Mini/ Max	22.38/52.70	1.13/3.14	
Correlation factor		0.029	

C efficiency and Urbanization

Urbanization is another factor which has a direct impact on VAT revenue collection. Along with the share of agriculture in the GDP urbanization is taken as one means of tax evasion.Urbanization can have three types of effect on C efficiency. Firstly it increases the income of the individuals and there by increase the consumption pattern. Secondly it changes the structure of the economy and more people adopt manufacturing and service related jobs. Lastly it changes the tax base of direct and indirect taxes of the government. There are 263 municipalities in Nepal and out of total population 62.2 percent people live in urban area.(NPC, 2019) . When VAT was implemented in Nepal in 1997 only 14 percent people live in urban areas of 58 municipalities. The the 10 the plan has projected the the rate of urbanization at 10 percent every year (NPC, 2001). The yearly data on urbanization is not available. So the periodic data from the planning documents of Nepal have been taken for the analysis.

Table 3
Urbanization and C Efficiency Ratio

Yeas	Urbanization	C efficiency
2064/65	14 percent	31
2067/68	19 percent	32
2070/71	24 percent	38
2073/74	42 percent	46
2076/77	62 percent	47
Mean	32.2	38.8
Max/Min	62/14	47/31
Standard Deviation	36.77	39.38

Source : NPC Secretariat , Periodic Plan Documents

C Efficiency Ratio and GDP per capita income

Increment in per capita income in a country for a long period signifies economic growth of the country. With this personal consumption expenditure also increase by less amount than increase in income (Keynes , 1936). VAT's tax on consumption of goods and services. So it must have a direct bearing on the value of C efficiency ratio. When we measure the per capita GDP in terms nominal prices it surges continuously but there is erratic in the value of C efficiency.

Table 4
Per Capita GDP and C efficiency Ratio (Per capita GDP in nominal price)

Year	Per Capita GDP	C efficiency Ratio
2000/01	Rs. 19071	41
2010/11	Rs.51594	32
2015/16	Rs 79528	37
2016/17	Rs 92031	46
2017/18	Rs.104159	54
2018/19	Rs 117474	47
Mean		43.2
Max/ Min		32/54
Standard Deviation	21.13	7.15
Correlation	-	0.18

Source : Various Issues of Statistical Year Books , CBS Kathmandu

C Efficiency Ratio and Trade Competitiveness

Nepal adopted liberal economic policy in the decade of 1990 and VAT was introduced in 1997. The Nepalese economy is import based economy and the import accounts for about

two third of VAT collection and VAT from internal sources accounts one third of the total VAT collection of the government. Trade competitiveness is often expressed as the ratio between total volume of exports and imports divided by the GDP of the country. In the last ten years the pattern of Nepalese foreign trade and the C efficiency ratio have been depicted in the following table :

Table 5
COVID-1919 Pandemic and VAT ratios

Year	Trade Competitiveness	C efficieny Ratio
2062/63	0.48	46
2072/73	0.39	37
2074/75	0.43	54
Mean	0.43	45.66
Standard Deviation	43.48	42.76
Correlation		.21

Source: Trade competitiveness data from the economic surveys

COVID-1919 Pandemic and C Efficiency

In Nepal the tax GDP ratio reached 21 percent before the COVID-19-19 Pandemic. In 2079/80 B.S. the ratio has come down to 16 percent and the impact of lockdown has not yet been eliminated.(IRD, 2080) The VAT GDP ratio before COVID-19 pandemic was 6.22 percent before the COVID-19-19 pandemic but it has come down to 5.32 percent in 2079/80. The external sector of the economy went into imbalance due to COVID-19-19 lockdown and government imposed restrictions on import of more than 50 commodities. In VAT collection in Nepal two third is contributed by the import of goods and services (IRD, 2080) . The situation was further exacerbated by the adoption of contradiction fiscal policy in which central bank of Nepal hiked interest rate to tame inflation. Due to decrease in GDP and consumption, the VAT efficiency ratios have been seriously affected. The following table illustrates this

Table 8
VAT Efficiency Ratios during the Pandemic and before

VAT Efficiency Ratios	Value in Pandemic Year 2076/77	Value Before Pandemic Year 2075/76
C Efficiency Ratio	34	44
VAT Efficiency Ratio	31	47
Gross Compliance Ratio	38	53

Source : Self Calculation

Conclusion

There is a positive correlation between VAT / Tax revenue ratio and tax revenue GDP ratio .The coefficient figure turned out to be 0.029 which is moderate.. There is also a

positive correlation between C efficiency and change in the urbanization of the country. the figure turns out to be 0.62 which is also moderate

C efficiency and declining share of agriculture has a negative correlation there is positive correlation between the value of c efficiency ratio and and increasing share of service in GDP and value of C efficiency ratio has positive relation which is high in Nepal (0.92) . The correlation between values of C efficiency and change in trade openness turned out to be 0.21 which indicates low positive correlation .

The COVID-19-19 pandemic affected both income tax and VAT revenue of the government which is reflected in declining tax revenue GDP ratio and VAT revenue and GDP ratio in 2019 /2020 The value of C efficiency also decreased in this year. The VAT productivity ratios (C Efficiency, VAT efficiency and Gross compliance ratios) declined in the pandemic year 2076/77.

The revenue collection performance has been increasing over the last 25 years . Political stability can not be expected in Nepal in near future. There is no complacent in the collection efficiency performance of VAT . Urbanization, increase in per capita GDP, trade competitiveness and decreasing share of agriculture in the GDP indicates enough ground for the improvement in the collection efficiency of VAT. Taking these factors into consideration the government should undertake a VAT gap study in Nepal as soon as possible.

Recommendations

- The exemption list in the VAT Act does not show any significant reduction. So this has assisted to remain the value of C efficiency very low. So with a detailed study, the government should initiate steps to reduce the list of exemptions.
- The annual report of Inland Revenue Department (IRD, 2022/23) shows the non-filers percentage and outstanding VAT dues of the tax payers 113 billion and 38 percent respectively. Moreover, the litigation amount of tax turned out to be 146 billion . This shows the administrative weakness of the tax regulator. So to increase the value of C efficiency ratio both structural and administrative reforms should be undertaken by the Ministry of Finance. One possible solution may be to establish a separate department to look after the VAT only.
- The value of C efficiency ratio decreased in 2020/21 and this may be attributed to the COVID-19-19 pandemic. Due to reduction in consumption expenditure owing to lockdowns and interest rate increment the value of C efficiency has not gained at the pre pandemic level. So the government with the support of monetary and fiscal policies it is imperative to increase consumption expenditure in the economy.
- There was a provision of refunding VAT deposited by the cell phone importers. vegetable oil producers, sugar and flour producers in the country. The provision remained in the Finance Act for 15 years but when the majority government came to power in 2017, the provision was abolished. This shows the impact of political instability in the country which has direct bearing on the value of C efficiency.

- The government should constitute an expert committee to assess the impact of COVID-19-19 pandemic on revenue generation . The committee should focus on impact on the mobilization of VAT which has become the major source of government revenue.

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