

The compliance costs of Value Added Tax (VAT): The case of the Republic of Mauritius

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Abstract

The evaluation of taxpayers' compliance costs has grown in significance within the tax system research over more than two decades and has predominantly emanated from developed countries. However, compliance costs literature is quite limited in developing countries. This article measures the compliance costs of the Value Added Tax (VAT) for the Republic of Mauritius for the period of 2001/2002, and using consumer price index has estimated the compliance costs for the year to 2009/2010. It also measures the net compliance costs after the effect of the benefits to the VAT registered traders. The regressive effect of compliance costs is proven, measured by the different categories of traders and the number of employee. A regression model estimating the magnitude of total compliance costs was also formulated with the turnover level, number of invoices and methods of recording as significant indicators.

Keywords: Compliance costs, VAT

¹ MSc; BSc; FCCA; PhD.

1. INTRODUCTION

The imposition of taxes represents a transfer of resources from households and businessmen to the Government. Taxation is an inevitable instrument in modern economies to fund public spending and meet fundamental economic and social objectives. It is one of the main tools used by government in financing of public administration, managing monetary policy, funding social and economic services, and the maintenance of welfare state. Import tariffs and excise duties often constitute the most important revenue sources in many developing countries. This trend however has faced a recent significant challenge, as many of the developing countries are now either lowering their trade taxes or replacing them with the consumption-type Value Added Taxes (VAT), sometimes referred to as the Goods and Services Tax (GST). This shift helps in reducing economic distortion caused by trade tariffs which are now largely discredited in the modern world economy and are increasingly regulated by the World Trade Organisation (WTO). Tax simplicity has long been viewed as good tax policy and researchers in finance have been studying the magnitude and sources of these taxes and the implying costs.

Research in compliance costs in countries in transition (CITs) is a relatively new phenomenon. The main reason for a previous lack of interest in such studies is a shortage of experts, cooperation of tax authorities, non-existent or old survey data and constant changes in the tax system. The Republic of Mauritius, like other developing countries, has also witnessed some evolution of the tax system by replacing the retail sales tax and reducing the trade tariffs and excise duties. Therefore a first study on compliance costs for VAT for the Republic of Mauritius is highly commendable and may be helpful in tax policy and tax reform.

1.1 Research objectives

This paper is based on the estimation of the compliance costs as depicted by Prof Sandford's (1973) study and it is one of the first studies on taxation for Mauritius. The paper uses data collected from a nation-wide survey and shows an estimate of the Total Compliance Costs (Tcc) of VAT for the Republic of Mauritius for the year to 30 June 2001. Since there were no major changes in the VAT tax system from 2001 to 2010, the study used the consumer price index to estimate the Tcc for the tax year 2009/2010.

The paper also reveals the range (that is, the maximum and minimum amount) of Tcc at a 95 per cent confidence level for the Republic of Mauritius. It also calculates the net cash flow benefits of VAT and henceforth obtains the Net Compliance Cost (Ncc) for the same period. The study also formulates a multiple regression that can account for the factors that can influence compliance cost of VAT.

1.2 Implications of the research

Due to persistent budget deficits and fall in tax revenue, Mauritius introduced VAT as from 7 September 1998 in replacement of the Retail Sales Tax (RST), as governed by the *Value Added Tax Act 1998*. As firms grow, VAT is one of the areas where they must deal with government regulations. The time needed to comply with VAT varies considerably between developed and developing countries. It has been argued that regulatory requirements are burdensome and can sometimes be a constraint for mainly small and medium size firms. This paper contributes to the factors influencing

compliance costs of VAT for the Republic of Mauritius. What can be implicated from this paper though there may be various factors governing the compliance costs of VAT, the number of invoices handled by a business can be classified as the most significant factor. Besides, the size of the firm and the professionals are key determinants to the net compliance costs as the small firm had a 'disbenefit' to VAT. This is very important for policy makers as there are significant variations not only in size but type of business, therefore factors should be given different weights when designing policies for the different types of firm.

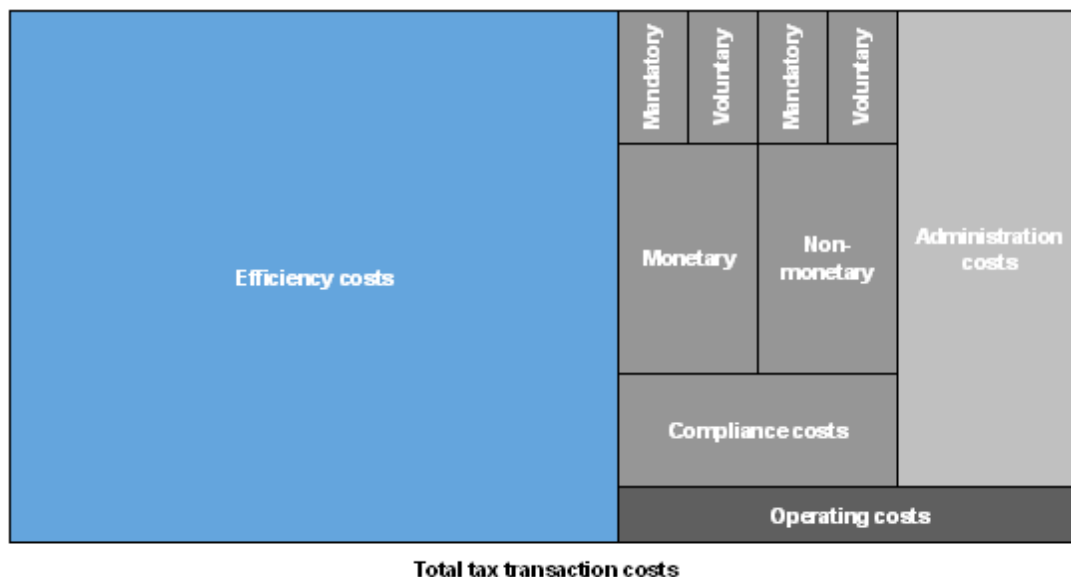
2. THEORETICAL CONCEPTS OF COMPLIANCE COSTS

The imposition of taxes is a necessity tool for government as it represents a major part of total revenue. The collection of taxes generates two broad types of social cost namely efficiency and operating costs (administrative plus compliance costs). Efficiency costs (also referred to as dead weight loss or excess burden), arise from tax-induced changes in relative prices, distorted consumer and producer choices, and can ultimately bring losses in overall output. Operating costs form a necessary component of raising tax revenue but the important point is to know the appropriate and acceptable level of costs. Operating costs are justifiable if the costs of raising the tax revenue (including the efficiency costs) are outweighed by the net benefits. Administrative costs are the costs borne by the tax authority to collect taxes and their other duties towards the taxpayers. Compliance costs are costs that are borne by taxpayers to abide by the tax authority. Compliance costs cover a range of both monetary and non-monetary cost. They include costs such as: acquiring the necessary and relevant knowledge of the tax system; compiling records; acquiring and maintaining the accounting tax systems and submitting of tax returns forms; evaluating the tax effectiveness of alternative transactions and methods in complying with law requirements; and collecting and remitting taxes to the tax authority. Compliance costs may also be mandatory or non-mandatory. Mandatory costs are those costs that taxpayers must incur to meet their statutory obligation such as reporting particular types of income or being able to substantiate deductions claimed. Voluntary costs are additional costs that the taxpayer may choose to incur to determine or minimise their tax liability by choosing alternative methods through tax planning. Administrative costs are the costs to the government of collecting taxes, and compliance costs are the value of resources expended by taxpayers in meeting their tax obligations. Figure 1 provides a schematic representation of the types of costs incurred in raising tax revenue.

Sandford (1995 Pp1) provides the definition of compliance costs, which is internationally accepted. Compliance costs are:

... costs incurred by taxpayers or third party, notably businesses, in meeting the requirements laid on them by the tax law and the revenue authority (excluding the payment of the tax itself and any distortion costs arising from it).

Figure 1: A breakdown of tax transactions costs



(Source: Oliver and Bartley, 2005)

Compliance costs might also be divided into money costs, time costs and ‘psychological’ costs. Money compliance costs include costs of employing additional staff in the tax department; fees paid to accountants for tax advice and incidental costs of postage, telephone, and travel to communicate with tax advisers or tax office, which are easily quantifiable. Time compliance costs are incurred where the tax legislation imposes duties such as the filling out of tax returns, additional ledger posting, and records to be made for tax purposes. However, the above two categories of compliance costs have been recently mitigated by the facility of taxpayers to fill in their return on-line. The most difficult costs to measure are the ‘psychological’ costs of complying with the legislation. Taxpayers suffer stress, anxiety and frustration in an attempt to abide by the tax legislation. However, no studies have managed to measure physiological costs successfully. Research done by Woellner et al in 2001 has used a combination of approaches to measure physiological costs of taxation. It includes the additional worry and anxiety to master and perform the complex duties imposed by the tax legislation efficiently under sanction of a legal penalty. Smith (1776 Pp 564) put it:

Though vexation is not strictly speaking expensive, it is certainly equivalent to the expense at which every man would be willing to redeem himself from it.

Sandford (1995) and Pope (1990) refer to a concept of net compliance costs. This is defined as the gross compliance costs minus the value of any cash flow benefit or plus the value of any cash flow cost. Cash flow benefit arises when there is a time gap between the time tax liabilities are actually incurred and the tax payment. For example, any increase in compliance costs can be offset by additional interest earned (or cost borne if a reclaim) on the differences in the timing of VAT remittances to/from the Revenue Department (after 20 days of the return period). These are private benefits or costs, not to the society as a whole. While net compliance costs and cash flow benefits

are recognised to some degree internationally, to date *gross* compliance costs are the most widely used and accepted in measuring the burden of taxpayer.

It is important to note that there are conceptual problems when measuring compliance costs. Taxpayers require an efficient accounting system to provide information for a variety of purposes including the payment of tax, knowledge of the financial position of the business among others. Surveys of taxation compliance costs might include the cost of keeping a sound accounting system, which might have to be kept anyway. Therefore, tax compliance costs might be over or under estimated due to the difficulty in distinguishing between overlapping sources of costs.

Such methodological problems mean that, in practice, taxpayers who are required to provide information about compliance costs can have difficulty determining what the real tax compliance costs are. Where compliance costs can be measured accurately, it is important to note that they do vary according to the type of business, market characteristics, and management structure among other factors. Studies in compliance costs are likely to be somewhat imprecise due to these conceptual and methodological reasons, but still can prove to be an important tool for policy makers. There are many factors that can affect the measurement of compliance costs regardless of the actual costs in absolute value. In an Australian report published in 2006 (Chapter 13: p387), the factors that may affect the compliance costs composition are:

1. Differences in data quality arising from variations in response rates, validation procedures or questions;
2. Differences in the components of compliance costs;
3. Differences in tax structures including variations in tax reliefs and threshold;
4. The composition of the tax population including differences in the number of self-employed;
5. Differences in tax rates having a direct impact on compliance costs to revenue ratios;
6. Fluctuations in tax revenue collections over the business cycle;
7. Preference for tax expenditure as opposed to direct expenditure, as tax benefits provided within the tax system (through tax expenditure) increases compliance costs and decreases tax revenue.

Compliance costs are largely attributed by authors to the actual complexity of a tax system and, as these increase the effective rate of tax, they thereby reduce the efficiency and equity of any tax. There is currently a worldwide move towards simplification of tax systems. Simplification of tax system would eliminate or reduce the need for anti-avoidance sections in the tax legislature. This was cited in Ariff *et al* (1997 Pp 1255) as put forward by the Fiscal and Financial Policy Sub-Committee (1986):

A simple tax system is essential for the better understanding by individual and corporate taxpayers. A simple system will also mean fewer resources will be devoted to such socially unproductive activities as tax planning and tax litigation. Complexity imposes high compliance costs on the community and equally high costs on the tax administration.

So, the tax system imposes economic and social costs upon tax agents and companies. Policy makers need therefore to constantly and delicately balance the *four canons of taxation*, namely, *equity, certainty, convenience, and economy* as referred to by A. Smith (1776). These canons are sometimes in conflict, nevertheless policy makers need strike the right overall balance to ensure that fiscal policies whilst satisfying the overall goals of the country, do so without an unsustainable tax burden on the taxpayers.

Factors that influence the level of compliance costs include:

1. The extent to which tax collection procedures can be a routine (Oster & Lynn, 1980)
2. The size of the firm (Godwin, 1976)
3. The type of firm (Godwin, 1976; Sandford *et al.* 1979)
4. In the case of sales taxes, the ratio of the taxable turnover to gross sales and the size of the average transaction (Yocum, 1961).

3. VAT COMPLIANCE COSTS LITERATURE REVIEW

In the tax literature until the 1970s, research studies related to both administrative cost and tax compliance cost have been much neglected. Economic literature rightly recognised the impact and implication of tax administrative costs as pointed out by Sandford *et al.* (1981), whereby academic economists have shown little interest in compliance costs studies and tax policymakers do not even consider compliance costs in policy discussion.

It is worth noting that little work was carried out on compliance cost in the nineteenth century as the abolition of trade barriers and the overall decline in taxation as a percentage of GDP, caused such costs to diminish anyway. There are several reasons for this relative neglect:

1. Tax compliance costs have been thought to be insignificant
2. There is no proper and formal model for compliance costs minimisation
3. Tax compliance costs estimates typically involved painstaking fieldwork for collection of large amount of primary data not available from published sources.

As Professor Sandford, the guru in compliance costs studies pointed out, the worldwide introduction of VAT system has substantially contributed to the government interest in the compliance costs studies. VAT is one of the most prevalent revenue sources from indirect taxes for Mauritius and the estimation of its compliance costs are of utmost importance.

There has been a steady growth of international interest, particularly among OECD countries, in tax compliance costs, both by Governments and academic researchers. The bulk of the studies arose in the US and it was only through the research work of Sandford (1973) that the concept of compliance cost was first introduced in the UK. In recent years, new research has been conducted in the US, UK, Canada, Germany and

the Netherlands, while empirical studies have been undertaken for the first time in Ireland, Switzerland, Australia, Spain, Sweden and more recently in Singapore (Ariff, Loh, and Talib, 1995).

Research into compliance costs in CITs is a new phenomenon. The main reasons for the lack of interest in compliance costs in the CITs are shortages of experts — who may be overloaded with more, pressing issues such as no taxpayers' associations and no civil initiatives (Ott & Bajo, 2000). There are also several obstacles within the CITs to initiate such research — lack of interest, little cooperation of tax authorities and usually non-existent surveys data in CITs.

An article published by Evans (2003), revealed both the breadth and depth of research in the field of tax operating costs in the last twenty years after initial neglect. The impact and existence of tax operating costs is not a recent feature — it goes back to the eighteenth century, when the concept of taxpayers burden was first introduced by Adam Smith's (1776) four canons of a good tax practice (equity, certainty, convenience, and economy). This paper examined most of the major, and some minor, administrative and compliance costs studies published since 1980. This paper highlighted the increasing recognition of the impact of operating costs upon proposed changes in the tax law.

The principle aim is to go further and make available in a *single source* all of the most recent research in tax operating costs, thereby providing a guide to interested readers and prospective researchers to obtain an initial knowledge on studies carried out in this field. Sixty (60) studies were identified in the period since 1980 and split into four major regions, North America, Europe, Australasia/South-East Asia and the rest of the world.

Tran-Nam and Evans (2002, Pp 393) have noted that the early quantitative studies of tax compliance costs in the 1930s to 1960s took place in North America, a trend already highlighted earlier as the main area of initial studies. Researchers of diverse academic backgrounds, including management science, business studies, accounting and economics, undertook those studies. Various methodologies were used and most studies identified many of the features now regularly cropping up, such as, the regressive nature of compliance costs, and the potential trade-off between administrative and compliance costs.

The compliance costs studies laid more emphasis on quantitative techniques and used various methodologies to research into aspects of compliance cost. The methods used as stated in Evans (2003, Pp 70) ranges from questionnaire and/or mail surveys (Allers, 1994) to estimating/stimulating techniques (Thompson, 1984).

The main finding of these studies is that VAT compliance costs are very regressive and falls disproportionately on small firms. In particular there is a clear economy of scale, so that when the compliance costs as a percentage of turnover is measured, the effect of compliance costs for small firms is very large, yet the compliance costs of large firms are insignificant.

Studies prior to Hasseldine and Hansford (2002) have not taken the physiological variables into consideration, which is more visible for small business where it is very difficult to separate personal and business issues (Storey, 1994). A further neglected area is that UK small businesses have a large proportion of businessmen who belong

to the ethnic minority and English is not their first language. This may contribute to a greater difficulty in complying with the tax regulations. These two dummy variables have been studied by Hasseldine and Hansford (2002) and they found them to be quite significant. But the present paper does not take into account the physiological factor of compliance costs.

4. METHODOLOGY

4.1 Data and sample

The main sources of primary survey data were from lists of traders in the Yellow Pages telephone directory, as the official lists of registered traders were requested from the VAT Department but this data could not be forwarded due to the Data Protection Act. However, the official lists and collaboration of the VAT department was sought, and this is considered one of the major problems encountered by most CITs economies as tax authorities refuse to cooperate. In fact, tax administrations withheld their support in almost all the countries in which the earliest research projects into compliance costs were carried out, except in New Zealand and Sweden.

A stratified random sample was therefore chosen based on the different categories of firms as provided from the traders' lists in the Yellow Pages telephone directory. A large-scale mail survey (1,000 trades) was used, as it is a chance to obtain a large random sample that is most representative of the underlying population.

Consequently, the grossing up of the total figure was based on the mean compliance costs for each category of the sample multiplied by the total number of firms registered for VAT for the year 2001/2002 in each category — based on the classification used by the VAT department.

4.2 Regression model

Compliance costs were evaluated as far as possible in money terms for the fiscal year 2001/2002 and estimated the range of total compliance costs at a 95 per cent confidence level. Then, using the consumer price index, the study forecast the compliance costs for the year 2009/2010. The consumer price index was considered to be a good measure to predict future compliance costs as, since its introduction in 1998, only the VAT rate was changed from eight per cent in 1998 to 15 per cent now. So compliance costs will not drastically affected as within this time frame no major changes were made to the VAT system in Mauritius.

Comparison and analysis could be made with the tax revenue collected from VAT and Gross Domestic Product (GDP). Where data permits comparisons were made with the level of turnover, business sector, and number of employees.

The study then formulates regression models for each component that might influence compliance costs (turnover level, number of invoices, types of records, Net VAT paid). After analysing, which one had a significance influence on compliance costs, the best estimate for total compliance costs (Tcc) for the registered traders were then formulated using multiple regressions and the regression model was in the form of:

$$Tcc = b_0 + b_1 T + b_2 I + b_3 R + b_4 V + \dots + b_n X_n + \epsilon_i$$

Where,

b_0 - Constant value

b_1 - Standardised coefficient of T (turnover band)

b_2 - Standardised coefficient of I (no. of Sales invoices)

b_3 - Standardised coefficient of R (types of business records)

b_4 - Standardised coefficient of V (Net VAT paid)

b_n - Standardised coefficient of the nth predictor (X_n)

ϵ_1 - Error (difference between the predicted and observed value of Tcc)

To be able to obtain the **Total Compliance Costs (Tcc)** of VAT in the Republic of Mauritius, the compliance costs obtained from the questionnaire were grossed up according to the number of firms registered in each category from the official information obtained from the VAT department annual report. The raw data obtained from the questionnaire were then grossed up using the normal gross-up procedures for each category to be able to compute the total compliance costs for the Republic of Mauritius.

Thus, the survey helped in calculating the magnitude of **Tcc** in the Republic of Mauritius and also estimated the cash flow benefits arising due to the timing in remitting the VAT collected to the authority, to obtain the **Net Compliance Costs (Ncc)**. The total tax compliance estimated from the survey were then further analysed and an attempt made to show any correlation existing between the size of the business and its tax compliance costs. It also investigated Tcc per employee and highlighted any reasons for such a burden for VAT among the firms in Mauritius. The survey also attempted to find out whether tax compliance costs of VAT had a relationship to the size of the business based on the turnover band or the number of employees.

Finally, the study recommended certain useful measures in order to reduce the compliance costs and thereby improving the efficiency of VAT collection as a source of revenue for the government.

5. FINDINGS

5.1 Magnitude of the gross and net compliance costs

For the analysis, the firms have been classified based on the turnover as follows:

Size	Turnover band
Very Small	Under MUR 15 million (inclusive)
Small	Between MUR 15 million to MUR 40 million (inclusive)
Medium	Between MUR 40 million to MUR 125 million (inclusive)
Large	Above MUR 125 million

These distinct categories were chosen as firms were classified according to the turnover level, and as it is also the criterion used by the VAT department for registration purposes and determination of the return period. Before trying to seek for any causes or characteristics that resulted upon the imposition of VAT by the government, the composition and size of compliance costs were calculated from the data collected.

The compliance costs for the fiscal year to 2001/2002 can be summarised in Table 1 below, indicating the **Tcc** broken down into **Internal Compliance Costs (Intcc**, incurred by the within the firms), **External Compliance Costs (Extcc**, incurred by tax agency) and also **Ncc**. The study also calculates the range of total compliance costs at a 95 per cent confidence level. The compliance costs are obtained based on data collected from the questionnaire and as traders in the pilot study face difficulties in recalling the commencement costs, this present study does not therefore emphasise the classification between the commencement costs and ongoing routine costs as in the Sandford (1979) study carried out in the UK. Note that this study also excludes the psychological costs such as the worry caused to traders due to the VAT legislation and any social costs such as the loss caused to the community when firms restrict their range of products to simplify the tax recording procedures, hence leading to a reduction in the compliance costs. Therefore it can be deduced that although these costs are very important, they are however not easily measurable.

The **Ncc** can be ascertained by deducting cash flow benefits from the total measurable compliance costs (**Tcc**). The benefits to registered traders can be of two kinds: Cash benefits and managerial benefits. Cash benefits are monies held by traders, owed to (or from) the tax authority. Registered payment traders, as tax collectors, benefit from holding the net VAT from the day collected from customers up to one month after the end of the return period (quarterly or monthly) where it is remitted to the tax authority. Repayment traders, on the other hand, face disbenefit through input tax suffered but not yet claim from the tax authority. Managerial benefits are the VAT component of any net credit arising from commercial transactions and VAT operations such as better record keeping. It may therefore be argued that the traders do enjoy a 'net cash flow benefit' over that period (if they are net payers to the revenue authority). Whilst reasonable values can be attributed to cash benefits, there is a strong case for not attempting to put monetary value to managerial benefits. It can be regarded, as unmeasurable benefits similar to the psychological costs that were also unmeasurable. The value of the cash flow benefit can be considered as equal to either the interest they could gain by lending the money or alternatively (for traders in overdraft) the cost of borrowing the equivalent amount from a bank or other financial institution. This cash flow can easily help the traders to reduce their overdraft facilities or other borrowing especially for those who collect large amounts of VAT during the return period.

The addition of the total for each category of firms, as shown in Table 1, gives the total 'measurable' compliance costs of VAT for the Republic of Mauritius at MUR 411.8 million, representing 5.8 per cent of total tax revenue from VAT for the period 2001/2002 and 0.3 per cent of GDP at market prices for the same period. From the study, it is also revealed that at a 95 per cent confidence level, the **Tcc** are in the range of MUR 336.7 million and MUR 486.7 million for the period 2001/2002. In addition, by readjusting the total compliance costs after the effect of inflation, the total compliance costs of VAT are estimated at MUR 489.2 million for the year 2009/2010.

Table 1 Total and net compliance costs for the year 2001/2002

Traders Category	Intcc Rs' m	Extcc Rs' m	Total Compliance Costs (Tcc)			Net Benefits Rs' m	Ncc Rs' m
			Lower Limit*	Upper Limit*			
			Rs' m	Rs' m	Rs' m		
Very Small	23.5	10.1	25.6	41.7	33.6	-(0.2)	33.8
Small	96.1	40.0	121.0	151.2	136.1	4.2	131.9
Medium	92.7	57.2	119.2	180.5	149.9	7.1	142.8
Large	66.0	26.2	70.9	113.4	92.2	9.8	82.4
Total	278.3	133.5	336.7	486.8	411.8	20.9	390.9

* - Value of Tcc at 95% confidence level

It can also be estimated that at a 95 per cent confidence level, the total compliance costs of VAT are in the range of MUR 400 million and MUR 578.2 million for the period 2009/2010 (Base year 2001/2002 = 100 and CPI for 2009/2010 = 118.8).

From the data published in the government's Annual Report (Revenue Authority, 2002), administrative costs for VAT amounted to MUR 32.9 million, representing only 0.47 per cent of total VAT receipts for the year 2001/2002 as compared to compliance cost of 5.8 per cent of VAT revenue. Previous studies on administrative costs have shown that these costs are both absolutely and relatively less burdensome than the compliance cost. They also highlight that administrative costs rarely exceed one per cent revenue yield, more usually well below one per cent as is the case for Mauritius with only 0.47 per cent. Therefore, total operating costs of VAT for the Republic of Mauritius are MUR 444.7 million, representing 6.3 per cent of the total revenue yield from VAT. This may be explained by the introduction of self-computation assessment, where the cost of operating the VAT was shifted from the tax administrators to the taxpayers, thus causing a high compliance cost, representing 92.6 per cent of total operating costs.

The Ncc are MUR 390.9 million and the effect of net cash flow benefits over the size of firms is significant when it reaches the highest level of firms. As for 'very small' firms instead of enjoying a benefit they are faced with disbenefit as they normally register voluntary for VAT and have suffered input tax and expect to have a repayment, which takes longer (45 days) for the government to repay. Thus, taking payment and repayment traders together, the net cash flow benefits are MUR 20.9 million, thus the VAT department is indeed making a considerable net 'loan' to the business community. The cash flow benefits however represent only 5.1 per cent of total compliance costs and as such are quite insignificant.

The internal compliance costs (Intcc) are MUR 278.3 million and External compliance costs (Extcc) are MUR 133.5 million representing 32.4 per cent of the Tcc, which is

relatively high compared to say only five per cent in Australia as revealed by the ATO study in 1998. This may be explained by traders preferring to transfer their burden of calculating their tax to the accounting firm acting as tax agent rather than having the VAT return in-house. Besides this, the total compliance costs as a percentage of total revenue collected from VAT is around 5.3 per cent, which is relatively higher than that of the UK at only 2.8 per cent (Sandford et al., 1981) but much lower than that of Australia (which had WST in 1998) at 12.1 per cent (ATO, 1998). The latter has revealed to be relatively higher due to the complexity existing in Australian tax law.

5.2 Regressivity of compliance costs

One of the most common aspects of total compliance costs in all research studies has been without doubt the unbalanced distribution of compliance costs among different traders. It has often been revealed that 'large' firms bear relatively less total compliance costs as a proportion of total turnover size than 'very small' firms. The economies of scale can be easily observed by expressing Tcc as a percentage of total turnovers (TT). Sandford *et al* (1981) found that small firms (those with turnover less than £ 50,000 per annum) could incur as much as 1.17 per cent of their TT as CC, while very large firms (those with turnover above £ 1 million) incurred only 0.04 per cent. From the present study the pattern of total compliance costs as a proportion of total turnover are as shown in Table 2.

Table 2: Total compliance cost (Tcc) as a % of total turnover (TT)

Category of traders	No. of Cases	Total Turnover (TT)	Total Compliance Costs (Tcc)	Total cc as % of TT	External cc as % of TT	Internal cc as % of TT
		Mean Rs ' m	Mean Rs	%	%	%
Very Small	33	13.2	61,173	0.46	0.32	0.14
Small	53	33.25	70,159	0.21	0.15	0.06
Medium	48	109.5	90,213	0.08	0.05	0.03
Large	32	138.2	102,749	0.07	0.06	0.02
Overall	166	58.6	83,115	0.14	0.04	0.10

Table 2, in which Tcc is expressed as a percentage of TT, reveals the full extent of the regressive nature of compliance costs. It can be noted that although in absolute terms the mean compliance costs rise fairly consistently with the size of business, the rise is much less than proportionate. Expressed as a percentage of TT, the 'very small' traders (those with turnover less than MUR 15 million) costs are estimated proportionately at more than three times than those of 'large' traders (those with turnover above MUR 125 million). Thus, the Tcc as a percentage of TT shows that 'very small' and 'small' traders are 0.46 per cent and 0.21 per cent respectively compared to only 0.07 per cent for 'large' traders. The CC as a percentage of TT for all firms merged (Overall) is 0.14 per cent, which is very much lower than the percentage of the 'very small' and 'small' traders but higher than the 'medium' and 'large' traders with 0.08 per cent and 0.07 per cent respectively. This demonstrates

that the 'very small' and 'small' traders bear a relatively heavier burden to VAT and also reveals that compliance costs to VAT is regressive in relation to size of trader.

Furthermore, with the breakdown for internal compliance costs, expressed as a percentage of total turnover, it shows that only for 'very small' firms with 0.14 per cent it is above the overall of 0.10 per cent, compared to only 0.02 per cent for 'large firms'. This indicates that 'very small' firms bear relatively more costs than 'large' firms do, as there is a minimum internal compliance cost (fixed costs) that needs to be bore by all firms and thus the large firms are able to enjoy economies of scale. As for the external compliance costs, it is 0.32 per cent for 'very small' firms as opposed to only 0.06 per cent for 'large' firms, revealing that the costs of an accountant press more heavily on the firms small in size. However, it is worth noting that the external costs as a percentage of compliance costs for 'medium' firms (0.05 per cent) are lower than that of the 'large firms. This may be caused by the competitive market pricing prevailing among accounting firms and there is a 'limit' to the price that could be charged to 'large' firms.

Clearly then, total compliance costs, as a proportion of total turnover is highly regressive for traders in Mauritius. These results show clearly that the burden of compliance costs is so much less for large firms than for small ones. Traditionally, economies of scale have rested on the scope offered for specialisation that is expected to play its part in VAT compliance research work. The 'large' firms have staff working full time, and partly qualified staff under the supervision of the financial controller does much of the book-keeping and accounting activities including the VAT related work. As for the 'very small' firms, the owners themselves have to do all the record-keeping related to VAT along with everything else and often lack the relevant skills and practice and thus, depend heavily on an external accountant for filling their VAT return, leading to heavier costs being incurred.

The high compliance costs for 'very small' and 'small' firms is also a factor of the number of invoices to be dealt, which do not rise in the same proportion as the turnover level, due to small and petty sales items. As for 'Large' traders, they usually buy and sell in bulk and often the numbers of sales invoices cost proportionately less to handle. Thus, compliance cost is dependent on the number of invoices being handled and the size of each transaction as stated in the German study by Neihus (1969). However, there is an element of fixed costs involved in the setting up and running of the VAT system, namely that it is the same across all registered firms with a lower burden for the larger firms due to economies of scale. Further, large firms use sophisticated and non-manual means to deal with VAT more efficiently and effectively, as the accounting system installed can deal with most VAT work with very little additional cost.

Another way of measuring regressivity is by the use of single index, the Gini-coefficient. The Gini-coefficient is a measure statistical dispersion most prominently used as a measure of inequality of income distribution. It can be used to compare the compliance costs distributions across the different turnover levels. The coefficient lies strictly between the values of zero (0) and one (1). The higher is the Gini-coefficient, the greater the deviation from perfect equality. Therefore the more unequal the actual level of turnover against compliance costs. In this context, 'zero' corresponds to the perfect income equality (that is compliance costs vary with the level of turnover, in other words, no concentration), and 'one' corresponds to perfect income inequality (that is compliance costs are more emphasised in one category of traders, the case of

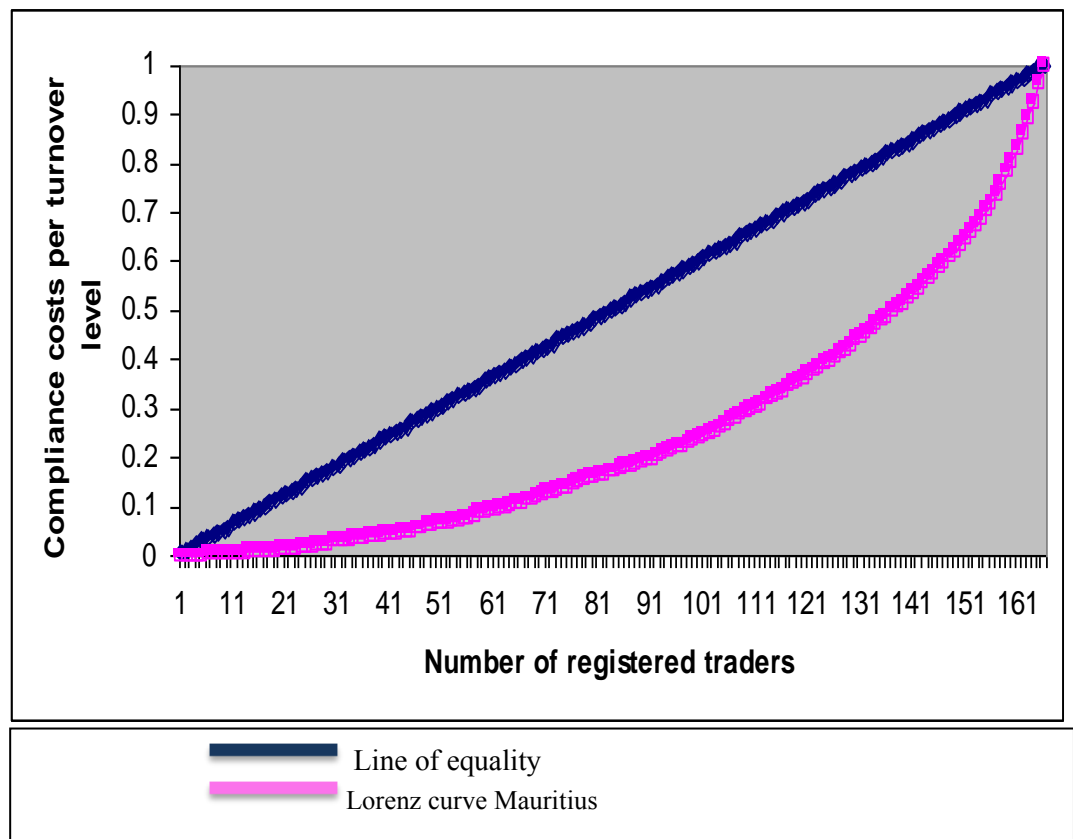
total concentration). The Gini-coefficient tells us how widely the total compliance costs ‘altitude’ varies with the turnover level in a given country.

From the responses, the main variables used are compliance costs per turnover level (Y_d) and the number of registered traders for VAT (n). The Gini-coefficient is calculated using the formula below:

$$G = \frac{\sum_{i=1}^n (2i-1)Y_i}{n^2 \bar{Y}}$$

The Gini-coefficient amounts to 0.49 and the curve in Figure 2 of cumulative point compliance costs per turnover level against the cumulative number of registered traders’ indicating that there exists an element of inequality between the compliance costs and the category of traders. One hundred and one out of 166 traders, representing 61 per cent of total traders hold a compliance cost per turnover of approximately 20 percent only (0.2), that is, compliance costs per turnover is not concentrated in one category of turnover. If compliance costs per turnover level were the same for all categories of traders, representing total equality, the compliance cost curve would have been the straight line as shown in the graph.

Figure 2: Compliance costs per turnover level against number of registered traders



5.3 Number of employees as a measure of regressivity

Normally, the number of employees in a firm helps to define the nature and size of a firm. An alternative way of looking at regressivity is to examine the compliance costs per employee. The Tcc per employee helps to indicate how much each employee is contributing towards the costs involved in abiding to VAT legislation. The total compliance cost per number of employees decreases with the size of the business. The mean number of employees for 'very small' is eleven (11) times more than that of 'large' firms, rising from a mean employee of 23 for 'very small' firms to mean employee of 257 for 'large' ones, as clearly shown in Table 3.

Table 3: Compliance Costs per Employee

Category of firms	No. of employees	TCC per employee
	Mean	MUR
Very Small	23	3,672
Small	58	1,830
Medium	78	1,505
Large	257	1,120
Overall	95	1,965

In a study done in Sweden (Huges, 2006), it was observed that the compliance costs per employee for small firms with one to four (1–4) employees were 35 times higher than that of big businesses with fifty to four hundred and ninety-nine (50–499) employees. From the present study, the compliance cost per employee is MUR 3,672 for 'very small' firms but only MUR 1,120 for 'large' firms, and relatively higher than the overall average for all categories of firms combined at only MUR 1,965. Therefore, both the compliance cost per employee and the total compliance costs found above are regressive as for 'large' firms the compliance costs being widely spread over a higher number of employees proved more cost effective.

Table 4: Number of employees as an indicator for Tcc

R	Model	R square	t-test
0.169	1	0.029	2.138

Further, Model 1 (Table 4) tries to highlight the existence of any relationship between total compliance costs and the number of employees. The Pearson correlation R is only 0.169 indicating a low positive correlation but the correlation is statistically significant at 0.05 levels (two-tailed test). From Table 4, $R^2 = 0.029$, indicating that the number of employees contribute to an insignificant 2.9 per cent of variations in total compliance costs.

This seems to be valid and reasonable as compliance costs for VAT has no bearing on the number of employees compared to PAYE which varies according to the number of

employees in the payroll system. In a study done by Collard et al. (1999) it was found that compliance cost of PAYE was highly correlated to the number of employees ($R=0.94$). This can be expected as number of employees working in a firm has a direct impact on the tax withheld by their employer on their respective earnings, but it has no bearing on the VAT payable, which is a tax charged on taxable supply.

5.4 Indicators of total compliance costs

A multiple regression was run using the hierarchical regression model. The forward, backward and stepwise methods rely on the computer selecting the variables based on mathematical criteria. Many writers and social science researchers argue that this takes many methodological decisions out of the hand of the researcher, as decisions of which variables should be included will be based upon slight differences in their semi-partial correlations. However, these slight statistical differences may contrast dramatically with the theoretical importance of a predictor in the model. For this reason stepwise method is more suitable for explanatory model.

Since there is a sound theoretical literature available on compliance costs, then the hierarchical method is a better model for predictor of the total compliance costs. In this model, predictors are selected based on past research (turnover, invoices and method of recording) and additional predictors available are included in the model in order of importance. Therefore, all potential factors that might contribute to the Total Compliance Costs (Tcc) are included as the dependent variables. Different models are generated indicating the relationship between Tcc and number of invoices, turnover band and the methods of recording for VAT as shown in the Table of Coefficients, Table 5.

From the correlation matrix, the Pearson correlation coefficient (R) between each pair of variables can be seen (for example, it can be seen that turnover band and sales invoices have a positive correlation with Tcc, $R = 0.420$ and $R = 0.423$ respectively, while that of the use of accountant with Tcc has a low positive relationship, $R = 0.035$). Secondly the one-tailed statistical significance of each correlation is displayed (for example, the correlation for Tcc with turnover band, number of invoices, net VAT paid and the methods of recording VAT are statistically significant as $P < 0.01$. however, the use of accountant is not significant). The correlation matrix is useful for getting an idea of the relationships between predictors and the outcome, as a preliminary look for multicollinearity. Despite the significance of these correlations, there are no substantial correlations ($R > 0.8$), there is therefore no collinearity between the predictors.

From the model summary (Table 5), Model 1 reveals that 'sales invoices', 'VAT records' and 'turnover band' account for 23.7 per cent ($R^2 = 0.237$) of the variation in the total compliance costs. However, when another predictor NET VAT Paid (NETVATPD) is included to make Model 2, the R^2 value is increased by 0.017 only, explaining that NET VAT Paid accounts for an additional of 1.7 per cent only. As for Model 3, inclusion of the service of an accountant (ACCTANT) contributes for an additional 0.5 per cent of the variations of total compliance costs.

Table 5: Coefficients of the multiple regressions

	Model	unstandardised coefficients		standardised coefficients		
		B	Std error	Beta	t	Sig
1	(constant)	-11234.2	20515		-0.548	0.585
	TOVER Turnover band	11699.853	4219.991	0.252	2.772	0.006
	RECORDS VAT records	16881.41	7772.738	0.163	2.172	0.031
	INVOICES sales invoices	4997.734	2506.66	0.191	1.994	0.048
2	(constant)	-5877.429	20527.61		-0.286	0.775
	TOVER Turnover band	11284.436	4189.777	0.243	2.693	0.008
	RECORDS VAT records	16244.947	7713.991	0.157	2.106	0.037
	INVOICES sales invoices	3813.527	2559.128	0.146	1.490	0.138
	NET VAT Paid	2733E03	0.001	0.143	1.943	0.054
3	(constant)	-12729.1	21579.81		-0.59	0.556
	TOVER Turnover band	10886.786	4206.881	0.234	2.588	0.011
	RECORDS VAT records	15974.54	7717.135	0.155	2.070	0.040
	INVOICES sales invoices	4336.713	2608.839	0.166	1.662	0.098
	NET VAT Paid	2595E13	0.001	0.137	1.860	0.065
	ACCTANT Accountant	3884.584	3780.013	0.071	1.028	0.306
a Dependent variable CC Total Compliance costs						

From Model 1, the adjusted R^2 (0.223) is very close to the value of R^2 (0.237), in fact the difference is only 0.014, about 1.4 per cent. This shrinkage means that if Model 1 is derived from the population rather than from the sample, it will account for approximately 1.4 per cent less variance in the outcome. The change in statistics (F-ratio) for Model 2 and Model 3 are 3.774 and 1.056 respectively, but it is not significant as $P > 0.01$, indicating that there is no major difference made by adding the new predictors to the Model 1. Finally, the Durbin-Watson statistics test whether there is any correlation between the residuals and from the model; DW is 1.940, close to two, indicating that there is no autocorrelation.

Further, the ANOVA also tells us whether the model is a significant fit of the data overall. The value of F is greater than 1 for all the three models (relatively higher for Model 1, $F = 16.773$) and the probability is less than 0.001, this indicates that Model 1 significantly improves our ability to predict the outcome variable (total compliance costs). However, that the other two models (2 and 3) with additional predictors do not improve Model 1 significantly as F ratios are relatively lower. Therefore, Model 1 is a better predictor for the outcome of the variable. So, methods of VAT records, number

of VAT invoices, and turnover band are better predictors for the value of the total compliance costs.

Therefore, the multiple regression equation (Model 1) predicting the total compliance costs can be defined as follows:

$$T_{cc} = -11,234 + 4,998 \text{ } \acute{i} + 16,881 \text{ } \acute{r} + 11,700 \text{ } \acute{s}$$

Where,

\acute{i} - Number of invoices

\acute{r} - Methods of recording VAT

\acute{s} - Sales band (level of turnover)

From Model 1 in Table 5 above, the *t*-statistics indicates whether the *b*- value is significantly different from zero, as *t* indicates the slope of the line. From the magnitude of the *t*-statistics (approximately 2), we can predict that turnover band, number of invoices and the methods of recording for VAT have a similar impact on the total compliance costs and the *b*-value is significant as $P < 0.05$. Besides, the standardised beta value (β) reveals the number of standard deviations that the outcome changes as a result of one unit change in the predictor. These values can be interpreted as follows:

Invoices: ($\beta = 0.191$): This value indicates that as the number of invoices increase by one standard deviation (1,669), total compliance costs increase by MUR 8,320 ($0.191 \times 43,559$). This interpretation is true only if the effects of sales band and methods of records for VAT are held constant.

Turnover Band: ($\beta = 0.252$): This value indicates that as the level of turnover increases by one standard deviation (937,000), total compliance costs increase by MUR 10,978 ($0.252 \times 43,559$). This holds true only if the effects of invoices and methods of recording VAT are held constant.

Records: ($\beta = 0.163$): This indicates that as the methods of recording for VAT rated one standard deviation higher (0.421), the total compliance costs increase by MUR 7,100 ($0.163 \times 43,559$). This holds true only if the effects of invoices and level of turnover are held constant.

Consequently, it can be concluded that the estimation of the gross compliance costs for the Republic of Mauritius is MUR 411.8 million and the net compliance costs is MUR 390.9 million. Note that the 'very small' traders faced a disbenefit to VAT due to the lengthy period between submission of return and repayment of VAT. This study also confirms the unbalanced distribution of compliance costs among registered traders as the compliance costs as a percentage of turnover level decreases. Besides, the dependent variables in Model 1 (number of invoices, turnover band and methods of recording) are a good predictor for the variations of total compliance costs. Therefore, this study explains 23.7 per cent of the variations in compliance costs, indicating that there may be other reasons unknown to this research influencing the total compliance costs or that the total compliance costs of VAT in Mauritius has a high element of fixed costs (minimum compliance costs) that do not vary with any indicators mentioned above.

Comparisons of compliance costs are difficult to conduct and need to be treated with caution, particularly if the case is for comparison involving multiple countries over long periods. Sandford (1995, p405) noted that international comparisons of operating costs (compliance costs and administrative costs) are more likely to mislead than enlighten. Table 6 below shows a comparative summary of the total compliance costs from some of the major studies carried out in different countries. The varied methodologies (mainly telephone, questionnaire surveys, and case study) and particularly the different treatment of time costs can render an effective comparison and inferences extremely difficult. A comparison of the total compliance costs in absolute terms cannot be possible due often to the differences in exchange rates and inflation rates as the studies were carried out at different periods of time.

However, the percentage of compliance costs to VAT revenue ranges from two per cent to 11 per cent and Mauritius was six per cent, which falls within that comparable proportion. As for the response rate, the rate of Mauritius being 20 per cent can be considered relatively low but it does represent four per cent of the total population — a good representation of the population for a nation-wide study.

Table 6: Comparative table of the major studies of VAT compliance costs

Country	Author (s)	Year Study	Tcc	CC as % VAT Revenue	Response Rate (%)
UK	Sandford et al	1977-78	£ 392m	11	31
	Sandford et al	1986-87	£ 791m	3.69	24
Australia	Pope (WST)	1993	A\$ 201m (Ncc)	2.1	24
	Evans et al (WST)	1997	A\$ 4,647m	9.3	36.4
Sweden	Huges	2006	SEK 1,900 m	3	n/a
Croatia	Blazic	2001	HRK 968.1 m	6	0.57% pop
Netherlands	Allers	1994	Gld 2,100	6	20
Mauritius		2001-02	Rs 411.8m	5.80%	20.3

The massive growth of the compliance costs literature reflects the fact that these 'hidden costs' of taxation are now a matter of considerable public concern, particularly in the business community. But government, revenue authorities, legislators, and taxpayers generally have become increasingly aware of the role and impact of compliance costs (administrative costs to a lesser extent) and there is a growing demand that compliance costs must be taken into account in the tax law design process.

In Klun 2004, as cited by Sandford (1995) states that the OECD research work into how the evaluation of compliance costs influenced tax policy concluded that only four OECD countries had a strong influence; the evaluation was used periodically by nine countries and the remaining had a minimal influence. Despite the long democratic tradition in these countries, compliance costs are often neglected in determining tax policy. In view of reducing the compliance costs burdens, the government of

Mauritius should assess the likely change in compliance costs whenever a tax reform is undertaken, note that no major tax reform was made to the VAT system since its introduction. The Mauritian government should also try to measure the size and composition of compliance costs and identify the characteristics that affect these costs. Thus, upon a change or an introduction of a new tax, care should be taken so that small firms or taxpayers not to bear an undue burden of tax. To encourage compliance the ATO publishes an annual compliance program detailing the focus risk areas as part of evaluation of an annual 'health of the system assessment' process. The HM Revenue and Customs Department in the UK normally measures the impact of compliance costs upon a change in the tax system and the analysis is published in a final Regulatory Impact assessment (RIA) when the associated legislation is laid before parliament. This assessment of the compliance costs impact assists in future policy development and evaluation work and helps the Government to improve tax compliance, face less resistance to change, thus increasing tax revenue.

Studies into compliance costs have nowadays created substantial public interest in particular concerning small business. Governments of various countries have begun to introduce measures to monitor compliance costs, limit incremental compliance costs, and where possible reduce compliance costs. The following are initiatives adopted by governments and it is high time for the Mauritian Government to take some of those initiatives to combat compliance costs:

1. Requirements that all new tax legislations be supported with a form of tax compliance costs impact statement;
2. Introduction of programmes and guidelines to improve the clarity of tax legislation;
3. Establishment of specific government bodies or task force in advising governments on the effectiveness of regulatory measures and identifying ways of minimising regulatory compliance;
4. Introduction of public consultation guidelines on the development and implementation of new policies;
5. Establishment (or development) of models or methods to measure the burden of new law or regulations, and
6. Introduction of specific compliance cost reductions targets.

6. CONCLUSIONS

This study on compliance costs at a national level is the first carried out in this field in Mauritius. Given the circumstances, research in tax is very difficult, as the researchers do not receive much support from the government or the tax authority. This study is the first attempt in calculating the magnitude of compliance costs for VAT in Mauritius and identification of a relationship of the compliance costs with the size of firms, number of invoices, and number of employees among other factors. However, the present study did face major difficulties, as taxpayers in CITs were not accustomed to questionnaires and were not comfortable responding to questions on income, turnover, and attitudes' to tax as these are considered to be very confidential matters. Though the purpose and objectives of the study were clearly spelt out in the covering

letter, the study faced a low response rate due to no collaboration from the tax administrators as was the case for most studies in developed countries.

Any research that assesses the taxpayers' point of view is important evidence for policymakers. Prospects exist for similar studies to be carried out on other taxes such as PAYE and company tax and also making comparison with other neighbouring developing and developed countries. It can be concluded that compliance costs are an important feature for any government as high tax compliance costs can lead to avoidance or even evasion of tax causing a reduction in the expected tax revenue for the government. This research did not attempt to make suggestions as to how compliance costs should or might be reduced or redistributed. The tasks of reducing or redistributing compliance costs is, perhaps one of the biggest challenges facing tax policy makers and administration in Mauritius and overseas. The analysis and recommendations reached from this survey may help tax administrators to improve the VAT tax system making it more efficient and less troublesome for the registered traders. However, the primary concern should now be how and where tax reform may be carried out leading towards minimisation of the compliance costs consistent with the objectives of tax legislation and revenue generation for the government.

This paper has estimated the gross compliance costs of VAT at MUR 411.8 million and net compliance costs are MUR 390.9 million. The analysis of the study has been able to show only 23.7 per cent of the variations of compliance costs and has revealed that there is a huge element of fixed cost. This paper also draws an insight into the main factors influencing compliance costs for the Republic of Mauritius. The number of invoices, turnover band and methods of keeping records are revealed as the most significant factors that affect the compliance costs of VAT.

The major limitation of such a large-scale postal questionnaire survey is that the researcher is often criticised for the non-representativeness of the respondents to the taxpaying population (that is, low response rate). Besides this, large proportions in the sample were not willing to complete the questionnaire, as this was the first such survey on compliance costs done in Mauritius and thus the respondents were not familiar with the concept. However, since such a low response rate was expected for research on taxation affairs, a larger sample thus was chosen (1,000) to mitigate this and efforts were made to obtain an adequate number of responses sufficient for analysis to be statistically representative of the population.

Another limitation of the study was with the follow-up interviews, where many difficulties were faced to obtain an appointment with the professionals and lawyers who were always busy and unwilling to provide enough time for a well-structured interview for the much richer qualitative information to be collected.

A more practical limitation of the survey method is that it is costly and time-consuming, especially as reminders, chasing and sorting out of responses were required. The present study was pioneering research work carried out by a single researcher. In future for better response rates, such types of research needs to be carried out by a team of researchers with the active support of the tax authorities. Research of this calibre needs a good organisation and management of the mailing system, which sometimes can prove difficult.

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