THE EFFECT OF CHANGES IN THE VALUE-ADDED TAX RATE ON TAX COMPLIANCE BEHAVIOUR IN SOUTH AFRICA

by

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ABSTRACT

THE EFFECT OF CHANGES IN THE VALUE-ADDED TAX RATE ON TAX COMPLIANCE BEHAVIOUR IN SOUTH AFRICA

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Enhanced revenue mobilisation is essential in developing countries such as South Africa but is inevitably a complex process, both from economic and political perspectives. Increasing the rate of Value-added Tax (VAT) has been identified as one option to increase tax revenue, although the likely effect of VAT rate changes on tax compliance behaviour is undetermined. This study considers the impact of such a change on the tax compliance behaviour of small business entities. In order to address the impact of VAT rate changes on tax compliance behaviour, a between-subjects pre-test/post-test online field experiment is conducted, designed to identify the implications of rate changes of various directions and magnitude.

Statistical analysis of the data obtained from the experiment indicates that small business entities are inclined to reduce the VAT liability when there is an increase in the VAT rate by overstating purchases rather than under-declaring sales, leading to an increase in non-compliance. The greater the magnitude of the VAT rate increase, the greater the level of non-compliance. In contrast, no significant relationships are identified between a decrease in the VAT rate and tax compliance. The results further indicate that the greater the magnitude of the VAT rate increase, the more likely it is that taxpayers registered as VAT vendors will deregister. Correspondingly, the greater the magnitude of the VAT rate decrease, the more likely it is that taxpayers will register as VAT vendors.

This study contributes to the literature and our understanding of tax compliance behaviour in three ways. Firstly, the research contributes to the limited body of knowledge on the effect VAT rate changes may have on the tax compliance behaviour of small business entities, particularly in a developing country context. Secondly and at a practical level, the research has implications for policymakers contemplating VAT rate changes. Finally, the study indicates how experimental research methods can be used in tax compliance behaviour research in Africa.

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LIST OF ABBREVIATIONS AND ACRONYMS

Table 1:   **Abbreviations and acronyms used in this document**

Abbreviation/Acronym	Meaning
ATAF	African Tax Administration Forum
CC	Close corporation
EEC	European Economic Community
EU	European Union
GDP	Gross domestic product
GST	Goods and services tax
IMF	International Monetary Fund
KZN	KwaZulu-Natal
OECD	Organisation for Economic Co-operation and Development
OUTA	Organisation Undoing Tax Abuse
SARS	South African Revenue Service
SMME	Small, medium and micro enterprises
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
USA	United States of America
VAT	Value-added tax

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Franklin D Roosevelt aptly reminded citizens of the United States of America (USA) that taxes[1] "are the dues that we pay for the privileges of membership in an organized society" (Roosevelt, 1936:n.p). Tax revenue collection is critical to governments as they need to provide necessities in the form of public goods and services to improve the public's standard of living, while encouraging economic growth and development (Education and Training Unit, 2009; Fuest & Riedel, 2009).

Taxes may be collected from a variety of different sources to broaden the tax base of a country. The different sources may include personal and corporate income tax, value-added tax (VAT) or general sales tax, excise duty, estate duty, capital gains tax, as well as many other taxes, duties and levies. Figure 1 depicts the average tax revenue collected from various types of taxes from the Organisation for Economic Co-operation and Development (OECD) countries in 2017, as a percentage of total tax revenue.

Figure 1:   Tax revenue collected per tax type in OECD countries, 2017
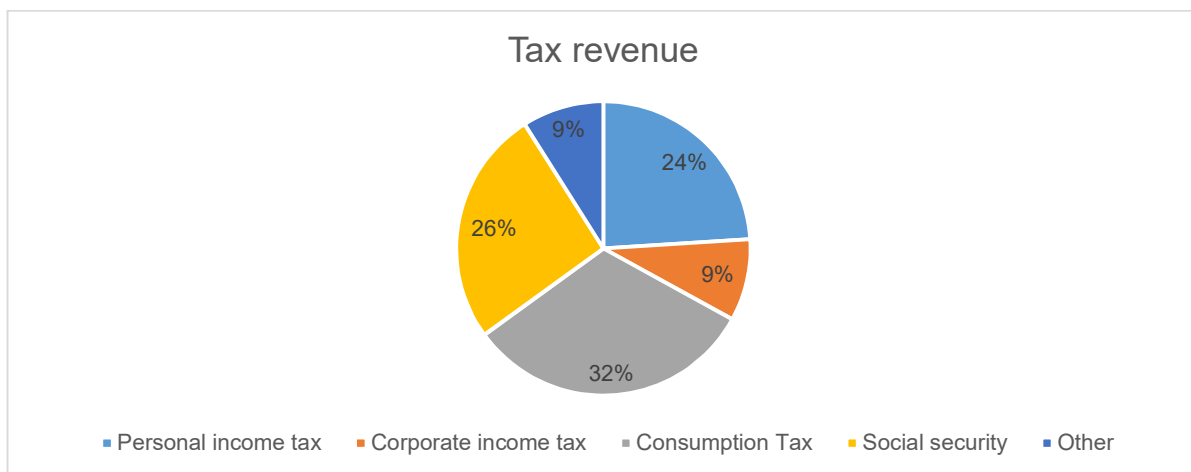
Source: OECD (2019b)

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[1] Taxes can be defined as "compulsory, unrequited payments to general government" (OECD, 2015b:13).

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From Figure 1, it is evident that the three main tax types from which revenue is collected in the OECD countries are income tax (33 per cent comprising 24 per cent from the personal income tax and 9 per cent from the corporate income tax); social security tax (26 per cent); and consumption tax (32 per cent). Apart from these three major tax types, the 'other' category in Figure 1 consists of taxes such as property tax charged on the value and transfer of property (OECD, 2019b).

Personal income tax refers to taxes on personal income (including profits of the self-employed, salaries and wages of employees and various forms of investment income such as interest, rent, royalties and dividends). It is collected directly from individuals or withheld at source and remitted by third parties (National Treasury & South African Revenue Service (SARS), 2019). Corporate income tax is collected from companies based on the taxable income of the companies (National Treasury & SARS, 2019). Social security taxes are compulsory payments made to receive future social benefits, such as contributions to unemployment insurance funds and contributions for the workmen's compensation fund, should any accident, injury, sickness, old-age or disability occur (OECD, 2018b).

Consumption taxes consist mainly of VAT (20 per cent of total tax revenue) and excise tax (OECD, 2018b). The European Union (EU) was one of the first regions to introduce VAT in the late 1960s through the European Economic Community (EEC) (James, 2015). By amending the traditional European-style system to fulfil its own needs, New Zealand was the first of the OECD member countries that implemented a modern VAT system,[2] in 1986. During 2017, the tax revenue New Zealand collected from its Goods and Services Tax (GST) was 30 per cent of total tax revenue (OECD, 2019a). South Africa's VAT system, introduced in 1991, is based on New Zealand's GST system (Schenk, Thuronyi & Cui, 2015).

In an attempt to increase tax revenue collection, the VAT rate in South Africa was increased from 14 per cent to 15 per cent on 1 April 2018, after it had remained unchanged for 15 years (since 1993) (Gigaba, 2018; National Treasury & SARS, 2019). However, the effect of the change in the VAT rate on tax compliance behaviour is largely unknown. A change in

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[2] Note that some countries refer to their consumption tax system as the Goods and Services Tax (GST) system and other countries use the term VAT system. These systems are broadly similar, of course with each country having adapted the system to suit their specific needs. More specific details follow later in Chapter Two.

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tax policy, such as a change in the VAT rate, might not be successful in raising more tax revenue if non-compliance increases. Observing the behavioural responses of taxpayers may shed light on the impact of changes in the VAT rate on tax compliance.

Tax compliance is the term used to describe the degree to which taxpayers meet their legal obligations regarding taxes (SARS, 2012). This would include submitting all the required tax returns on time, reflecting the right amount of tax liability and paying that liability on time (Roth, Scholz & Witte, 1989). SARS (2012:4) states that "[i]n order to do the right thing, people need to know what they have to do, have the ability to do it and then have the right motivation to take action". If taxpayers take this right action, better tax compliance should be achieved.

Tax non-compliance refers to when taxpayers, either intentionally or unintentionally, fail to meet all or part of their legal obligations regarding taxes (Kirchler, 2007). Examples of such non-compliance include taxpayers not registering for a specific type of tax that they are legally obliged to register for; not submitting the correct return on time; not declaring all income; overstating expenses or not paying the right amount of tax on time. There is a fine line between using the law to one's best advantage – taking cognisance of the loopholes to reduce one's taxes (tax avoidance) – and transacting illegally to avoid paying taxes (tax evasion) (GIZ Sector Programme Public Finance, 2010; James & Alley, 2002). All governments face the same problem, in varying degrees, of seeking to maximise tax revenue collections from an often reluctant taxpaying society, where members may attempt to minimise their tax liabilities (Alm & Torgler, 2011).

In an attempt to minimise one's tax liability, the expected utility theory suggests that a rational person would weigh the possibility of being audited against the penalty or related punishment faced if caught. A person would thus consider the chances of an uncertain outcome happening and the associated consequences thereof (Hamid, 2013). For example, VAT vendors could consider evading VAT by not declaring all sales or over-claiming purchases when there is an increase in the VAT rate, should they perceive that they will save more money than the penalties payable if caught (taking the audit probability into account). Additionally, there may be VAT vendors that were previously non-compliant and may not have declared all sales for VAT purposes as the benefit of evading taxes was seen

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to be greater than the penalty if caught. However, when the VAT rate decreases, the benefit of evading taxes might seem less appealing. Similarly, a person who did not previously register as a VAT vendor although it was compulsory to register, might now decide to register when the VAT rate decreases as the price would not need to include as much VAT as was required before the rate decrease therefore evading taxes might become less appealing. To assist in reducing possible tax evasion and ensuring the better collection of VAT revenues, an efficient VAT system needs to be operational.

VAT efficiency can be measured in several ways, including through the VAT compliance gap, the VAT policy gap and the c-efficiency ratio. The VAT compliance gap is the difference between the estimated potential net VAT collections for a specific period and the accrued net VAT collections for that same period (International Monetary Fund (IMF), 2015; Keen, 2013). The VAT compliance gap is caused by fraud, tax evasion, tax avoidance as well as other miscalculations (De Wet, 2015; OECD, 2018a). The VAT policy gap is the difference between "theoretical revenue given a hypothetical policy framework and potential revenue given the current policy framework" (IMF, 2015:6). The VAT policy gap is measured by assuming perfect compliance (Keen, 2013). The c-efficiency ratio compares the VAT revenue collected to the amount that could have been collected on total consumption (with consumption measured as Gross Domestic Product [GDP] final consumption) at the standard VAT rate, on the assumption that the law was perfectly enforced (IMF, 2015).

Taking cognisance of the efficiency of the VAT system, this study aims to determine the effect of changes in the VAT rate on tax compliance behaviour of individuals in management positions of small business entities[3] in South Africa, a developing country. The contribution is three-fold: first, the research addresses an identified knowledge gap in the literature pertaining to the effect of changes in the VAT rate on tax compliance behaviour, particularly in the South African context. Second, the research results may assist policymakers in other countries to predict the effect of a change in the VAT rate on tax compliance behaviour before the implementation of such a policy. The results may also provide insight to South African policymakers as to whether a further increase in the VAT rate would secure more tax revenue. Third, the research methodology (an online field experiment) is among the first

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[3] For the rest of the study, reference will only be made to tax compliance behaviour of small business entities, implying the tax compliance decisions of the individuals managing and being involved in the financial decisions of the small business entities.

instances where this has been applied to consider effects on tax compliance behaviour in an African country. The results obtained add to the current body of knowledge on tax compliance behaviour in Africa.

In focussing our attention on South Africa, its total tax collection in 2018[4] amounted to R1 216.5 billion,[5] of which the net VAT collected contributed R298 billion. This means that VAT collections contributed 24.5 per cent of the total revenue (see Figure 2) (National Treasury & SARS, 2018:viii). As shown in Figure 2, South Africa relies more heavily on VAT as a tax revenue stream (24.5 per cent) compared to the average tax mix of OECD countries (20 per cent), though it is not as heavily reliant on the VAT revenue as in New Zealand (where VAT comprises 30 per cent of total tax revenue) (OECD, 2019a).

Figure 2:   Tax revenue per tax type in South Africa: 2017/2018
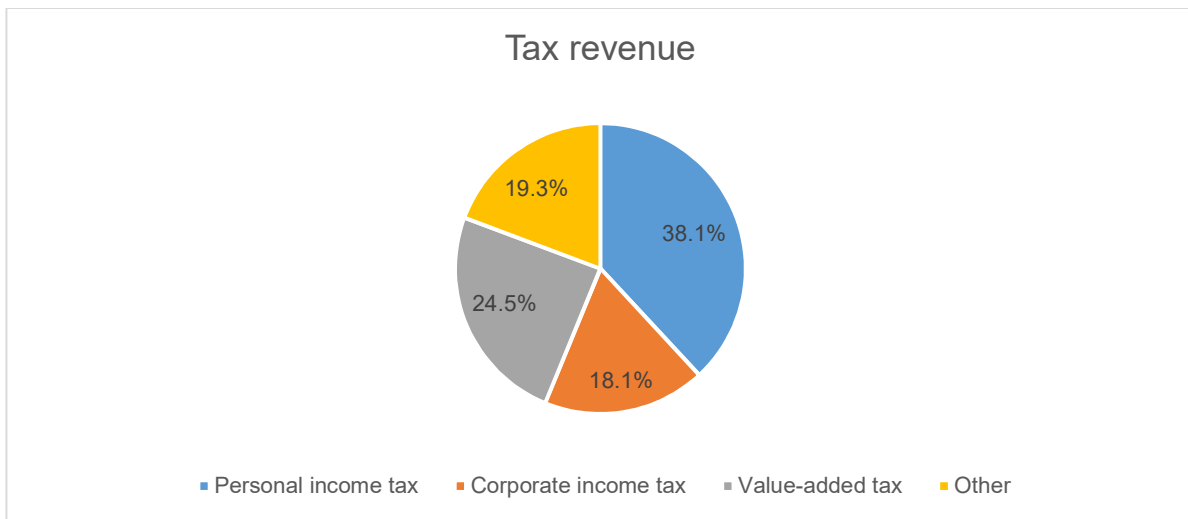
<u>Source</u>: National Treasury and SARS (2018:viii)

Given that VAT is a tax based on consumption, South Africans pay VAT when they purchase goods for home consumption and thus VAT affects a large number, if not all, of the total population of 58.78 million people (Statistics South Africa, 2019a). VAT is, therefore, a key source of revenue to the government in South Africa and for that reason, the government focuses on VAT and its potential to generate tax revenue (Owens, Battiau & Charlet, 2011).

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[4] The VAT rate increase became effective from 1 April 2018. Therefore, the figures for the financial year ending 31 March 2018 were presented as these were the figures applicable at the time when the VAT rate increase was announced.

[5] R = South African Rand (ZAR)

Even though South Africa has a relatively efficient VAT system (based on analysis of the VAT compliance gap and VAT policy gap) in comparison to other countries, the system can always be improved. The VAT compliance gap for South Africa was between 5 per cent and 10 per cent of the potential VAT revenues during 2007 to 2012, which is low in comparison to other countries (IMF, 2015) such as the EU member countries, with an average of 13.2 per cent in 2015 (OECD, 2018a). However, 5 per cent of the VAT revenue collected in 2019 amounts to R16.2 billion, which may make a difference in the budget deficit and improve service delivery by the government to its citizens (National Treasury & SARS, 2019). Additionally, the VAT policy gap is estimated to be between 27 per cent and 33 per cent for South Africa, which is low in comparison to other countries such as EU member countries where the average is 41 per cent (IMF, 2015:6).

As can be seen in Figure 3, South Africa's c-efficiency ratio average is just over 60 per cent for the period between 2007 and 2013. In comparison, New Zealand has a very efficient tax system with a c-efficiency of 97 per cent (Inter-American Center of Tax Administrations, 2017). Figure 4 illustrates the c-efficiency ratio of countries in the EU, with Luxembourg having the most efficient system (88 per cent) and Italy having the least effective system (32.8 per cent) (Hodzic & Celebi, 2017). South Africa's c-efficiency ratio is only exceeded by two EU countries. Although South Africa has a relatively good score in comparison to other Sub-Saharan countries (Figure 3) and EU countries (Figure 4), there is still much room for improvement.

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Figure 3:   C-efficiency ratio in Sub-Saharan African countries

Source: Staff calculations.
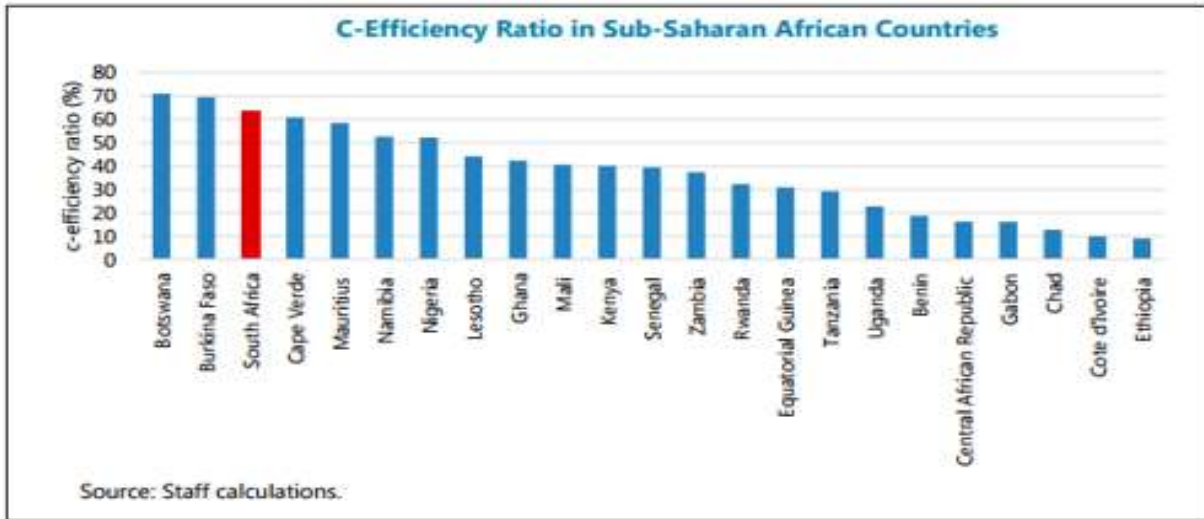
Source: IMF (2015:12)

Figure 4:   C-efficiency ratio in EU countries
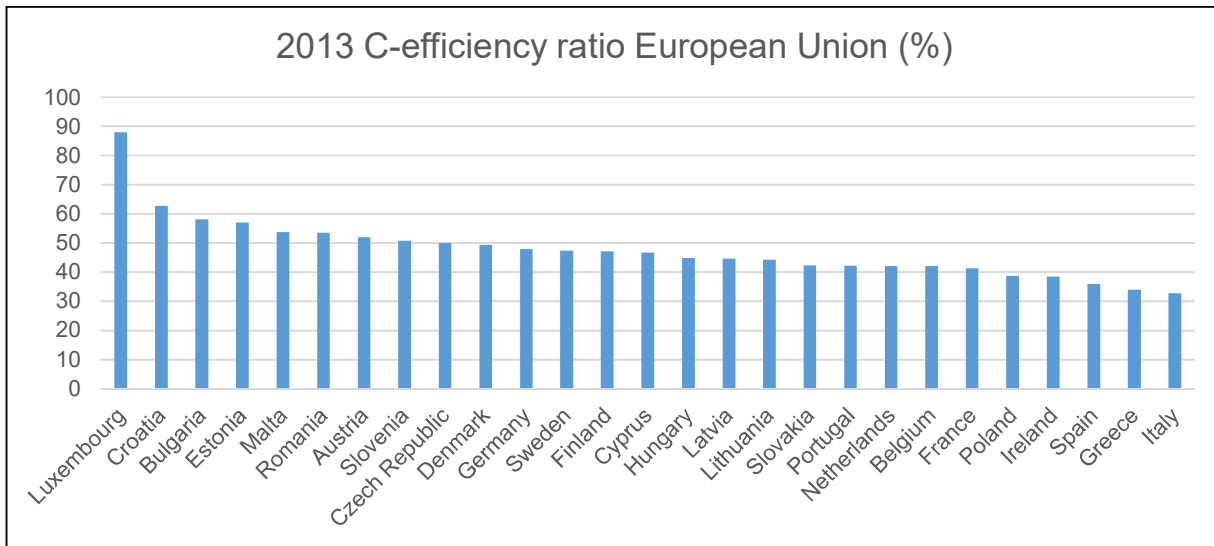
Source: Hodzic and Celebi (2017)

Although some of the evidence may suggest that South Africa's VAT system is performing reasonably well when compared to other countries, the VAT system could still be improved to collect more tax revenue. An evaluation of the possibility of seeking additional tax revenue from the major sources available in South Africa focuses on personal income tax, corporate income tax and VAT. Support is now provided for selecting VAT as the best alternative.

Although increasing the personal income tax is an option to increase tax revenue, in 2015 the Davis Tax Committee counselled against it and advised that it would be more appropriate and viable to raise the VAT rate than the personal income tax rate. The number of people registered for personal income tax is already low (33.1 per cent for 2015; 37.8 per cent for 2019) (Davis, 2015; National Treasury & SARS, 2015; National Treasury & SARS, 2019; OECD, 2015a; Statistics South Africa, 2015; Statistics South Africa, 2019a). Additionally, compliance is already expected to be higher (due to the increased potential for detection) with personal income tax because the income tax is mostly withheld at the source (Clotfelter, 1983; paragraph 2 of the Fourth Schedule, Income Tax Act 58/1962). This is, however, only generally true when considering salaried individuals. The risk for non-compliance will increase again where people are self-employed, as typically no income tax is withheld at the source. However, in 2019, only 15.2 per cent of the workforce was self-employed in South Africa (World Bank, 2019), a relatively small portion of the total workforce. The opportunities for income tax non-compliance are therefore largely confined to a small body of individuals and are not likely to be as high as the opportunities for non-compliance within the VAT system.

There is also little scope for increasing the corporate income tax rate, which is currently levied in South Africa at the rate of 28 per cent. Increasing this rate would, arguably, not be ideal, given that it is already four per cent higher than that of the average OECD member countries (African Tax Administration Forum (ATAF), 2016). If the companies' tax rate were to be increased, South Africa would no longer be as competitive and could lose corporate tax revenue as a result of companies moving to other jurisdictions with more favourable (lower) tax rate structures. Moreover, companies are expected to generate less income in an uncertain economic climate,[6] reducing the tax revenue derived by the government from corporate income tax. Since the unemployment level could increase with people being retrenched, income from personal income tax would also potentially decrease. There is thus already considerable pressure on the income tax base, which may suggest that additional revenue may not be so easily gleaned from changes to the income tax base (Owens *et al.*, 2011).

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[6] ". . . despite the strength of South Africa's institutions, perceptions of weakening governance and of rising uncertainty regarding the direction of policies have been associated with low investment and consumer confidence" (International Monetary Fund, 2016:n.p.).

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For these reasons, it seems that the most appropriate type of tax to consider in South Africa to achieve an increase in tax revenue would be VAT. Additional tax revenue can potentially be raised from VAT by changes in the tax base (base-broadening), changes in the tax rate or both. VAT revenues could be increased, for example, through an increase in the VAT rate. The OECD recommendation, based on a survey it conducted, was that South Africa should broaden the VAT base by decreasing the number of goods and services which receive preferential tax treatment and by strengthening VAT compliance (OECD, 2015a). In contrast to the OECD findings, the IMF (2015) reported that room for increasing the VAT base is limited and, in comparison to its peer countries, South Africa's VAT administration is relatively effective

The OECD indicated that the VAT rate might need to be raised to be able to finance the large spending plans of the government (OECD, 2015a). The tax compliance behavioural implications are, however, unknown and limited research exists on the behavioural responses of taxpayers to changes in the VAT rate.

Gutmann (1977) has taken a different view in raising VAT revenue, noting that the more the government increases the tax burden, the more it drives the total economy underground to escape the liability to pay taxes. Vivian (2015) agrees with Gutmann (1977), by stating that raising the VAT rate would be a 'bad idea', as it puts a greater burden on the middle to low-income groups, some of whom are already struggling to buy the bare necessities. He noted that after Zimbabwe's VAT rate increase, civil unrest erupted and warned that an increase in the VAT rate could lead to a taxpayer revolt. The best way to overcome the problem of insufficient tax revenue, according to Vivian (2015), is to decrease wasteful government expenditure and not consider raising any further taxes.

Although contradictory opinions exist as to whether or not to increase the VAT rate as discussed above, the VAT rate was increased by one percentage point in 2018 (Gigaba, 2018).

The focus of the study, therefore, is the effect of changes in the VAT rate on VAT compliance behaviour of small business entities. An increase in the VAT rate could lead to higher tax

collections but lower VAT compliance, where a decrease in the VAT rate may also increase tax collections because it will encourage better VAT compliance (Agha & Haughton, 1996).

1.2 PROBLEM AND PURPOSE STATEMENT

An increase in the VAT rate could be an option for increasing tax revenues (OECD, 2015a; Van Oordt, 2016). However, the administration of VAT provides an opportunity for reluctant vendors to evade taxes as it involves a greater degree of self-declaration than many other taxes. Uncertainty exists as to whether a VAT rate increase will motivate the taxpayers to become less compliant.

The government is highly dependent on the tax revenue as taxes fund government expenditure and assist economic growth. The problem is that if taxpayers in South Africa do not pay their "fair share" of taxes, then additional strain is added to the tax burden of compliant taxpayers, increasing the chances of a tax revolt. The government is potentially also unable to provide the necessary public goods and services due to a lack of tax revenue collected. The main purpose of this study is, therefore, to use an experimental design to identify the effect that changes in the VAT rate will have on the tax compliance behaviour of small business entities in South Africa.

1.3 RESEARCH QUESTIONS AND OBJECTIVES

The specific research questions guiding this study are: how (direction) and to what extent (magnitude), is the tax compliance behaviour of small business entities in South Africa likely to be affected by changes in the VAT rate? In order to answer these questions, and based upon a detailed literature review, the following objectives were identified:

- to identify factors that influence tax compliance behaviour in general and VAT compliance behaviour specifically, in an SME and South African context;

- to conduct an experiment to identify the changes (if any) in the VAT compliance behaviour of small business entities if there are changes in the VAT rate; and

- to reach a conclusion on the effect that changes (direction and magnitude) in the VAT rate in South Africa will have on VAT compliance behaviour of small business entities.

1.4 IMPORTANCE AND BENEFITS OF THE STUDY

An increase in the VAT rate in order to increase VAT revenue appears to be a viable policy option for South Africa to increase government revenue but such a change may have the opposite effect. An increase in the VAT rate would aim to generate more tax revenue, however, should more people not comply this may have a detrimental effect as ultimately, less revenue may be collected. Although many studies[7] consider the effect of factors on tax compliance behaviour, it is mostly from an income tax perspective.

The change in the VAT rate may thus affect tax compliance behaviour, however, research on the effect of the magnitude of the change in the VAT rate is limited and some studies merely focussed on the effect on VAT revenue, not tax compliance behaviour (Agha & Haughton, 1996; Pagán, Soydemir & Tijerina-Guajardo, 2001; Tijerina-Guajardo & Pagán, 2000). Further research is thus required to determine the effect a change in VAT policy, as manifested in a change in the rate at which VAT is levied, would have on tax compliance behaviour. Not only will the direction of the VAT rate change be considered but also the magnitude of the change.

Although surveys are often used as a research instrument to test for tax compliance, experiments are also popular when performing tax compliance research and have been used as an alternative to the survey methodology. Experiments have the advantage of using business simulations which best reflect real-life behaviour in participants' responses (Richardson & Sawyer, 2001:230; Yong *et al.*, 2019:784). To date, however, very few experimental research studies have been found where the effect on tax compliance behaviour has been determined when there are changes in the VAT rate. These will be discussed in the literature review in Chapter Three.

Hence, this study will contribute to the limited body of knowledge that deals specifically with the effect of changes in the VAT rate on tax compliance behaviour of small business entities in South Africa, a developing country. Moreover, limited evidence could be found of the experimental research methodology being applied in developing countries for tax

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[7] For studies on tax compliance, see Jackson and Milliron (1986); Richardson and Sawyer (2001); (Hasseldine, Hite, James & Toumi, 2007); Kirchler (2007); (Devos, 2014); and Yong, Lo, Freudenberg and Sawyer (2019). Studies on tax compliance are considered in detail in Chapter Three.

compliance studies and the study will, therefore, strengthen the literature on the application of experiments. Further, policymakers in other countries may be able to use the results as an indication of the potential effect of changes in the VAT rate on tax compliance behaviour. Alternatively, the policymakers could replicate the experiment in their countries to determine tax compliance behaviour in that specific country.

1.5 SCOPE

The scope of the research is deliberately limited in several ways, regarding the literature; the nature of the tax; the nature of the taxpayer; the nature of the transactions involved and the country involved. Each of these is considered in turn.

The study only considers the literature available in English and thus some important studies in other languages may have been omitted.

This study will explore the literature dealing with tax compliance affecting all types of taxes, however, the experiment itself will focus only on the VAT system. There have been numerous studies,[8] including experiments, considering the impact of various factors on compliance in relation to income tax. In contrast, the factors that impact upon VAT compliance are relatively under-explored.

The sample of participants consist of individuals in management positions of small business entities and not all business entities. The size of the entity will be considered small where the entity has a gross income of less than or equal to R20 million[9] in a 12-month period (Anon., section 12E(4)(a) of the Income Tax Act). Small businesses, in general, have been identified as one of the 'more risky' sectors in terms of tax compliance, as tax registration is often low in this sector. SARS also specifically identified that they will place an extra focus on VAT for this sector, where VAT is withheld by the supplier, but not paid over to SARS, and where VAT refunds are abused (SARS, 2012). For this reason, the study will focus on small business entities only.

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[8] Ibid.

[9] R20 million was equivalent to USD 1,410,290 on 1 October 2018, which was during the time the experiment was conducted (Oanda, 2020).

The focus of the study is the impact on tax compliance behaviour of small business entities when there are VAT rate changes and these changes are fully accounted for in the price of the product or service; the changes in price are passed on completely to the final consumer. The study does not consider the effects of demand and supply following such changes in the VAT rate, which could also affect the price. An economic analysis of the implications of changes in the VAT rate is not considered.

The experiment was conducted in South Africa. Although a reasonable indication could be obtained from the results as to how people in other countries might react to changes in the VAT rate, certain factors influencing people's behaviour are country-specific and could consequently influence the results. Other policymakers could, however, conduct the experiment to determine the effect in their own setting.[10]

1.6 RESEARCH DESIGN

The study seeks to determine the impact upon the tax compliance behaviour of small business entities when there are changes in the VAT rate. A post-positivist approach is followed to collect data using an experiment. Post-positivism is based on the ontology of critical realism, accepting that reality is influenced by people's observations and sensations and that the results only indicate that something is probably true, not certainly true (Denzin & Lincoln, 2011; McKerchar, 2010). The epistemology of a modified dualism or objectivism is thus appropriate, acknowledging that the findings are only probably true, not necessarily true (Denzin & Lincoln, 2011; McKerchar, 2010). In terms of methodology, experiments and correlation studies are thus often used, as post-positivism seeks to determine causal relationships (Scotland, 2012), such as whether there is a relationship between the change in the VAT rate and tax compliance behaviour. Post-positivism also acknowledges that there are various techniques which can be used to solve a real-world problem. To solve these problems, hypotheses are developed from existing theories for a discipline in order to observe the phenomena using the deductive approach. The relevant theories are applied to

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[10] Note that South Africa is a developing country and thus the setting might be very different from a developed country. Refer to Chapter Two for a further discussion on developing countries and the challenges faced in terms of tax compliance.

a specific case to test the phenomena (Creswell, 2009; McKerchar & Evans, 2009; Saunders, Lewis & Thornhill, 2016; Scotland, 2012; Sekaran & Bougie, 2013).

Several research methods may be used when collecting data, namely an extended literature review, case study, survey, structured observation, interview, questionnaire or experiment (Hofstee, 2011; Saunders *et al.*, 2016). Since causality of a specific factor (tax rate change) on another variable (tax compliance behaviour) can be tested through conducting an experiment, an experiment was selected as the most appropriate research method (Burtless, 1995). This is also because the researcher attempts to address the issue of dishonest answers by providing business simulations, therefore obtaining responses which are deemed to be similar to real-life behaviour (Richardson & Sawyer, 2001; Yong *et al.*, 2019).

The research is primarily quantitative in nature. An online field experiment was conducted to determine the effect of the independent variable (the positive or negative change in the VAT rate) on the dependent variable (tax compliance behaviour) (Trotman (in Libby, Bloomfield & Nelson, 2002)). The causal relationship between the independent and the dependent variables are studied and described using statistical techniques (Saunders *et al.*, 2016).

The research applies a 'between-subjects' experiment whereby participants are exposed to one of four possible treatments:
- business entities experience a five percentage point decrease in the VAT rate;
- business entities experience a one percentage point decrease in the VAT rate;
- business entities experience a one percentage point increase in the VAT rate; and
- business entities experience a five percentage point increase in the VAT rate.

The target population consists of individuals in a management position in small business entities. Participants were invited by applying volunteer and haphazard/convenience sampling techniques (Saunders *et al.*, 2016). The invitation (via a link) to the study was posted on social media and distributed to known contacts. When potential participants accessed the link, a short explanation of the study was provided, noting that their responses would be anonymous and therefore confidential. As mentioned, participants were eligible to

complete the questionnaire if they were individuals in management positions of small business entities. Further, the business's gross income[11] must be above R50 000,[12] but less than R20 million.[13] The participants were randomly assigned by Qualtrics[14] to one of the four treatment groups.

A total of 120 usable responses[15] were required for the study. The aim was to have as close as possible to 30 valid responses in each of the four treatment groups, as a sufficient sample size for experiments is deemed to be between 15 and 30 participants per treatment group (Daniel, 2012).

This pre-test/post-test between-subjects experiment also contained an element of within-subjects design as the same transaction was given to all participants at the start of the study, after which the treatment was applied. The results of the first and the second transaction (pre-test and post-test) were then compared and analysed (the same participants' answers were compared in some analyses).

Statistical analyses of the outcomes of the experiment were conducted using descriptive and inferential statistics in the Statistical Package for Social Sciences (SPSS)[16] to determine the differences and associations between the four treatment groups. Descriptive statistics quantitatively summarise the collected information. Inferential statistics were used to test the hypotheses to estimate the effects of the small sample to the target population, to get an idea of how the population may react to changes in the VAT rate. Inferential statistics thus indicate how data correlate and are associated with each other (Leedy & Ormrod, 2015; Saunders *et al.*, 2016). Finally, in order to be able to conduct the experiment, appropriate ethical standards need to be maintained.

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[11] The term 'gross income' was used in the experiment instead of 'taxable supplies', as more individuals would be familiar with the term 'gross income' and the two terms have similar meanings.

[12] In South Africa, the voluntary threshold for VAT registration is taxable supplies exceeding R50 000 in a 12-month period (Anon., section 23(3)(b) of the VAT Act) and the compulsory registration threshold is taxable supplies exceeding R1 million (Anon., section 23(1)(a) of the VAT Act).

[13] A small business as defined in section 12E(4)(a) of the Income Tax Act.

[14] Qualtrics is an online instrument delivery service provider used to conduct survey research or collect information.

[15] Usable responses are those where the participants met the qualifying criteria and answered a sufficient number of questions in order to perform meaningful analyses.

[16] SPSS is a software package used for statistical analysis of data (WhatIs.com, 2019).

1.7 ETHICAL CONSIDERATIONS

All studies need to comply with ethical guidelines. The current study is particularly sensitive due to the nature of the topic, namely tax compliance behaviour. People might be reluctant to provide honest answers as they may be scared that they will be caught and penalised for non-compliance. Care should be taken that the study is conducted ethically, especially when human beings are involved. The key aspects to consider are the protection from harm, confidentiality, informed consent, the right of the participant to withdraw at any stage and the researcher needs to act honestly and with integrity (Leedy & Ormrod, 2015; Shadish, Cook & Campbell, 2002).

Participants completed the online experiment in the comfort of their own home or office, being an environment that they are used to. Anonymity was ensured as participants were not obliged to be at a specific venue at a specific time. This relieves them of any possible embarrassment or harm. Due to the sensitivity of the experiment, requesting participants to report on their tax compliance, participants needed additional comfort that their responses could in no way be linked back to them. All responses are automatically anonymous as Qualtrics does not reveal the identity of the participants. Participants were never asked to fill in any of their details which would make them identifiable. Participants were informed at the start of the online study that their responses would be confidential and could not be linked to the individual. They were also told that their participation was voluntary and that they could withdraw from the experiment at any stage. Participants then had to give their informed consent by clicking on the 'Yes' button to indicate their willingness to participate and could then continue with the experiment.

The researcher presented the data that was received logically and no manipulation of the results took place. The data are also kept for a period of ten years and can be scrutinised by any interested party. Ethical clearance to conduct the study was obtained from the Ethics Committee of the Faculty of Economics and Management Sciences at the University of Pretoria before the experiment was conducted: Protocol Number EMS092/18.

1.8 RIGOUR OF THE DATA

The trustworthiness and quality of quantitative data are evident in the reliability and validity of the data and ensure that the data are worthy of attention (Hoepfl, 1997). As such, reliability of data refers to whether, if a person conducts the same experiment again and again with the same objects, he/she will obtain the same results as in the current study. Reliability considers the "accuracy and precision of the measurement procedure" (Babbie & Mouton, 2001; Cooper & Schindler, 2008:289) and asks the question, did the treatment cause the outcome (Robson, 2011)?

Pilot studies can be conducted to improve the experiment by identifying and correcting any uncertainties participants might have, which increases the reliability of the data obtained. A carefully designed experiment and successful implementation thereof ensures that reliable data are collected from which generalisations can be drawn cautiously to the target population (Yesegat, 2009).

One factor that could influence the results of the data obtained is the bias or influence of the researcher or observer in the data collection process. Another influencing factor would be that participants may be tired, not feel well or experience tension from work. However, by using an established method (such as an experiment) that has been shown by other researchers to be reliable, the risk is minimised (Babbie & Mouton, 2001; Robson, 2011).

In order to increase the reliability of the data, pilot studies were conducted to ensure that participants would not be uncertain about what is requested of them. Furthermore, the data were collected online and thus the researcher was not involved in the actual collection of the data. Therefore, no personal research bias could play a role in data collection.

Although various external factors such as tiredness and stress could affect participants, the random allocation to the various treatment groups should ensure these external influencing factors are distributed and present among all treatment groups. Experiments are seen as a popular method to research tax compliance and thus the data obtained is expected to be reliable if the experiment is set up correctly (Richardson & Sawyer, 2001).

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Validity is "the extent to which a test measures what we wish to measure" (Cooper & Schindler, 2008:289). This study addresses three types of validity, namely content validity, internal validity and external validity. Content validity considers whether the study is fully representative of what it aimed to measure. Internal validity refers to with how much confidence one can conclude that the causal relationship that was tested can be trusted and not influenced by other factors. External validity refers to with how much confidence one can generalise the results to other populations (Scribbr, 2020).

In terms of content validity, the study considers the demographic profiles of the participants in Chapter Five, Section 5.3 and compare them to relevant populations in South Africa to ensure the representativeness of the target population. Experts (the supervisors, a statistician and experimental expert) also worked through the experiment before it was pilot tested, enhancing the content validity. Internal and external validity are discussed in more detail throughout Chapter Four, with full discussion concerning the results of the study in Chapter Five.

1.9 STRUCTURE OF THE THESIS

The thesis comprises six chapters, with the structure of the thesis designed to meet the stated objectives.

Chapter One has provided the background information and appropriate context, leading to the identification of the problem and the purpose of the research. This was followed by the objectives of the study in order to meet this purpose and some detail on the importance of this study (its motivation). The scope of the study was subsequently identified to establish key limitations. The research design of the study was then briefly discussed, followed by consideration of ethical and data issues and finally the chapter included this outline for the structure of the thesis.

The literature review is divided between two chapters, as two main constructs underpin this study: 'VAT' and 'tax compliance'. In order to provide an appropriate context for the study, Chapter Two will provide an overview of the VAT system and its operation, including a brief history of the tax, a discussion on the tax systems, the registration requirements, calculating

the VAT liability and finding the optimal VAT rate, all from a global perspective. It will also focus on a closer analysis of South Africa's VAT system.

The literature review continues in Chapter Three with an overview of 'tax compliance'. The various theories that seek to explain this aspect of human behaviour will be discussed, including a discussion of economic and psychological/behavioural approaches. This is followed by the factors identified in other studies that influence tax compliance behaviour. Studies specifically considering research on VAT rate changes are then discussed. The literature review will adopt an 'inverted pyramid' approach whereby it will begin with this broad appraisal and then steadily refine and narrow its scope in order to establish the gap in the knowledge that this thesis seeks to address. The chapter concludes with the hypotheses that were deduced from literature and are to be tested in the study.

Chapter Four will discuss the research design and conduct of the study, focussing on the post-positivism philosophy and experimental methodology adopted to perform the research. The research method is discussed next, including a discussion on the treatment groups, setting up and conducting the experiment, details of the pilot study and an explanation of the sampling method to select participants.

Chapter Five will analyse and discuss the results of the experiment to determine the effect of changes in the VAT rate on tax compliance behaviour of small business entities. The chapter commences with a section on the data analysis, including the type of techniques used to analyse the data, the cleaning of the data and a discussion on the validity and reliability of the data. This section is followed by a description of the sample obtained. Next, the results of the effect on tax compliance are discussed in terms of amounts declared, considering the direction and magnitude of the change in the VAT rate. Then, the effect of changes in the VAT rate on tax compliance regarding registration decisions is discussed. Lastly, the evidence is provided on demographic variables affecting tax compliance decisions.

The study will conclude in Chapter Six, by indicating how each of the research objectives was met by summarising the results obtained from the experiment. The contribution that the

study makes is stated. Limitations of the instrument and the study are discussed, leading to reflections on how to improve the instrument and possible areas for future research.

CHAPTER 2

VALUE-ADDED TAX AND ITS OPERATION

The research questions are how (direction) and to what extent (magnitude), is the tax compliance behaviour of small business entities in South Africa likely to be affected by changes in the VAT rate? Therefore, the two main constructs derived from these questions and forming the basis of the current study are 'VAT' and 'tax compliance'. In Chapter Two, an overview of VAT and its operations are provided and the literature review is extended to Chapter Three, where the focus is on tax compliance.

VAT is the tax that has spread most rapidly across the world when compared to all other new taxes in modern history (Schenk *et al.*, 2015). It is said to be the most important single tax in many developing countries (Bird & Gendron, 2007). This chapter provides an overview of VAT and its operations as it discusses the origins of VAT, explains the VAT systems, discusses VAT registration requirements, calculating the VAT liability and attempting to find the optimal VAT rate. These matters will not only be considered in general terms but extended to include a more specific focus on the operation of VAT in South Africa. The nature of the current chapter is both descriptive and analytical, to enhance the understanding of VAT in the context of this study.

2.1 HISTORY OF VALUE-ADDED TAX

Historically, VAT has largely replaced various forms of consumption tax such as the general sales tax, which typically operated on the basis that the tax was only levied once, at the last point of distribution to the end-user (Schenk *et al.*, 2015). VAT is the preferred consumption tax since the tax revenue is more secure, as it is collected throughout the manufacturing, production and distribution processes. A supplier is less likely to forego the input tax that could be claimed on the purchase of a taxable supply, than not declaring and paying the general sales tax collected from the final consumer (Cnossen, 2011; Ebrill, Keen, Bodin & Summers, 2001; James, 2015). With the general sales tax, the consumption tax is not charged upon the sale if the purchaser can prove, by way of a registration number, that the supply will be used for business purposes (Krever, 2008). However, some people argue that

VAT is more susceptible to fraud than the general sales tax as a result of the refunds that could be claimed under the VAT system (De la Feria & Krever, 2013).

The VAT system as it is known today has its origin in Europe, where the EEC, through the Treaty of Rome, obliged its member states to implement a VAT. Each member state could form their VAT system based on the directives, indicating the basic framework to be followed. The original six EEC member countries implementing a VAT system were first France in 1954, followed by Germany, Luxembourg, the Netherlands, Belgium and Italy. The body was later expanded to include Denmark, the Republic of Ireland and the United Kingdom (UK) in 1973, Greece in 1981, Spain and Portugal in 1986, Austria, Sweden and Finland in 1995 and subsequently various other predominantly Eastern European countries in the early 2000s. All of the now 27 EU (the successor to the EEC) member states are required to adopt a VAT (European Commission, Not dated; European Union, 2020; Hellerstein & Gillis, 2010; James, 2015).

Based on the European model for a VAT system, VAT has expanded globally. Thirty-five of the 36 OECD member countries now implement a VAT, with the USA being the only OECD country not implementing a VAT system. Instead, their main consumption tax is a retail sales tax (Hellerstein & Gillis, 2010; James, 2015; Krever, 2008; OECD, 2018a).

South America was yet another region that implemented VAT at an early stage, mostly between 1960 and 1979. New Zealand followed this trend and implemented VAT in 1986, trailed by Australia, Canada, Russia and some of the African countries (including South Africa) during the 1990s. After 2000, there were more African countries to follow this trend (Ebrill *et al.*, 2001; OECD, 2018a). Of the total of 195 countries in the world (Worldatlas, 2019), approximately 168 countries now have a VAT system (OECD, 2018a). Figure 5 gives a timeline of the implementation of VAT globally.

Figure 5: International implementation of VAT
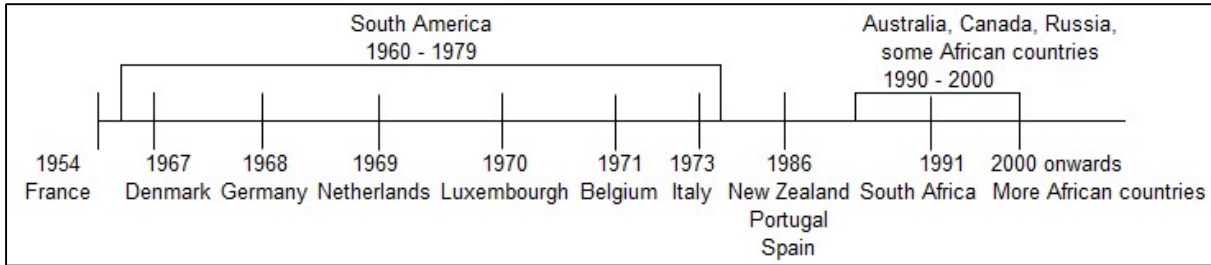
South Africa's current VAT system is based on New Zealand's VAT system (Schenk *et al.*, 2015) and was introduced in South Africa on 29 September 1991 at a rate of 10 per cent, replacing the general sales tax system which was levied at 12 per cent. Since VAT is more broad-based than the general sales tax, the effect on tax revenue collected was deemed to be neutral (Jansen & Calitz, 2017).

2.2 VALUE-ADDED TAX SYSTEMS

An in-depth understanding of a VAT system is deemed to be necessary to ground the research in theory. Theoretically, a VAT system can be based on either the origin principle or the destination principle. The origin principle entails that the tax is levied in the country from which the supply originates, thus where it was produced. The focus is on the origin of the *supplier* (Ebrill *et al.*, 2001; OECD, 2018a). On the other hand, the destination principle encompasses that the VAT is levied in the country where the product is supplied. It, therefore, considers the destination of the *consumer* (Ebrill *et al.*, 2001; Schenk *et al.*, 2015). The origin principle sets consumers on an even footing, while the destination principle levels the playing field for the suppliers (OECD, 2018a). From a theoretical and practical perspective, the destination principle is the preferred option as this ensures neutrality (Davis Tax Committee, 2014; OECD, 2018a).

Neutrality is further enhanced when VAT on exports is levied at a zero rate, to enable the importing country to levy the VAT (Ebrill *et al.*, 2001; James, 2015; OECD, 2018a; Schenk *et al.*, 2015); therefore avoiding the unfair practice of double taxing of products. This ensures that the destination principle is applied.

After establishing the specific VAT principle to be applied in a country, the theoretical or conceptual underpinnings of the type of VAT system to be employed needs some consideration. There are two broad types of VAT systems, namely the traditional VAT system and the modern VAT system. Most of the EU countries follow the traditional VAT system (Krever, 2008). The modern system was adopted in various countries such as New Zealand, Australia and South Africa but with variations according to each country's needs (De la Feria & Krever, 2013; Krever, 2008; Schenk *et al.*, 2015).

There are more similarities between the two types of VAT systems than differences. The similarities include the following:

- VAT is levied by registered VAT vendors on supplies made;
- registration is mostly only compulsory once the vendor generates taxable supplies[17] above a specified threshold;
- registration is allowed for vendors with turnovers below the threshold in some circumstances;
- input tax credits can be claimed on purchases made for business purposes, which are deducted from the output tax payable to the revenue authority; and
- both systems apply the destination principle (Krever, 2008).

The two main differences between the two VAT systems relate to the rates structure. Multiple rates are embedded in the traditional system, whereas the modern system typically applies single non-zero VAT rates. The traditional system implements more exemptions of products than the modern system. Of the 54 African countries, 19 apply multiple VAT rates and are thus following the traditional VAT system (Crowe Horwath, 2016; EY, 2018). According to Ebrill *et al.* (2001), the most successful VAT structure is one with a sufficiently high threshold and with a single non-zero VAT rate (thus a modern VAT system), with few exemptions.

An example of the transition of a VAT system from traditional to modern can be found in New Zealand. The VAT system implemented by New Zealand in 1986 was based on the European-style traditional system; however, the legislation was adjusted to include a much broader base by applying a single tax rate and eliminating numerous exemptions, therefore

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[17] A taxable supply is a supply made on which VAT is levied, even if it is at zero per cent (Anon., Section 1 of the VAT Act (89/1991)).

developing into a modern VAT system (Krever, 2008; Schenk *et al.*, 2015). New Zealand overcame the problem of political pressure and regressive impact on the low-income earners by granting compensation in the form of income support (welfare payments) instead of having multiple rates and exemptions (further discussed in Section 2.4) (Krever, 2008).

The strongest argument in favour of the zero-rating of products is to provide relief for the low-income earners by including basic foodstuff and education in this category. High-income earners, however, spend proportionately more on these items than the low-income earners and therefore benefit more from the zero-rating (Krever, 2008). As such, zero-rating and exemptions of a large number of items are not effective in meeting the objective of distributive justice. This is the first reason why VAT is perceived as a regressive type of tax. In the UK, it was found that it would be better to increase grants to the low-income earners and get rid of most zero-rated items and reduced rates, as the poorest 30 per cent of the population would then be better off. The decrease in zero-rated items will result in an increase in VAT revenue from the high-income earners. The increased revenue will be available for redistribution amongst the low-income earners through grants (Crawford, Keen & Smith, 2010; De la Feria & Krever, 2013; Mabugu, Fofana & Chitiga-Mabugu, 2015; Van Oordt, 2016).

Another reason for stating that VAT is regressive in nature can be found in the disparity of disposable income between lower-income households and higher-income households. The lower-income households spend proportionately more of their disposable income on VAT than the higher-income households (Schenk *et al.*, 2015). A warning was articulated by Ebrill *et al.* (2001) and confirmed in the UK's *Mirrlees Review* (Mirrlees & Adam, 2010) that VAT should not be evaluated in isolation but considered within the tax system as a whole. A seemingly regressive tax may then form part of the solution to alleviate poverty. Although the VAT is perceived to be regressive when viewed in isolation, the total tax system may be progressive. To decrease the regressiveness of VAT, some countries apply rate differentiations and exemptions to selected supplies (Ebrill *et al.*, 2001), however this increases the administrative burden. VAT is seen as a complex tax that requires efficient administration by the revenue authority and the taxpayer. However, this is not always possible especially in developing countries, where skills are scarce and basic record-keeping is not always a priority (Ebrill *et al.*, 2001).

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Due to the uniqueness of each country, the VAT system cannot be perceived as a "one size fits all" system that can be copied and pasted into different countries. Each country has its challenges and distinctive characteristics that need to be minimised through tax design (Bird & Gendron, 2007). The following guiding principles should be present in a VAT system to ensure it is addressing the uniqueness of each country (Kloeden, 2011):

- the tax law should be simple and easy to comply with and administer;

- there should be services offered to taxpayers to assist them with meeting their obligations, such as binding rulings and interpretations;

- filing of returns and payment of the tax liability should be easy;

- collection enforcement to ensure that non-compliant taxpayers are identified and addressed;

- taxpayer audits should be done selectively and effectively;

- penalties should be enforced as a deterrence measure; and

- an independent review of decisions should be accessible.

For purposes of this research, the general theory of VAT systems is applied to the general application of VAT systems in South Africa. The VAT system as applied in South Africa follows the destination principle and is based on the modern VAT system. The VAT legislation provides for certain, yet limited, exemptions and zero-rated items. To offer relief to the lower-income earners in South Africa, certain basic foodstuffs such as eggs, milk, maize meal, brown bread, rice, unprocessed fruits and vegetables are zero-rated (Anon., schedule 2 to the South African VAT Act (89/1991)). Some other supplies that are zero-rated in South Africa, other than exports, are the sale of going concerns, agricultural goods and fuel (Anon., section 11 of the VAT Act). The limited number of zero-rated items reduces the complexity of the system. Furthermore, the administrative burden is reduced as South Africa has a single, non-zero VAT rate.

The South African VAT system is found to be mildly regressive but it is a good source of government revenue in comparison with other tax types, as individuals in the informal sector also contribute to the VAT revenue stream. It should be noted that the South African tax system as a whole is progressive in nature and that the VAT should not be considered in

isolation (Go *et al.*, 2005). The general theory of VAT can be better understood by analysing the more specific theory that is used as building blocks of the system, which follows below.

2.3 VALUE-ADDED TAX REGISTRATION

Analysing the specific theory of a VAT system will commence with a discussion on the requirements of who must register and when to register. In the majority of countries, an entity only has to register under the VAT system once the minimum compulsory threshold in that specific country is reached. The threshold refers to the turnover of an entity in a 12-month period. For registration under the VAT system to be compulsory, the turnover amount must exceed a minimum pre-determined amount. The main purpose of a threshold is to prevent the mostly unwanted situation where very small businesses have to register for VAT, as the compliance cost is disproportionately high for them in comparison to large businesses (Evans, 2003). In this scenario, it will be even more difficult for a small business to be profitable. If they are obliged to register, this could have the effect that the burden of the increased compliance cost is passed to the consumer in the form of higher prices for products, leading to a reduction in competitiveness. The advantage of being a registered VAT vendor though is that they can claim back the input tax on their purchases (Ebrill *et al.*, 2001; James, 2015; Schenk *et al.*, 2015). In developing countries the choice of a compulsory threshold amount is crucial as the collection of VAT revenue should be maximised and at the same time provide sufficient support to the small business entities (Ebrill *et al.*, 2001).

A voluntary threshold refers to the minimum turnover an entity must earn in a 12-month period before being allowed to register as a VAT vendor (Ebrill *et al.*, 2001). A minimum voluntary threshold is important to reduce the risk to the revenue authority of an entity claiming input tax but then disappearing before paying any net tax. In setting the appropriate thresholds, the administration costs of the revenue authority should also be considered, as it is not economically viable for the revenue authority to spend large amounts of resources for the collection of a small amount of VAT. Thus, if compliance did not have any cost and all taxpayers voluntarily complied, the optimal registration threshold would be zero, as this would maximise the revenue received from VAT and would also limit competition between firms. However, this is not practical (Ebrill *et al.*, 2001; James, 2015; Schenk *et al.*, 2015).

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In order to illustrate the optimal threshold for VAT registration, a balance should be struck between the size of an entity and the potential VAT revenue to be collected, keeping the compliance cost in mind. Figure 6 illustrates the inverted relationship between the number of taxpayers (sorted according to size) and the amount of total tax revenue collected from them.

Figure 6: Taxpayer segments: Taxpayer population and total tax revenue contribution characteristics
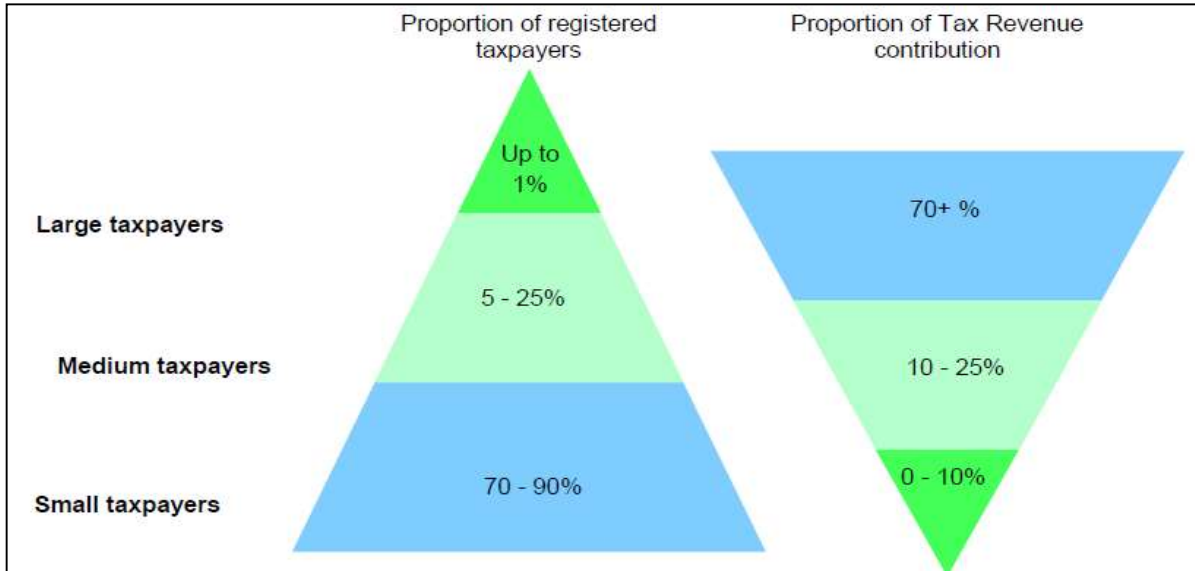
Source; Kloeden (2011:26).

Where a business evades VAT by not registering when it should, it is at least partly 'caught' in the VAT net when it purchases supplies from VAT vendors. VAT is paid on the product at the time of purchase but the purchaser is unable to claim this input tax back due to the business not being a registered VAT vendor (Ebrill *et al.*, 2001; Krever, 2008).

For purposes of this research, the specific theory of VAT systems is applied to the specific application of VAT systems in South Africa. Every entity that makes taxable supplies in a 12-month period of more than R1 million (compulsory threshold) is required to register as a VAT vendor. However, any entity making taxable supplies of more than R50 000 (voluntary threshold) may register as a VAT vendor (Anon., section 23 of the VAT Act). This high compulsory threshold ensures that the small businesses, for whom the tax compliance costs would be high, are excluded (Owens *et al.*, 2011).

The current study will address tax compliance of small businesses. The small businesses just above the threshold are most affected by VAT, as they have to register as VAT vendors and thus their compliance costs increase but they do not receive a large income. Small businesses just below the threshold do not have to levy output tax, however, they cannot claim any input tax on purchases either (Ebrill *et al.*, 2001).

Once it is established that an entity should be registered for VAT, the next step in the specific theory of the VAT system would be to determine the VAT liability.

2.4 VALUE-ADDED TAX LIABILITY

Analysing the specific theoretical and conceptual underpinnings of a VAT system will continue with a discussion on the calculation of the VAT liability. Since VAT is levied on consumption, it is not dependent on income received. VAT is collected at multiple stages of the economic cycle, from the sale of the product in the primary sector to the final distribution of the goods to the end-consumer (Krever, 2008; Schenk *et al.*, 2015). Any producer, be it a manufacturer or even a farmer or hairdresser, can add value to his/her raw materials or purchases or his/her service before selling it on to the consumer (Tait, 1988). A supply can either be consumed immediately in full (such as a haircut) or bought now and fully consumed later (such as chocolate) or consumed over a period of time (such as furniture). The tax is levied in full at the time of the sale of these supplies, regardless of when it is consumed (OECD, 2018a).

The VAT is charged in addition to the selling price of the product, the intention being that the tax burden is carried by the final consumer of the goods or services (supply) for household purposes (OECD, 2018a; Schenk *et al.*, 2015). When there is an increase in the VAT rate and the vendor passes this increase in price to the customer, the vendor's product is less competitive from a global perspective as it is now more expensive than before. This could result in the vendor choosing to evade taxes by not increasing the price of the product and declaring less VAT, rather than becoming less competitive by increasing the price of the product.

Output tax is levied at every point of sale of taxable supplies by registered vendors, however, an input tax credit can be claimed on the cost incurred to manufacture or purchase the good. The VAT vendor thus calculates the tax liability for each VAT reporting period by deducting the input tax credits (tax paid on taxable imports or domestic purchases) from the tax on the taxable supplies (output tax) (Ebrill *et al.*, 2001; Krever, 2008; Schenk *et al.*, 2015). This is the most common and practical method and is called the credit-invoice method (Ebrill *et al.*, 2001; OECD, 2018a; Tait, 1988). Under this system, the vendor claiming the input tax must have a valid tax invoice that was issued by the supplier of the goods or services (OECD, 2018a; Schenk *et al.*, 2015). This self-policing method should motivate purchasers to ensure they receive invoices to claim their input tax and as such, the seller should declare the relating output tax (Ebrill *et al.*, 2001; Krever, 2008).

Another method used to determine the VAT liability of vendors is called the subtraction method, which is an entity-based method and is only applied in Japan. The VAT on allowable purchases is subtracted from the VAT on taxable supplies, determined for each business on an accounts-based measure (Ebrill *et al.*, 2001; OECD, 2018a; Tait, 1988).

Although the suppliers act as agents to collect VAT on behalf of the revenue authorities, the reverse charge mechanism is sometimes applied to collect VAT on consumption from the consumers. This occurs where the buyer declares the output VAT and pays it straight to the revenue authority, instead of paying the VAT to the seller, who then has to pay it over as agent to the revenue authority (OECD, 2018a). A typical transaction where this occurs is where a service is imported by a buyer for personal consumption.

Since VAT collection is based on the fact that VAT is a self-declared tax, there is a strong possibility that VAT vendors could over-claim input taxes on purchases and under-declare output taxes payable on sales (SARS, 2015).[18] It could happen though, that vendors levy VAT on the sale but never pay the VAT collected over to the revenue authority: this is referred to as the "missing trader" problem (GIZ Sector Programme Public Finance, 2010; Tumpel & Wurm, 2012).

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[18] This is evident from the agency theory: The agency theory involves that one party (the agent) acts on behalf of another party (the principal) to meet the goals of the principal. In this case, the VAT vendors are the agents and the principal is SARS. However, conflict or goal divergence may arise where the agents' goals are not aligned with those of the principal (Jensen & Meckling, 1976).

In practice, claims on fraudulent invoices are a high-risk factor (Ebrill *et al.*, 2001; Krever, 2008). In Germany, the magnitude of the problem of claims on fraudulent invoices was out of control to such an extent that it was suggested that input tax claims should only be paid once it is proved that the relating output tax has been received by the revenue authority (Bird & Gendron, 2007). This system would be an option for other countries to implement as well to ensure that input tax is only claimed and allowed if output tax has been paid.

Applying these principles to the South African context, it is noted that the credit-invoice method of ascertaining the VAT liability is used together with the reverse charge mechanism in certain cases. A risk identified by SARS in the small business sector is evident where small businesses[19] collect VAT but do not pay it over to SARS (SARS, 2012).

An essential element in calculating the VAT liability and ultimately the revenue to be collected through the VAT system is the VAT rate applied. Thus, the next step in the discussion on the specific theory of the VAT system relates to the determination of the optimal VAT rate.

2.5 OPTIMAL VALUE-ADDED TAX RATE

In general, finding the optimal tax rate to determine the tax liability requires significant research and many factors influence this decision. It is also difficult to pinpoint for each tax what the tax rate should be, as all taxes are integrated. As is evident from the Laffer curve illustrated in Figure 7, if a government charges too low a tax rate, the tax system is inefficient and the government cannot collect enough revenue to fund their expenditure. However, if the rate is too high, people avoid or evade taxes to pay less, which makes the system inefficient again. The optimal point is somewhere between these extremes where the tax rate results in the optimal amount of tax revenue collected (Raja, 2015).

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[19] Small business entities for purposes of this study and in the South African context will be businesses earning less than R20 million gross income during a 12-month period.

Figure 7:   Optimal tax rate

Source: Raja (2015).

Although the Laffer curve could explain (to an extent) how the optimal tax rate may be determined to obtain the optimal amount of tax revenue, it should be noted that the Laffer curve is criticised in tax theory. At a minimum, the shape of the curve is uncertain and disputed among economists (Blatt, 2012; Goolsbee, Hall & Katz, 1999; Malcomson, 1988). The uncertainty is highlighted by different factors that could influence the tax rate as well as whether tax cuts could stimulate the economy, the type of tax system in place, the rate at which the economy is growing, how high the tax rates are already, tax loopholes and how easy it is to enter the informal sector, which does not pay tax (Amadeo, 2019).

The COVID-19 pandemic has had an enormous effect on the economy worldwide due to the measures implemented by governments to contain the spread of the virus. The great lockdown, where many businesses were closed and citizens were encouraged to stay at home, significantly decreased consumption of products (Deb, Furceri, Ostry & Tawk, 2020). In an attempt to stimulate the crippled economy, some countries have decreased their VAT rates either temporarily or permanently.[20] Some countries implemented a standard VAT cut on all products, whereas others only cut the VAT rates on specific items or industries which were affected the most, such as restaurants, catering services, accommodation, hospitality, events, books, health clubs and gyms (Asquith, 2020b). Yet, Saudi Arabia increased its VAT

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[20] Countries introducing VAT cuts include Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Greece, Kenya, Moldova and Portugal (Asquith, 2020b).

rate from five per cent to 15 per cent, probably because of the significant drop in the oil prices and the fact that the government desperately needed revenue (Asquith, 2020a).

Nevertheless, to try and comprehend the process of finding the optimal tax rate for VAT, or ensuring that the rate is not set too high or too low, an understanding of the rate at which VAT is currently levied is necessary. VAT is mostly levied on the selling price at the standard rate. In some countries, an increased or reduced rate is charged on specified items and is referred to as a 'multiple-rate structure' (Ebrill *et al.*, 2001; Krever, 2008). Cnossen (1982) is very clear in his view that a structure with multiple rates and therefore involving rate differentiation (he specifically cites the Netherlands as an example) does not make much sense. Some differentiation is inappropriate and sometimes too complex to see the thin line between the items, such as with the exemptions of certain foodstuffs or health services. He suggests reduced rates should be abolished and the standard rate then dropped to compensate for the increase in VAT paid.

Supplies that are exempt from VAT are different from supplies that are zero-rated. Supplies are usually exempt from VAT where it is difficult to determine the value, time or place of supply and is hard-to-tax. In this case, no input tax can be claimed but no output tax has to be paid either (Ebrill *et al.*, 2001; James, 2015). De la Feria and Krever (2013), however, also argue that the 'excuse' of difficulty in taxing certain items and thus exempting it, is no longer convincing as solutions can be found around this problem. One such solution would be to amend the definition of 'consumption'.

In most countries, certain products are levied at a rate of zero per cent. This means that all input tax can be claimed on expenditure incurred to manufacture or to obtain the product, however, no output tax needs to be paid. This would put a VAT vendor supplying mostly zero-rated products in a VAT refund position, where the revenue authority has to repay VAT to the vendor (Ebrill *et al.*, 2001; James, 2015). Exports are typically zero-rated by many countries in order to adhere to the destination-principle (OECD, 2018a).

The countries that apply a multiple rate structure mainly follow the traditional VAT system. They have a standard rate but also implement a reduced rate for items that are consumed more often by low-income earners, to give them relief. There may also be increased rates

that are levied higher than standard rates on luxury items purchased, specifically consumed by the high-income earners, to make the tax seem more progressive (OECD, 2018a; Schenk *et al.*, 2015).

There are several disadvantages associated with the use of multiple rates. The first is that this increases the administration and compliance costs and does not influence the revenue income significantly (Charlet & Owens, 2010). From a vendor's perspective, compliance costs increase where multiple rates are applicable as forms are more complex to complete and bookkeeping systems also need to be more complex to be able to account for these various transactions. Increases in compliance costs are typically not favourable for taxpayers and thus, the idea to evade tax becomes more attractive, regardless of it being fraudulent (Agha & Haughton, 1996).

Another disadvantage is the unnecessary time spent by vendors in systems with multiple rates to reclassify their products into more favourable categories (Krever, 2008). Reduced rates overall in a multiple-rate structure result in interpretive problems and aggressive tax planning measures (De la Feria, 2012).

From the revenue authority's perspective, a disadvantage is the complicated audit process as the products in the various categories with multiple rates have to be checked for correctness. Additionally, the classification between the various categories could be subjective and thus more time is spent on arguing about which category the product should be allocated to (Ebrill *et al.*, 2001).

The final disadvantage is the political vulnerability. If the government is persuaded to accept the need for reduced rates at a certain point in time, they could surrender under pressure in the future when more reduced rates are demanded by its citizens and so erode the revenue flowing from the tax base (Ebrill *et al.*, 2001).

From Table 2, it is evident that the more recently introduced VAT systems tend to favour a single non-zero rate. Table 2 indicates that the percentage of countries that have implemented a multiple VAT rate has decreased over time.

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Table 2:   VAT systems introduced: single or multiple rates

Date of introduction	Number of countries	Countries with a single rate	Countries with multiple rates	Multiple rates (%)
Before 1990	45	12	33	73
1990 – 1995	53	21	32	60
1996 – 2000	27	15	12	44
2001 – 2005	16	8	8	50
2006 – 2010	15	8	7	47
After 2010	12	8	4	33
Total	**168**	**72**	**96**	**57**

Source: Compiled from OECD (2018a:194-197)

To eliminate cross-border discrepancies of sales between various countries, some regions have harmonised their VAT rates to have the same VAT rate as the neighbouring country. The West African Economic and Monetary Union countries amended their original VAT rates to adopt a common 18 per cent rate, except for Niger, which levied 19 per cent (Doe, 2006). Similarly, the East African Community countries implemented a uniform VAT rate of 18 per cent, with only Kenya applying a VAT rate of 16 per cent.

In general, across the world, VAT rates have remained fairly stable until 2008 when the economic crisis hit. Many countries then increased their VAT rates to increase the much-needed tax revenue (OECD, 2012). Increases in VAT rates were experienced in 22 of the then 28 EU Member States since 2008 (the UK is no longer an EU member country since 31 January 2020) (De la Feria, 2015; European Union, 2020). In 2018, the average standard VAT rate for 23 OECD countries also being members of the EU was 21.8 per cent. The OECD average was a bit lower at 19.2 per cent (OECD, 2018a).

For purposes of this research, the history and current standing of the South African VAT rate must also be discussed. The VAT was introduced in 1991 at 10 per cent to raise government revenue. Since income tax rates were already considered high, the VAT was selected as the best method to increase the tax revenue, also because it has fewer distortions than other taxes and is effective in growing the economy.[21] However, after 18 months, it was evident

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[21] The tax distortions and ability of VAT to assist in growing the economy are further discussed in Chapter Three, section 3.5.

that the rate was too low as the same level of government revenue was not achieved. The rate was therefore increased to 14 per cent in 1993 and more items were zero-rated to provide relief to the low-income households (Department of Finance, 1993). The former Minister of Finance announced an increase of the VAT rate to 15 per cent in 2018, stating that the VAT rate remained unchanged since 1993 and that the rate "is low compared to some of our peers". He also stated that the increase was necessary to be able to maintain the integrity of the public finances (Gigaba, 2018:11).

Table 3 sets out the rates applied by South Africa and its neighbouring countries.

Table 3:   VAT rates of South Africa and its neighbouring countries

Country	Standard VAT rate (%)
Botswana	12
Lesotho	14
Mozambique	17
Namibia	15
South Africa	15
eSwatini	14
Zimbabwe	15
Average	**14.57**

Source: ATAF (2018); PwC (2018)

From Table 3 it is evident that South Africa and the neighbouring countries have not harmonised their VAT rates but that South Africa's VAT rate is in line with the average VAT rate of the neighbouring countries. Further, research undertaken by the ATAF involving 26 African countries concluded that the average VAT rate of these 26 countries is 15 per cent (ATAF, 2018). South Africa is thus on par with the average for these countries in Africa, however, the OECD average of 19.2 per cent is much higher than the 15 per cent currently applied in South Africa.

In summary, the global trend has been for VAT rates to increase over time (European Commission, 2018). Yet interestingly and despite these increases, relatively little research appears to have been conducted into the effects of VAT rate changes on tax compliance behaviour. This aspect will be further explored in Chapter Three.

2.6 SUMMARY

After the in-depth discussion of a VAT system, the research is grounded in the principles underpinning the operation of the VAT generally, and – more specifically – its operation in South Africa. VAT has been a fundamental source of tax revenue for most countries, especially for developing countries. Research indicates that the most efficient and effective VAT system will have a single VAT rate with no exemptions, no domestic zero-rates and a sufficiently high compulsory registration threshold. This will broaden the VAT base to its full potential but still allow scope for exports to be taxed following the destination principle. It will also be less complex and reduce compliance costs (OECD, 2012). Each country has its opportunities and challenges and therefore needs to evaluate and apply the most appropriate VAT system applicable to their circumstance.

When considering VAT rates, the overwhelming trend noted over time is that rates have increased, especially in European countries. South Africa's VAT rate recently increased by one percentage point, which is similar to the average of the VAT rates applicable in its neighbouring countries and also of 26 African countries. However, VAT evasion and avoidance are known to increase when there is a tax rate increase (Matthews, 2003).

As discussed above, changes in indirect tax policy rather than through direct taxes are said to be more appropriate to limit the unfavourable effect on growth and employment. This study will, therefore, focus on the effect policy changes and specifically changes in the VAT rate, have on tax compliance. The focus of the study will be two-fold: first, the study will consider the tax compliance behavioural outcomes that follow from a decrease (of varying degrees of magnitude) in the VAT rate as this could potentially increase tax compliance, which could, in turn, increase tax revenue. Second, an increase in the VAT rate (of varying degrees of magnitude) will also be considered as it is designed to increase tax revenue.

Now that an in-depth discussion has been provided on the VAT system and how it operates, it is necessary to understand the broader literature related to tax compliance behaviour. This will confirm the gap in the literature that the study seeks to address.

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CHAPTER 3
TAX COMPLIANCE

3.1 OVERVIEW

The two main constructs of this study are VAT and tax compliance. In the previous chapter an overview of the history and operation of VAT was provided in an international and national context. The relevant literature on tax compliance is now considered to identify the gap in knowledge regarding tax compliance behaviour as it relates to VAT rate changes.

A former South African Minister of Finance, Pravin Gordhan, noted that citizens need to have confidence in the tax system and have the perception that every citizen is tax compliant. He further noted that "Unfortunately, there remain those who are not willing to meet their responsibilities as good citizens and as caring human beings. These people not only affect our ability to function independently as a state but also undermine the foundation of the tax system by eroding the core principle of fairness" (Gordhan, 2012:1). The problem with attaining good tax compliance is that people have unlimited desires but limited resources to fulfil these desires (Cohen, 2015).

Tax compliance literature presents contradictory views regarding the honesty (ethics) of taxpayers. Some studies (such as those contained in the meta-analysis of Jackson and Milliron (1986)) noted that there is a trend where voluntary tax compliance appears to be declining. Non-compliance is a global problem where some may employ any measure available to them to decrease tax liability, even illegal measures (Alm & Torgler, 2011; Cohen, 2015). However, there are studies supporting the idea that there are many taxpayers who are honest and would not evade taxes, even if an opportunity to do so existed (Christian & Alm, 2014; Erard & Feinstein, 1994; Gordon, 1989).

Before the effect of a VAT rate change on tax compliance behaviour can be determined, a deeper understanding of the underlying concepts of tax compliance is necessary. These concepts include the meaning of tax compliance or non-compliance, intentional and unintentional non-compliance as well as tax avoidance (legal) and tax evasion (illegal). The

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broad theories influencing tax compliance are then discussed in Section 3.3 and this provides a platform (in Section 3.4) to contemplate more specific factors that have been considered to influence tax compliance behaviour. Conducted research studying VAT rate changes is examined in Section 3.5. From the discussion of the factors influencing tax compliance behaviour, the hypotheses of the study are developed in Section 3.6.

3.2 COMPLIANCE VERSUS NON-COMPLIANCE

Not all taxpayers are compliant or one can say that compliance levels may vary (McKerchar & Evans, 2009). Tax compliance is a topic that encompasses research from many disciplines, including law, accounting, economics, sociology, psychology and political sciences as well as other fields (Jackson & Milliron, 1986). Various definitions exist for the concept of 'tax compliance'. Tax compliance can be conceptually defined simply as "the degree to which taxpayers comply with the tax law" or it can be explained as taxpayers' willingness to pay their taxes (James & Alley, 2002; Kirchler, 2007).

For this study, a more operational meaning is used, where a compliant taxpayer is regarded as someone who adheres to the tax laws. This can be done by registering as a taxpayer when obliged to do so; submitting the relevant returns on time and completing them accurately; making the necessary tax payments on time and keeping records for the required period (OECD, 2008).

Figure 8 summarises SARS's viewpoint on how to encourage tax compliance (based upon work undertaken by Braithwaite and the model initially adopted by the Australian Taxation Office) (SARS, 2012). Taxpayers have various attitudes to compliance, from being willing to do the right thing, all the way to deciding not to comply. Depending on the attitude towards compliance, the revenue authority can follow various strategies to ensure compliance, from making it easier for taxpayers to comply, to implementing deterrence measures and using the full force of the law to demand compliance.

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Figure 8:   Encouraging tax compliance

Attitude to compliance	Nurturing willing participation and building fiscal citizenship	Compliance strategy	Level of compliance cost
Have decided not to comply		Use full force of the law	High
Don't want to comply		Deter by detection	
Try but don't always succeed		Help to comply	
Willing to do the right thing		Make it easy	Low
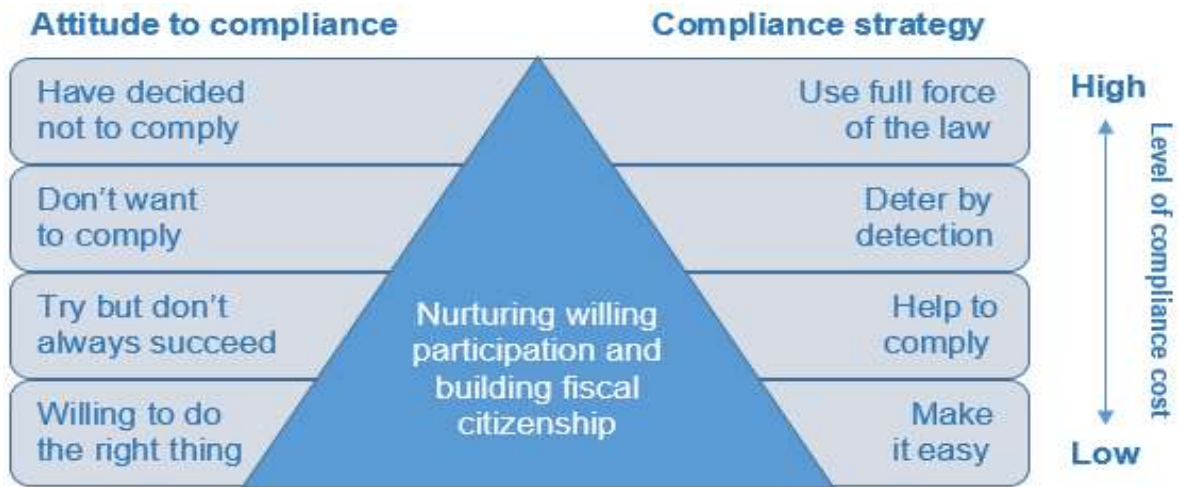
Source: SARS (2012:6)

SARS's compliance model informs its activities. Education and outreach programmes are run and interpretation notes issued to ensure clarity and certainty of tax legislation upfront. Service delivery is important to the organisation as it knows that ease in registration, filing and paying of taxes increases tax compliance. Lastly, responsible enforcement is implemented through risk profiling, research, debt collection and dispute resolution (SARS, 2019).

Tax non-compliance is an important factor to consider when contemplating a tax policy or legislative change, as the expected tax revenue might never be received. Non-compliance may be intentional or it may be unintentional. Where intentional non-compliance occurs, the act of non-compliance may constitute avoidance or it may constitute evasion. Figure 9 is a visual representation of the concept of non-compliance.

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Figure 9:   Summary of tax non-compliance definition
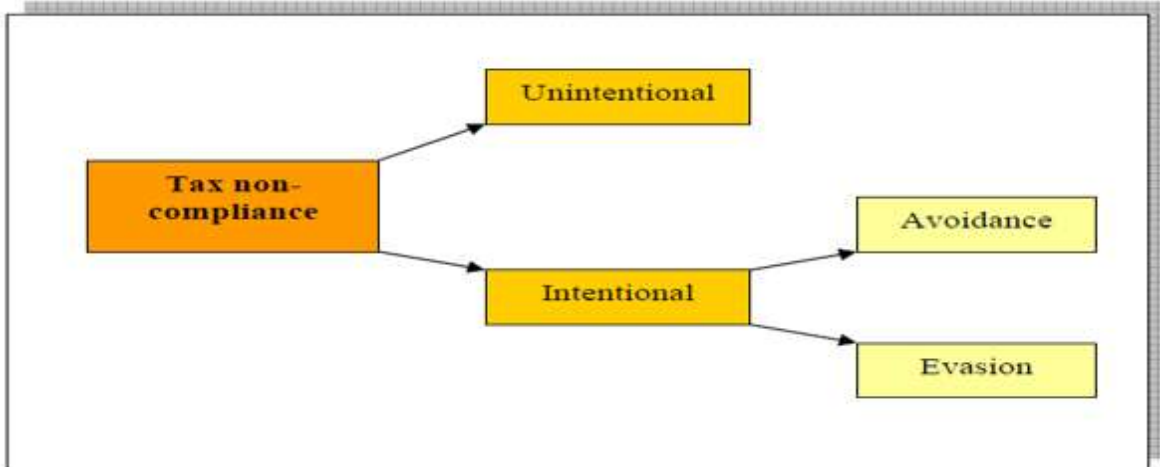
Tax avoidance can be defined as legal actions taken to reduce one's tax liability. Tax avoidance follows the letter of the law but not the spirit of the law; stated otherwise, it does not follow what was intended by the law (Schenk *et al.*, 2015). Tax avoidance can also be described as aggressive tax planning.

In contrast, tax evasion can be defined as illegal actions taken to reduce one's tax liability. The problem is the difficulty to differentiate between legal and illegal measures. The concept "avoision" was created to demonstrate the uncertainty of whether an action is legal (avoidance) or illegal (evasion) (Lewis, 1982).

The focus of this study is the illegal evasion of tax payments. Tax evasion is therefore discussed in more detail.

Tax non-compliance in the form of evasion entails two categories: evasion by commission and evasion by omission. Evasion by commission requires an action taken by the taxpayer (Lewis, 1982). Evasion by commission in the context of VAT includes inflated refund claims, where vendors claim refunds on fictitious invoices. As this allows vendors to receive back public funds, this is one of the most common types of VAT fraud (Bird & Gendron, 2007; Harrison & Krelove, 2005; Keen & Smith, 2006).

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Other forms of evasion by commission involve input tax claimed on goods used for exempt supplies or for private consumption and input tax claimed on invoices from suppliers that are not registered VAT vendors (Harrison & Krelove, 2005; Keen & Smith, 2006). These methods have the effect that the purchase amount is inflated, reducing the VAT liability.

Evasion by omission, in contrast to evasion by commission, occurs when the taxpayer earns income but does not declare it (Lewis, 1982). Sales can be underreported, thus the output tax payable is lower than it should be. Alternatively, traders do not register for VAT when they should and therefore do not pay output tax at all, such as individuals in the informal sector (Harrison & Krelove, 2005; Keen & Smith, 2006).

Taxpayers can act in various ways when contemplating non-compliance. They may consider moving to another country with a lower tax burden or they may move to the informal sector of the country they are currently in (Bird & Gendron, 2007). Non-compliance is a world-wide problem but there is evidence that this is a recurring problem in developing countries (Fjeldstad, Schulz-Herzenberg & Sjursen, 2012). For this reason, countries with large informal sectors are more reliant on indirect taxes such as VAT to ensure that a tax contribution is still received from the informal sector, as most transactions include VAT (Alm, Martinez-Vazquez & Schneider, 2004; Hines, 2004).

The informal sector comprises of those who do not register for the necessary taxes or file appropriate returns and those who under-report their income or over-report their expenses (Morissette, 2014; Slemrod, 2019). Even though the individuals in the informal sector do not pay taxes, developing countries rely heavily on the informal sector, especially for job creation and reducing poverty (Fourie & Skinner, 2018; Rogan & Skinner, 2019). Generally, sub-Saharan African countries are associated with large informal sectors (Bird & Gendron, 2007). South Africa's informal sector employed 18 per cent of the labour force for Quarter 4 of 2019 (Statistics South Africa, 2019b). Although the vast majority (around 73 per cent) of the individuals in the informal sector do not need to register as their income characteristically falls below the registration threshold (Rogan & Skinner, 2019), some are supposed to register but do not register and are therefore non-compliant.

The informal sector is of great concern for three principal reasons. In the first place, given that a lot of taxes are not collected from the informal sector, there may inevitably need to be

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an increase in tax rates in the formal sector to make up for tax revenues lost. Second, this results in the tax burden being shifted from the informal sector to the formal sector (perhaps then driving participants in the formal sector to the informal sector). Third, since very little tax revenue is collected from the informal sector, this encourages trading within it and stimulates that economy, of course at the expense of the formal sector (Hines, 2004).

The informal sector is characterised as hard-to-tax, partly due to its usual reliance on cash transactions and because the effort to collect seemingly low returns may not seem cost-effective. Nonetheless, there are strong reasons to support the collection of taxes from the informal sector. Failing to collect tax from the informal sector may result in businesses exiting the formal sector due to the more competitive price being levied in the informal sectors (McKerchar & Evans, 2009). Note, however, that with the growing credit card or debit card sales transactions instead of cash transactions, some taxpayers are moving from the informal sector to the formal sector because of the audit trail (Mitchell & Scott, 2019).

A change in the VAT rate will potentially affect the entire population. Although the potential is there to collect more tax revenue, more people could move to the informal sector and thus tax revenue is lost. In order to facilitate a deeper understanding of tax compliance, study is required into the theories underlying tax compliance.

3.3 TAX COMPLIANCE THEORIES

Numerous studies[22] have been conducted into the factors influencing tax compliance using a variety of research methodologies, including experimental research, surveys, regression modelling and analytical studies. Various theories or conceptual frameworks have been developed from these studies to explain tax compliance or non-compliance. Figure 10 provides a summary of the theories influencing tax compliance decisions. Additionally, as depicted in Figure 10, tax compliance theories can be broadly divided into what has been termed the behavioural/psychological approach and the economic deterrence approach (James & Alley, 2002).

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[22] Meta-analyses can be found in Jackson and Milliron (1986), Richardson and Sawyer (2001) and also many studies in (Hasseldine *et al.*, 2007), Kirchler (2007) and (Devos, 2014).

Figure 10: Tax compliance theories
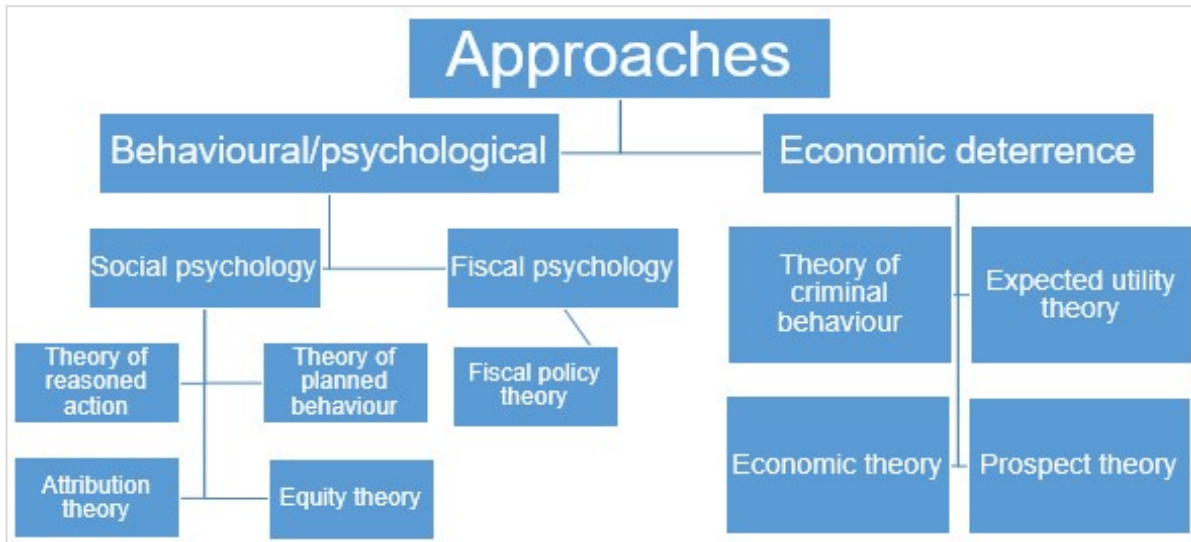
Source: Researcher's summary from studies discussed below

The behavioural/psychological approach addresses factors which influence a taxpayer's behaviour and which are associated with the psychology and sociology disciplines. Ethics and fairness play a major role in decision-making. By way of contrast, the economic deterrence approach takes into account economic incentives and has a focus on costs (to the taxpayer) to comply or not to comply. It assumes that people want to maximise their income and wealth and thus the cost versus benefit principle is applied. Taxes will only be paid when the fines and penalties (if caught) are higher than the benefit obtained. The focus is thus on efficiency in resource allocation (James & Alley, 2002). Each of these two broad approaches according to Figure 10, are now discussed in more detail.

3.3.1 Psychological/behavioural approach

McKerchar and Evans (2009) divide the behavioural/psychological approach into two groups, namely social-psychological models and fiscal psychological models. Social-psychological models are used to predict and understand the decision-making or behaviour of people by using methodological approaches such as compositional modelling,[23] attribution theory and equity theory (McKerchar & Evans, 2009).

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[23] Compositional modelling focuses on reasoned action, whereby people would consider the implications of their actions and then act according to their personal preferences. The factors that influence this behaviour are of a personal and social nature. The personal nature considers the attitude of the people on

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Social psychology researchers note that human behaviour, including tax compliance behaviour, will always be difficult to explain (Ajzen, 1991). There are many factors which could influence tax compliance behaviour, such as people's perception of ethics, fairness, guilt and sense of duty (Andreoni, Erard & Feinstein, 1998).

The theory of reasoned action (Figure 10) represents one attempt to explain human behaviour, with the main focus on intention: the intention of a person drives his/her behaviour. Intention, in turn, is influenced by two factors: *attitude towards the behaviour* (an evaluation of the entity in question and a personal factor) and *subjective norms* (the social pressure to react as expected from society and a social factor). This reaction to the expectation of society is referred to as social desirability bias (Ajzen & Fishbein, 1977; Ajzen & Madden, 1986; Saunders *et al.*, 2016).

Extending on the theory of reasoned action, the theory of planned behaviour (as per Figure 10 and illustrated in Figure 11) was developed by Ajzen and Madden (1986) to incorporate a third factor which influences intention, namely perceived behavioural control. Internal and external factors can influence a person's control over the intended behaviour. Internal factors include skills, abilities, knowledge and planning, whereas external factors include time, opportunity and dependence on other people. The person's perception of how easily the action can be performed (controlled) will thus also influence behaviour.

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how to behave: either positively or negatively. However, people's decisions are also influenced by social pressure: they might act according to how they perceive their community would expect them to act (social desirability bias) (McKerchar & Evans, 2009).

Figure 11:   Theory of planned behaviour
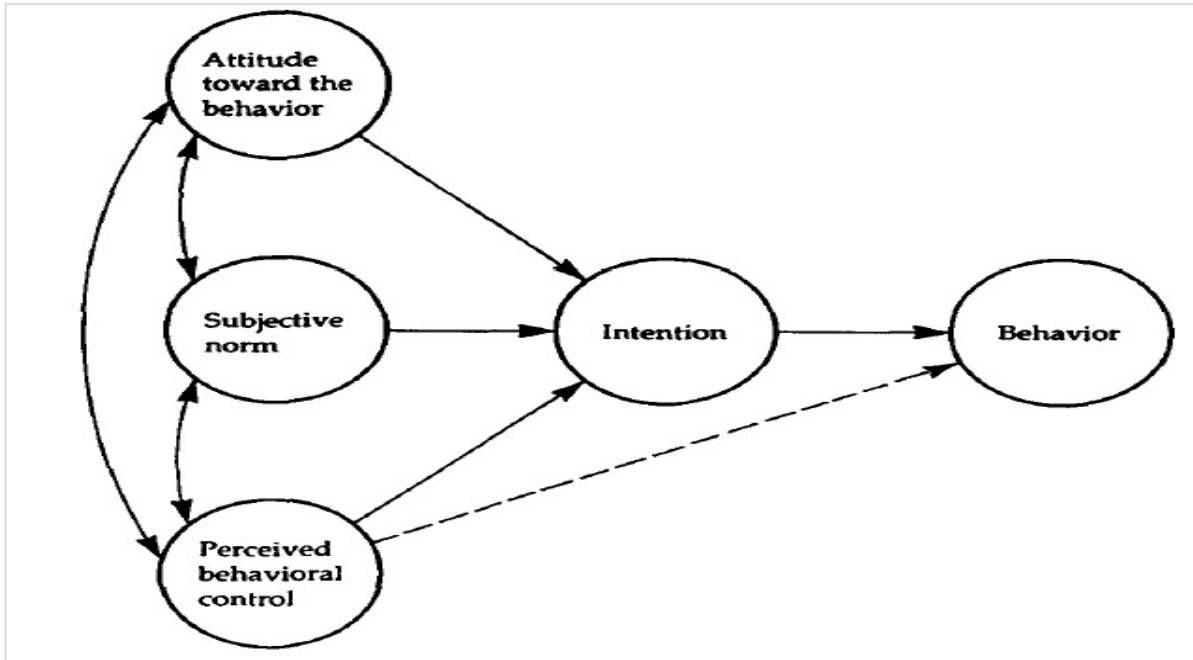
Moral obligation was added to the theory of planned behaviour by Bobek and Hatfield (2003), where the experiment confirmed that the three elements of the theory of planned behaviour, as well as moral obligation, play a significant role in non-compliance. Moral obligation refers to what an individual perceives as being right and what is wrong, without considering the views of others.

A further theory discussed in the social-psychological model is the attribution theory, where people have a rational interpretation of the causal relationships in a given scenario. They tend to be more judgemental of others, perceiving that a bad situation is caused by internal or personal reasons, whereas, with themselves, it is not their fault as issues are caused by bad external factors (McKerchar & Evans, 2009:176). Individuals are not completely rational, nor completely irrational (Holzinger & Biddle, 2016).

Finally, the equity theory completes the discussion on the social-psychological model. It refers to the idea that people are more willing to contribute, for example in the form of taxes, when they feel that other citizens are also paying their fair share of taxes (McKerchar & Evans, 2009).

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The fiscal psychological model draws from both the economic deterrence approach as well as the behavioural approach, focusing on taxpayers' attitudes and views of non-compliance as a behavioural problem that could be improved by managing the relationships between taxpayers and tax authorities. A person's attitude is influenced by tax mentality, feelings of tax tension and tax morale (McKerchar & Evans, 2009). The attitude and beliefs of a taxpayer can, therefore, be used to predict the actual behaviour of that person (Hasseldine & Bebbington, 1991). Improved tax compliance can be reached where taxpayers are more positive about and cooperative in paying taxes and when they feel that they are treated fairly by receiving adequate goods and services from the state in return for the taxes paid (McKerchar & Evans, 2009). Fiscal psychology theory, therefore, presumes that people are demotivated to pay their taxes when they cannot see the real benefit or advantage that they are receiving in return (Hasseldine & Bebbington, 1991; Mitu, 2018).

The behavioural/psychological approach can assist in understanding tax compliance behaviour. However, the economic deterrence approach should also be considered.

3.3.2 <u>Economic deterrence approach</u>

The economic deterrence approach focuses on the features that impact on the economic wellbeing of the taxpayers (James & Alley, 2002). Economic deterrence deals with measures in place to inhibit non-compliance and thus the way people respond to punishment for their crimes (McKerchar & Evans, 2009). Typical factors which are considered in the economic deterrence studies are the probability of being audited, fines and penalties and the tax rate (Devos, 2014; Hamid, 2013).

Economic deterrence theory draws on concepts initially developed in theories seeking to explain criminal behaviour. One of the earliest studies on the theory of criminal behaviour was by Becker (1968), where he sought to determine what the optimal amount of resources would be to spend on punishing criminal activities, including tax evasion. Punishment could include fines, imprisonment, torture and death. Although fines are a popular way of punishing crimes, the punishment should be high enough to compensate the society for welfare loss (Becker, 1968).

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The offenders consider various factors in deciding whether to commit a crime: the willingness to do something illegal, the probability of being caught and the severity of the punishment if caught. Offenders with higher income have more money to spend on planning their offences, getting good lawyers for appeals and perhaps paying bribes to get out of the situation. Thus, before deciding to commit a crime, the taxpayer makes a rational decision between the various available options (Becker, 1968).

Building on Becker's theory and directing it towards tax compliance behaviour, Allingham and Sandmo (1972) analysed individual taxpayers' decisions relating to deliberate underreporting in order to avoid paying taxes. According to Allingham and Sandmo (1972), the two most important factors that may influence decisions about tax evasion are the probability of audit and the penalty rate or fine. If the audit probability is high or the penalty for non-compliance is high, compliance improves as people do not want to pay more should they get caught. An increase in the tax rate was also considered and they found that it should also lead to more evasion as it is then more profitable to evade taxes but the results were ambiguous. Allingham and Sandmo (1972) thus developed the expected utility theory, which presumes that a rational individual is someone who weighs the possibilities of being audited and the related punishment against successfully cheating (Hamid, 2013).

Yitzhaki (1974) amended Allingham and Sandmo's model by making the penalty payable dependent on the unreported tax, not the unreported income and found that in certain circumstances an increase in the tax rate should increase compliance and lead to individuals declaring more income. Risk-averse taxpayers would not take a gamble and thus would report more income after a tax rate increase. The economic theory thus comes into play, presuming that people make decisions depending on how it will affect their wealth; in order to maximise their utility or profit (Becker, 1962).

The final theory to be discussed under the economic deterrence approach is the prospect theory, explaining that people tend to be more risk-averse when they are in a position to obtain a gain. When a person is in a loss situation (liability to pay taxes), he/she tends to take more risks, leading to non-compliance (Kahneman & Tversky, 1979; Richardson & Sawyer, 2001).

The particular factor under review for this research study is a change in the tax rate and thus the economic deterrence approach is more relevant than the behavioural/ psychological approach. When designing the experiment for this study, the researcher also considered the probability of being audited, penalties and interest, which emphasises the saliency of the economic deterrence approach. Nonetheless, many of the factors that have been identified in the other approaches also clearly impact on tax compliance behaviour of the owners of small businesses in the context of a change in the rate at which VAT is levied and therefore cannot be ignored in the remainder of this literature review. As a result, from the theories discussed and the literature analysed, several factors have been identified that may influence tax compliance. These factors are now examined in more detail.

3.4 FACTORS THAT INFLUENCE TAX COMPLIANCE BEHAVIOUR

Numerous studies have been undertaken where single or multiple factors are discussed that may or may not influence tax compliance. A meta-analysis was undertaken by Jackson and Milliron (1986) on studies into factors affecting tax compliance in the period 1967 to 1985, involving various methodologies, including surveys, experiments, analytical studies and regression modelling. The authors identified 14 key factors that affect tax compliance behaviour, namely age, gender, education, income level, withholding of income at source, occupation, peer influence, ethics, fairness, complexity, contact with revenue authorities, sanctions, audit probability and tax rates (Jackson & Milliron, 1986).

A follow on meta-study was compiled by Richardson and Sawyer (2001), who summarised the studies done from 1986 to 1997 dealing with the relationship of key factors influencing tax compliance. They identified five additional factors affecting tax compliance behaviour, namely compliance costs, tax preparers, framing, positive inducements and tax amnesties.

More recently, Yong *et al.* (2019) have used text mining software to identify themes and concepts in 713 articles relating to tax compliance factors. They identified 19 additional factors affecting tax compliance behaviour: tax evasion; tax enforcement; trust; power; sole traders; culture; tax system; political; individual taxpayer; business taxpayer; tax morale;

social norms; religion; withholding taxes; reciprocity; tax perception; perceived opportunity; tax avoidance and wealthy taxpayers.

Whilst it is acknowledged that this most recent meta-analysis adds to the richness of the literature, it is suggested that many of these new factors can be related to prior terms used in the earlier analyses and thus have similar meanings. For example, 'tax evasion' and 'tax avoidance', although identified as new factors, are also recognised as themes, which are discussed in detail in the literature review. In addition, 'tax morale' is discussed along with ethics, whilst 'trust', 'power' and 'tax perception' are incorporated in the discussion of fairness, below. 'Tax system' is a concept that has a close relationship with tax fairness and tax complexity, both of which are discussed as separate factors (Yong *et al.*, 2019). In the analysis that follows, therefore, these additional 19 factors are not discussed individually but grouped with their closest counterparts.

In addition to the work of Jackson and Milliron (1986), Richardson and Sawyer (2001) and Yong *et al.* (2019), Fullarton (2013) has also contributed further to the conceptual frameworks for a deeper understanding of the factors influencing tax compliance. Based on these studies, Figure 12 was compiled to provide an overview and classification of the factors that have been identified as potentially influencing tax compliance behaviour that are of relevance to this study.

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Figure 12:   Factors influencing tax compliance behaviour

Although these different factors have been identified as potential influencers of tax compliance, they seldom act in isolation. There could be complex interrelationships and interactions between these factors. For example, although age influences tax compliance,

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the effect could be different when age is combined with other factors to determine the effect on tax compliance. Similarly, there are, amongst others, interactions between gender and education, between occupation with income source and income level and between education with fairness perception and ethics (Richardson & Sawyer, 2001). Yong *et al.* (2019) also identified the relationships between various factors by calculating what they refer to as the 'connectivity', which shows the strength of the connection between each of the concepts or factors. Each of the 19 factors contained within the three categories (demographic, social-psychological and structural - Figure 12) are now analysed.

In determining the relevance of the literature regarding each factor, four aspects were considered as being of particular relevance for the current research:

- the nature of the subject (such as the taxpayer) concerned: the study is principally concerned with research that relates to the small business taxpaying population;
- the type of tax involved: the thesis is principally concerned with research that relates to VAT or to indirect taxation more broadly;
- the context in which the research took place: the thesis is principally concerned with research that relates to the compliance behaviour of taxpayers in developing countries; and
- the methodology applied: the thesis applies an experimental methodology but seeks to identify the effect of factors on the compliance behaviour of taxpayers through any methodology applied.

Emphasis is placed upon studies which have taken place in more recent years. However, seminal research that has taken place in earlier years is never ignored and often built upon.

3.4.1 Demographic factors

There are six demographic factors (gender, age, education, income level, source of income and occupation) that the literature suggests may influence tax compliance behaviour. Most of the studies relate to income tax, with only a limited number of studies considering tax compliance in the context of VAT (Kosonen & Ropponen, 2013; Marchese, 2009; Naritomi, 2019). The majority of the studies analysed below have been conducted in developed countries, mostly the USA, European countries, Australia and New Zealand. Limited studies

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have been conducted in developing countries such as Brazil, China, Indonesia and Malaysia, with studies related to developing African countries including Nigeria, Ghana, Kenya, Uganda and Tanzania (Aladejebi, 2018; Ali, Fjeldstad & Sjursen, 2014; Carsamer & Abbam, 2020; Marchese, 2009; Mascagni & Santoro, 2018; Naritomi, 2019). The studies specifically relating to South Africa were conducted by Ali *et al.* (2014) and Smulders, Stiglingh, Franzsen and Fletcher (2017). The most popular research method used for the studies was by means of surveys, although experimental studies also seem to be a favoured method for tax compliance studies relating to the six demographic factors which are now explored in more detail.

Gender

Whether the taxpayer is male or female has been shown to have an effect on the level of tax compliance (D'Attoma, Volintiru & Steinmo, 2017; Hofmann, Voracek, Bock & Kirchler, 2017; Jackson & Milliron, 1986; Richardson & Sawyer, 2001). The behavioural characteristics of men and woman differ and thus factors such as altruism, fairness, honesty, obedience, risk and trust all play a role in their decision-making process (Bruner, D'Attoma & Steinmo, 2017).

Several studies on individuals' tax compliance concluded that females tend to be more opposed to tax evasion and are more compliant than males (Aladejebi, 2018; Bazart & Pickhardt, 2011; Carsamer & Abbam, 2020; D'Attoma *et al.*, 2017). Perhaps this is because "women feel more enforced to pay taxes" (Kogler, Muehlbacher & Kirchler, 2013:14). Positive rewards also act as a motivator for females to be more compliant than males (Brockmann, Genschel & Seelkopf, 2016).

The fact that other factors could also influence tax compliance in combination with gender should not be ignored. There is an interaction between gender and education as well as gender and income level, whereby females with college (university) degrees and higher income tend to be less compliant than females without college degrees (Hite, 1997).

When considering the corporate workplace, one should keep in mind that females have very different characteristics as top managers, such as analysing and selecting strategies in a different way than males (Bear, Rahman & Post, 2010). Therefore, having females in

management positions and as owners of corporate firms, has a positive effect on corporate tax compliance (Damayanti & Supramono, 2019).

In contrast to the studies finding that females are more compliant taxpayers than males, some studies provide evidence that males are more compliant than females (Friedland, Maital & Rutenberg, 1978; Kirchler & Maiejovsky, 2001). Others concluded that gender does not necessarily correlate with tax evasion or that the trend that females are more compliant than males, is diminishing (Anderhub, Giese, Güth, Hoffmann & Otto, 2001; Hasseldine, Kaplan & Fuller, 1994; Putri & Venusita, 2019; Robben, Webley, Elffers & Hessing, 1989; Shafer & Wang, 2018).

The empirical evidence relating to the role of gender on tax compliance therefore generally suggests that females are likely to be more compliant than males. However, the outcome is not always clear and qualifications to this general finding can be found.

Age

Age refers to a person's chronological age (Richardson & Sawyer, 2001). In general, the studies on individual taxpayers argue that the old tend to comply more than the young (Grasmick & Bursik, 1990; Hasseldine *et al.*, 1994; Robben *et al.*, 1989). The young are less supportive of the progressive tax system than the old and their attitudes are also more accepting to non-compliance than the old (Jurney, Rupert & Wartick, 2017). This could be because the old have greater financial stability, possibly earning more income than the young due to experience and they are more dependent on public goods and services. The old also have had more experience with business and with revenue authorities and would have gained more knowledge about tax law, which is associated with better tax compliance (Hofmann *et al.*, 2017). The young also seem to be less affected by deterrence measures such as the probability of being caught and punished and are not as opposed to tax evasion as are the old (Becker, 1968).

There are, however, studies that found no statistical significance between age and tax compliance (Collins, Milliron & Toy, 1992). Again, the interaction with other factors and its effect on tax compliance should not be ignored. Song and Yarbrough (1978) found that individuals between 40 and 65 have strong ethical values regarding tax. As a result, these

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middle-aged taxpayers tend to be more compliant than the young (in this case, those younger than 40) and also those older than 65.

From a small business sector perspective, the old still tend to be more compliant than the young (Carsamer & Abbam, 2020). However, age does not always create a willingness to pay tax as, no matter how old a taxpayer is, they will not comply if they do not have an awareness of having to pay tax and paying taxes is not a priority for them (Wijayanti, Saraswati & Kartika, 2020). Although the results are inconclusive, the majority of studies seem to indicate that the old tend to be more compliant than the young.

Education

Education may relate to two distinct ideas. The first may be education in terms of obtaining secondary or tertiary qualifications, such as completing high school or obtaining a college degree, regardless of the field in which the qualification is obtained. The second relates more to the specific tax knowledge a person possesses and refers to the ability to understand and then to comply (or not to comply) with the tax laws (Jackson & Milliron, 1986).

Studies on education by reference to formal educational qualifications indicate that tax compliance improves with higher education since generally, a higher educated person has the know-how to comply, regardless of the content of the education (Inasius, 2018; Song & Yarbrough, 1978). However, there is also evidence that higher educated people can identify the loopholes and may, in fact, be less compliant (Hofmann *et al.*, 2017). The higher income earners tend to be the higher qualified persons but as a result, they are also the people paying more taxes. The high-income earners may thus view tax evasion more favourably (McGee, 2012).

One should be careful not to assume that a higher (educationally) qualified person has a better tax knowledge, as the education in question might have dealt with many different topics or fields (Kirchler, 2007; Richardson & Sawyer, 2001). Although some individuals are highly qualified, they may not have sufficient knowledge to comply with tax obligations under a self-assessment system. Thus, education and training specifically in the tax field will have a positive impact on tax compliance (Kwok & Yip, 2018; Loo & Ho, 2005). People who are

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less educated may comply less as they might not know that they even need to register as VAT vendors or they make unintentional mistakes due to a lack of tax knowledge (Hofmann *et al.*, 2017; Kosonen & Ropponen, 2013; Mascagni & Santoro, 2018). Kirchler and Maiejovsky (2001) found that self-reported tax compliance increased where the respondents had a better knowledge of the legal principles, as they deemed the tax system to be fairer. In South Africa specifically, higher tax knowledge seems to cultivate a better tax compliant attitude, which in turn ensures improved tax compliance (Ali *et al.*, 2014).

From the perspective of studies done in the small business sector, secondary and tertiary education, in general, seem to improve small and medium enterprises' tax compliance (Carsamer & Abbam, 2020). Tax knowledge does have some impact on tax compliance, however, the effect is not significant (Inasius, 2018).

Charlet and Owens (2010) advised that the key to success might be to educate and inform citizens of changes in policies to increase their tax compliance behaviour. Furthermore, tax education should be included in schools and in tertiary education, regardless of the field of study, to assist in reducing the external compliance costs that small business entities face (Smulders *et al.*, 2017).

The empirical evidence relating to the role of education on tax compliance is not always conclusive and further research is necessary on this topic. A clearer distinction should also be made between education level in general and tax specific knowledge.

Income level

Income level refers to how much gross income or positive income a person receives (Jackson & Milliron, 1986). The effect of the income level on tax compliance is highly variable in the studies in the meta-analysis by Richardson and Sawyer (2001).

Since the payment of taxes reduces the amount of disposable income, lower-income earners could be more affected by taxation than higher-income earners, encouraging risk-seeking behaviour. On the other hand, high-income earners are less tax compliant as they feel over-taxed, thus being more willing to pay fines should they get caught since they can do so. The difference in tax compliance behaviour is sometimes not so evident between

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high-income earners and low-income earners but rather with persons that are on the verge of falling into a higher tax bracket who would tend to evade taxes to stay in the lower-taxed bracket (Hofmann *et al.*, 2017; McGee, 2012).

Kogler *et al.* (2013) and Song and Yarbrough (1978) suggest that higher tax compliance is achieved by higher-income earners. On the other hand, Anderhub *et al.* (2001) and Hasseldine *et al.* (1994) suggest that there is a negative correlation between income level and tax compliance, encouraging tax evasion. The empirical evidence relating to the income level on tax compliance is therefore inconclusive and further research is necessary on this topic, although there is sufficient evidence to suggest that income level does have an impact on tax compliance.

Income source

The source of income refers to the type or nature of the income. Tax is sometimes withheld at the source and paid over directly to the revenue authority, for example, a taxpayer in employment. In such a case, the under-reporting of income is more difficult. However, if a person is self-employed there is (usually) no one that reports the income or withholds tax on that income[24] and the revenue authority has to collect the tax from the taxpayer directly (Alm, 2018; Jackson & Milliron, 1986).

"Compliance is far greater on income subject to employer withholding and third-party information sources than on income not subject to these features" (Alm, 2018:15; Internal Revenue Service, 2016). Therefore, not only withholding of income at source usually improves tax compliance but the information provided by third parties could also improve tax compliance. Third-party reporting involves information being supplied directly to the government by third parties, such as firms, credit card companies, consumers, workers and other countries. Such reporting may reduce non-compliance as the reporting is dependent on someone else on which the supplier does not necessarily have an influence. A supplier cannot himself or herself then decide not to report taxable income as it is already reported. In a study conducted in Ecuador, tax compliance increased after the revenue authority used

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[24] There are some exceptions where tax is withheld from payments made to people that are not in the payer's employment, such as withholding tax on payments to non-resident entertainers or sportspersons in South Africa (Anon., Section 47B and 47D of the Income Tax Act (58/1962)).

the third-party reported information to inform taxpayers of discrepancies on their returns (Carrillo, Pomeranz & Singhal, 2017; Slemrod, 2019). Another example is the VAT lottery system where, in certain countries such as Argentina, Bolivia, Brazil, China, Chile, Indonesia, Italy, Portugal, South Korea and Slovakia, consumers insist on receiving receipts for purchases, which improves tax compliance due to the suppliers being forced to record the transaction by issuing a receipt (Marchese, 2009; Naritomi, 2019).

Some countries have systems in place where input tax can only be claimed where information on the seller is provided. The information can then be used to check the VAT return of the seller to ensure they declared the output tax (Slemrod, 2019). Another positive effect of third party reporting is evident in a study of small and medium businesses in the USA through the implementation of a system where electronic transactions (such as with debit/credit cards) are reported to the revenue authority by third parties. Although this does improve revenue collection, it is only effective for electronic payments (Adhikari, Alm, Collins, Sebastiani & Wilking, 2016). Non-compliance could still occur with cash transactions/sales and through businesses over-claiming business expenses (Slemrod, Collins, Hoopes, Reck & Sebastiani, 2017). Contrary to the other studies, Hasseldine *et al.* (1994) found no significant effect of income source on tax compliance.

From a study of the literature, one can conclude that where income is withheld at the source and/or reported by a third party to the tax authority, tax compliance increases. VAT, however, works differently to income tax and VAT vendors are seen as agents of the revenue authority in the VAT collection process.

Occupation

A person's occupation refers to the individual's employment or how income is earned. Originally it was thought that the higher the status of the person's employment, the better the chances of evading taxes. This assumption has, however, changed over time and the results are no longer conclusive (Jackson & Milliron, 1986). Problems in the carrying out of the studies have been identified, one of the problems being the categorisation of occupation into the various statuses considered to be associated with that occupation (Richardson & Sawyer, 2001).

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Similar to the discussion on income source, those who are self-employed and trading as individuals or in small businesses have a greater opportunity for tax evasion than those earning salaries or wages (Joulfaian & Rider, 1998; Wallschutzky, 1984). When considering specific industries, one notes that individuals are often inexperienced with tax matters when starting their businesses and their tax behaviour is influenced by the culture of their particular occupational sector (Ashby, Webley & Haslam, 2009). A variety of industries have been identified as being non-compliant, such as independent tradesmen and farmers (Wallschutzky, 1984), vehicle sales, investors, informal suppliers, lawyers and judges (ironically), doctors and dentists (Erard & Ho, 2003).

The receipt of cash payments boosts non-compliance, as these payments have been identified to remain unreported to the revenue authorities. Industries identified where the non-declaration of cash-in-hand transactions are considered to be problematic are builders (Shover, Job & Carroll, 2002), hairdressers and beauticians (Ashby & Webley, 2008).

There are, of course, also those studies where no significant effect of occupation on tax compliance is found (Hasseldine *et al.*, 1994). Different studies yield different results and, therefore, the results of the effect of occupation on tax compliance are somewhat inconclusive.[25]

Summary of demographics

Various demographic factors have been shown by the research, which has used a variety of different methodologies to affect tax compliance behaviour, although the effect of these factors is somewhat ambiguous. Females tend to be more compliant than males and those who are older are more likely to be compliant than the young. Tax compliance also improves when income is withheld at the source. The effects of education, the income level and occupation on tax compliance behaviour are less certain.

Note, however, that the majority of the studies focus on income tax in the context of developed countries, with very little evidence derived from studies regarding VAT and developing countries. Although there have been some experimental studies conducted, the

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[25] Studies specifically relating to VAT non-compliance in restaurants and by hairdressers are discussed in more detail in Section 3.5.

most favoured methodology used in these studies is the survey. Individuals are the focus of the majority of the studies although some studies have also been conducted in the context of small business entities. The results between those conducted with individuals as the respondents and small businesses entities as respondents, however, were not significantly different.

3.4.2 <u>Social-psychological factors</u>

The social-psychological approach, in contrast to the economic approach, focuses on more subjective or normative factors. Taxpayers are not always just motivated by their rational drive for maximised profits but are also motivated by their ethical and moral beliefs. These beliefs assist taxpayers in determining what is right and wrong for them in general but also in relation to paying their fair share of taxes (Wenzel, 2005b).

From Figure 11, three broad categories can be considered under the social-psychological approach: ethics and morale, fairness and perception of fairness and peer influence. The majority of studies were conducted with individual taxpayers, although some studies considered the tax compliance behaviour of small and medium businesses (Carsamer & Abbam, 2020; Coolidge & Ilic, 2009; Holzinger & Biddle, 2016; Inasius, 2018; Maciejovsky, Schwarzenberger & Kirchler, 2012; Olsen, Kasper, Enachescu, Benk, Budak & Kirchler, 2018; Rawlings, 2012). Most of the studies analysed related to income tax, with one study considering the tax compliance effect of church taxes (Dwenger, Kleven, Rasul & Rincke, 2014).

The majority of the studies have been conducted in developed countries, mostly the USA, European countries, Australia and New Zealand. Limited studies have been conducted in developing countries such as Indonesia, Malaysia, Pakistan and Latin America. There are studies done in developing African countries including Botswana, Ghana, Kenya, Uganda, Tanzania and South Africa (Ali *et al.*, 2014; Carsamer & Abbam, 2020; Coolidge & Ilic, 2009; Cummings, Martinez-Vazquez & McKee, 2001). The most popular research methods used for the social-psychological studies were surveys and experiments.

Tax ethics and morale

Tax ethics can be defined as "one's belief that there is a moral imperative that one should be honest in one's tax dealings" (Wenzel, 2005b:492). Further, morality is another important concept and is synonymous to "ethics, virtue, a conscience, a feeling of guilt over wrongdoing, honesty, altruism, willingness to cooperate, fairness, a sense of duty and social responsibility" (Eisenhauer, 2006:437).

"Individuals do not like paying taxes, they take a variety of actions to reduce their tax liabilities and on many occasions they succeed" (Alm & Torgler, 2011:635). Why would most individuals then still comply? They still comply as ethics play an important role in people's decision making, striving to be responsible, law-abiding citizens. Therefore, although people do not like paying taxes, they often do not cheat due to ethical considerations (Alm & Torgler, 2011). Strong tax ethics and a sense of moral values have a significantly positive effect on tax compliance behaviour (Rawlings, 2012). The findings in Dwenger *et al.* (2014) support this statement as 20 per cent of the taxpayers showed an intrinsic motivation (duty, guilt and norms) to pay their church taxes, even when there were no deterrence measures. Most taxpayers complied exactly (not giving more or less than what they are obliged to give), indicating a stronger motivation for merely complying because the taxpayers feel it is their duty, rather than for being scared of shame or guilt.

Personal norms play a role in acting ethically and therefore being tax compliant. Taxpayers with high personal norms tend to comply regardless of whether they owe taxes or if a refund is due to them. In contrast, taxpayers with low personal norms are reasonably compliant when they are in a tax refund position but not compliant when they are in a tax liability position (Hunt & Iyer, 2018).

Tax ethics are also influenced by the social group in which they operate and the accepted behaviour in that group influences the individual's tax ethics, which in turn affects tax compliance (Wenzel, 2005b). Social norms can be grouped into two categories, namely the injunctive norms which are what the group approves of or disapproves of, or descriptive norms, which looks at what the group does (referred to as the theory of normative conduct) (Cialdini, Reno & Kallgren, 1990; Holzinger & Biddle, 2016). Self-reported compliance is sometimes found to be higher than the level of compliance a person perceives fellow citizens

to uphold. This dangerous assumption could have a detrimental effect on tax compliance for governments. A person might be non-compliant to conform to the incorrectly perceived non-compliant nature of his/her fellow citizens (Wenzel, 2005a). Therefore, it is important for improved tax compliance to improve social norms (Alm & Martinez-Vazquez, 2008), as social norms causally affect personal tax ethics (Wenzel, 2005b). Song and Yarbrough (1978) indeed found that those with high tax ethics perceived others to be faithful in being tax compliant.

There are interrelationships between tax ethics and other factors that influence tax compliance behaviour. Tax ethics are low when citizens perceive politicians to act in their own interest and tax ethics are high when the citizens perceive the tax burden to be fair (Song & Yarbrough, 1978). "[T]tax administration, tax system and the perceived tax burden, tax awareness, compliance perceptions, trust in officials, the state and others, institutional quality such as corruption, the willingness to obey and religiosity have a relatively strong impact on tax morale" (Torgler, Demir, Macintyre & Schaffner, 2008:313). An interesting observation from Maciejovsky *et al.* (2012) is that businesses that mostly rely on cash transactions are scoring low on tax ethics.

Individuals are therefore not always the self-interested, rational individuals trying to maximise profits that they are perceived to be. They are often motivated by other factors that mostly sprout from the ethical values a person holds (Alm & Torgler, 2011). It is evident that tax ethics influence tax compliance, although people's ethical considerations differ and thus the effect on tax compliance differs.

Fairness and perception of fairness

Fairness in tax has two dimensions. The first dimension is whether the taxpayer perceives that he or she receives sufficient resources or services from the government in return for the taxes paid to the government (improving tax compliance) (Alm, Jackson & McKee, 1992b; Fjeldstad *et al.*, 2012; Jackson & Milliron, 1986). The second dimension occurs when the taxpayer feels that other taxpayers get equal treatment relative to him or her (Fjeldstad *et al.*, 2012; Jackson & Milliron, 1986). Getting something for free will motivate taxpayers to give more generously when they know others are also contributing to the cause (Alm *et al.*, 1992b). A taxpayer will, however, most likely not comply or comply less where they feel that

the tax system is unfair due to insufficient government services being provided in return for taxes paid (Torgler *et al.*, 2008). There is thus a strong positive relationship between the perception of equity and fairness and an increase in tax compliance (Inasius, 2018).

In considering the fiscal exchange, taxpayers are more inclined to be tax compliant when they are satisfied with the public goods and services they receive in return for taxes paid (Coolidge & Ilic, 2009; Kiow, Salleh & Kassim, 2017; McKerchar & Evans, 2009; Nkundabanyanga, Mvura, Nyamuyonjo, Opiso & Nakabuye, 2017). Taxpayers are even willing to pay increased taxes, as long as the benefit they receive in the form of public goods and services also increases (the notion of an appropriate fiscal exchange or contract theory) (Alm, McClelland & Schulze, 1999; Torgler, 2003).

When citizens perceive the government to be corrupt and wasting money, they may view paying taxes as unfair and are more inclined to evade taxes (Carsamer & Abbam, 2020; McGee, 2012). Where there is better control over corruption, tax compliance improves. "The consequences of corruption are obvious. It is a cancer that destroys the organisation itself and undermines all other aspects of society" (Picur & Riahi-Belkaoui, 2006:174).

Corruption has the potential to lead to mistrust as the way in which tax money is spent is perceived as unfair. Trust[26] in the government and revenue authority and perception of the power[27] of these entities (both trust and power are identified as tax compliance factors in Yong *et al.* (2019)) have an effect on tax compliance and citizens declaring their taxes honestly. This trust and perceived power can be influenced by media coverage. Government and revenue authorities could thus regulate (manipulate) taxpayers' behaviour by promoting tax compliance via media channels (Kasper *et al.*, 2015).

When taxpayers trust their government (high trust), positive emotions are stimulated, resulting in more taxpayers complying voluntarily. When the power of the tax authority increases (high power), negative emotions of enforced compliance are induced, resulting in tax evasion. High power could stimulate positive emotions as honest taxpayers could anticipate that 'free riders' will be caught and will need to pay their fair share of taxes. By

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[26] Trust is defined as "belief in the benevolence of tax authorities, their service orientation and their professional engagement for the commons" (Kasper, Kogler & Kirchler, 2015:4).
[27] Power is defined as "tax authorities' abilities to detect and punish tax crimes" (Kasper *et al.*, 2015:4).

increasing the power of the government or the revenue authority, enforced compliance improves, whereas voluntary compliance is achieved when trust improves. A combination of enforcement activities (power) and trust is ideal as this reduces negative feelings, encourages intentions to comply and decreases taxpayers' propensity to evade (Kogler *et al.*, 2013; Olsen *et al.*, 2018; Steinmo, 2018).

Although some people would perceive fairness only when their preferred policy outcome was implemented, others perceive fairness when merely their voices were heard, even if their preference(s) were not implemented (Hogan, Maroney & Rupert, 2013). This is an important observation for policymakers when tax compliance policy changes are considered, as perception could affect the process.

When considering fairness from the second dimension, individuals who perceive their ethnic group to be treated unfairly are more inclined to evade taxes (Ali *et al.*, 2014). Individuals are more likely to comply when they know their fellow citizens, friends or family are also contributing and paying their fair share of taxes (Alm *et al.*, 1992b; Torgler *et al.*, 2008). This is further discussed under 'peer influence'.

From the empirical evidence, it is apparent that fairness and the perception of fairness influence tax compliance even though there is uncertainty as to whether fairness perception is seen as a catalyst for encouraging non-compliance or whether it is a rationalisation measure (Jackson & Milliron, 1986; Richardson & Sawyer, 2001). The tax system should thus be perceived as fair to achieve better tax compliance. For a country to maximise tax compliance, the government should be seen as incorruptible; it should instil trust in the citizens and rule with the appropriate power. Where taxpayers have a positive attitude towards the tax system and also the revenue authority, this significantly increases tax morale and thus tax compliance is improved (Torgler *et al.*, 2008).

Peer influence

Peer is a term that is used to refer to family, friends, colleagues and acquaintances of a person. These people's views on tax evasion could influence the taxpayer's tax compliance (Inasius, 2018; Jackson & Milliron, 1986). Not only is a person influenced by their peers' behaviour but also by the possibility of social recognition or sanctions from these peers

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(Luttmer & Singhal, 2014). The majority of studies suggest that peers (if peers are perceived to be more tax compliant) have a positive correlation with tax compliance. What is uncertain is who exactly the peers are who influence a taxpayer's tax compliance decisions; is it only the people close to him or her or is it the view of society, in general, that affects their tax compliance (Jackson & Milliron, 1986; Richardson & Sawyer, 2001)?

People tend to comply more if they believe that other individuals are also complying (thus also an element of fairness). Knowing more information about your neighbour's decisions influences your own tax decisions in two ways: through the reporting decision (whether you declare all your income to the revenue authority) and through the filing decision (whether you file a return at all) (Alm, Bloomquist & McKee, 2017). Therefore, if a person knows many evaders, the probability is high that the person might also evade taxes (Hasseldine *et al.*, 1994).

Whistle-blowing by peer groups could motivate tax compliance since it could worsen the shame and guilt people experience. In Pakistan, taxpayers' liability is revealed to the general public, having the effect that peer groups can inform the revenue authority of non-compliance if the level of consumption and wealth observed by them do not match the amount of taxes declared (Slemrod, Rehman & Waseem, 2019).

In addition to peers, revenue authorities could also influence taxpayers in the way that they convey messages to taxpayers. By sending social norm messages[28] with reminder letters to taxpayers with overdue taxes, payment rates may increase. People react more to messages about what people do (descriptive norms) than what they say (injunctive norms) (Hallsworth, List, Metcalfe & Vlaev, 2017).

Tax compliance or non-compliance can thus be encouraged by family and friends and even by the revenue authority. From the empirical evidence, it would appear that compliant peers positively influence tax compliance behaviour.

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[28] More studies on 'nudging' or communication from the revenue authority are discussed under "*Contact with the revenue authority*".

Summary of social-psychological factors

Tax ethics, fairness and perception of fairness (including trust in and power of revenue authorities) and peers have been shown by the research to influence tax compliance. A higher level of tax ethics, a positive fairness perception and compliant peers positively influence tax compliance behaviour. Taxpayers are also more willing to comply when the government and revenue authority is not seen as corrupt, they have trust in these bodies and the bodies can enforce legislation through their power.

Note, however, that the majority of the studies focus on income tax in the context of developed countries. Experiments and surveys were the most favoured methodologies used in these studies. Individuals are the focus of the majority of the studies although some studies have also been conducted in the context of small business entities. Similar results were obtained from studies using individuals as respondents and studies using small businesses entities as respondents.

3.4.3 <u>Structural factors</u>

Structural factors refer to those elements that influence the design features of a tax (how it is structured and filed). The assumption under the economic deterrence approach is that taxpayers want to maximise their income and that they will weigh the costs of getting caught and the penalties that will then be payable against the benefits of 'getting away with it' (expected utility theory). This approach examines a situation rationally and ignores subjective or normative aspects (Wenzel, 2005b).

From Figure 12, it is evident that there are ten factors appropriate to an examination of the structural factors that may influence tax compliance (compliance costs, the complexity of the tax system, tax preparers, framing, positive inducements, tax amnesties, contact with the revenue authority, sanctions, audit probabilities and tax rates). The majority of the studies reporting on these factors consider tax compliance on individuals, with several studies using students as subjects (Alm *et al.*, 2017; Alm *et al.*, 1992b; Bazart & Pickhardt, 2011; Friedland *et al.*, 1978; Kim, Evans & Moser, 2005; Moser, Evans & Kim, 1995; Sussman & Olivola, 2011). There are, however, some studies considering the tax compliance effect of small and medium business enterprises or other corporates (Aladejebi, 2018; Faridy, Copp,

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Freudenberg & Sarker, 2014; Gillitzer & Sinning, 2020; Harju, Kosonen & Ropponen, 2014; Kosonen & Ropponen, 2013; Pomeranz, 2015; Sapiei & Kasipillai, 2013; Smulders *et al.*, 2017; Webley & Ashby, 2010). Most of the studies relate to income tax, with only a limited number of studies considering tax compliance in the context of VAT (Bergman & Nevarez, 2006; Faridy *et al.*, 2014; Gillitzer & Sinning, 2020; Harju *et al.*, 2014; Hybka, 2018; Kosonen & Ropponen, 2013; Pomeranz, 2015; Webley & Ashby, 2010; Yesegat, 2009). Interestingly though, there were also studies on church taxes (Dwenger *et al.*, 2014) and TV taxes (Drago, Mengel & Traxler, 2020; Fellner, Sausgruber & Traxler, 2013).

The majority of the studies analysed have been conducted in developed countries, mostly the USA, European countries, Australia and New Zealand. Limited studies have been conducted in developing countries such as Columbia, Ecuador, Indonesia, Malaysia, Latin America, Pakistan and Russia. Studies relating to structural factors were also conducted in developing African countries including Ethiopia, Nigeria, Kenya, Rwanda and Tanzania (Abdul & Wang'ombe, 2018; Aladejebi, 2018; Belay & Viswanadham, 2016; Mahangila, 2017; Mascagni, Nell & Monkam, 2017; Yesegat, 2009). It was notable that the majority of studies on compliance cost specifically considering the effect it has on tax compliance were conducted in Africa. The studies specifically relating to South Africa were conducted by Coolidge and Ilic (2009) and Smulders *et al.* (2017). The most popular research methods used for the studies were by means of surveys and experiments. Experimental research was prominent in the studies testing the effect on tax compliance of contact with the revenue authority, sanctions, audit probabilities and the tax rate. Each of the ten factors is now discussed.

Compliance costs

Tax compliance costs are "the costs incurred by taxpayers in meeting the requirements laid on them by the tax law and the revenue authorities" (Sandford, 1995:1). This implies that such costs exclude the tax liability itself but include costs incurred that would not have been incurred had there not been any tax liability. An individual needs to incur costs to obtain the necessary knowledge to be able to apply the law to the business' finances, the time it takes a person to complete a tax return, the time taken for filing the return and the costs involved in retaining the required information for the specified period. Fees paid to professionals for

advice, salaries to staff involved in the tax process as well as travel expenses relating to the tax process would also constitute tax compliance costs (Sandford, 1995).

The introduction of VAT has been identified internationally by empirical studies as increasing compliance costs significantly and that small business entities experience the burden much more intensely than large businesses (Faridy *et al.*, 2014). In a study measuring tax compliance costs for small business entities in South Africa, it was found that taxpayers spent the most time and money in relation to all taxes, on VAT compliance (Smulders & Stiglingh, 2008).

Although many studies have been conducted on measuring tax compliance costs (Eichfelder & Vaillancourt, 2018; Evans, 2003), limited studies have considered the effect that tax compliance costs have on tax compliance behaviour (Richardson & Sawyer, 2001). However, the majority of these limited studies analysed below have, surprisingly, been done in Africa. There appears to be an inverse correlation between VAT compliance costs and VAT compliance (Yesegat, 2009) and compliant small and medium enterprises in Bangladesh noted that compliance costs are a driving force of VAT non-compliance (Faridy *et al.*, 2014). Similarly, for income tax, tax compliance decreases when tax compliance costs increase (Abdul & Wang'ombe, 2018; Mahangila, 2017). Therefore, when the revenue services know which factors increase tax compliance costs for small businesses, they know which areas to improve to ensure an increase in tax compliance behaviour and therefore the contribution to tax revenue (Smulders *et al.*, 2017). However, an analysis by Coolidge and Ilic (2009) did not support the expectation that the perception of high tax compliance costs would harm the registration decisions of taxpayers. This could be due to the perceived advantages of registering for tax, such as better growth opportunities for the firm, 'being legal', helping the poor and having access to financing (Coolidge & Ilic, 2009).

Although empirical evidence seems to indicate that an increase in tax compliance costs reduces tax compliance behaviour, this area remains relatively unexplored and additional research should be conducted in this field.

Complexity of the tax system

As tax systems develop, inevitably they become more complex. Where legislation is complex, it creates uncertainty and unintentional non-compliance could occur (McKerchar, 2002). The complexity of the tax system has become known as a factor that negatively influences tax compliance; additionally it creates the opportunity not to comply (Collins *et al.*, 1992; Jackson & Milliron, 1986; Richardson, 2006; Torgler *et al.*, 2008). For example, compliant small and medium enterprises indicated that the complexity of the VAT law in Bangladesh is a significant driving force of non-compliance (Faridy *et al.*, 2014).

Complexity of the tax system is evident on many levels. First, policy complexity deals with the number of taxes the taxpayer has to comply with. Second, statutory complexity considers the difficulty in reading and understanding the tax law. Third, administrative complexity reflects on the ease of complying with the tax laws and keeping the necessary record of transactions. Lastly, compliance complexity deals with the ease in complying, for example through easier filing procedures such as e-filing (Abdul & McFie, 2020; Tran-Nam & Evans, 2014).

Due to the complexity of tax systems and uncertainty of the enforcement, taxpayers experience the need to appoint tax experts rather than doing their taxes themselves, which in turn increases tax compliance costs (Andreoni *et al.*, 1998; McKerchar, 2005). These tax experts then can influence their clients' tax compliance behaviour (Sapiei & Kasipillai, 2013) (as discussed under 'tax preparers').

One should keep in mind that the lack of tax knowledge could increase the perception of tax complexity and therefore, both of these factors influence tax compliance (Belay & Viswanadham, 2016; Saad, 2014). Taxpayers also become despondent with complex tax laws and are more non-compliant when new legislation is enacted (sometimes even ignoring the new rules) in an already complex tax design (Abeler & Jäger, 2013).

Another factor that interrelates with tax complexity, is the perception of fairness of the tax system. Where taxpayers see the tax system as complex, they also perceive it as unfair (Abdul & McFie, 2020).

Although the complexity of the tax law tends to lead to non-compliance for various reasons, tax policymakers should be careful not to over-simplify the law in an attempt to reduce complexity as "simplexity" may not provide for the necessary exceptions and difficult concepts. Tax law is sometimes complex for specific reasons, such as to allow for individual circumstances, the economy being complex in itself, to provide more certainty and to diminish tax avoidance. Simplexity may result in unintentional non-compliance due to lack of knowledge of the legislation (Blank & Osofsky, 2017; Budak, James & Sawyer, 2016). Complexity of the tax system does, therefore, have an effect on tax compliance, with a more complex system usually resulting in a decrease in tax compliance (Alm, 2012).

Tax preparers

Tax preparers, such as registered tax practitioners, influence the taxpayers who are their clients through the advice they provide. This influence can be positive or negative, depending on the position the tax preparer takes (Jackson & Milliron, 1986). Many possible factors influence a person's decision to use a tax preparer: self-employment, being older in age; being less educated; if the return is complex; if the taxpayer could face high audit and penalty rates; reducing anxiety and rather spending time on other matters than filing (Andreoni *et al.*, 1998; Klepper, Mazur & Nagin, 1991; Richardson & Sawyer, 2001). Corporate tax matters especially could be very complex and for this reason, corporates tend to seek the help of tax professionals for their expertise and tax knowledge. These tax professionals then influence the corporation's tax compliance decisions (Sapiei & Kasipillai, 2013).

Tax preparers can provide accurate information regarding the treatment of transactions due to their expertise and for this reason, tax compliance is expected to increase when tax preparers are used. However, because they can provide aggressive tax advice, greater non-compliance could be achieved (Andreoni *et al.*, 1998). Evidence also suggests that where the treatment of a transaction is unambiguous, tax preparers encourage compliance. However, when the treatment is ambiguous, non-compliance is encouraged (Klepper *et al.*, 1991).

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Taxpayers tend to submit their tax returns themselves should they wish to deliberately report their income incorrectly. However, it has been found that the magnitude of incorrect reporting is much larger when tax preparers were used (Erard, 1997).

An interrelationship exists between tax preparers and contact with the revenue authority and the effect it has on tax compliance. Boning, Guyton, Hodge, Slemrod and Troiano (2018) found that the tax paid increased by two per cent for firms having the same tax preparer where revenue officers visited one of these firms in the tax preparer's network. However, again, there are those studies that do not find a significant correlation between tax preparers and tax compliance behaviour (Hasseldine *et al.*, 1994).

Afield (2014) is of the opinion that tax compliance will increase if tax preparers obtain certificates that they have the relevant tax knowledge to prepare returns and also to ensure that these practitioners' competencies are at the right level. This should ensure more accurate tax returns. As non-compliant taxpayers seek out the non-compliant accepting tax preparers (also Battaglini, Guiso, Lacava and Patacchini (2020)), Afield (2014) states that rewards should be in place to encourage the tax preparers and the taxpaying clients to be more compliant, such as lower penalties, lower costs to comply and reducing the audit risk. The results from empirical evidence are thus unclear as to the effect of the tax preparer on tax compliance behaviour, as it is dependent on the inclination of the tax preparer to be compliant.

Framing

Framing refers to how an act or situation is packaged or presented, which can influence a person's decision to comply or not. The prospect theory is evident in the 'framing' context because when a taxpayer is likely to experience a gain (such as a bonus from a refund), they tend to be more compliant. However, when they are in a loss position (such as a tax liability), they are generally more risk-taking and willing to take a chance not to comply (Kahneman & Tversky, 1979; Kirchler & Maiejovsky, 2001; Kornhauser, 2006; Richardson & Sawyer, 2001). "People prefer tax policies that are labelled as 'bonuses' rather than as 'surcharges', [and] like hidden more than explicit taxes" (Sussman & Olivola, 2011).

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Many countries have implemented electronic filing systems where taxpayers can complete their tax returns online. Before submitting the return, they can calculate the tax effect; in other words, are they in a taxpaying or tax refund position. Whether a taxpayer completes an online return with the option to automatically calculate the tax due/tax refund or whether the return is submitted on a paper, has an effect on tax compliance, be it a positive or negative effect. A negative effect, for example, is where taxpayers who use software to complete their returns and see that they are in a tax due position, tend to report lower income than those taxpayers that are in a refund position (Hunt & Iyer, 2018). This may be because those in a tax due position want to minimise their tax liability.

Tax revenue received by the government is used to provide public goods. Each individual has a preferred regulatory focus and as such, some are more motivated to comply when they receive information regarding the advantages of tax budgets being sufficient to provide for public goods (promotion focus), whereas others are more motivated to comply when they receive information regarding the dangers of the tax budgets being too low (prevention focus) (Holler, Hoelzl, Kirchler, Leder & Mannetti, 2008).

Some people intensely dislike paying taxes and have a stronger preference to avoid paying taxes versus trying to avoid incurring higher monetary costs unrelated to tax. They are willing to make sacrifices (drive further, wait longer in queues, invest in tax-free bonds) to avoid paying taxes, even though it is more inconvenient (Sussman & Olivola, 2011).

Framing often interrelates with fairness perception. In America, subjects perceive bonuses received to be fairer than surcharges paid in relation to marriage taxes or tax credits received for having children. However, they are of opinion that the high-income earners receive too many bonuses and the low-income earners pay too many surcharges. They, therefore, prefer a progressive tax system, showing a higher preference thereof when taxes were presented as a percentage instead of in dollars, again indicating that how a tax is framed affects taxpayers' preferences (McCaffery & Baron, 2004).

Framing also interrelates with gender. When messages were sent to participants regarding consequences faced for complying or not complying, men were more persuaded when negative (loss) messages were provided to them and women more persuaded when they

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were provided with positive (gain) messages (Hasseldine & Hite, 2003). Clearly, the way people view taxes affects tax compliance. When agents view the VAT collected from customers as their own turnover and not as money merely collected on behalf of the revenue authority, tax compliance decreases as people are less willing to pay it over (Webley & Ashby, 2010).

From the empirical evidence, one can see that the way in which a tax is framed can have an effect on tax compliance behaviour. However, the effect differs according to the way it is framed.

Positive inducement

Positive reinforcement may have a positive effect on behaviour and as such, positive inducements in tax may lead to increased tax compliance (Jackson & Milliron, 1986; Torgler, 2003). In order to enforce tax compliance, a carrot or a stick approach can be followed. The carrot approach would be where positive tools are used. Such tools could include monetary awards (such as cash backs or discounts on taxes), lottery tickets, prompt refunds of taxes, friendly and helpful assistance by revenue authority staff, thanking compliant taxpayers, social insurance benefits and public goods. The stick approach would be where compliance is achieved through punishment, such as fines, penalties or other sanctions (Alm, 2012; Richardson & Sawyer, 2001). Of importance though is that something such as positive inducements cannot be used in isolation, just as punishment cannot be used in isolation. There has to be a mix of positive inducements to comply and punishment for non-compliant behaviour (Richardson & Sawyer, 2001).

Positive inducement, be it at an individual level or at a public level, may indeed be an effective strategy to improve tax compliance (Alm, 2012). Positive inducements could have a short term effect only, such as where recognition is received. For a short time, the taxpayers are motivated and comply more but then this motivation could fade again. Introducing a longer-lasting reward, such as the construction of a sidewalk, create longer-term tax compliance. These longer-term rewards also motivate neighbours to be more compliant as the reward is also visible to them (Carrillo, Castro & Scartascini, 2017).

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Rewards in the form of lottery winnings have a positive effect on tax compliance (Bazart & Pickhardt, 2011; Naritomi, 2019) and some taxpayers improve their tax compliance where the reward is of a non-financial nature (Koessler, Torgler, Feld & Frey, 2016). Social recognition is another positive reward motivating taxpayers to be more compliant, especially where top tax compliant taxpayers are recognised. Rewarding them for contributing to the public good is experienced as more effective than punishing them for not contributing (Dwenger *et al.*, 2014; Slemrod *et al.*, 2019). Government benefits received, such as social insurance benefits, are another form of positive inducement increasing tax compliance (Alm, Cherry, Jones & McKee, 2012). Lastly, immediate fixed rewards or a decline in the chances of future audits could also improve tax compliance (Alm, Jackson & McKee, 1992a).

Positive rewards do not always have a positive effect on tax compliance: it can either have no effect on those receiving the reward, or a negative effect on those who are not rewarded (Fochmann & Kroll, 2016).

Hence, the empirical evidence indicates that generally the presence of positive inducements may have a positive effect on tax compliance.

Tax amnesties

Tax amnesties permit previously non-compliant taxpayers the opportunity to correct their non-compliance situation with the revenue authority by paying their tax liabilities but without the fear of incurring penalties and interest or other prosecution. Unfortunately, tax amnesties are not implemented to reward compliant taxpayers but to attempt to increase tax revenue (Richardson & Sawyer, 2001; Yücedoğru & Sarisoy, 2020). One of the primary factors identified as to why taxpayers did not pay their tax liability before the amnesty, is because they lacked sufficient funds to pay the tax at that time (Ritsema, Thomas & Ferrier, 2003).

Results of previous studies have mixed views on the effect of tax amnesty on tax compliance and the collection of tax revenue. Supporters of tax amnesties argue that it is a successful way of raising tax revenue in the long run, as both previously non-compliant and new taxpayers are brought into the tax net (base-broadening). Opponents, however, argue that compliant taxpayers become despondent due to feelings of unfairness and that the incentive for them to remain compliant reduces (Yücedoğru & Sarisoy, 2020). Conflicting results have

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been obtained, where some researchers state that tax amnesties did not have a significant effect on tax compliance and thus, the tax revenue collected did not increase significantly (Alm, Martinez-Vazquez & Wallace, 2009; Hasseldine *et al.*, 1994; López-Laborda & Rodrigo, 2003). Others found that tax compliance may increase with a tax amnesty (Aladejebi, 2018), increasing tax revenue collected in the short run and not having a negative effect on tax compliance in the long-run (Luitel & Mahar, 2013). Yet, some researchers believe that frequent tax amnesties could harm tax compliance behaviour. Due to the fact that offenders can make their wrongs right regularly, without any punishment, compliant citizens have less confidence in the government and revenue authority to appropriately deal with offenders. The recurring amnesty may also cause offenders to continue to offend (Saraçoğlu & Çaşkurlu, 2011).

Before a tax amnesty may be successfully implemented, certain procedures should be kept in mind, such as allowing the public to discuss and vote for the amnesty to be implemented. As they are then more informed of the importance to contribute to the provision of public goods, tax compliance may improve (Torgler & Schaltegger, 2005). The amnesty could also be more effective if better education is provided to taxpayers regarding their obligations to pay taxes and informed that the penalties for offenders will be greater after the amnesty period (Alm *et al.*, 2009). Mixed results have therefore been obtained on the effect that tax amnesties have on tax compliance behaviour and therefore, further research in this area is required.

Contact with the revenue authority

Contact with the revenue authority can take various forms such as a taxpayer being audited by the revenue authority or a taxpayer receiving letters from the revenue authority due to deficiencies regarding the information required by/from the taxpayer. Additionally, nudges stating the programs supported by tax revenue or information regarding penalties for non-compliance can also be sent (Jackson & Milliron, 1986; Slemrod, 2019).

Communication from the tax authority can be performed through a phone call, a letter that is posted, an e-mail sent or a tax official can visit a taxpayer. Although letters from the revenue authority tends to improve tax compliance, a stronger motivation for even better tax compliance is a visit by a tax officer, but it is also more costly (Boning *et al.*, 2018; Ortega &

Scartascini, 2017). Low-cost delivery methods, such as an SMS or e-mail can still be highly effective, even more than a letter in the post would be, especially due to some letters not being delivered (Mascagni *et al.*, 2017). That said, tax compliance is still significantly increased when letters are sent (and delivered) to taxpayers reminding them of their duty to pay, offering assistance, or threatening them should they not pay (Fellner *et al.*, 2013; Gillitzer & Sinning, 2020; Hasseldine *et al.*, 2007; Mascagni *et al.*, 2017). Sending the reminders earlier, results in earlier payment of taxes (Gillitzer & Sinning, 2020).

The content of the letters also plays a significant role, as deterrence messages such as penalty messages, are very effective in increasing tax compliance and thus increasing tax paid (Bott, Cappelen, Sørensen & Tungodden, 2019; De Neve, Imbert, Spinnewijn, Tsankova & Luts, 2019; Meiselman, 2018). Deterrence messages were even effective in increasing the tax payments of suppliers of firms who received deterrence messages (Pomeranz, 2015). Even neighbours of citizens who received messages regarding their non-compliance of unpaid TV taxes started paying their TV taxes (Drago *et al.*, 2020). Letters threatening to name and shame taxpayers to their neighbours, improved tax compliance (Perez-Truglia & Troiano, 2015). However, Meiselman (2018) did not find that messages sent to non-filing citizens resulted in their neighbours filing returns.

Pomeranz (2015) considered the effect of deterrence letters through an experiment specifically relating to VAT and found that tax payments increased for the firms that did receive deterrence letters in comparison to those who did not. However, it is evident that the deterrence was more effective for firms for whom there is less of a paper trail (selling to final consumers and being smaller firms), rather than for those where there is a VAT paper trail (selling to other firms and being larger firms). Non-compliant small and medium enterprises in Bangladesh also indicated that a positive relationship between the VAT officials and taxpayers encourages compliant behaviour (Faridy *et al.*, 2014).

Contradictory results were, however, found regarding moral suasion in letters sent to taxpayers. Bott *et al.* (2019) found that moral suasion had a significant effect on the increase in tax payments received, whereas Pomeranz (2015) found that letters regarding tax morale and placebo letters did not have a significant effect on taxes paid.

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Contact with the revenue authority in the form of letters received can be improved by simplifying the letters and adding deterrence messages to the letter (De Neve *et al.*, 2019). "[A] single sentence, strategically placed in mailings to attract attention, can have an economically meaningful impact on tax filing behavio[u]r" (Meiselman, 2018:190). Information letters regarding the tax treatment of new tax law could also be sent to taxpayers before a change being implemented, as this would reduce unintentional mistakes made in applying the new rule (Kosonen & Ropponen, 2013).

It is clear that some studies find no significant effect of contact with the revenue authority on tax compliance (Hasseldine *et al.*, 1994). However, the results of more recent studies tend to consistently indicate that non-compliance is reduced where letters/other forms of messages are sent to taxpayers (Slemrod, 2019).

Sanctions

The government needs to have the necessary power to impose tax compliance and this would include sanctions in the form of monetary penalties or even imprisonment (McKerchar & Evans, 2009). A sanction can be defined as "a strong action taken to make people obey the law or rule, or a punishment given when they do not obey" (Cambridge Dictionary, 2019: n.p.). Sanctions do not only include legal sanctions such as penalties but also self-imposed shame and socially imposed embarrassment (Bird & Gendron, 2007; Grasmick & Bursik, 1990). The types of sanction – legal sanctions or interpersonal sanctions – have different effects on tax compliance. Similarly, the severity of the sanction also influences tax compliance (Jackson & Milliron, 1986; Richardson & Sawyer, 2001).

One of the first experimental studies on tax compliance considering sanctions found that sanctions do increase tax compliance but are also dependent on other factors, such as class, education and religious groups (Schwartz & Orleans, 1966). Studies considered the effect of sending letters to taxpayers informing them of the penalties applicable should they fail to comply. The effect clearly showed an increase in tax compliance (Castro & Scartascini, 2013; Meiselman, 2018). A warning would be that where penalties are set too high and not properly enforced where non-compliant taxpayers go unpunished, the behaviour of compliant taxpayers may change to non-compliance (Bird & Gendron, 2007).

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Although monetary measures could be effective deterrent measures, non-monetary measures are, in some cases, more effective. Taxpayers are more afraid of being imprisoned or put on probation and less afraid of monetary fines (Dubin, 2007). Disallowing hunting licences and not renewing drivers' licences may also promote voluntary tax compliance more effectively than monetary penalties (Blank, 2014). Professional licence suspension has also been implemented as a deterrence measure. However, the researcher found that the reason the taxpayers did not pay their taxes was usually due to financial constraints as suspension of licences was more prevalent under the low-income earners (Kenchington & White, 2020). This would, however, indicate that tax compliance improved for those who can pay the taxes. Webley, Adams and Elffers (2004) found in their study on VAT compliance among small businesses that it takes effort to evade taxes and the fear of getting caught causes anxiety. Avoiding anxiety in itself is already a strong deterrent against tax fraud. Shaming in the eyes of neighbours also acts as an effective deterrent for non-compliance (Perez-Truglia & Troiano, 2015). There are, of course, those studies that found no significant effect of deterrence measures on tax compliance (Collins *et al.*, 1992; Hasseldine *et al.*, 1994), or that fines only have a small effect on tax compliance (Alm *et al.*, 1992b).

The interrelation of penalties and other factors could have an effect on tax compliance behaviour, such as a combination of audit rates and penalties. Tax compliance increases where the audit and penalty rates increase, however, the probability of being caught should also increase before the penalty increase will be effective (Alm *et al.*, 1992b). Friedland *et al.* (1978), however, found that larger penalties are more effective deterrence measures than an increase in the audit probability. Larger penalties thus motivate taxpayers to be more compliant (Alm *et al.*, 1992b). Contrary though to this finding, Alm (2012) later found that an increase in the audit probability (see below) is more of a deterrent than an increase in fines.

In an attempt to improve tax compliance, Tanzania introduced a system where electronic fiscal devices have to be used by vendors to record sales, which is sent directly to the tax administrator's system. Unfortunately, tax compliance did not increase as the customers' perceptions on the detection and the penalty levied played a role in their compliance decision. The majority of participants perceive the risk of punishment to be very small if they do not obtain a receipt for their purchase. From a supplier perspective, their perception of

how compliant other businesses are influenced their tax compliance behaviour (Fjeldstad, Kagoma, Mdee, Sjursen & Somville, 2020).

From the empirical evidence, it is clear that the penalty rate and other forms of sanctions can have a positive effect on tax compliance, even if it is small (Alm, 2018; Andreoni *et al.*, 1998). Legal sanction cannot be used in isolation to improve tax compliance. The government should impose a range of monetary and non-monetary penalties and even education and persuasion, depending on what would be the most effective in that specific setting (Kirchler, Hoelzl & Wahl, 2008).

Audit probability

Audit probability refers to the chance of being detected as non-compliant and the revenue authority rectifying this error (Jackson & Milliron, 1986). This would usually result in the levying of penalties. Research on audit probability (also known as the probability of detection) has been popular, as Yong *et al.* (2019) indicates the concept of probability of detection to be the fourth most researched tax compliance concept.

Taxpayers may not always be aware of what the audit rate is, usually estimating it to be lower than what it is in practice. When the audit rate is uncertain, the tax evasion is also lower and is a tool which can be used to reduce the said tax evasion (Alm, 2018; Tan & Yim, 2014). The efficiency of tax audits could depend on several factors, such as the coverage of the audit and the methods used to select taxpayers for audits, namely manual screening whereby available information is used to select the taxpayer, random selection or risk-based methods using parametric or non-parametric measures (Hybka, 2018).

Most studies find that when the audit probability increases or is high, taxpayers tend to be more compliant and therefore, there is a positive correlation between audit probability and tax compliance (Alm *et al.*, 1992b; Andreoni *et al.*, 1998; Friedland *et al.*, 1978; Inasius, 2018; Rahmayanti & Prihatiningtias, 2020; Witte & Woodbury, 1985). However, Alm *et al.* (2017) found that an increase in the audit probability only had a positive influence on tax compliance behaviour of people already filing. Those that do not file tax returns, do not start filing because of an increase in the audit probability. Although compliance is enhanced after an audit for those already being compliant, cheaters tend to be even more non-compliant

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the year after having been audited, possibly in an attempt to recover costs of the additional assessment issued (Bergman & Nevarez, 2006).

An effective way in which to communicate the audit probability is to send letters with threats of audit probabilities to taxpayers, as a higher increase in the audit probability increases tax compliance more than with a low audit probability (Harju *et al.*, 2014). Slemrod, Blumenthal and Christian (2001) also found that where the opportunity to evade was greater, such as the self-employed, the audit probability had a stronger effect on tax compliance. These measures to improve tax compliance tend to be more effective in the higher income groups than in the lower-income groups as the penalties may be more significant (Witte & Woodbury, 1985).

Experience with previous audits and the outcome thereof could also influence future tax compliance. In general, individuals who were audited in the past are likely to report more taxes (Alm *et al.*, 2017). Where taxpayers were audited and additional assessments were issued, the taxpayers reported more taxable income in the next year, indicating an improvement in tax compliance. However, where the audit was performed and no additional assessment issued, those taxpayers reported less income the following year (Beer, Kasper, Kirchler & Erard, 2019). Therefore, an audit might not turn out as bad as the taxpayer expected and thus it is not such a significant deterrent. It could also happen that taxpayers perceive the audit as a bad experience which could entice them to evade more taxes in future, to take revenge on the revenue authority (Andreoni *et al.*, 1998).

In relation to studies specifically considering VAT, VAT audits resulted in higher tax compliance (Hybka, 2018). Interestingly, VAT vendors who already have a VAT paper trail due to invoices being issued to its customers responded less to an increase in audit probability than those who do not usually have a paper trail (selling mostly to final consumers), probably because they are already more compliant due to the paper trail (Pomeranz, 2015).

Although most studies find a positive correlation between audit probability and tax compliance, Collins *et al.* (1992) did not find a significant correlation. Nevertheless, from the

empirical evidence it would appear that the majority of studies find that an increase in the audit probability leads to an increase in tax compliance.

Marginal tax rates

"Rate rises can also have a negative psychological impact on consumers and businesses and encourage greater fraud and evasion of the tax" (Needham, 2011:1). This is because the return is higher when one can successfully evade tax (Alm *et al.*, 1992b).

Studies testing the effect of changes in the marginal tax rates on tax compliance have found mixed results. Clotfelter (1983:363) found in his analysis that "marginal tax rates have a significant effect on the amount of tax evasion" but also noted that his model was too simple to adequately describe tax evasion. He did, however, conclude from his study that a decrease in the tax rate would bring about a decrease in under-reporting, thus increasing tax compliance, as was found by Allingham and Sandmo (1972). Similarly, several other studies found that where marginal tax rates increase, tax compliance decreases (Alm *et al.*, 1992b; Friedland *et al.*, 1978; Ottone, Ponzano & Andrighetto, 2018; Wahlund, 1992).

A study on the informal sector in the USA found that tax evasion increases with an increase in the marginal tax rate. If a person declares normal income during the week but work done over weekends is not declared, this will keep the taxpayer in a lower tax bracket, on which a lower tax rate is paid due to the progressive nature thereof (Tanzi, 1983). "To the extent that taxes affect behavio[u]r - decisions to work more or to save and invest additional dollars of income - it is this marginal or last tax rate that is often considered the most important in making substitutions of work for leisure or saving for consumption" (Steuerle, 1992:22). Marginal tax rates therefore affect the working and/or saving behaviour of taxpayers.

However, Feinstein (1991) found that a higher marginal tax rate decreases tax evasion through his econometric analysis, agreeing with the model by Yitzhaki (1974). Other studies also found that an increase in the tax rate increases tax compliance or at least does not encourage tax evasion (Alm, Sanchez & De Juan, 1995; Anderhub *et al.*, 2001). Blackwell (2010) did not find statistical significance and clear results of the effect of changes in the tax rate on tax compliance and recommends that more research should be done on the effect of tax rates on tax compliance.

The perception taxpayers have on how fair a tax rate is, may also influence their compliance decisions. A high tax rate is perceived as unfair when the taxpayers have low trust in the government, whereas the same tax rate could be perceived as contributing to the public goods when trust is high (Kirchler *et al.*, 2008). Tax compliance behaviour may also depend on the perception of how fair the exchange is with the government. Subjects who receive more government services after the tax rate increase report more income as they perceive a smaller loss in relation to those that did not receive government services. However, those who did not receive additional government services after the tax rate increase report the same amount of income as before the tax rate increase. Therefore, both the economic and equity theories influence taxpayer reporting decisions (Kim *et al.*, 2005).

Taxpayers are also affected by their position in relation to others. When some taxpayers experience a higher increase in tax rate than others (horizontal inequity[29]), they declare less income as they perceive there to be exchange inequity.[30] However, where horizontal equity is present and tax rates are increased for everyone, the response to exchange inequality is not so drastic, as people are aware that the same tax rate increase applies to everyone (Moser *et al.*, 1995; Spicer & Becker, 1980). Therefore, tax evasion can be influenced when tax rates are perceived as unreasonable (Wahlund, 1992).

'Soaking the rich', where the rich are overburdened with taxes, will not increase the tax revenue collected (Barro, 1996). Looking at the period 1981 to 1991, it is evident that where there was an increase in the top marginal tax bracket's rate, the revenue collected remained the same or even decreased. This is because the high-income earners are inclined to report less taxable income when the tax rate is higher. A possible solution to the problem of income distribution, Barro (1996) suggests, is not trying to take from the high-income earners and give to the low-income earners, as this makes the high-income earners despondent. Rather, improve education and training so that the low-income earners can also become skilled workers, who earn higher wages than the unskilled workers.

Although the studies indicate that tax rates have an effect on tax compliance, most taxpayers are not sure what their marginal income tax rate is. It is only higher-income taxpayers who

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[29] Different taxpayers with the same levels of income having different rates applicable to them.
[30] Changing tax rates but not increasing public supply of goods or services.

prepare their tax returns themselves who are more accurate in estimating their marginal tax rates (Rupert & Fischer, 1995).

Research on tax rates has been very popular. Yong *et al.* (2019) indicates that the concept of tax rates is the second most researched tax compliance concept after tax evasion. However, even in recent studies, an insignificant relationship between tax compliance and perceptions of the tax rate was found (Inasius, 2018) or the results of the effect of a tax rate increase are mixed (Alm, 2018). The tax rate itself is not always the most important consideration for people but, rather, what their tax rate is in relation to others.

Empirical evidence thus suggests that there are conflicting results on whether a tax rate increase will have a positive or negative effect on tax compliance. Note, however, that the studies broadly discussed above regarding the change in the tax rate consider changes in income tax rates. A detailed discussion on the studies considering the VAT rate changes is done in Section 3.5, as this is the focus of the current research and thus requires in-depth attention.

Summary of structural factors

Various structural factors have been shown by the research to influence tax compliance. Research most commonly supports the view that an increase in compliance cost and complexity, decreases tax compliance. Positive inducements, contact with the revenue authority, sanctions in various forms and an increased audit probability usually lead to an increase in tax compliance. How a tax is framed also affects tax compliance. The effect of a tax preparer, tax amnesties and the level of the tax rate have mixed results on tax compliance and therefore further research should be conducted in these fields.

However, the majority of the studies focus on income tax in the context of developed countries, with very little evidence derived from studies into VAT. Both experiments and survey studies were popular research methods used in the studies of structural factors and their effect on tax compliance. Individuals are the focus of the majority of the studies although some studies were conducted in the context of small business entities and other corporate firms. The results between those conducted with individuals as the respondents and small business entities as respondents, however, were not significantly different.

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3.4.4 <u>Summary of factors influencing tax compliance behaviour</u>

SARS (2012:5) summarises the effect of different factors on tax compliance behaviour by stating:

> *"In summary, the factors affecting compliance behaviour are an intersection of individual values and norms, societal values and norms, the belief in the justice and fairness of the system, the ease of compliance, the speed and accuracy of detection of non-compliance (i.e. the likelihood of getting caught), the speed and accuracy of corrective measures and the severity or impact of the deterrent measures."*

Many studies have been undertaken in an attempt to explain tax compliance behaviour. Research will certainly continue to explore these concepts to refine them, using the full range of research methodologies. In terms of addressing the key focus areas of the current study, relating specifically to small businesses in developing African countries and VAT rate changes, research seems to be relatively limited. Moreover, most of the studies have focused on the effect of tax compliance factors on income tax and not on VAT.

The current study will, therefore, explore the impact of VAT rate changes on tax compliance, as encountered by small business entities in South Africa, a developing country. The gap in knowledge is amplified by the analysis of existing literature on tax compliance behaviour focused on VAT rate changes.

3.5 RESEARCH ON VALUE-ADDED TAX RATE CHANGES

In some respects, VAT can be seen as a more transparent tax than other taxes because VAT vendors know how much tax will have to be paid and if they cannot or do not want to pay it, they do not buy the supply (Owens *et al.*, 2011). Although an increase in the VAT rate will be costly for both tax authorities and taxpayers, it is a way for developing countries to expand their tax revenue (Bird & Gendron, 2006). It is, however, imperative that governments take the demands of the citizens into account, especially where it involves a broad-based tax such as VAT (GIZ Sector Programme Public Finance, 2010).

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There has been a drive towards funding budget deficits through changes to indirect taxes rather than through direct taxes, especially in developing countries. The reason for this is that changes to indirect taxes do not have such adverse impacts upon growth and employment in the economy and are not considered to be as distortive as direct tax changes (De la Feria, 2012). VAT has a less adverse impact upon growth in a globalised and changing world because the tax base is less mobile in comparison to income taxes, due to VAT being levied on consumption, not on source. When considering the tax mix of a country, a high personal income tax rate could negatively impact the low-income earners as this discourages the will to work, reducing employment, labour market participation and the ability to upskill workers. High personal income tax rates on high-income earners also result in distortions as entrepreneurs take less risks, the mobility of the high-income earners increases, income may be shifted across income periods and the forms in which income is earned may be misrepresented. VAT is therefore seen to have a less negative impact on economic growth than income taxes (OECD, 2018c).

When income tax rates increase, people could either work more to ensure that they still receive the same amount of money after tax (income effect) or they could work less as they would rather spend extra time on relaxation than on working more to earn more (substitution effect). In contrast, when VAT rates increase, fewer items can be purchased as the income to spend remains the same but the prices of the products and services increase (Mirrlees, 2011).

An increase in the VAT rate could also raise the rate of inflation due to the increase in prices, resulting in a decrease in spending from low-income households, ultimately slowing economic growth. Although prices usually increase with an increase in VAT, demand decreases for products and adds pressure on the sellers to reduce the prices again (Needham, 2011). Regressivity could also worsen due to the increase in the VAT rate.[31]

Should a country decide to increase the VAT rate, one must be mindful of the fact that whenever a VAT rate is pushed too high, compliance could reduce (Agha & Haughton, 1996). Many economists believe that charging too high a tax is ineffective in redistributing wealth and that it deters economic activity (Bird, 2008).

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[31] Refer to Chapter Two, Section 2.2 for a more detailed discussion on regressivity of a VAT system.

When increasing the VAT rate, it tends to be much more attractive to trade in the formal economy than in the informal economy, as the input tax can then be claimed back (Bird, 2008). Specific examples of research undertaken on changes in the VAT rate in other countries were analysed in order to establish whether changes in tax compliance behaviour were a factor taken into account. After the increase in the VAT rate from 12.5 per cent to 15 per cent in New Zealand in 2010, Buchan, Olesen, Black and Kumar (2012) found that the compliance costs of the businesses increased due to staff training that needed to take place, communication to customers regarding the change, technology costs to upgrade and updating the systems to incorporate this change. The focus was, however, on compliance costs and did not consider the effect of the change on tax compliance behaviour.

Barrel and Weale (2009) also considered the one-month temporary reduction in the VAT rate in the UK, however, their study focussed on the effect it had on consumption, not on tax compliance behaviour. The effect of a change in the VAT rate on consumption for 14 developed countries was studied by Miki (2011), finding that just before an increase in the VAT rate, consumption increases. Consumption then declines drastically when the VAT rate increase is implemented and gradually increases again over time.

The change in the VAT rates for harmonisation in the EU was found to have financial effects on the valuation of businesses (Pointon & Spratley, 1998). Matthews (2003) attempted to determine the Laffer curve for the EU VAT rate for 14 countries using VAT revenue data from the Government Finance Statistics Yearbook. He found that VAT efficiency decreases when there is an increase in the VAT rate, due to tax evasion and avoidance, as well as a reduction in the VAT base as consumers spend less. According to Matthews (2003), the optimal VAT rate is between 18 per cent and 19.3 per cent, to maximise revenue collection but taking non-compliance into consideration. Some countries' VAT rate is below this range and increasing the VAT rate may be politically difficult and may result in social tension. Other countries might need to reduce their current VAT rate to obtain more tax revenue due to non-compliance decreasing. The study also found that there is the possibility that small businesses deregister as VAT vendors or evade VAT when there is a VAT rate increase.

In Greece, a VAT rate increase from 13 per cent to 23 per cent occurred during 2011 but the rate was then reduced again to 13 per cent in 2013 for non-alcoholic sales items in

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restaurants. Artavanis (2018) found a strong negative correlation between the VAT rate and tax compliance, especially in small firms, where compliance increased when the rate decreased. Businesses attempt to minimise signalling any such evading activity to the revenue authorities by making the necessary adjustments to the output and input amounts declared, to maintain a reasonable VAT ratio. When there is a decrease in the VAT rate, the motive for non-compliance decreases as the proceeds from underreporting are less, increasing the VAT ratio, leading to a higher audit probability.

In research undertaken by Agha and Haughton (1996), 17 OECD countries were studied using a regression model on data which found that taxpayers are less compliant where 1) a higher VAT rate is introduced, 2) multiple VAT rates are in use and 3) a lower amount is spent on VAT administration by revenue authorities. The higher the VAT rate, the greater the incentive to evade as the saving might be larger. An increase of one per cent on the mean VAT rate of the countries resulted in a decrease in compliance by 2.7 per cent.

An experimental study was done on hairdressers in Finland where the VAT rate for only hairdressers, was increased from nine per cent to 23 per cent. Harju *et al.* (2014) found that VAT evasion increased with the increase in the VAT rate as the sales decreased by seven per cent for those in the treatment group in relation to the control group.

The argument that a reduction in the tax rate leads to an increase in tax revenue, as posited by the Laffer curve (Raja, 2015), arises from the suggestion that when tax rates are increased, more traders are likely to evade taxes, leaving those left in the tax net bearing a greater burden, hence causing horizontal inequity. The opposite is expected where there is a decrease in the tax rate, according to Bird (2008). Due to the high percentage of income that a low-income earner spends on VAT, it is argued that the low-income earners, however, do not benefit as much from a decrease in the VAT rate than the higher-income earners would (Keen, 2012:5).

As a result of the economic crisis in Mexico, the government increased the VAT rate from 10 per cent to 15 per cent in April 1995. The result of this increase was, as expected, an increase in tax revenue received. However, should the inflation increase as well, this offsets the rate increase and thus tax receipts would not alter (Pagán *et al.*, 2001). The increase

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was, however, only supposed to be temporary and the government considered reducing the VAT rate again, especially to encourage more consumption. Tijerina-Guajardo and Pagán (2000) thus studied the effect of a one percentage point decrease in the VAT rate in Mexico from 15 per cent to 14 per cent, finding that it leads to a decrease of 2.42 per cent in VAT revenue received by the government. Although tax revenue received was addressed in the research, tax compliance specifically was not addressed.

From the research conducted in various countries discussed above, only Agha and Haughton (1996), Artavanis (2018), Harju *et al.* (2014) and Matthews (2003) studied the effect of a change in the VAT rate on tax compliance. All these studies were, however, performed in developed countries, with only Harju *et al.* (2014) performing an experiment. None of the studies considered both the direction and the magnitude of the VAT rate change and the effect it had on tax compliance behaviour.

South Africa is the focus of the current study. The VAT rate in South Africa was increased from 10 per cent to 14 per cent in 1993, due to the decline in the contribution of indirect taxes to the tax revenue collection and because it has the "smallest adverse impact on growth" (WynSculley, 2004:177). The VAT rate remained unchanged for 15 years until it was increased to 15 per cent in April 2018, as the VAT rate was considered low in relation to other African countries; it was also increased to continue funding public expenditure (Gigaba, 2018). Studies on VAT rate changes specifically relating to South Africa are now discussed in order to further identify the knowledge gap in the literature.

VAT policy change (brought about by the need for improved funding, such as for tertiary education following the #FeesMustFall campaign[32]), especially a change in the VAT rate, may have tax compliance implications. If the government has to fund tertiary education from VAT revenue, there are two options. The first is that educational services are reclassified from being an exempt supply to a zero-rated supply for the institutions to claim back input tax paid, which will decrease costs for students. The viability of this option is however not so certain as a large part of university costs are salaries and wages, which are exempt from

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[32] #FeesMustFall is a student-led campaign that started during October 2015. Students protested against the increase in student fees and asked for an increase in government funds to universities (Fihlani, 2019).

VAT. Additionally, when more input tax is claimed and none received, this will decrease VAT revenue in total, leaving less tax revenue to fund government expenditure (Theron, 2016).

The second option is to increase the VAT rate, which may result in more tax revenue. This additional revenue must then be earmarked for tertiary education and taxpayers need to be certain that the money does not disappear due to corruption, which is considered to be high in South Africa (Theron, 2016; Transparency International, 2019). Further, the trade unions are also not supportive of this increase as they believe that it is a tax on the low-income earners (Theron, 2016).

Additional government revenue is, however, not only required for funding education but government expenditure in general. Van Oordt (2016) considered possible VAT policy changes to increase tax revenue in South Africa. He suggested that tax revenue could be increased by increasing the VAT rate by one or two percentage points.

Go *et al.* (2005) analysed the South African VAT system by way of using a computable general equilibrium in an attempt to analyse the welfare and income distribution effects thereof. They found that, although the VAT system is mildly regressive, the tax system overall is progressive. The total tax system also becomes more progressive when VAT is removed from food items typically consumed by the poor and the lost revenue is made up by increasing the direct tax rate of the high-income earners. A 25 per cent (75 per cent) decrease in the VAT rate calls for a 21 per cent (60 per cent) increase in the income tax rate of high-income earners. However, they also found that VAT is the most effective instrument for generating tax revenue, indicating that as the VAT rate increases, tax revenue received by the government increases.

Erero (2015) performed a simulation where he considered a change in the VAT rate of one per cent, two per cent, three per cent, four per cent and five per cent over the period 2012 to 2018. The purpose of the study was to determine whether the increase in the VAT rate would increase the unemployment levels and unequal income distribution. He found that the increase in the VAT rate resulted in a slight increase in government revenue received as well as a slight increase in the GDP. The low-income earners were not disadvantaged if the government correctly redistributed the increased revenue to the low-income earners.

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Various studies also focussed on options to provide relief to the low-income earners, such as through the zero-rating of certain food items but also considering the revenue foregone by the government. In some instances, very specific items could be zero-rated, taking into account tax efficiency and equity (Alderman & Del Ninno, 1999). However, in most cases, it is more efficient from a tax revenue perspective to not zero-rate any items and rather increase social grants to provide relief to the low-income earners (Jansen & Calitz, 2017). Although the studies performed in South Africa considered the effects of changes in the VAT rate on various items, none of them considered the effect on tax compliance behaviour.

Very little literature in South Africa or elsewhere has considered the effect of changes in the VAT rate on tax compliance behaviour, specifically for small businesses in a developing country. Indeed, Faridy (2013:10) has specifically noted that "VAT is a neglected area for the compliance behaviour and tax evasion research area". Hybka (2018) also notes that even though there are many studies on income tax compliance, studies on VAT compliance is rather rare.

The current study will contribute to the literature by performing experimental research. This will assist in determining the effect of changes in the VAT rate on tax compliance behaviour in a developing African country.

3.6 SUMMARY AND HYPOTHESES

Although factors have been researched regarding the impact they may have on tax compliance behaviour and the role of certain deterrence measures, the gap in the literature identified is that no study thus far could be found that considers the impact of changes in the VAT rate on the tax compliance behaviour of small business entities in South Africa. Even though factors that have an impact on income tax compliance behaviour may also have an impact on VAT compliance behaviour, there are fundamental differences in these tax systems and how they operate that call for further research on VAT specifically.

According to Alm (2012), most experimental studies have concluded that higher tax rates result in a decrease in tax compliance. Although he was able to conclude that the tax rate does affect tax compliance, the direction and magnitude of the correlation are still unclear.

Further, Alm (2012) concluded that research has been done on tax compliance but that there are still some major gaps that need to be explored. One of the questions he mentions is "Do higher tax rates encourage/discourage compliance?" (Alm, 2012:73).

VAT impacts a larger portion of the population compared to income tax, as, for the 2019 year of assessment, only 37.8 per cent of total South African individuals (National Treasury & SARS, 2019; Statistics South Africa, 2019a) paid income tax. Yet, all persons consuming products in South Africa are potentially affected by VAT and form part of the VAT base.

The research questions that have guided the study are thus: how (direction) and to what extent (magnitude), is the tax compliance behaviour of small business entities in South Africa likely to be affected by changes in the VAT rate? The following hypotheses have therefore been developed from the analysis of literature to answer the research questions posed by this thesis:

- H_{1A1}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns;

- H_{1A2}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns;

- H_{1B1}: A larger increase (decrease) in the VAT rate will result in lower (higher) declared sales amounts by small business entities registered as VAT vendors;

- H_{1B2}: A larger increase (decrease) in the VAT rate will result in higher (lower) declared purchase amounts by small business entities registered as VAT vendors;

- H_{2A}: A larger decrease (increase) in the VAT rate will result in small business entities being more likely to register (deregister) for VAT; and

- H_{3A}: Demographic variables affect amounts declared and associated compliance for the decrease and increase in VAT rate groups respectively.

In the next chapter, the research design implemented to answer the research questions and test the various hypotheses derived from those questions, is explained in detail.

CHAPTER 4
RESEARCH DESIGN AND CONDUCT

4.1 INTRODUCTION

From a review of the literature, it has been identified that there is a gap in the knowledge of what the effect of changes in the VAT rate would be on the tax compliance behaviour of small business entities in South Africa. Evidence from literature confirmed that limited studies on this aspect of tax compliance behaviour have been done in Africa.

During the discussion of the factors influencing tax compliance behaviour, the structural factors were one of the three groups analysed (Figure 11). One of the structural factors, namely tax rates is the focus of this study and was identified as a factor which could influence tax compliance behaviour, even though its effect is uncertain, largely due to the fact that results from previous research mainly relate to income tax rates and not the VAT rate.

Therefore, the research question that was formulated to guide the current study is: how (direction) and to what extent (magnitude), is the tax compliance behaviour of small business entities in South Africa likely to be affected by changes in the VAT rate? Hypotheses designed to test the research question and address the identified gaps in the literature were developed at the culmination of the literature review in Chapter Three.

A research design appropriate to address the research question and test those hypotheses is developed in this chapter. The chapter commences with an outline of the research philosophy that underpins this study (Section 4.2) and continues by explaining the research methodology (Section 4.3), followed by an explanation of the research method adopted (Section 4.4). The chapter concludes with a summary of the chapter (Section 4.5).

4.2 RESEARCH PHILOSOPHY

A research philosophy refers to the framework of thinking when developing knowledge, such knowledge being obtained systematically through research. The research philosophy will determine the ontology and the epistemology applied during the research process. Ontology

refs to how the researcher views the world, or the assumptions regarding the nature of reality. Ontology is thus seen as the theory of being. Epistemology refers to how the researcher believes knowledge is created, or what is acceptable knowledge and how it can be conveyed to others (Greener, 2011; McKerchar, 2010; Saunders *et al.*, 2016). The methodology is the execution of the research based on the identified philosophy.

Traditionally, the two extremes on the research philosophy continuum are **positivism** and **interpretivism**. On one side of the spectrum lies positivism, which uses deductive reasoning[33] to follow a precise, structured method which objectively identifies absolute facts about causal relationships. The researcher removes himself/herself from the participants to objectively study the causal relationship in question. Hypotheses, usually based on existing theories, are developed and tested by the positivist. Although positivism is a popular philosophy, many researchers criticise it for being unrealistic and question the confidence placed on the objectivity, accuracy and certainty of the findings. Positivism could be appropriate for doctrinal research but it is not considered to be an effective philosophy for studies exploring the behaviour of people (Leedy & Ormrod, 2015; McKerchar, 2010; Saunders *et al.*, 2016).

Interpretivism, in contrast, seeks to find the social reality of a problem based on the subjective interpretation of the researcher. The researcher's beliefs and views influence the interpretation of the results of the study. Interpretivism is linked to inductive reasoning[34] where theory is built, not tested. Interpretivism assumes that "a person's view of the world is real to them" and that the knowledge created is subjective, the findings being true in their specific context (McKerchar, 2010:75). This is therefore also the major disadvantage of interpretivism; the results are subjective and open to researcher bias. The results cannot be generalised to the population as it is very individualistic. That said, interpretivism is ideal to use when one wants to obtain a deep understanding and wants to qualitatively study cross-cultural differences, ethics and leadership strategies (Dudovskiy, 2018).

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[33] Deductive reasoning refers to when general theory is applied and tested to a specific case (McKerchar, 2010).

[34] Inductive reasoning refers to where a number of observations are made regarding a phenomenon and a general conclusion is reached based on these observations. Inductive reasoning cannot be used to prove a hypothesis (McKerchar, 2010).

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As research progressed, researchers developed philosophies between these two extremes, such as post-positivism and pragmatism. These represent positions somewhere on the continuum between positivism and interpretivism (McKerchar, 2010). For this research study, the most appropriate philosophy is deemed to be post-positivism, which is based on the ontology of critical realism. Critical realists wish to see reality as independent and external but realise that the perception thereof is influenced by the person's observations, sensations and perceptions based on personal experiences. Critical realists accept that conclusions are reached based on the 'limited view' the researcher has of the situation and that these may well be different if viewed from another perspective. Critical realists search beyond empirical realism to try and get to the 'real' reality, acknowledging that the reality might be imperfect and never fully understood (Denzin & Lincoln, 2011; McKerchar, 2010; Saunders *et al.*, 2016; Trochim, 2006).

Post-positivism emanated from positivism by addressing the problems encountered with positivism, such as being unrealistic in the world, questioning the confidence placed on the objectivity, accuracy and certainty of the findings. Post-positivism is seen as the 'humbler version' of positivism (McKerchar, 2010:74). It is based on the epistemology of a modified dualism or objectivism, acknowledging that the findings are not necessarily true but only probably true. Therefore, in post-positivism, one can realise that theories are fallible and can be revised if proved wrong. For this reason, results are interpreted based more on probability rather than certainty and merely approximating truth rather than claiming that it is the only truth. As humans are not all-knowing, research is done as and when new information is found. A full understanding of the problem might even be impossible (Denzin & Lincoln, 2011; Leedy & Ormrod, 2015; McKerchar, 2010).

Post-positivism brings together theory and practice and goes into the detail of social concerns. It recognises that there are many techniques, measures and observations that are correct to get to an answer to a real-world problem (Henderson, 2011; Trochim, 2006). Post-positivism seeks to determine causal relationships and for this reason, experimentation and correlation studies are often used (Scotland, 2012).

To determine the effect of a change in the VAT rate on tax compliance behaviour, a cause and effect relationship is studied. The fact that the VAT rate decreases or increases (cause),

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may lead to certain effects on tax compliance (increase or decrease) behaviour but these effects are unclear. This unknown response is tested from the perspective of individuals operating small businesses in South Africa. The change in the VAT rate (variable causing the effect) is the independent variable and the change in tax compliance behaviour (variable being influenced) is the dependent variable (Leedy & Ormrod, 2015; Sekaran & Bougie, 2013). To test this causal relationship, this study follows a post-positivism philosophy.

4.3 RESEARCH METHODOLOGY

Research methodology refers to the manner or approach in which the study will be conducted, based upon the identified philosophy. Different approaches can be followed, such as a qualitative approach or a quantitative approach or a mixed-method approach (Greener, 2011; McKerchar, 2010).

Qualitative research is typically performed under a non-positivist research philosophy, such as interpretivism. The results are always subjective rather than objective and focus on building theories through inductive reasoning. Qualitative research focuses on characteristics or qualities that cannot be stated numerically but rather in words, such as people's perceptions of a situation (Leedy & Ormrod, 2015; McKerchar, 2010; Sekaran & Bougie, 2013).

Quantitative research is typically performed under a positivist (and post-positivist) research philosophy. Since a positivist research philosophy entails that the research is aiming to identify an objective reality, this knowledge needs to be created or verified by empirical means. The hypotheses are identified before the data is collected and the instrument is set up accordingly. The instrument does not change during the data collection period and the researcher remains at a distance by not getting involved and causing bias among participants. The results of the empirical data collected are analysed statistically. Quantitative research is usually linked with experiments, a positivist philosophy and also with a deductive approach where a theory is tested (Creswell, 2016; McKerchar, 2010; Saunders *et al.*, 2016).

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Mixed methodology refers to when a researcher uses a combination of research approaches, thus using a qualitative and quantitative approach to solve the research problem. A mixed methodology is usually applied where the researcher aims to identify the "real" reality. Mixed methodologies are applied to be able to address different objectives or where the one approach affects or influences the subsequent approach followed to address the problem. Results from the various approaches could also be compared and used to strengthen the outcome of the results (Leedy & Ormrod, 2015; McKerchar, 2010; Saunders *et al.*, 2016).

The approach adopted for this study is quantitative in nature as quantitative research generates numerical data for statistical applications. Behaviour can thus be quantified through coding and the results could be generalised to a larger population. Using the quantitative approach, the behaviour of a sample of taxpayers can be tested in order to generalise the results to the target population. The researcher is not as interested in the underlying reasons, opinions and motivations for the behaviours, which would usually be explored using a qualitative approach (Cooper & Schindler, 2008; DeFranzo, 2011).

Quantitative research can be conducted through a scientific method, following a post-positivism philosophy where theories (the expected utility and agency theories) are tested. For this study, an experiment is used to collect data about an observable reality, from which possible generalisations can be drawn to the target population. Deductive reasoning was applied where hypotheses were developed from existing theories in order to observe the phenomenon, namely the effect changes in the VAT rate have on tax compliance behaviour. The results of the empirical data collected are analysed statistically in an attempt to quantify the occurrence of changes in behaviour. The main purpose of this study is to use an experimental design to identify the effect that changes in the VAT rate will have on the tax compliance behaviour of small business entities in South Africa (Creswell, 2016; Greener, 2011; Leedy & Ormrod, 2015; McKerchar, 2010; Saunders *et al.*, 2016; Sekaran & Bougie, 2013).

4.4 RESEARCH METHOD

4.4.1 <u>Selection and discussion of the appropriate research method</u>

Empirical tax compliance studies are difficult to perform because obtaining reliable information is a challenge. People do not want to admit that they are not complying with tax laws as they presume that society expects them to respond differently.[35] Where participants do not provide honest answers, external validity is decreased as the results cannot be generalised to the target population (Alm *et al.*, 1992b; Sekaran & Bougie, 2013). It is therefore imperative to employ a research method that will obtain this information as accurately as possible from participants, permitting them to report honestly without feeling threatened. This section initially considers the various possible research methods available and then identifies the most appropriate method to achieve the objectives of the study.

When applying the post-positivist philosophy and the quantitative methodology, three quantitative research methods could be followed, namely correlation research, survey research or experimental research (Creswell, 2012). As is evident from the analysis on tax compliance studies by Yong *et al.* (2019) for the period 1998 - 2017, the majority of studies in this particular field (68 per cent) use a quantitative approach, of which the predominant research method is either the survey (41 per cent) or experiment (24 per cent).

Correlation studies are used to determine correlations or associations between individual variables but the researcher is unable to allocate individuals to different treatments or groups. Since different treatments are not possible and because variables cannot be controlled for, it is not as rigorous as an experiment (Creswell, 2012; Dudovskiy, 2018). Correlation studies were not deemed appropriate for the current research as the researcher would not be able to test the effect of different VAT rates on tax compliance since there cannot be different treatment groups.

A survey is often used to determine people's opinions, desires and attitudes but does not necessarily reflect how they might behave in real life (Hofstee, 2011; Leedy & Ormrod,

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[35] This is social desirability bias, which is when a person feels obliged to answer in a specific way based on what they think society expects (Saunders *et al.*, 2016).

2015). Instead of testing associations among variables, surveys describe trends through statistical analysis (Creswell, 2012). Richardson and Sawyer (2001) note that surveys have been a very popular method to perform tax compliance studies during the 1980s but the critique they have of surveys suggests that the response rates are often very low, averaging around 30 per cent with a low of 5.5 per cent. This could result in the findings being less robust.

Quantitative survey data may be collected through structured interviews or questionnaires (Creswell, 2012; Saunders *et al.*, 2016). A structured interview is a conversation between an interviewer and interviewee, where the interviewer asks specific, mostly closed-ended questions to gather data about the phenomena to be researched (Creswell, 2012; Saunders *et al.*, 2016). One of the advantages of an interview is the clarification that can take place immediately between the questions asked and answered (Daniel, 2012). Disadvantages, however, include that it takes a significant amount of time to conduct the interviews, there are additional costs involved (travelling or telephone costs) and there is potential for interviewee bias (Dudovskiy, 2018). An interview may not be an appropriate collection method where data are collected on a sensitive topic, such as whether one complies with tax laws. Anonymity is not achieved as the interviewer knows who the respondent is. The respondents may then not answer honestly in fear of being penalised if they do not comply. Social desirability bias could also negatively influence the results of the data collected, as respondents could give the answer they expect the researcher wants, instead of answering honestly (Callegaro, 2011).

A questionnaire is a pre-formulated written set of instructions that can be completed by the respondents themselves, either through postal questionnaires or over the internet (web or mobile questionnaires) (Leedy & Ormrod, 2015; Saunders *et al.*, 2016; Sekaran & Bougie, 2013). Postal questionnaires are not deemed appropriate for this type of study, as more participants can be reached in a shorter period through the internet. Costs are also limited with internet or mobile questionnaires since use thereof is free of charge. Online questionnaires can be structured such that, depending on the participant's answer, the survey skips to the next appropriate question (Leedy & Ormrod, 2015). Surveys were not deemed appropriate for the current study as they consider trends but do not provide information on associations between variables as was sought in this study. Response rates

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are low for surveys and do not necessarily reflect how people might behave in real life (Hofstee, 2011; Leedy & Ormrod, 2015; Richardson & Sawyer, 2001). People might not be honest in their answers as anonymity is not achieved.

An experiment is a test that is done by controlling for certain factors, to determine the effect one variable has on another. In an experiment, the independent variable is manipulated (the VAT rate is decreased or increased) and the outcome on the dependent variable is observed (did compliance remain the same, improve, or worsen?) (Leedy & Ormrod, 2015). These causal relationships can be determined reasonably accurately by performing an experiment; in fact, an experiment is deemed the most appropriate method of collecting primary data to determine the probable effect of one variable affecting another (Shadish *et al.*, 2002). Alm (1991) reports that experiments were used to collect reliable data not necessarily collected through literature analyses or other research methods. Through experiments, the causality on the effect of the behaviour is also certain as the researcher may keep all other factors constant and only change the variable that is to be tested (Burtless, 1995).

Tax compliance behaviour, specifically illegal behaviour such as evading taxes, is a sensitive topic and participants may not want to provide honest answers if they can be identified, such as in an interview. An experiment seeks to find a way around the problem of dishonest answers (Torgler, 2003). Richardson and Sawyer (2001:230) indicate that experimental research has become the most popular method for tax compliance studies after surveys were originally used for tax compliance studies.

The experimental design[36] was chosen for this study, as it can be seen as the method of collecting primary data that best explains and identifies the probability of one variable affecting another. Experiments simulate real-world situations (although it is much more simplified) through detracting the respondents' focus from the aim of the study (tax non-compliance in this case) by simply identifying responses and reactions to business situations, instead of asking direct questions such as 'would you evade tax'. Experiments are highly replicable and can, therefore, be reproduced at other times and in other countries to measure the effects of a specific event (such as a change in the VAT rate) before the change is effected in practice. Policymakers might assume certain responses to changes in

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[36] See Appendix 1 for full details of the instrument and protocols used for the experiment.

legislation but to test this assumption, they could perform an experiment to ensure that the results are in the anticipated direction (Burtless, 1995; Davis & Holt, 1993; Hofstee, 2011; Maines, Salamon & Sprinkle, 2006; Richardson & Sawyer, 2001).

One of the disadvantages of using an experiment is that it often merely provides a 'yes' or 'no' answer; there is no explanation provided by the participant (Vittana, 2020). This was overcome in the current study by asking additional questions at the end of the experiment to obtain possible reasons for the participants' answers. Depending on the type of experiment selected, various other disadvantages are present, which are further discussed in the text below.

Having established that an experimental design is the most appropriate research method for the study being undertaken, the thesis now explores some of the key concepts and principles that are involved in an experiment. The concepts and principles that are explored, are "treatment", "control group", "reliability", "validity" (internal and external), the differences between laboratory and field experiments, "between-subjects" and "within-subjects" design and the concept of with or without "pre-test" and "post-test". In addition, the experiment may or may not involve pilot testing before being formally conducted. The following discussion provides the rationale for the ultimate experimental design that was selected.

A treatment in an experimental study can be described as the intervention applied by the researcher, the researcher expecting that this change in condition will affect the dependent variable. There can be more than one treatment group in an experiment, depending on the number of conditions the researcher would like to test (Leedy & Ormrod, 2015; McKerchar, 2010). The treatment groups are discussed in detail in Section 4.4.2.

A control group is a group of participants for whom there is no intervention. The control group is used to compare the results of the treatment groups in order to determine the effect of the manipulated variable (Leedy & Ormrod, 2015; Saunders et al., 2016).

Reliability of an experiment refers to obtaining consistent results from the experiment, should all factors remain the same. Due to the nature of the study, it is possible that other factors could influence the responses of the participants, referred to as 'nuisance' factors,

that the researcher does not want to influence the results (Salkind, 2012; Welman, Kruger, Mitchell & Huysamen, 2005). The nuisance factors are controlled for by randomly allocating the participants to the various treatment groups.

Internal validity refers to how accurately one can conclude with confidence that the independent variable that was manipulated caused an effect on the dependent variable. Can the conclusions drawn from the experiment be said to accurately reflect what happened in the experiment? Internal validity is important for experimental designs in order to ensure that the one variable that was manipulated did, in fact, cause the change in the other variable (cause-and-effect relationship) (Babbie & Mouton, 2001; Leedy & Ormrod, 2015; Saunders *et al.*, 2016; Sekaran & Bougie, 2013).

External validity refers to how accurately one can conclude that the cause-and-effect relationship noticed in the experiment, can be generalised to the larger population (Leedy & Ormrod, 2015; Saunders *et al.*, 2016; Sekaran & Bougie, 2013).

As illustrated in Figure 13, an experiment can be conducted in one of two ways; either by conducting a laboratory experiment or by conducting a field experiment. With a laboratory experiment, the setting is artificial as it is not the normal environment the participant operates in. The advantage of a laboratory experiment, however, is that the researcher can control better for nuisance factors. The researcher can then conclude with a stronger argument that the independent variable caused the effect on the dependent variable, instead of other factors having caused the effect. Internal validity is thus stronger in a laboratory experiment than with a field experiment because the researcher can control for the nuisance factors (Dudovskiy, 2018; Sekaran & Bougie, 2013).

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Figure 13: Alternatives when conducting an experiment
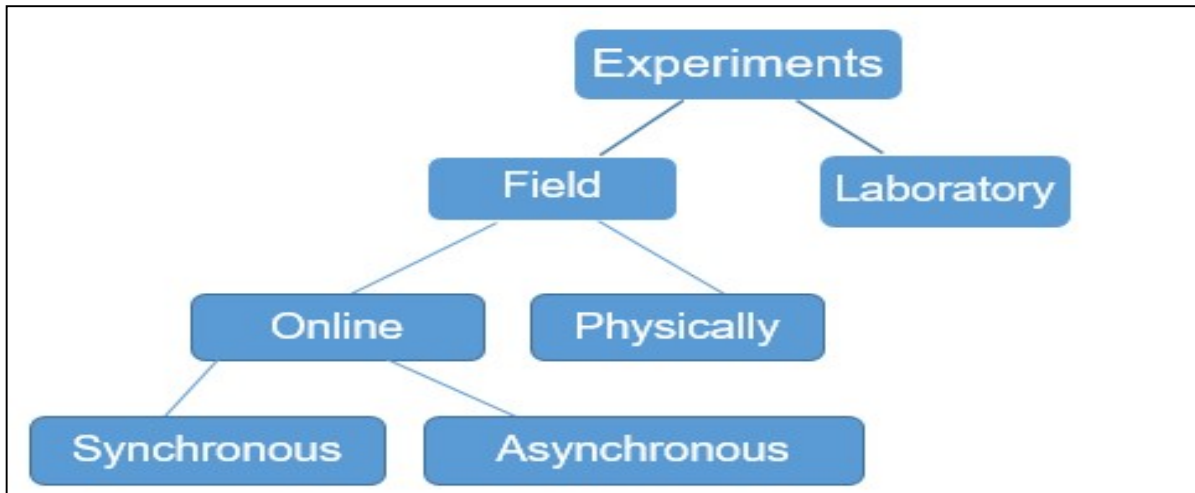
Source: Compiled by author from sources discussed below

A field experiment is conducted in the participant's natural environment and the scenario is thus closer to real-life than what a laboratory experiment would be. For this reason, external validity is greater in a field experiment than a laboratory experiment as it is probable that the sample acted similarly to how the rest of the population would act, increasing generalisability (Sekaran & Bougie, 2013).

Field experiments can be conducted online or physically in the natural setting (Figure 13). The advantages of conducting experiments online are the reduced cost to run the experiment, the data gathering is less time consuming, a wider geographical area can be reached, larger sample sizes can be obtained, difficult to reach populations due to time constraints are more reachable and better design features can be used, such as randomisation, graphics and skip patterns (Daniel, 2012). A disadvantage of using an online experiment is that some potential participants are automatically excluded from the experiment due to a lack of computer or internet access and knowledge (Sekaran & Bougie, 2013).

Electronic data through online experiments could be collected in real-time – referred to as synchronous data collection – or not in real-time, referred to as asynchronous data collection (Figure 13). Where data are collected in real-time, this implies that the researcher and the participant are exchanging information with each other and receiving immediate responses.

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Asynchronous means that the participant could complete the questionnaire in his or her own time and the researcher could view the response at a later stage (Saunders *et al.*, 2016).

An experiment could be designed in two ways, namely a between-subjects design or a within-subjects design. A between-subjects design refers to the situation where a participant is only exposed to one treatment and, if there is a control group, the treatment group participant is not included in the control group. A separate experimental group of participants must be used if there is more than one treatment to be tested in an experiment for a between-subjects design (Saunders *et al.*, 2016).

A within-subjects design refers to the situation where the same participant is exposed to all the treatments applied in the experiment. This means that when there are four treatment groups, the same participant is exposed to all four treatments, not just one. The advantages of using a within-subjects design are that fewer participants are required for the experiment and external factors that could influence participants are controlled for, as these are the same participants in all treatments. The disadvantages are that the experiment may become too long and tiring and that the participants could learn as they progress with the experiment what the researcher is testing and manipulating their answers to reflect what they think the researcher expects (Saunders *et al.*, 2016).

In an experiment, a pre-test and/or a post-test can be applied. A pre-test refers to a scenario in the experiment being asked before a treatment is applied. A post-test is thus the scenario asked after a treatment is applied. Some experiments only apply post-tests, whereas others apply a combination of pre-tests and post-tests. The advantage of conducting a pre-test and post-test is that the same participants are exposed to both tests such that the participants can serve as their own control (Leedy & Ormrod, 2015; Sekaran & Bougie, 2013).

A pilot study can be undertaken before an experiment is run to ensure that the study intended to be performed is feasible, the questions are clear and unambiguous and to iron out any weaknesses. By conducting a pilot study, the researcher ensures that the experiment is set up correctly and that all questions are asked to obtain the required results (Leedy & Ormrod, 2015; Saunders *et al.*, 2016). The pilot study is discussed in detail in Section 4.4.4.

The different alternatives for the experiment, the experimental design and the options regarding a pre-test/post-test were considered in selecting the appropriate manner for setting up the experiment for the current study. To get respondents from a wide geographical area into one laboratory room at exactly the same time to conduct a laboratory experiment, or even conduct a physical field experiment, is practically improbable. The participants are involved in the daily operations of their businesses and have various commitments. Participants from other regions may not be willing to travel to the venue to attend the 20-minute experiment. This would be too costly and time-consuming for them. An online field experiment was thus seen as ideal. The data were collected asynchronously through Qualtrics, an online instrument delivery service provider. A recognised limitation of the study is that some potential participants from the target population are excluded from the study as they do not have a computer, nor internet access.

A further reason for conducting the experiment online through Qualtrics is to attempt to overcome high attrition rates and to obtain a sufficient amount of responses. Participants may complete the experiment in their own time, at a convenient place, incentivising them to be more willing to participate.

In this study, a predominantly between-subjects experimental design was administered instead of a within-subjects design in order to avoid the participants becoming biased and answering what they think the purpose of the research is. The participants are thus not exposed to more than one treatment. An element of within-subjects design is, however, also present, as all participants were asked the same question for the first scenario. This question serves as the measure of control for comparing the results within the treatment groups after the treatment was applied.

Although there is no control group in the experiment, results of the pre-tests and post-tests within each treatment, as well as across treatments, are compared to determine the effect of the independent variable (a change in the VAT rate) on the dependent variable (the change in tax compliance behaviour of participants). This experiment thus follows a pre-test/post-test design.

Before a discussion on the set-up of the experiment can take place, the treatment groups first need to be explained. This is because the set-up of the experiment is based on the various treatment groups.

4.4.2 <u>Treatment groups</u>

Four treatments are applied in this study to determine the effect of changes in the VAT rate on tax compliance behaviour of small business entities. These four treatments are as follows:

- a treatment involving a five percentage point decrease in the VAT rate;
- a treatment involving a one percentage point decrease in the VAT rate;
- a treatment involving a one percentage point increase in the VAT rate; and
- a treatment involving a five percentage points increase in the VAT rate.

The rationale for choosing these treatments derived from a consideration of the VAT rate decreases and increases that have taken place in the EU over time (European Commission, 2018). The VAT rates in EU countries have increased, over time, between one and five percentage points above the initial rates. Furthermore, the highest VAT rate in Africa is 20 per cent, levied in Madagascar and Morocco (EY, 2018). This is five percentage points higher than the current VAT rate of 15 per cent in South Africa. The magnitude of the rate change was also considered as this could potentially affect people's tax compliance decisions. Rate changes of one and five percentage points were thus chosen for the different treatments.

For a researcher to control for nuisance variables, the researcher must ensure that the allocation of participants to the treatment groups is done in such a way that demographic factors, such as age, gender and income level, are spread among the various treatment groups. This can be achieved by matching groups, such as taking the total number of participants in one category (such as gender) and dividing these participants equally among the treatment groups. The problem with this, however, is that not all factors can be taken into account and some factors might not be known to the researcher. Although matching is often done in laboratory experiments, it is not usually done during field experiments (Sekaran & Bougie, 2013).

Another alternative to control for nuisance factors is to randomly assign participants to the various treatment groups. Random assignment would mean that each participant has an equal chance of being assigned to any one of the treatment groups. This will ensure that, overall, there is a spread of the various factors or attributes across the groups, based on the laws of normal distribution, thus improving the internal validity of the experiment. The probabilities are then good that the results obtained are due to the treatment and not due to other factors or attributes present within groups (Leedy & Ormrod, 2015; Sekaran & Bougie, 2013; Shadish *et al.*, 2002).

In this experiment, participants were randomly assigned to the various treatment groups to enhance internal validity. This is a major advantage of using an online tool to conduct the experiment, as participants are randomly allocated to the various groups by the software program. Qualtrics only randomly allocated the participants to the various treatment groups after the first scenario's questions. Therefore, participants who do not qualify for the study were never allocated to any treatment group. The researcher also deleted unusable responses and 'reset' the number of valid responses in each treatment group in Qualtrics throughout the data collection process, for Qualtrics to continue allocating participants to the treatment groups where more responses were still needed.

A discussion now follows on how the experiment was set-up using the four treatment groups. This was done in order to obtain the desired data.

4.4.3 The set-up of the questions in the experiment

Based on experience, Davis and Holt (1993) share the following lessons on how to ask a question in an experiment:
- Details are important: Verification of results needs to be possible at the end of the study and this verification is only possible if there is sufficient detail in the question.
- The design is important: Without a proper design, a proper experiment cannot take place from which reliable results are obtained. In designing the experiment, there are three critical elements:
  - the calibration of the results must be right;
  - the focus must be restricted to the treatment of interest; and

- the appropriate complexity must be chosen.

Furthermore, reactive arrangements could be a threat to external validity. This is where the participants are aware of the researcher's intent and thus they react differently in the experiment than what they would necessarily do under usual circumstances (Salkind, 2012).

A taxpayer's compliance can be measured either directly or through hypothetical scenarios. Hypothetical scenarios may be the preferred option as respondents might not want to report honestly on their non-compliance if asked directly. Compliance information can be "sensitive, incriminating and likely to be misinterpreted" (Devos, 2008:43; Hessing, Elffers & Weigel, 1988). Hypothetical scenarios are seen as an acceptable manner of data collection on tax compliance behaviour. Hite (1988) found that there is a strong positive correlation between self-reported compliance and government data on taxpayer compliance, as well as between self-reported compliance and hypothetical compliance decisions.

Manipulation checks are important to ensure that the participant identifies and takes cognisance of the independent variable(s) (Libby *et al.*, 2002). Attention checks are similar to manipulation checks, incorporated to ensure that the participant is attentive and not distracted while completing the experiment. This will ensure that better data quality is obtained (Abbey & Meloy, 2017). Abbey and Meloy (2017) reported an average of 35.79 per cent inattentive respondent rate, the maximum being an alarming 68.97 per cent. This highlights the importance of doing attention checks to ensure valid data are collected.

The researcher kept these lessons in mind in setting up the experiment.[37] To ensure that there is sufficient detail obtained, the questions are set up to reflect the necessary detail, keeping the research objectives and hypotheses in mind. Pilot studies are conducted to ensure that there are no uncertainties and that the instrument is reliable. The experiment was conducted between June 2018 and January 2019. The results of the participants early in the study were compared to those of the participants that completed the experiment late in the study, to ensure that there were no external (other) factors that influenced the responses, verifying the reliability of the data received (refer to Chapter 5, Section 5.2.4 for a detailed discussion on this).

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[37] Refer to Appendix 1 for details of the experiment.

When considering the design aspects and specifically the need to ensure appropriate calibration, it is noted that there is no control group against which the behaviour of the treatment groups can be measured. Instead of a control group, all groups are exposed to exactly the same first scenario, being a scenario which applies a VAT rate of 15 per cent. After this scenario, the various treatment groups are exposed to different VAT rate changes. The control, therefore, lies in each group itself.

It is important to decide which variables are tested and which ones need to be controlled for. In this experiment, the main variable that is manipulated is the rate of VAT levied, which is the variable of interest. Everything else remains the same across all treatments. Therefore, the focus is restricted only to the treatment of interest. In considering the complexity, attempting to simulate the real world can be very difficult. Therefore, the researcher decided which aspects are important and which aspects could be ignored, which also narrows the scope of the experiment.

To address the issue of reactive arrangements, the experiment commenced with a brief introduction in which the participant was only told that the study deals with the South African VAT system. Limited information was provided to ensure that the participant was not fully aware of the researcher's intent and thus, it is assumed that the participant would not amend the answers given to satisfy the researcher based on what the participant thinks the researcher wants. After reading the brief instructions, the participants were asked if they were willing to participate.

The anonymity of participants is key and since the participants cannot be identified, it is assumed that they provided honest answers in the experiment. Participants were made aware in the introduction that the online experiment is anonymous and that the answers cannot be traced back to them.

Next, the participants answered questions regarding demographic aspects. This improved the analysis of results, as the data were analysed per demographic characteristic to provide additional insight on taxpayers' tax compliance behaviour and which factors possibly influence compliance. The demographic spread of the variables over the four treatment

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groups was also considered to support the generalisability of the results to the target population.

To increase the reliability of the results, participants in each treatment were given standardised instructions. The scenarios were created in the third person – hypothetical scenarios – so that, psychologically, the participant does not think that the researcher is measuring *his/her* responses. This is due to the sensitivity of the topic and individuals possibly not wanting to give honest answers regarding their own tax affairs if they are non-compliant (Devos, 2008:43; Hessing *et al.*, 1988).

Experiments do not take into account penalties such as imprisonment, which is something that could happen in real life and it could influence the participant's behaviour in real life (Yesegat, 2009). Section 39 of the VAT Act, however, states that the penalty is 10 per cent of the outstanding taxes.

Revenue authorities do not usually make their audit probabilities known to the public and so the public do not know what the chances are of them being audited (Choo, Fonseca & Myles, 2016). Andreoni *et al.* (1998) also noted that audit probability sometimes depends on the amount of income that was declared. SARS, however, indicates that they plan to have a 12 per cent audit coverage of registered taxpayers (SARS, 2017).

The experiment was set up as closely as possible to real-life but it does not completely simulate it, which is acknowledged as a limitation. Even though a possible audit probability is available, the researcher believes that most people do not know what the audit probability is. The participants are rather told that the usual possibility to be audited in South Africa is present and that if the audit is conducted and it is found that they declared an incorrect amount of VAT, the penalty is 10 per cent of the outstanding taxes. The limitation is, however, that no actual penalties can be levied in the experiment as it is conducted online and not in a laboratory and no rewards are paid to participants based on their responses.

To test the first hypotheses (Hypotheses 1_{A1}, 1_{A2}, 1_{B1} and 1_{B2}), the section after the demographic questions informed the participant that a hypothetical person trades with the same goods or services as the participant and that the hypothetical person is a registered

VAT vendor. The participant was informed that all transactions are cash transactions as cash is difficult to trace. Therefore only cash transactions are considered for the experiment. Where electronic payments are made, transactions are much easier to see and to monitor, which is presumed to increase compliance (Bird & Zolt, 2008).

The sales and purchases of the hypothetical person were provided to the participant who had to indicate the choice it is presumed the hypothetical person would make when the current VAT rate of 15 per cent is applied. The first question asked was what the total amount of sales were that the hypothetical person is likely to declare. It could happen that the taxpayer under-reports taxable supplies in order to reduce the output tax that needs to be paid. The next question asked how much of the total purchases, including personal purchases, the participant assumed the hypothetical person would declare. This is because a taxpayer could over-claim input tax on fictitious or invalid invoices.

In the next section, the participant was given exactly the same information and exactly the same two questions, with the exception that the VAT rate was adjusted. Each separate treatment group was exposed to one of the following VAT rates: 10 per cent, 14 per cent, 16 per cent or 20 per cent.

To ensure that participants were attentive, two questions were included as manipulation or attention checks after the first two scenarios. The one question asked participants what treatment (VAT rate change) they were exposed to. This is a form of memory recall. This question is very important as the participant needed to identify the change in the VAT rate correctly in order to reflect their possible change in behaviour, which is what the researcher is testing (Kim *et al.*, 2005). The other question asked the participant to select option five on a Likert scale with seven options to determine that they read the question and that they were attentive while answering.

Another check to determine the validity of the responses is to determine if the time in which the experiment is completed, is sufficient. The time the participant takes to complete the questionnaire is recorded by Qualtrics. If the time taken is too short, being less than 6.67 minutes (a third of the expected response time) for this experiment, it means that the participant merely selected options and did not necessarily consider the whole scenario with

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care. These responses were looked at in further detail to see if sufficient comparative information was given. Insufficient responses were then ignored for the analysis of results.

To test the next hypothesis (in support of H$_{2A)}$, the participants in the one or five percentage point decrease in VAT rate treatment groups were asked whether a hypothetical person that is not registered as a VAT vendor, would register as a VAT vendor should the VAT rate decrease. Two scenarios were given: one where the hypothetical person's taxable income is slightly above the compulsory threshold where a person must register as a VAT vendor and one where he or she is slightly below.

To test the effect of an increase in the VAT rate, the participants in the one or five percentage point increase in VAT rate treatment groups were asked whether a hypothetical person that is registered as a VAT vendor, would deregister as a VAT vendor should the VAT rate increase. Again, two scenarios are given: one where the hypothetical person's taxable supplies are slightly above the compulsory threshold where a person must register as a VAT vendor and one where he or she is slightly below. This will indicate whether taxpayers just over the compulsory threshold perhaps evade taxes.

The next section of the experiment relates to the participant's view on VAT compliance, specifically regarding registration. Several factors could influence the registration decisions of business entities, including the location of the enterprise - if the enterprise is separate from the home, it is easier to be identified by the revenue authority for inspection; incentivising the customers to ask for an invoice - for a vendor to issue a valid tax invoice, it will need to be registered; assisting with access to the formal credit market. In informal settings, the interest rates of credit are higher than in formal markets (Mukherjee & Rao, 2019).

Some entities decide to voluntarily register as VAT vendors even though they are below the tax threshold. The reasons for this could be that the business is expected to grow and sales will then be above the threshold; the ability to claim back input VAT on purchases made; being advised by tax practitioners to do so and to improve reputation or credibility (Klahr, Joyce, Donaldson, Keilloh & Salmon, 2017).

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A question was asked in the form of a Likert scale, whether a hypothetical person would register for VAT if taxable supplies are above the compulsory threshold because there is a moral obligation to do so. The same question is then asked but if the taxable supplies are just below the compulsory threshold.

The last section of questions was obtained from the study of Choo *et al.* (2016), to determine the reasoning or thought processes that may have taken place when answering the questions. This section also contained questions asking the participants where they were when completing the experiment and whether the information and what was expected of them in the experiment was clear, or what exactly did they not understand. After the experimental design was completed, pilot studies were conducted. Thereafter, the main experiment was performed.

4.4.4 <u>Conduct of the pilot study</u>

Three rounds of pilot studies were conducted by testing the instrument with participants similar to the participants who are involved in the experiment, as well as academics, as they could identify problem areas in the experiment based on their academic knowledge. Non-probability purposive sampling (explained in detail in Section 4.4.5) was applied to ensure that the relevant people with sufficient knowledge had an opportunity to criticise and improve the experiment before it was sent to the participants for the main experiment (Leedy & Ormrod, 2015; Saunders *et al.*, 2016).

Before the link to the experiment in Qualtrics was sent to the pilot study participants, the supervisors, an experimental expert and a statistician worked through the experiment in Excel format. This ensured that all the necessary questions were asked and that the type of answers obtained could be analysed appropriately. Content validity is also enhanced as these experts ensured that the study achieves what it aimed to measure.

The first pilot study, done in Qualtrics, was sent to 18 academics, one sole proprietor and one engineer. Thirteen individuals completed the pilot study and suggested improvements. The suggestions fell into three categories: language, structural and content changes. Minor language changes were suggested to improve the participants' understanding of what needs

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to be done. Structural changes were suggested for ease of answering questions by changing the order of the questions. A sliding scale answering option was also replaced with a text entry as an exact amount could not be selected on the sliding scale. Content changes included fixing the Likert scale options that pulled through incorrectly and adding descriptive paragraphs to make it easier for the participant to know what to do.

Some of the pilot respondents suggested that the post-experiment questions where the participants were asked to indicate what influenced their decision-making process, be split for the two hypothetical persons. All the post-experiment questions relating to both persons were asked at the end. The suggestion was that the one scenario is asked, followed by the post-experimental questions on that scenario and then the next scenario is asked, followed by its post-experimental questions. Although it is understood that participants have to think back to what the information was regarding the first hypothetical person, the post-experimental questions cannot be split, as the answers to the second hypothetical person's scenario will most probably be influenced by the information asked in the post-experiment questions of hypothetical person one.

The appropriate changes were made to the first pilot study and it was then sent to four participants who have small businesses, being the target population for the research. Feedback on the experiment was received from three participants. The suggestions from the second pilot test emphasised the fact that some individuals did not understand what was required of them in specific questions. The wording was therefore amended to be clearer.

The experiment was then sent for a third round of pilot testing to three different people who are also involved in small businesses and feedback was received from two of the three. It was suggested by one of the respondents in the feedback that the scenarios should not be given in the form of a third-person scenario but that the instrument should be asking about the participant's own business circumstances. The participant remarked that she would be fully compliant and would answer as such if the scenarios were based on her own business, but, when asked about the compliance of a hypothetical person, her answer would be different, for example, that they were not fully compliant.

This participant's comment was assessed and although it is a valid comment, the researcher decided to leave the scenario in the third person. This was largely as a result of concerns about social desirability bias, whereby a person feels obliged to respond in a specific way. Tax compliance is a sensitive topic where people could lie about their non-compliance if they fear that they will be caught or when they feel it is not socially acceptable not to comply. Asking in the third person makes it easier for the participant to answer honestly (Saunders *et al.*, 2016). Furthermore, a question was asked in the experiment as to whether participants' answers would have been different if the scenario was not posed in the third person.

After three rounds of pilot testing and making the appropriate changes, weaknesses were ironed out and the experiment was deemed to be clear and unambiguous. Next, the appropriate participants were selected to complete the experiment.

4.4.5 <u>Target population and sample selection</u>

For this experiment, it was necessary to select business entities that could register for VAT in South Africa as participants (Shadish *et al.*, 2002). In South Africa, the voluntary threshold for VAT registration is taxable supplies of R50 000 made in a 12-month period (Anon., section 23(3)(b) of the VAT Act) and the compulsory registration threshold is taxable supplies of R1 million made in a 12-month period (Anon., section 23(1)(a) of the VAT Act).

SARS has identified that registrations for small businesses are low, with particular reference to VAT (SARS, 2012). The target population is thus small business entities and is defined for the purposes of this study as entities with a gross income of less than or equal to R20 million in a year of assessment (Anon., section 12E(4)(a) of the Income Tax Act). For practical reasons, including time and financial resource constraints, a sample of participants was selected. The two major categories for the sampling of participants are probability sampling and non-probability sampling (Figure 14).

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Figure 14: Sampling techniques
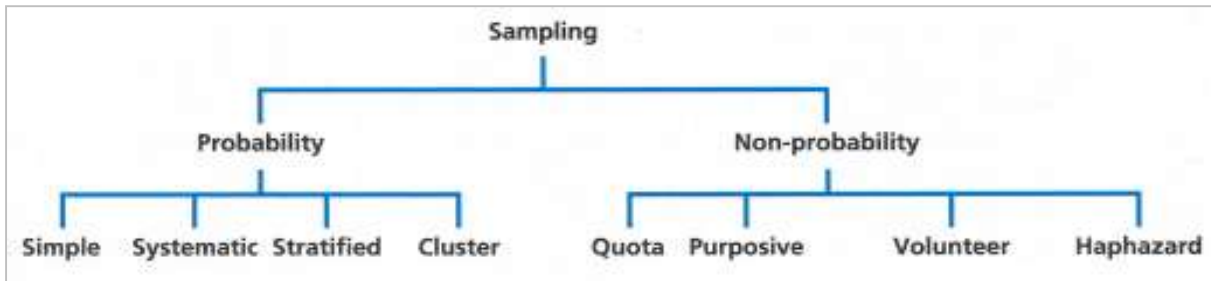
With probability sampling, the chances of all persons in the target population being selected for the sample are equal and selection is done randomly (Leedy & Ormrod, 2015; Saunders *et al.*, 2016). The focus of the study was, however, on non-probability sampling. With non-probability sampling, the participants are selected or approached less randomly and, as a result of the fact that all persons in the population do not have an equal chance of being selected as a participant, the results cannot be said to be conclusive for the population as a whole (Leedy & Ormrod, 2015; Saunders *et al.*, 2016).

Non-probability sampling involves different methods through which the sample can be selected (Dudovskiy, 2018; Leedy & Ormrod, 2015; Saunders *et al.*, 2016). These include quota sampling, purposive sampling, volunteer sampling and haphazard sampling (Figure 14). Quota sampling is used where the researcher needs a specific number of participants in a specific group. Quota sampling could also be used where the same ratio of participants need to be selected as one would find in the general population (Leedy & Ormrod, 2015; Saunders *et al.*, 2016).

Purposive sampling is used where the researcher needs specific individuals to participate in the study. The researcher targets specific persons in order to ensure that the research question and objectives will be met. Purposive sampling is also referred to as judgement sampling, as the researcher applies judgement to select the participants. The results of purposive sampling cannot be generalised to the entire population but work well when the sample size is small enough, to obtain best results (Leedy & Ormrod, 2015; Saunders *et al.*, 2016).

Volunteer sampling (consisting of snowball sampling and self-selection) entails that participants select themselves or others to participate in the study, rather than them being chosen by the researcher. Snowball sampling is described as the situation where the researcher contacts a few persons to participate in the study whom the researcher knows are qualifying participants and these participants then identify more individuals to participate and so the process continues. The advantage of snowballing is that a wider range and larger number of people can be reached (Dudovskiy, 2018; Saunders *et al.*, 2016). Self-selection is where the participants identify that the researcher is looking for participants and they volunteer themselves to participate. The researcher can either publicly advertise that he or she is looking for participants or ask people directly whether they are willing to participate (Lavrakas, 2008; Saunders *et al.*, 2016). An advantage of the self-selection sampling approach is that a large number of people are made aware that the researcher is looking for participants and anyone willing to assist then self-selects to participate (Saunders *et al.*, 2016).

Haphazard sampling is also referred to as convenience sampling, as this method would be the most convenient for the researcher to apply but at the cost of not getting a representative sample. The sample is selected merely based on the availability of participants at the time of data collection (Lavrakas, 2008; Saunders *et al.*, 2016).

The sample of participants can be obtained in various ways. One option is for the researcher to distribute the experiment himself or herself through his or her own contacts. An alternative is to use an online instrument delivery service provider, which distributes instruments electronically to participants on its database (Brandon, Long, Loraas, Mueller-Phillips & Vansant, 2014). The advantage of using a service provider would be that it potentially has a wider spread of participants and a larger number of participants who can be contacted.

The disadvantages, however, are that the service providers could potentially not obtain a sufficient sample size due to a limited database and that the cost of getting the available sample is too high. For this study, the researcher obtained a quote from a service provider and the sample size was too small and the cost too high. The researcher thus decided to distribute the experiment herself.

A possible problem with experimental research is the small sample sizes. Care should be taken to ensure that the sample size is sufficient to enhance validity (Richardson & Sawyer, 2001). A typical sample size for experimental research is 15 to 30 participants per treatment group (Daniel, 2012). High attrition rates could also make the results weaker (Burtless, 1995).

A few studies were considered to determine an appropriate sample size for the current study. In Hogan *et al.* (2013), a sample of 92 participants was selected and assigned to four experimental groups. Kim *et al.* (2005) used 91 participants in total for four experimental groups. In Rupert, Single and Wright (2003), 89 participants were allocated to three experimental groups. On average, therefore, researchers assign between 20 and 30 participants per experimental group.

For the pilot study, purposive sampling was used. Academics were specifically asked to complete the experiment, as they could check for technical accuracy. People in practice were also asked for their opinion to ensure that the experiment is clear and easy to complete.

For the main experiment, a combination of volunteer sampling and convenience sampling was used. The researcher sent a link of the experiment to the South African Institute of Tax Practitioners who posted the link in a newsletter that was sent to their members. The link was posted in the newsletter for three weeks. The link was also sent to the Organisation Undoing Tax Abuse (OUTA), who posted the link on their Facebook page where they had 142 000 likes. The members and followers could then decide whether they would volunteer to do the experiment, or whether they would ignore the e-mail or post. The link to the experiment was also posted on social media such as the researcher's own Facebook profile and through WhatsApp. If a person then chose to participate, he or she could access the link and complete the experiment, representing a method of self-selection sampling.

The researcher also sent the link to various people that are known to the researcher to qualify for participation in the study. This is again a form of self-selection sampling as the potential participants identified that the researcher was looking for participants for the experiment. The participants were asked to send the link of the experiment to family or friends that they know qualify as participants, following the snowballing technique. A list of

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e-mail addresses of 15 158 contacts was obtained through LinkedIn, which is in the public domain. An e-mail with the link to the experiment and a short description regarding the study was sent to all of these e-mail addresses. The experiment opened during June 2018 and closed during January 2019.

To ensure that sufficient data were collected to perform adequate analytics to reach a conclusion, the planned sample size was between 25 and 30 participants per treatment group. Participants were randomly assigned to the various treatment groups once they agreed to participate in the experiment and correctly answered the qualifying questions. This ensured that there is a representative, similar sample size in each of the treatment groups (refer to Chapter Five, Section 5.3 for a further discussion on the representativeness across the treatment groups).

After the data were collected from the experiment, the analyses on the data were performed to provide answers in support or refutation of the hypotheses. The data analysis procedure and results are discussed in the next chapter.

4.5 SUMMARY

For this research, a post-positivist philosophy is followed using a quantitative research method through a pre-test/post-test design field experiment to obtain data from the participants. The experiment, conducted after appropriate pilot testing and refinement of the instrument and protocols, is mainly an asynchronous between-subject design experiment conducted using an online instrument delivery service provider. Participants were randomly assigned to one of four treatment groups: two involving a decrease in the VAT rate of one or five percentage points; and two involving an increase of one or five percentage points. The data from the experiment was used to determine the effect changes in the VAT rate may have on the tax compliance behaviour of small business entities in South Africa. The results of the experiment are discussed in Chapter Five.

CHAPTER 5
RESULTS AND ANALYSIS

5.1 INTRODUCTION

The previous chapter explained the research design of the study, including the rationale for undertaking an experimental approach. The specific research questions guiding this study are: how (direction) and to what extent (magnitude), is the tax compliance behaviour of individuals operating small business entities in South Africa likely to be affected by changes in the VAT rate? These questions were tested by conducting an asynchronous online, between-subjects field experiment with a pre-test/post-test design. The results of the experiment and the analysis thereof are discussed in this chapter.

The main purpose of the experiment was to identify the effect that changes in the VAT rate will have on the tax compliance behaviour of individuals operating small business entities in South Africa. The specific businesses considered for the study were small businesses, earning a gross income between R50 000 and R20 million during a year of assessment. The experiment was opened during June 2018 and closed during January 2019 once sufficient responses were obtained.

This chapter continues in Section 5.2 with the data preparation procedures, including the cleaning of the data. It also includes a description of the various descriptive[38] and inferential[39] statistical techniques used to determine differences and relationships or associations between variables to test the various hypotheses developed earlier in the thesis. Reliability and validity of the data obtained are also discussed. This is followed in Section 5.3 by a description of the sample in terms of demographics. The main results addressing the research questions are discussed next, including the effect of changes in the VAT rate on tax compliance considering amounts declared (Section 5.4) and registration decisions (Section 5.5). Due to the rich nature of the data collected from the experiment,

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[38] Descriptive statistics are performed to see how data correlate or are associated with one another (Leedy & Ormrod, 2015).
[39] Inferential statistics are done to test the hypotheses by considering the level of significance of results (Leedy & Ormrod, 2015).

further analyses were performed to obtain a deeper understanding of the effect of demographic variables on tax compliance, which are then discussed in Section 5.6. These results present the effect of changes in the VAT rate on tax compliance by reference to identified factors, namely gender, ethnicity, age, qualifications, province, type of business, industry, income level, VAT knowledge and return submission.

5.2 DATA ANALYSIS

5.2.1 Type of data analysis performed

Experiments have been shown to be good instruments for measuring the presence and direction of causal relationships. The disadvantage, however, is that they cannot accurately measure the size of the relations (Maines *et al.*, 2006). For this study, the direction of the relationship is measured to see if tax compliance moves in the same direction as the change in the VAT rate.

In addition, although the exact or absolute magnitude of the relationship cannot be measured accurately, the researcher can compare whether, for example, more participants evade tax when they are exposed to a five percentage point change in the VAT rate versus those who are exposed to a one percentage point change in the VAT rate. Hence, a relative size effect can be identified.

The analysis of the data was done statistically to find patterns within and between treatments. Descriptive statistics were performed to see how data correlate or are associated with one another. Inferential statistics were done to test the hypotheses by considering the level of significance of results (Leedy & Ormrod, 2015).

5.2.2 Cleaning up the data

In total, 557 responses were recorded on Qualtrics. The data obtained was scrutinised and invalid or unusable responses were eliminated by taking the following eight steps:

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Step 1: All responses indicating that participants are not willing to participate were removed. A total of 8 responses were removed.

Step 2: All responses not adhering to the qualifying questions were removed. This included participants not involved in the management of the business, or cases where the business entity's gross income did not fall between R50 000 and R20 million for a 12-month period. A total of 201 responses were removed.

Step 3: The time taken for participants to complete the questionnaire was checked. If a participant took less than a third of the time expected to complete the questionnaire, the response was removed. This is based on a guideline used by Qualtrics, where a response is deemed to be invalid if it takes less than a third of the estimated questionnaire completion time (Qualtrics, 2014). Before deleting the response, however, the response was scrutinised to see if it is not perhaps a valid response with sufficient comparative information. Only one of these responses were deemed to be valid and sufficient. A total of 115 responses were removed.

Step 4: All responses where participants did not complete the experiment with sufficient comparative information were removed. The lowest percentage of completion of these responses showed that the respondent completed 84 per cent of the experiment. A total of 45 responses were removed where less than 84 per cent of the experiment was completed.

Step 5: The attention checks in the questionnaire were used as a further step in the process of eliminating invalid responses. The first attention check asked the participants to select "5" on a Likert scale. All respondents who did not select "5" were removed. A total of 11 responses were removed.

Step 6: The second attention check asked the participants to correctly identify the change in the VAT rate as per the treatment they were exposed to. If the participant was not able to correctly identify the change in the VAT rate, the response was removed. This is an important step as the aim of the experiment was to see how the change in the VAT rate would affect tax compliance. If participants could not identify the change, that defeats the purpose. A total of 35 responses were removed.

Step 7: All responses where participants originally answered the qualifying questions correctly but exceeded the gross income limit in a follow-up question, were removed as they fell outside of the scope of the study. A total of 10 responses were removed.

Step 8: One further response was removed where it was clear from the participant's additional comments that he/she did not understand what was being asked and it was evident that he/she calculated the amounts to report incorrectly by adding and deducting the output tax from the input tax. The amounts were supposed to have been reported separately.

After cleaning the data, there were 131 responses left. Qualtrics automatically randomly assigned each response to only one of the four treatments groups after the participants completed the first scenario. The total responses in each treatment group is depicted in Table 4. As is evident from this table, the number of responses in each treatment group is similar in number, resulting in a reasonable, randomised spread of participants to the various treatment groups. The minimum number aimed for of 30 per group was met.

Table 4: **Allocation to the various treatment groups**

Treatment group	Number of responses
Large decrease group (10%)	33
Small decrease group (14%)	30
Small increase group (16%)	34
Large increase group (20%)	34

The next step was to code the data so that the statistical programme could read the data and perform the necessary analyses. A codebook was created, indicating the number assigned to the description, such as '0' if the participant is female and '1' if the participant is male. This procedure was performed for all answers where the answers were given in words, not in numbers.

Some of the questions required the participants to report how many sales and how many purchases they would declare for VAT purposes, based on given scenarios. The participants thus declare amounts. Unfortunately, one of the limitations of the study is that the question was not clear enough for participants to know if they should report the values inclusive or exclusive of VAT. The researcher wanted figures exclusive of VAT but based on comments given in the experiment and as is evident from the amounts declared, some participants declared the amounts inclusive of VAT.

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The researcher removed the VAT from some of the declared amounts for sales for comparability. VAT was only removed if the amount declared was more than R2 million. The sales figure given to the respondents was R2 million, exclusive of VAT. The assumption is that no person would declare more sales for tax purposes than what they are legally bound to declare. In some cases, it was evident that the participant made a typing error and typed R23 million (R2 million plus VAT at 15 per cent, plus an extra 0). In such a case, the amount was also limited to R2 million. For a list of all amounts changed and the reason for the change, refer to Appendix 2.

For purchases, the amounts were amended by removing the VAT only where it was evident that VAT was included based on the percentage of VAT given in the scenario. Therefore, VAT was only removed from purchases if it was clear that VAT at the right percentage was included.

After the data were cleaned, the data were scanned for possible errors such as coding errors, or amounts declared not making sense, such as a sales amount of more than R2 million. Any errors found were corrected.

5.2.3 <u>Using inferential statistics</u>

Parametric tests are usually used where the data are normally distributed when utilising inferential statistics in analysing data. Non-parametric tests are usually used when the stringent requirements of parametric tests are not met, such as where the data are not normally distributed, or are categorical (nominal or ordinal) or the sample sizes are small. As most of the responses are categorical (specifically regarding demographic factors) and the sample sizes small, non-parametric tests were used. Additionally, the continuous variables were mostly not normally distributed and univariate analysis of variance (factorial ANOVA) was not considered appropriate. The disadvantage of non-parametric tests in comparison to parametric tests, is that non-parametric tests are less sensitive, which means that this method might fail to pick up differences between groups which could be present (Pallant, 2010).

The assumptions for non-parametric techniques are as follows (Pallant, 2010):

- the samples were random: this is true for the current research as participants were randomly allocated to the various treatment groups; and

- the observations were independent: The same participants were tested in the first transaction and then once more only after a treatment was applied. There are different (independent) participants in each of the four treatment groups.

For some of the tests performed in analysing the data, the mere amounts declared for sales or purchases were not sufficient and needed to be recoded to indicate compliance or non-compliance. For sales, a '1' was allocated where R2 million was declared (compliant) and a '0' where any other amount was declared (non-compliant). For the purchases category, any amount below and equal to R500 000 was coded as a '1' (compliant) and a '0' for all amounts above R500 000 (non-compliant).

The following tests were performed in analysing the data: t-test, Wilcoxon signed-rank test, Mann-Whitney, the Pearson chi-square test of independence, the Fisher Exact test and the Kruskal-Wallis test. A description of each of these tests is now provided, stating why the test is deemed appropriate.

T-test

The t-test is used to determine whether there is a difference between the means of two independent groups where the variables are continuous (can have a range of values between the maximum and minimum) (Laerd Statistics, 2018). This test is used to determine "whether the distribution of values for groups or batches can be considered to come from the same population or not" (Acton, Miller, Fullerton & Maltby, 2009:356). The t-test is appropriate to test whether there is a difference in the responses between participants that completed the experiment early (June - August 2018) or late (October 2018 - January 2019). If no significant difference is noted, it suggests that no exogenous factors were influencing the results.

Wilcoxon Signed-Rank test

This is a test used to determine the differences between groups. It is a non-parametric test (when the data are not normally distributed) used to test whether there are differences

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between the medians of paired or matched observations. The same participants are "tested… under two different conditions on the same dependent variable" (Laerd Statistics, 2018). This is the ideal test since the same participants are tested twice on the same scenario but at different VAT rates and the data are not normally distributed.

Mann-Whitney U test

"The Mann-Whitney U test (also called the Wilcoxon-Mann-Whitney test) is a rank-based non-parametric test that can be used to determine if there are differences between two groups on a continuous or ordinal dependent variable" (Laerd Statistics, 2018:n.p.). This implies that two different groups of participants are tested. The observations should be independent (Laerd Statistics, 2018). The Mann-Whitney test is therefore similar to the Kruskal-Wallis test, except that it can test for differences between two groups only, not more. This test is ideal since the data are not normally distributed and the difference between the two groups are required but this time, the participants of the treatment groups differ.

Pearson's chi-square test of independence

Chi-square "is a statistical test of association between two variables in which the expected values are compared with the observed values" (Acton *et al.,* 2009:348). This test is appropriate for testing the association between the demographic variables and tax compliance.

Fisher Exact test

The Fisher Exact test is also used to test the association between two variables (Laerd Statistics, 2018). As in the case of this research, the Fisher Exact results are used when the data do not meet the requirements of performing other tests.

Since one of the main assumptions for the validity of the Pearson's chi-square test is that no more than 20% of the cells[40] should have expected frequencies less than five,[41] which is not always met, the Fisher's exact test is more appropriate in these cases and will thus be used (Laerd Statistics, 2018). In the majority of cases, more than 20 per cent of the cells

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[40] The cells of the crosstabulation of the two categorical variables contains the number of times a particular combination of category occurred.
[41] The expected cell frequency is calculated as (Row total* Column total)/N.

had an expected frequency of less than five and the Fischer exact test was thus more appropriate. Where the expected frequency was less than 20 per cent, Pearson's chi-square results were reported. Fisher Exact test was originally developed for a 2-by-2 contingency table and only provides an exact p-value. An extension to this test was developed for any r by p contingency table by Freeman and Halton (1951). The test statistic that was developed can be expressed as FI (x)) = –2log(ŷp(x)) and is used by SPSS as the Fisher Exact test value (Freeman & Halton, 1951).

Kruskal-Wallis test

The Kruskal-Wallis test is a non-parametric test that is rank-based. It is used to determine whether there are "statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable" (Laerd Statistics, 2018:n.p.). This test is appropriate to determine, in terms of ranks, which treatment groups declared larger differences in amounts between the 15 per cent category and the treatment itself, for sales and purchases.

The distribution of the Kruskal-Wallis test statistic approximates a chi-square distribution, with k-1 degrees of freedom, if the number of observations in each group is five or more. Therefore, the *p*-value becomes inaccurate if the sample size is less than five.

To ensure that the data collected are valid and reliable, various tests were performed. These are now discussed.

5.2.4 <u>Reliability of the data</u>

Reliability of the data in a study refers to the ability to obtain consistent results. Therefore, the data are seen as reliable if the same results will be obtained should the experiment be conducted again and again on the same objects, thus the same methods under the same circumstances (Dudovskiy, 2018; Middleton, 2020).

One measure to determine reliability in terms of internal consistency is the Cronbach's alpha. It is used to measure the consistency of a scale and whether the same underlying dimensions are measured. For example, when a Likert scale was asked in a questionnaire,

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it measures whether the scale is reliable (Laerd Statistics, 2018). Several post-experimental questions sought information regarding possible factors that might have influenced participants' decisions when they answered the various scenarios that applied to the hypothetical persons. Using Cronbach's alpha, the internal consistency (reliability) was found to be 0.713. The Cronbach's alpha value was above the acknowledged threshold of 0.6 for exploratory research (Hair, Black, Babin & Anderson, 2010), deeming the reliability to be satisfactory.[42]

The second set of questions related specifically to the registration decisions that the hypothetical person would make and the same set of questions were asked as to what factors influenced their decisions. Using Cronbach's alpha, the internal consistency (reliability) was found to be 0.782, again exceeding the threshold of 0.6 and the reliability is deemed to be satisfactory (Hair *et al.*, 2010).[43]

Another measure used to determine the reliability of the data is to consider the consistency of the responses over time. Responses were received over a period of eight months. To ensure that there were no external shocks or exogenous factors potentially influencing the results depending on when the participant completed the experiment, a wave analysis was done to determine whether responses are in line with each other, regardless of when the experiment was completed.

To determine whether statistically significant differences exist between the responses of participants who participated early in the study versus those who participated late, a t-test for independent groups was used on the amounts declared in the 15 per cent category (sales and purchases). This category of responses was selected as all participants had to answer these questions for their responses to be deemed a usable response. Furthermore, these responses were used in most of the analyses. The current VAT rate applicable in South Africa is 15 per cent and therefore reflects a real-life scenario. From the data it was evident that there were 69 responses from June 2018 to August 2018, none in September and then 62 responses from the end of October 2018 to January 2019. The 'early' participants (coded as 1) are thus those who participated any time from June to August 2018 and 'late'

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[42] Refer to the first table in Appendix 4.
[43] Refer to the second table in Appendix 4.

participants (coded as 2) as those who participated any time from October 2018 to January 2019.

The associated statistical hypothesis[44] is:

- $H_{4A:0}$: There is no difference between the early and late participant groups with regard to amounts declared for each treatment group and the 15 per cent category for both sales and purchases.

The mean and standard deviation of the various groups in terms of amounts declared for sales and purchases are shown in Table 5. From this table, it is evident that there is very little deviation between the amounts declared for the early and late participant groups. None of the differences are significant, thus the responses over time yield consistent results.

Table 5:   Means and standard deviation between early and late responses

Variable	Timing of participation	N	Mean (R)	Std. Deviation
15% category – Sales	Early	69	1 822 476.37	424 873.070
	Late	62	1 931 129.03	338 676.812
Large decrease group (10%) – Sales	Early	18	1 944 444.44	235 702.260
	Late	15	1 981 212.12	51 936.145
Small decrease group (14%) – Sales	Early	15	1 567 707.60	668 325.165
	Late	15	1 880 000.00	464 758.002
Small increase group (16%) – Sales	Early	18	1 944 444.44	235 702.260
	Late	16	2 000 000.00	0.000
Large increase group (20%) – Sales	Early	18	1 651 851.83	588 003.454
	Late	16	1 912 500.00	262 995.564
15% category – Purchases	Early	69	536 535.28	169 929.457
	Late	62	528 629.03	136 394.346
Large decrease group (10%) – Purchases	Early	18	525 000.00	84 453.259
	Late	15	534 848.48	92 065.160
Small decrease group (14%) – Purchases	Early	15	551 520.43	246 028.291
	Late	15	516 666.67	64 549.722

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[44] A statistical hypothesis is also referred to as a sub-hypothesis, which is used to analytically test the hypotheses. In this case, there is no main hypothesis that links to the sub-hypothesis as the reliability test does not answer the research question. Therefore, no main hypothesis is deemed necessary.

Variable	Timing of participation	N	Mean (R)	Std. Deviation
Small increase group (16%) – Purchases	Early	18	588 888.89	149 071.198
	Late	16	558 125.00	181 630.348
Large increase group (20%) – Purchases	Early	18	566 666.67	123 669.388
	Late	16	596 875.00	151 072.554

The results of the t-test are presented in Table 6. The null hypothesis of no statistically significant differences is not rejected at a five per cent level of significance based on the p-values that are all greater than 0.05. There is no difference between the early and late participant groups with regard to amounts declared for each treatment group and the 15 per cent category for both sales and purchases. This indicates that there were no exogenous factors present that affected the reliability of the results obtained, despite the long time period of the experiment.

Table 6:   Independent samples t-test results for timing of participation

	t-test	Sig. (2-tailed)
15% category – Sales	-1.626	0.106
Large decrease group (10%) – Sales	-0.591	0.559
Small decrease group (14%) – Sales	-1.486	0.150
Small increase group (16%) – Sales	-0.941	0.354
Large increase group (20%) – Sales	-1.699	0.102
15% category – Purchases	0.292	0.771
Large decrease group (10%) – Purchases	-0.320	0.751
Small decrease group (14%) – Purchases	0.531	0.603
Small increase group (16%) – Purchases	0.542	0.591
Large increase group (20%) – Purchases	-0.641	0.526

The researcher thus concludes that the data obtained through the experiment are reliable and further testing could be conducted.

5.2.5 <u>The validity of the data</u>

The validity of the data refers to with how much certainty one can conclude that the observation is due to the treatment that was applied and not perhaps due to other external factors. The experiment can be seen as valid if one can conclude that it measured what it intended to measure (Dudovskiy, 2018). "If research has high validity, that means it produces results that correspond to real properties, characteristics and variations in the physical or social world" (Middleton, 2020, n.p.).

Therefore, a number of demographic questions were asked of the participants to obtain a better understanding of the knowledge and background of the participants and their businesses and to establish whether the participants were broadly representative of the small business population[45] in South Africa, where data permitted (to enhance validity). Where data were not available on the small business population, a comparison to registered VAT vendors was done as the study is about VAT compliance. Descriptive statistics in SPSS were run to obtain the results. The results are discussed below, together with the description of the sample of participants.

5.3 DESCRIPTION OF SAMPLE

The following paragraphs compare the participants' profiles with relevant comparable populations in South Africa in order to establish to what extent the participants can be considered to be representative (content validity) of the broader population (which in turn can help to indicate the extent to which the results of the experiment can be extrapolated to the broader target population – external validity), strengthening the validity of the data. It also describes the sample of participants whose responses were deemed to be valid.[46] A breakdown of the demographic variables of participants per treatment group is also provided to indicate the spread of factors across the treatment groups. Random allocation of participants to the treatment groups was performed by Qualtrics, enhancing internal validity.

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[45] A term often used to describe businesses that include small businesses is small, medium and micro enterprises (SMME). Note, however, that the definition of a SMME differs to that of a small business as used in the current study. SMME classification is based on, amongst others, number of employees employed in addition to the turnover (Trade & Industry Policy Strategies, 2019).
[46] Refer to Section 5.2.2 for the process followed to clean the data.

Gender, ethnicity, age and qualification

Figure 15 presents the demographic factors that relate to gender, ethnicity, age and qualifications of the participants. It shows that the majority (58 per cent) of participants were male; that a very large majority of participants (roughly 82 per cent) identified as White; that participants were more or less equally spread into three major age groups – 20 to 35, 36 to 50 and 51 to 65 – with relatively few participants in the over 65 age group; and that the majority of the participants (70 per cent [44 per cent + 26 per cent]) have at least a bachelor's degree. The following paragraphs compare the participants' profiles with gender, ethnicity, age and qualifications profiles of relevant comparable populations in South Africa in order to establish to what extent the participants can be considered representative of the broader population (which in turn can help to indicate the extent to which the results of the experiment can be extrapolated to the broader target population).

Figure 15: Gender, ethnicity, age and qualifications of participants (n = 131)

According to Statistics South Africa (2018a), 51 per cent of the total South African population is female. The statistics for the labour force, however, are slightly different. On average, 45 per cent of the labour force are females (Statistics South Africa, 2018b). In the study, a similar percentage (42 per cent) of participants were female, thereby indicating a broadly representative sample of the labour force regarding gender.

The small, medium and micro enterprises (SMME) owners by population group in South Africa are as follows: 75.1 per cent are Black, 16.9 per cent are White, 4.4 per cent are Coloured and 3.6 per cent are Indian/Asian (Small Enterprise Development Agency, 2019).

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Unfortunately, a representative sample in terms of ethnicity was not obtained, with the large majority (82 per cent) of the participants being White. This is a limitation of the study. Other ethnic groups reported by participants in the study are South African, Mixed race, Coloured and Eurasian. Although Coloured was a specific category in the experiment, representation from this category was very small (0.015 per cent) and thus it was combined with the 'Other' category.

Table 7 provides a summary of the percentage of people per age group for the participants in comparison to the SMME population. Note that the age groups varied slightly between the experiment and available data regarding the population.

Table 7:   **Age group comparison**

Age group (Experiment / Population)	Participants (%)	SMME Population (%)
Not asked in experiment / < 20	-	0.3
20-35 / 20-34	29.8	24.4
35-50 / 35-49	37.4	46
50-65 / 50-64	28.2	24.9
>65 / >64	4.5	4.3

Source: Own data and Small Enterprise Development Agency (2019)

The distribution across the various age groups in the experiment is deemed to be broadly representative of the population as is evident from Table 7, with the majority of the participants being between the age of 35 and 50. The distribution is deemed to be reasonable as it was not expected to have any participants younger than 20 years old, as they recently finished school and are possibly still studying or building their careers or businesses. The researcher also did not expect to have many participants older than 65, as people may typically retire from the age of 65 and would therefore not necessarily be involved in the business as actively anymore, compared to younger participants.

Participants were given the following options representing their qualifications: Up to matric (being Grade 12, the last year of high school), post-matric (including certificates, diplomas or other qualifications after matric, excluding bachelors, masters or doctoral degrees), bachelor's degree, master's degree or a doctoral degree. From the results, it is evident that

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the majority of participants have at least a bachelor's degree (70 per cent [44 per cent bachelors + 26 per cent masters/doctoral]).

SMME owners' educational qualifications are reported to be 20.8 per cent with tertiary education, 25.8 per cent completed secondary education and the rest (53.4 per cent) either have no schooling, only primary education or did not complete their secondary education (Small Enterprise Development Agency, 2019). The results of the participants in the experiment are thus not representative of typical SMME owners' educational qualifications as almost all participants indicated that they have a qualification higher than just matric/secondary education (94 per cent).

The participants are thus representative of the target population for gender and age but not for ethnicity and qualifications. This limits the generalisability of the results.

Location, business entity and turnover

The participants had to indicate the province(s) in which the business entity is located, the type of business it trades as, the industry it is in and the income level the entity falls in. As can be noted from Figure 16, the majority of the participants conduct their businesses in Gauteng (57 per cent), trade in private companies (50 per cent), are operating in the financial sector (44 per cent) and receive a gross income of between R1 million and R5 million per annum (37 per cent). The following paragraphs compare the data obtained from the experiment with relevant comparable populations in South Africa in order to establish to what extent the participants can be considered to be representative of the broader target population.

Figure 16: Organisational specifications of participants and province (n = 131)

Province

Table 8 provides a summary of the percentage of participants with businesses in various provinces in comparison to the SMME population. Data on VAT registrations per province is not available from the National Treasury or SARS.

Table 8:   Province comparison for experiment participants and the population

Province	Participants (%)	Population (SMMEs) (%)
Gauteng	57	34.7
KwaZulu-Natal	10	15.7
Western Cape	20	10.2
Other	13	37.4

Source: Own data and the Small Enterprise Development Agency (2019).

The location of registered SMMEs by province is mostly in Gauteng (34.7 per cent) with the 'Other' category combining several smaller provinces in terms of population (37.4 per cent) (Small Enterprise Development Agency, 2019). From Table 8 it is evident that the majority of the participants (57 per cent) conduct business in Gauteng, some are in the Western Cape (20 per cent) and a smaller portion from KwaZulu-Natal (KZN) (10 per cent), while the balance conducts business elsewhere (13 per cent). Five per cent of the participants stated that they conduct business in more than one province.

The sample of businesses that participated in the experiment is thus broadly representative of the three major provinces where SMMEs are located.

Type of business entity

The distribution of registered VAT vendors among the various types of business entities for the 2018 fiscal year for South Africa is reported to be 76 per cent companies and close corporations (CC), 18.4 per cent individuals and 5.6 per cent other types (National Treasury & SARS, 2018). Half of the participants (50 per cent) stated that they conduct their business in the form of a private company and 22 per cent are registered as a CC. Thus, 72 per cent of the sample are either companies or CC's and 19 per cent conduct business as sole proprietors (individuals). The other types of organisational forms (9 per cent) mentioned were trusts, non-profit organisations, partnerships and associates.

The representation of participants from the various type of businesses is thus similar to the distribution of business types for South African registered VAT vendors.

Industry

When considering the industries in which small firms trade in South Africa (excluding agriculture), the largest number of small firms are in trade (43 per cent), manufacturing (21.6 per cent), finance and business services (20.6 per cent), transport (6.9 per cent) and construction (3.2 per cent) (South African Market Insights, 2019). The majority of the participants in the experiment were from the financial services sector (44 per cent). Participants in engineering and construction represented eight per cent and real estate represented seven per cent. In the experiment, there was also a wide range of participants from various other industries such as health care, legal services, information technology, agriculture, engineering, construction and many more. Refer to Appendix 3 for a detailed break-down of the various industries the participants are in.

The sample is therefore not representative of the target population in terms of industry.

Income level

The minimum threshold of taxable supplies made in a 12-month period for voluntary registration as a VAT vendor in South Africa is R50 000, whereas it is compulsory to register if the taxable supplies of the business are more than R1 million in a 12-month period (Anon., section 23(1)(a) and 23(3)(b) of the VAT Act). By considering the registered VAT vendors with an annual turnover between R50 000 and R20 million during the 2018 fiscal year, the national distribution shows that 34 per cent have turnover between R50 000 and R1 million, 41 per cent have turnover between R1 million and R5 million and 25 per cent have turnover between R5 million and R20 million (National Treasury & SARS, 2018).

When considering the voluntary registration category (gross income[47] of between R50 000 and R1 million), 35 per cent of the participants indicated this income level, with 33 per cent of the 35 per cent indicating that they are registered for VAT. Thirty-seven per cent of the participants indicated an income level between R1 million and R5 million and 28 per cent had an income level between R5 million and R20 million.

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[47] Although the VAT terminology refers to 'taxable supplies', the wording used in the experiment was 'gross income' as the researcher was of opinion that more participants would be familiar with this term than with what exactly 'taxable supplies' are.

The participants' distribution is similar to that reported by the National Treasury and SARS (2018) and is thus representative of the VAT vendors in South Africa.

Of all the participants, 65 per cent should be registered for VAT as their gross income exceed the compulsory threshold of R1 million. Of the 65 per cent, 94 per cent indicated that they are registered for VAT in real life, suggesting that six per cent of those who should be registered are already non-compliant, even before any changes in the VAT rate occur.

The participants are thus representative of the population for province, type of business and income level.

VAT knowledge and VAT return submission

Figure 17 presents the demographic background that applies to the levels of VAT knowledge of the participants and who submits the VAT returns of the business entity (who the tax preparer is). Some vendors do not submit VAT returns. As noted above under 'Income level', 35 per cent of the participants have income below the compulsory registration threshold, although some of them (33 per cent of those who do not need to be registered) registered voluntarily. It shows that the majority (51 per cent) of participants are of opinion that they have an exact understanding of VAT and that 46 per cent submit their VAT returns themselves (self-preparers).

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Figure 17: VAT knowledge and return submission of participants (n = 131)
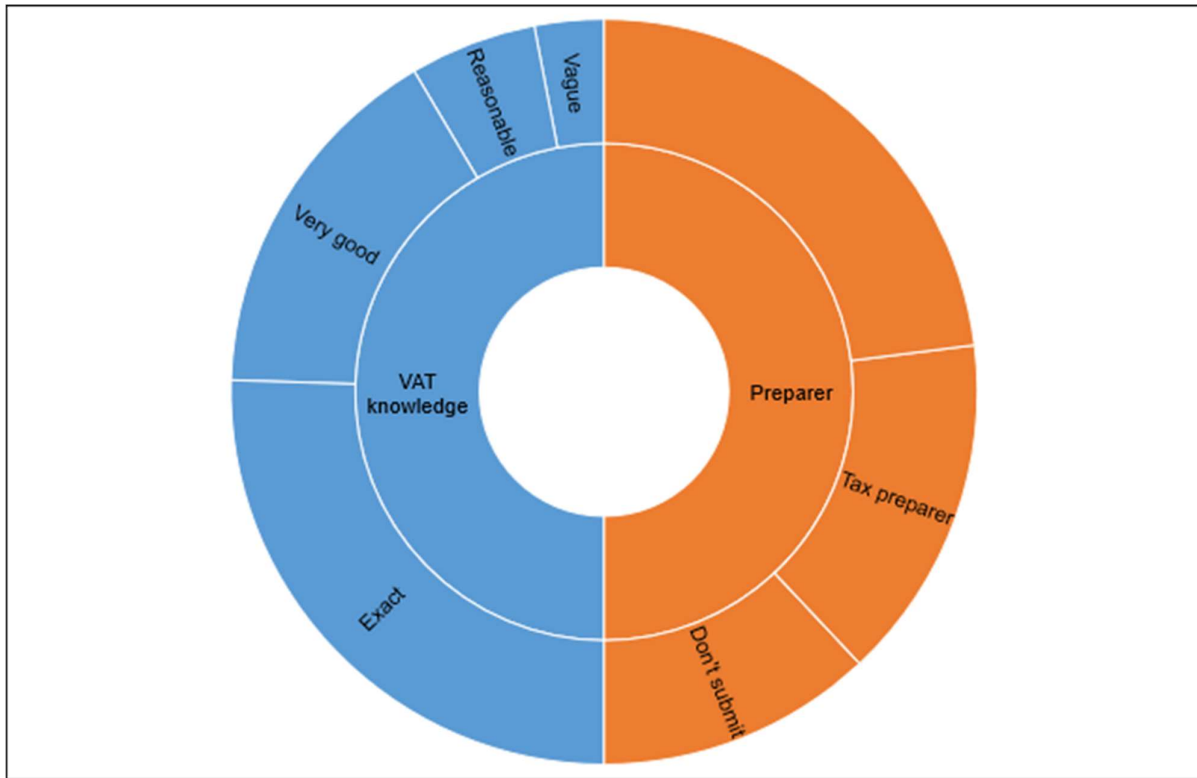
All participants who indicated that they merely have a vague idea of how to calculate VAT payable (eight participants) also indicated that they either do not submit VAT returns in real life (two participants) or that they get someone to submit their VAT returns on their behalf (six participants). This would be expected as it would not be ideal for revenue collection to have someone with only a vague VAT knowledge submitting their own VAT returns.

Almost half of the participants are self-preparers (46 per cent). There are, however, participants who have tax preparers submitting their VAT returns (30 per cent). Of the participants that use tax preparers, one person indicated that a friend or family member does the returns free of charge and the rest pay the tax preparers.

The reason for using tax preparers when the participant has a reasonable/good/excellent knowledge of VAT was not asked. The study by Collins, Milliron and Toy (1990), however, provides two primary reasons for seeking assistance from tax preparers. The first primary reason is to file correct tax returns. Those who are seen as more moral and conservative, tend to use tax preparers to ensure the accuracy of their returns. Tax preparers are also

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used more often where the taxpayer's tax knowledge is low or the return is complex but the reason is to file correct returns. The second primary reason for using a tax preparer is to minimise tax liability. So far as this reason is concerned, income level has a positive association with using a tax preparer, as tax preparers can use their expertise to identify tax-reducing strategies, whereas social responsibility has a negative association. Those who have less tax knowledge or who are older in age, tend to be keener to use tax preparers. Tax professionals, therefore, assist their clients in understanding and applying tax laws where the tax systems are complex and taxpayers are uncertain about the enforcement by the government (Andreoni *et al.*, 1998; Battaglini *et al.*, 2020; McKerchar, 2005).

A reasonable idea of what happens in real life should be obtained through the experiment as nearly half of the participants (46 per cent) are self-preparers and the majority of the participants in the study (51 per cent) have an exact VAT knowledge based on their own opinion. The experiment should thus, to a limited extent, reflect real-life behaviour.

VAT rate

As a further tax-related question, the participants were asked what the current VAT rate is to test their VAT knowledge. Ninety-two per cent provided the correct answer of 15 per cent, seven per cent did not answer and one participant incorrectly stated 14 per cent.

Allocation of demographic variables across the four treatment groups

Qualtrics randomly allocated participants to the four treatment groups. A breakdown is provided in Table 9 of each demographic variable across the various treatment groups. The distribution of respondents across the categories of a demographic variable within a specific treatment group is given as a percentage, for example, the gender distribution for the large decrease group (10%) is 51 per cent males and 49 per cent females.

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Table 9:   Demographic variables of the treatment groups

		Number of participants across all groups	Large decrease group (10%)	Small decrease group (14%)	Small increase group (16%)	Large increase group (20%)
Number of participants per treatment group		131	33	30	34	34
		Number and %	%	%	%	%
Gender	**Female**	55 (42)	51	47	44	27
	Male	76 (58)	49	53	56	73
Ethnicity	**White**	107 (82)	91	83	67	85
	Indian	10 (7)	3	10	12	6
	African	9 (7)	6	3	15	3
	Other	5 (4)	0	4	6	6
Age	**20 to 35**	39 (30)	30	33	24	32
	36 to 50	49 (37)	37	40	47	27
	51 to 65	37 (28)	30	23	29	29
	> 65	6 (5)	3	4	0	12
Education	**Up to matric**	8 (6)	6	7	9	3
	Diploma / Certificate	31 (24)	27	30	18	21
	Bachelor's degree	58 (44)	46	37	47	47
	Post-graduate degree	34 (26)	21	26	27	29
Province	**Gauteng**	75 (57)	58	67	50	56
	KwaZulu-Natal	13 (10)	9	3	17	9
	Western Cape	26 (20)	24	23	12	20
	Other	11 (8)	9	7	12	6

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	National	6 (5)	0	0	9	9
Type of business	**Close corporation**	29 (22)	30	23	12	23
	Private company	66 (51)	31	53	62	56
	Sole proprietor	25 (19)	27	17	20	12
	Other	11 (8)	12	7	6	9
Industry	**Agriculture**	7 (5)	0	7	9	6
	Eng & construction	10 (8)	9	10	6	6
	Financial services	57 (44)	46	33	50	44
	Other	40 (30)	30	27	23	41
	Real estate	9 (7)	6	13	6	3
	Retail & consumer	8 (6)	9	10	6	0
Income level	**R50 000 to R1m**	46 (35)	37	33	36	35
	Between R1m & R5m	49 (37)	27	47	35	41
	Between R5m & R20m	36 (28)	36	20	29	24
VAT knowledge	**Vague**	8 (6)	9	7	6	3
	Reasonable	14 (11)	0	20	15	9
	Very good	42 (32)	18	36	41	32
	Exact	67 (51)	73	37	38	56
Return submission	**None**	32 (24)	24	20	32	21
	Self	60 (46)	55	43	38	47
	Other	39 (30)	21	37	30	32

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Summary

In summary, the greater number of the participants in the experiment are male, identify with the White ethnicity group and are aged between 35 and 50 years old. Regarding their highest level of formal education, the greater number have at least a bachelor's degree. The businesses mainly trade in Gauteng, operate in the financial services sector, trade in the form of a private company and receive a gross income of between R1 million and R5 million. They mostly have an exact VAT knowledge and are self-preparers of VAT returns.

The results of the participants' profiles were linked to comparable populations in South Africa to establish whether the results obtained are broadly representative of the target population (or/and if the validity of the results are enhanced) and whether the results can be extrapolated to the population of small business entities. The results are broadly representative for gender, age, province, type of entity and income level but not representative in terms of ethnicity, qualifications and industry. Thus, any broader extrapolation should keep this limitation in mind.

5.4 VALUE-ADDED TAX COMPLIANCE REGARDING AMOUNTS DECLARED

VAT compliance entails that a person: registers for VAT when above the compulsory registration threshold; submits the relevant returns on time and completes them accurately; makes the necessary tax payments on time; and keeps records for the required period (OECD, 2008). VAT non-compliance in terms of accuracy regarding amounts declared can be achieved by either or both under-reporting sales (output VAT) or over-reporting purchases (input VAT). Under-reporting sales or over-reporting purchases will reduce a taxpayer's VAT liability, resulting in non-compliance. Under-reporting of sales occurs when not all of the sales of a business entity are declared. Over-reporting purchases can be achieved by declaring invalid purchases where the acquisitions were not for business purposes or a valid tax invoice was not received.

It was hypothesised that changes in the VAT rate (and the magnitude of those changes) would have an impact on the decision of the business regarding amounts declared. More specifically, the following hypotheses were developed:

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- H_{1A1}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns;

- H_{1A2}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns;

- H_{1B1}: A larger increase (decrease) in the VAT rate will result in lower (higher) declared sales amounts by small business entities registered as VAT vendors; and

- H_{1B2}: A larger increase (decrease) in the VAT rate will result in higher (lower) declared purchases amounts by small business entities registered as VAT vendors.

For the experiment, a person is seen as being compliant regarding sales declared, when an amount of R2 000 000 was declared and non-compliant when any other amount was declared (Figure 18). A person is also seen as compliant regarding purchases when an amount of R500 000 or less was declared and non-compliant if more than R500 000 was declared (Figure 18). These assumptions relating to sales and purchases were used in testing hypotheses H_{1A1}, H_{1A2}, H_{1B1} and H_{1B2}.

Figure 18: VAT non-compliance guidelines for the experiment

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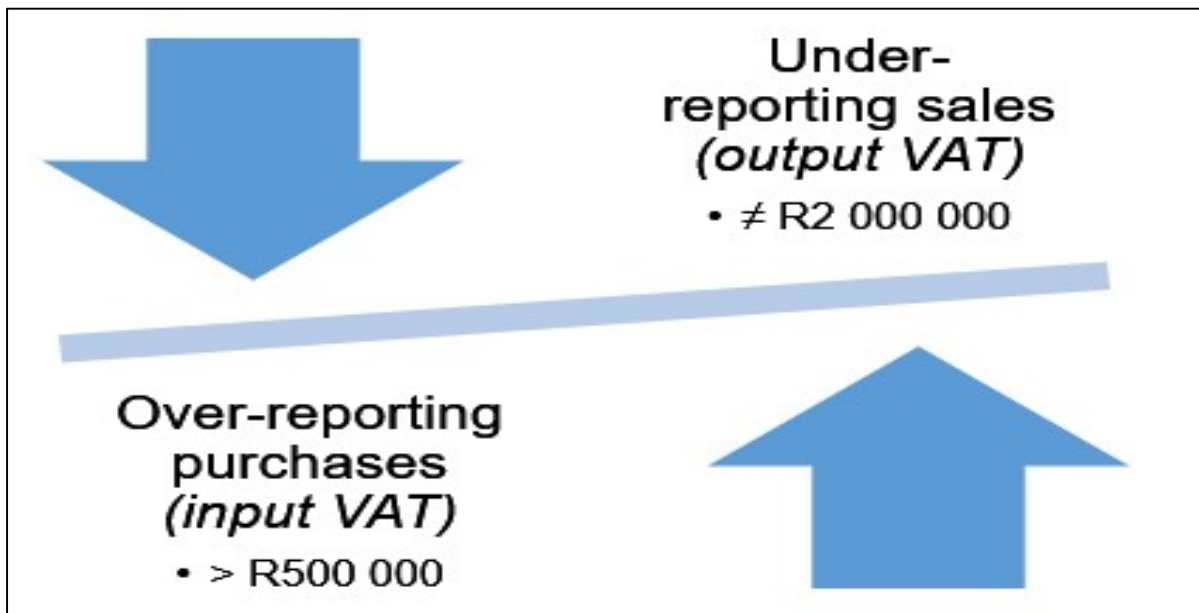
For the first scenario of the experiment,[48] all participants were requested to report the amount of sales and purchases they think a hypothetical person would declare at the current VAT rate of 15 per cent. The participants were then allocated to the various treatment groups (refer to Chapter Four, Section 4.4.2) and given the same scenario but exposed to a different VAT rate.

The amounts declared by the participants for the first scenario (VAT rate of 15 per cent), indicated compliance or non-compliance with legislation. Regarding the sales amount, 12.2 per cent of the participants recorded fewer sales than they should have declared (R2 million); therefore they are regarded as non-compliant. Non-compliance for purchases was identified in 19.1 per cent of the participants who declared more purchases than they are legally allowed to (R500 000). This will decrease their total VAT liability and therefore constitutes non-compliance.

The descriptive statistics for the sales and purchases amounts (R) declared in each treatment group as well as the original 15 per cent category are shown in Table 10.[49] The mean sales are consistently less than R2 million and the mean purchases are consistently more than R500 000, indicating that participants tend to under-declare sales and over-state purchases, regardless of the VAT rate. The highest overstatement of purchases, however, is found in the increase in the VAT rate (16 per cent and 20 per cent) treatment groups.

Table 10:   Descriptive statistics for sales and purchases declared within the various treatment groups

	N	Mean (R)	Std. dev	Skewness[50]	Kurtosis
Sales					
15% category	131	1,873,899.77	388,859.362	-3.275	10.212
Large decrease group (10%)	33	1,961,157.02	176,180.680	-5.410	30.113
Small decrease group (14%)	30	1,723,853.80	587,474.678	-1.900	2.180
Small increase group (16%)	34	1,970,588.24	171,498.585	-5.831	34.000
Large increase group (20%)	34	1,774,509.79	476,435.228	-2.222	4.373

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[48] Refer to Appendix 1 for the experiment.
[49] For the SPSS tables of results for all the tests performed, refer to Appendix 4.
[50] The skewness and kurtosis values are used in the discussion below $H_{1A:0}$, relating to the impact of the direction of the VAT rate change on tax compliance.

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	N	Mean (R)	Std. dev	Skewness[50]	Kurtosis
Purchases					
15% category	131	532,793.39	154,432.439	-.420	3.222
Large decrease group (10%)	33	529,476.58	86,730.093	2.940	7.669
Small decrease group (14%)	30	534,093.55	177,614.762	-.574	2.472
Small increase group (16%)	34	574,411.76	163,358.523	-.060	1.345
Large increase group (20%)	34	580,882.35	135,967.190	1.276	-.131

Surprisingly, the highest understatement of sales occurred in the small decrease group (14%), followed by the large increase group (20%). A large understatement was expected only in the large increase group, as it was expected that people try to minimise their VAT liability the most when the tax payable is the most. Further, the mean sales declared increased from the mean sales declared in the 15 per cent category, for both the large decrease (10%) and small increase (16%) groups, although it was only expected in the decrease group. A decrease was expected in the two increase groups to limit the VAT payable due to the increase in the VAT rate.

This seems to be the first study considering the effect of a change in the VAT rate on VAT compliance for sales and purchases, separately. Although it is from an income tax perspective, Hasseldine *et al.* (1994) also considered compliance separately for sales and deductions and found that taxpayers tend to under-declare sales (23 per cent) more often than overstating deductions (12 per cent). At an initial and broad picture level, therefore, the results seem to be different from an income tax perspective compared to a VAT perspective.

The impact of the direction of the VAT rate change on tax compliance

The statistical hypothesis related to H_{1A}[51] is:

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[51] H_{1A1}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns, and
H_{1A2}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns.

- H$_{1A:0}$: Differences do not exist concerning the amounts of sales and purchases declared between each of the treatment groups and the 15 per cent category (Median difference (M) = 0)

The sales and purchases amounts declared in each of the treatment groups (10%, 14%, 16% and 20%) were subtracted from the amounts declared for sales and purchases based on the 15 per cent scenario to determine this difference. A paired sample t-test was considered but as the difference variables had skewness and/or kurtosis values outside the accepted thresholds (-2 and +2 as per Table 10) (George & Mallery, 2010) for the assumptions of normality, the Wilcoxon signed-rank test[52] was used. In the case of sales, if more sales were declared in the treatment group than declared in the 15 per cent category (the difference result is thus negative), it is more likely that (greater) compliance was achieved. Where the purchases declared in the treatment group were less than the 15 per cent category (the difference result is thus positive), it is more likely that the participant was compliant.

The statistical significance of tests is influenced by the sample size. Therefore, even very small differences may be statistically significant if the sample is large enough and large differences may not be statistically significant if the sample size is small. Therefore, due to the sensitivity of statistical significance, the effect size will be reported in this study. 'Effect size' is a standardised measure of the magnitude of the differences between groups tested in this study. It is formally defined as a "quantitative reflection of a magnitude of some phenomenon that is used for the purpose of addressing a question of interest" (Kelley & Preacher, 2012:140). If the effect size is large, the difference is practically important. For this reason, it is important to also report the effect size in addition to the statistical significance (McLeod, 2019).

In considering the effect size of the differences, the Cohen's d value was determined to indicate the difference between two means. A value ≥ 0.2 indicates a small effect, a value ≥ 0.5 a medium effect and a value ≥ 0.8 a large effect (Cohen, 1988). "This means that if two groups' means don't differ by 0.2 standard deviations or more, the difference is trivial, even if it is statistically significant." (McLeod, 2019: n.p.).

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[52] Refer to Section 5.2.3 for a description.

The Wilcoxon signed-rank test indicates that there are few significant differences in the amounts of sales and purchases declared between each of the four treatment groups and the 15 per cent category as is evident from the p-values presented in Table 11. Regarding sales, statistically significant differences at a 10% level were only noted for the sales declared when there is a one percentage point decrease in the VAT rate (14%). The effect size is classified as medium, thus the effect is of medium importance with some differences in the amounts declared between the two scenarios. However, the difference was not in the direction as hypothesised; fewer sales were declared, whereas H_{1A} hypothesised more sales to be declared.

Regarding purchases, statistically significant differences at a 5% and 10% level were noted when there is a one percentage point or a five percentage point increase in the VAT rate, respectively. Again, the effect sizes are classified as medium, thus the effects are of medium importance with some differences in the amounts declared between the two scenarios. Therefore, there is evidence that supports H_{1A} when there is an increase in the VAT rate, where small business entities registered as VAT vendors overstate purchases.

Table 11:   Wilcoxon signed rank test summary

Treatment rate	N	Sales			Purchases		
		# declaring more/less	p-value	Cohen's d	# declaring more/less	p-value	Cohen's d
10%	33	↑ 0 ↓ 1	0.159	-0.354	↑ 1 ↓ 2	0.297	-0.187
14%	30	↑ 0 ↓ 2	0.090*	-0.505	↑ 3 ↓ 2	0.113	-0.455
16%	34	↑ 0 ↓ 0	0.500	0.000	↑ 4 ↓ 0	0.033**	-0.666
20%	34	↑ 2 ↓ 6	0.104	-0.443	↑ 4 ↓ 2	0.056*	-0.567

* significant at 10% level as p < 0.1, ** significant at 5% level as p < 0.05,
↑ = more ↓ = less
Note: Shading indicates the effect size (red – negligible effect; orange – small effect; green – medium effect)
The statistical hypotheses stated are one-sided.[53] Thus, the *p*-value reported is the one-sided value, obtained by dividing the *p*-value for the two-sided test (see Appendix 4) by two.

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[53] With a one-sided test, the entire value of significance level is on one side, meaning in one direction (UCLA, 2020), as in the case of this research. It is "a statistical test of a hypothesis that [~~predict~~ confirm] the direction of a difference or relationship." (Acton *et al.*, 2009:353). This test is performed to test the direction of the differences between the results of the different treatment groups by deducting the

Therefore, the experiment suggests that there are generally no differences in the amounts of sales and purchases declared between each of the four treatment groups and the 15 per cent category, except for:

- the small decrease group (14%) for sales, where fewer sales were declared; and

- the small and large increase groups (16% and 20%) for purchases, where more purchases were declared.

The experiment, therefore, suggests that when there is an increase in the VAT rate, participants tend to declare less VAT payable. This relates specifically to them manipulating purchases and not necessarily manipulating sales.

The impact of the magnitude of the VAT rate change on tax compliance

The next set of statistical hypotheses are designed to test whether the magnitude of the change in the VAT rate has any impact upon tax compliance in relation to H_{1B}:[54]

- $H_{1B1.1:0}$: There is no positive difference between the two increase groups with regard to the amount of sales declared;

- $H_{1B1.2:0}$: There is no negative difference between the two increase groups with regard to the amount of purchases declared;

- $H_{1B1.3:0}$: There is no negative difference between the two decrease groups with regard to the amount of sales declared; and

- $H_{1B1.4:0}$: There is no positive difference between the two decrease groups with regard to the amount of purchases declared.

The difference in amounts declared for sales and purchases between the 15 per cent category and each of the treatment groups was calculated. For the treatment groups with a decrease in the VAT rate (either a five percentage point or a one percentage point

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sales/purchases declared in the treatment group from the sales/purchases declared by those participants in the 15 per cent category.

[54] H_{1B1}: A larger increase (decrease) in the VAT rate will result in lower (higher) declared sales amounts by small business entities registered as VAT vendors; and
H_{1B2}: A larger increase (decrease) in the VAT rate will result in higher (lower) declared purchases amounts by small business entities registered as VAT vendors.

decrease), a Mann-Whitney test[55] was conducted by comparing this difference in amounts declared for the large decrease group (10%) to the difference in amounts declared in the small decrease group (14%). For the treatment groups who experienced an increase in the VAT rate (either a one percentage point or a five percentage point increase), a Mann-Whitney test was conducted by comparing this difference in amounts declared for the small increase group (16%) to the difference in amounts declared in the large increase group (20%).

The results as indicated in Table 12 show statistically significant differences at a 10% level of significance for the sales in the two increase in VAT rate groups only – thus $H_{1B1.1:0}$ is rejected. No statistically significant differences for the other groups were noted - thus, $H_{1B1.2:0,}$ $H_{1B1.3:0}$ and $H_{1B1.4:0}$ cannot be rejected. Thus, there is evidence to suggest that when there is an increase in the VAT rate, the larger the increase in the VAT rate, the lower the sales amount that is declared – therefore, H_{1B1} is supported.

Table 12:   Results of Mann-Whitney test for differences in amounts declared

	Decrease groups - sales	Increase groups - sales	Decrease groups - purchases	Increase groups - purchases
Mann-Whitney U	478.000	510.000	463.000	554.500
Wilcoxon W	1,039.000	1,105.000	928.000	1,149.500
Z	-0.634	-1.491	-0.761	-0.468
Asymp. Sig (1-sided)	0.263	0.068*	0.224	0.320
Cohen's d	-0.160	-0.368	-0.193	-0.114

* Statistically significant at a 10% level
Note: Shading indicates the effect size (red – negligible effect; orange – small effect)

The effect sizes based on Cohen's d are negligible for both sales and purchases between the decrease in the VAT rate groups as well as for purchases between the increase in the VAT rate groups, meaning that there were barely any differences in amounts declared between the two groups. The effect size is small for sales between the increase in the VAT rate groups, meaning that there were very few differences between the amounts declared between the two groups but there were some differences nonetheless.

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[55] Refer to Section 5.2.3 for a description.

Although no statistically significant trends emerged for most of the groups as per the Mann-Whitney tests, the mean ranks from the tests were analysed and illustrated in Table 13 to see if a trend is evident for additional discussion purposes. The Mann-Whitney test ranks score dependent variables, regardless of the group the variables are in, according to its size, the smallest rank being assigned to the smallest value. The ranks for the different groups are then obtained and a mean rank per group is assigned (Laerd Statistics, 2018). In the current study, a higher mean rank for the difference in sales declared, would indicate that fewer sales were declared from scenario 1 (15 per cent category) to scenario 2 (treatment: decrease/increase) and thus larger non-compliance is indicated by a larger mean rank. However, a higher mean rank for the difference in purchases declared would indicate that fewer purchases were declared from scenario 1 (15 per cent category) to scenario 2 (treatment: decrease/increase) and thus larger non-compliance is indicated by a smaller mean rank.

Table 13:   Mean ranks for decrease and increase groups, for sales and purchases

	Group	N	Mean Rank
Difference in decrease groups: sales	Large decrease group (10%)	33	31.48
	Small decrease group (14%)	30	32.57
Difference in increase groups: sales	Small increase group (16%)	34	32.50
	Large increase group (20%)	34	36.50
Difference in decrease groups: purchases	Large decrease group (10%)	33	32.97
	Small decrease group (14%)	30	30.93
Difference in increase groups: purchases	Small increase group (16%)	34	33.81
	Large increase group (20%)	34	35.19

The mean ranks attempt to provide a clearer indication of the trends that emerge than the mean values itself. Although not significant, some trends were noted. The mean differences are presented in Table 14 to aid in the discussion of the mean ranks, which follows below.

Table 14:   Mean differences for decrease and increase groups, for sales and purchases

Group		Difference: Sales	Difference: Purchases
10%	Mean	5,509.64	5,371.90
	Minimum	0	-250,000
	Maximum	181,818	350,000

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Group		Difference: Sales	Difference: Purchases
14%	Mean	1,175.18	-34,729.07
	Minimum	0	-499,500
	Maximum	20,000	3,814
16%	Mean	.00	-2,5147.06
	Minimum	0	-35,0000
	Maximum	0	0
20%	Mean	44,019.62	-37,058.82
	Minimum	-1,970,000	-510,000
	Maximum	1,000,000	200,000

In analysing the mean ranks for differences between the decrease in the VAT rate groups regarding sales, the participants in the small decrease group (14%) tend to declare slightly fewer sales once exposed to the treatment (mean rank = 32.57), than the participants in the large decrease group (10%) (mean rank = 31.48), indicating that a larger decrease in the VAT rate does not lead to higher compliance, which was unexpected. The results are in contrast to the study by Artavanis (2018), who found that compliance increases when the VAT rate decreases.

In analysing the mean ranks for differences between the increase in the VAT rate groups regarding sales, the participants in the large increase group (20%) tend to declare fewer sales once exposed to the treatment (mean rank = 36.50), than the participants in the small increase group (16%) (mean rank = 32.50), indicating that a larger increase in the VAT rate tends to lead to lower compliance, which was expected.

In analysing the mean ranks for differences between the decrease in the VAT rate groups regarding purchases, the participants in the large decrease group (10%) tend to declare fewer purchases once exposed to the treatment (mean rank = 32.97), than the participants in the small decrease group (14%) (mean rank = 30.93), indicating that a larger decrease in the VAT rate leads to higher compliance, which was expected.

As the mean ranks are based on the position of the values on a ranking scale, when considering the actual minimum and maximum purchases values, it is clear that the range for the large decrease group (10%) was wider and includes positive differences, thus

resulting in a higher mean rank value than for the small decrease group (14%). However, when considering the actual mean values, it is evident that the large decrease group (10%) (mean = 5 371.9) declared fewer purchases than the small decrease group (14%) (mean = -34 729.07), indicating that a larger decrease in the VAT rate does not lead to higher compliance. The results thus appear to be contradictory, however, the skewness of the data indicated that the average value is not a representative measure of the location of the data.

In analysing the mean ranks for differences between the increase in the VAT rate groups regarding purchases, the participants in the large increase group (20%) tend to declare fewer purchases once exposed to the treatment (mean rank = 35.19), than the participants in the small increase group (16%) (mean rank = 33.81), indicating that a larger increase in the VAT rate tends to lead to a higher rate of compliance, which was expected. Based on the mean values, it is evident that the large increase group (20%) (mean = -37 058.82) declared more purchases than the small increase group (16%) (mean = -25 147.06), on average, indicating that a larger increase in the VAT rate leads to lower compliance. Once again, the mean cannot be considered as a representative measure of the location due to the skewness of the data.

Thus, in summary, considering the impact of the direction of the VAT rate change, it is evident from the Wilcoxon test results that when there is an increase in the VAT rate more purchases are declared. This confirms the results of the Agha and Haughton (1996) study, which suggested that people become less compliant when there is an increase in the VAT rate. The findings are also in line with those of Harju *et al.* (2014) and Matthews (2003), that VAT evasion increases when the VAT rate increases. From the current study, it is noted that the more common way to reduce a small business's VAT liability (and thus be non-compliant) is by over-declaring purchases rather than under-declaring sales. The results were not as conclusive for a decrease in the VAT rate. An increase in the VAT rate change thus has an impact on tax compliance.

When considering the impact of the magnitude of the change in the VAT rate, the Mann-Whitney test identified that with a larger increase in the VAT rate, the lower the amount declared for sales is, thus resulting in non-compliance. No other study was found that considered the effect of the magnitude of the VAT rate change on tax compliance.

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These results support the prospect theory, indicating that taxpayers tend to take more risk by not declaring all sales or overstating purchases when they are in a loss position (having to pay more tax), thus becoming (more) non-compliant. The results are also in line with the expected utility theory, where taxpayers weigh the costs of not complying (such as penalties) against the benefits of not complying (saving tax).

5.5 VALUE-ADDED TAX COMPLIANCE REGARDING REGISTRATION

The study hypothesised that changes in the VAT rate (and the magnitude of those changes) may have an impact on the decision of the business to register or deregister. More specifically the following hypothesis was developed:

> H_{2A}: A larger decrease (increase) in the VAT rate will result in small business entities being more likely to register (deregister) for VAT.

The statistical hypotheses tested in order to answer H_{2A} are:

- $H_{2A1.1:0}$: There is no difference regarding the likelihood to register as a VAT vendor between the large decrease group (10%) and the small decrease group (14%) (decrease in VAT rate groups); and

- $H_{2A1.2:0}$: There is no difference regarding the likelihood to deregister as a VAT vendor between the small increase group (16%) and the large increase group (20%) (increase in VAT rate groups).

In order to test these statistical hypotheses, a set of questions in the experiment were asked to determine whether a decrease or an increase in the VAT rate would have an effect on tax compliance regarding VAT registration. From the expected utility theory, it is derived that a rational person would weigh the costs of a penalty if caught against the payment required. It was therefore expected that more participants would be willing to register for VAT when there is a decrease in the VAT rate and even more for the large decrease group since the VAT liability would now be less with a smaller VAT rate. It would be less appealing to evade tax. It was expected that with an increase in the VAT rate, participants want to save money

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and would, therefore, not be as likely to register as a VAT vendor as they would be if there were no increase.

A person or entity is obliged to register for VAT in South Africa when the taxable supplies exceed R1 million in a 12-month period (Anon., section 23(1)(a) of the VAT Act). During the experiment, the first question asked whether the participants in the decrease in the VAT rate groups (where the VAT rate decreased from 15% to either 10 % or 14%) had to report what they think the likelihood is that a hypothetical person making taxable supplies of R1.1 million (just above the threshold) would register as a VAT vendor when exposed to a decrease in the VAT rate, assuming they were not registered as VAT vendors yet. Participants in the increase in the VAT rate groups (increase to 16% or 20%) had to report what they think the likelihood is that a hypothetical person making taxable supplies of R1.1 million would deregister as a VAT vendor when exposed to an increase in the VAT rate, assuming that they were registered VAT vendors. This is referred to as the compulsory registration question. The results for the compulsory registration question are illustrated in Figure 19 and the discussion follows below.

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Figure 19: Registration decisions: Compulsory registration
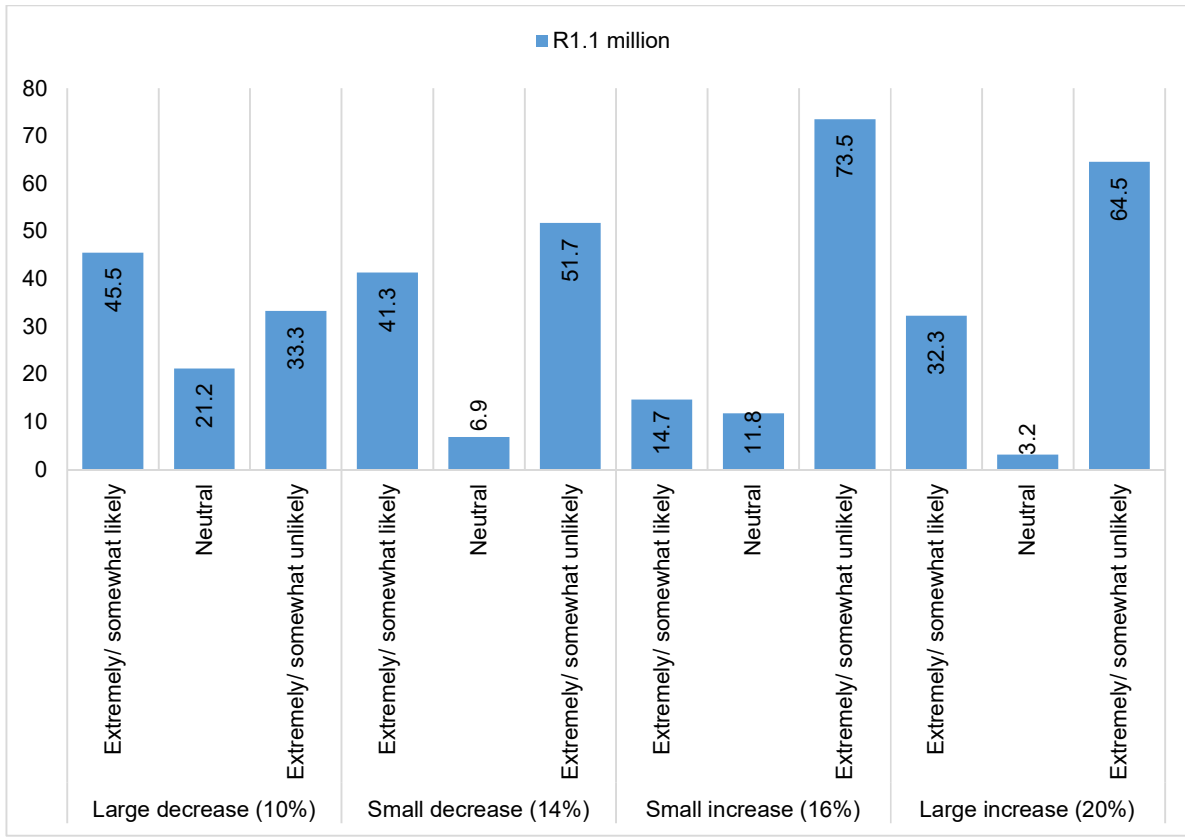
When sales are R1.1 million, thus just above the compulsory registration threshold, only 45.5 per cent in the large decrease group (10%) and 41.3 per cent in the small decrease group (14%) indicated that a hypothetical person will be extremely or somewhat likely to register as a VAT vendor. Less than half of the participants in the decrease groups, therefore, think that a hypothetical person would register when compelled to do so, indicating non-compliance in terms of registration. People who previously did not comply but battle with their unethical behaviour were expected to register as the financial impact is less when the VAT rate is smaller. In the large decrease group (10%), 33.3 per cent indicated that it is extremely or somewhat unlikely that a hypothetical person would register as a VAT vendor and 51.7 per cent in the small decrease group (14%) reported that it is extremely or somewhat unlikely that a hypothetical person would register as a VAT vendor. It is surprising that such a large percentage of participants would remain unregistered with a decrease in the VAT rate; it was expected that fewer participants in the large decrease group (10%) would be extremely unlikely to register in comparison to the small decrease group (14%),

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which is consistent with the results. This is because the VAT liability for the large decrease group (10%) would be smaller due to the smaller VAT rate.

When sales are R1.1 million, thus just above the registration threshold, 73.5 per cent in the small increase group (16%) and 64.5 per cent in the large increase group (20%) indicated that a hypothetical person will be extremely or somewhat unlikely to deregister as a VAT vendor. It was expected, consistent with the results, that fewer participants in the large increase group (20%) would be extremely or somewhat unlikely to deregister as VAT vendors in comparison to the small increase group (16%), as the VAT liability would be larger in the larger VAT rate group. In the large increase group (20%), however, 25.8 per cent indicated that they believe that others are extremely likely to deregister for VAT, whereas only 8.8 per cent in the small increase group (16%) feel strongly about deregistering as a VAT vendor. Again, this was expected as the VAT liability is larger for the large increase group (20%). The responses indicate non-compliance in terms of registration as not all participants indicated that they will be extremely or somewhat unlikely to deregister as VAT vendors. This supports the finding of Matthews (2003), that small businesses deregister as VAT vendors when there is an increase in the VAT rate.

The second question asked the participants what the likelihood is that a hypothetical person would register/deregister when their sales are slightly below the threshold (R900 000). This is referred to as the voluntary registration question. It was expected that for the decrease groups, most participants would think that someone would be extremely unlikely to register and for the increase in VAT rate groups, most participants would think that someone would be extremely likely to deregister. This is because the hypothetical persons are not obliged to register as VAT vendors and the costs for complying as a VAT vendor for small businesses are proportionately much higher than for large businesses. The results for the voluntary registration question are illustrated in Figure 20 and the discussion follows below.

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Figure 20: Registration decisions: Voluntary registration
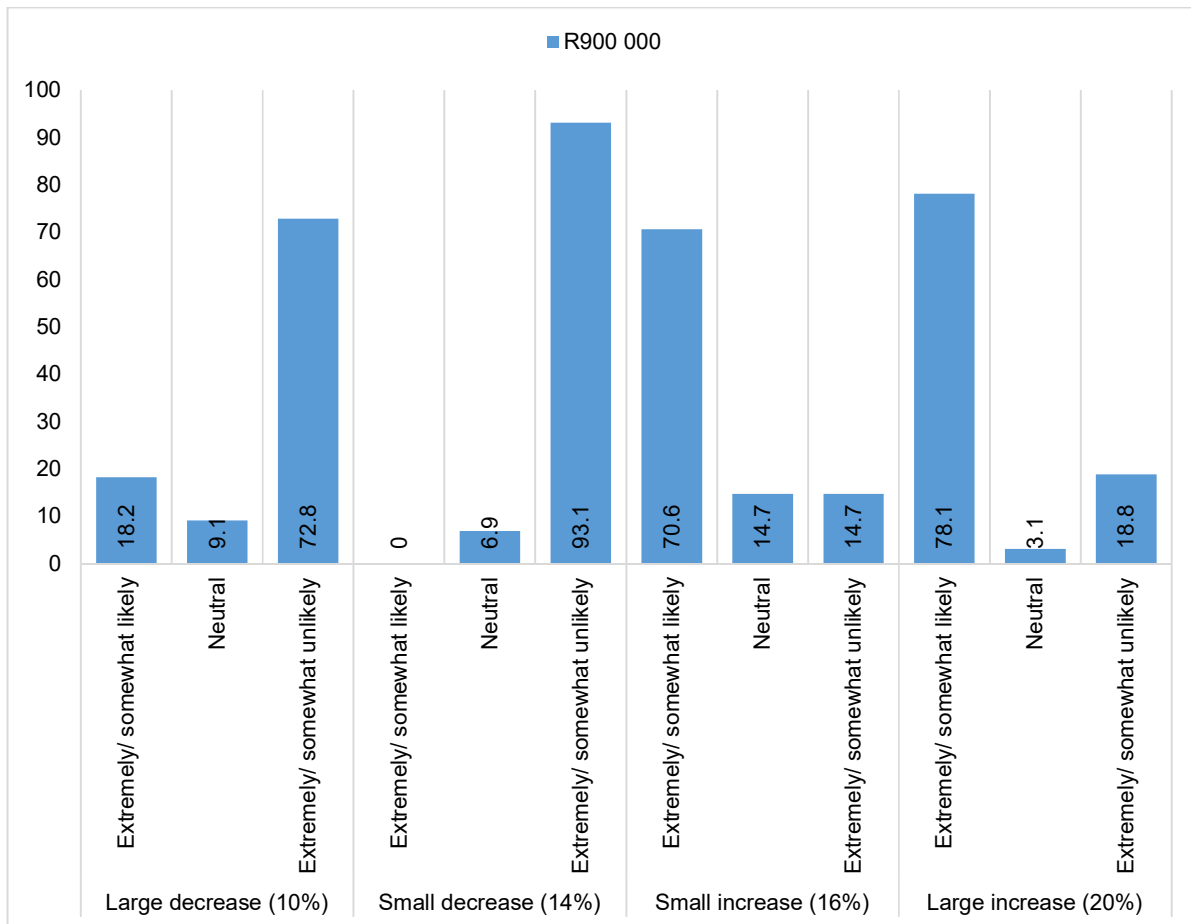
When sales are below the compulsory registration threshold, at R900 000, fewer participants in the large and small decrease groups would think that a hypothetical person would register as a VAT vendor but this is expected as they are not obliged to register. In the large decrease group (10%), only 18.2 per cent indicated that it is extremely or somewhat likely that they would register as VAT vendors and in the small decrease group (14%); no participants indicated that it is extremely or somewhat likely that they would register as VAT vendors.

When sales are below the threshold, at R900 000, more participants would think that a hypothetical person would deregister as a VAT vendor. In the small increase group (16%), 70.6 per cent indicated that it is extremely or somewhat likely that they would deregister as VAT vendors and in the large increase group (20%), 78.1 per cent indicated that it is extremely or somewhat likely that they would deregister as VAT vendors. This is expected

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as they are not compelled to remain registered as VAT vendors. Some, however, do remain registered, probably because they would like to be able to claim back input tax on purchases made or for other economic reasons such as improved reputation or credibility.

When analysing the results from the voluntary registration question, an observation was made that there are more participants in the increase in VAT rate treatment groups that would remain registered as VAT vendors (not indicating that it is likely for them to deregister as VAT vendors), than where participants indicated that they will register as VAT vendors in the decrease in VAT rate treatment groups. This was not expected, as the VAT liability would be lower in the decrease in VAT rate groups.

A Mann-Whitney test for the decrease in the VAT rate groups and the increase in the VAT rate groups was run, respectively, to test the hypotheses. The results were not statistically significant as indicated in Table 15 (decrease groups) and Table 17 (increase groups), thus the null hypotheses could not be rejected for both the decrease and increase in VAT rate groups. H_{2A} is therefore not supported. A larger decrease (increase) in the VAT rate does not result in small business entities being more likely to register (deregister) for VAT. The results of the study are different to the results of Matthews (2003), who found that there is a possibility that small businesses deregister as VAT vendors when there is an increase in the VAT rate.

For the decrease in the VAT rate groups, the Mann-Whitney test results are presented in Table 15. The effect size is small for both the compulsory and voluntary registration questions, meaning that there were some but very few differences in responses between the two treatment groups.

Table 15:   Decrease in VAT rate groups Mann-Whitney test

	R1.1 million sales (compulsory)	R900 000 sales (voluntary)
Mann-Whitney U	400.500	396.000
Wilcoxon W	835.500	831.000
Z	-1.133	-1.483
Asymp. Sig	0.257	0.138
Cohen's d	-0.288	-0.380

Note: Shading indicates the effect size (orange – small effect)

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Even though the results were not statistically significant, the mean ranks were analysed for additional discussion purposes to see if a trend emerged as presented in Table 16.

Table 16:   Mean ranks: Registration for decrease in VAT rate groups

	Group	N	Mean Rank
Compulsory registration	Large decrease group (10%)	33	33.86
	Small decrease group (14%)	29	28.81
Voluntary registration	Large decrease group (10%)	33	34.00
	Small decrease group (14%)	29	28.66

Considering the mean ranks for the compulsory registration question, the participants in the large decrease group (10%) thought that a person would be more likely to register as a VAT vendor (mean rank = 33.86) than the participants in the small decrease group (14%) reported (mean rank = 28.81). Similarly, considering the mean ranks for the voluntary registration question, the participants in the large decrease group (10%) also thought that a person would be more likely to register as a VAT vendor (mean rank = 34.00) than the participants in the small decrease group (14%) reported (mean rank = 28.66). It is expected that more participants would be willing to register as VAT vendors in the large decrease group (10%) in comparison to the small decrease group (14%) as the VAT liability would be less with a smaller VAT rate. This is in line with the expected utility theory, that a rational person would weigh the cost against the benefit of not complying. With a large decrease in the VAT rate, the cost-saving would be less if one is not registered as a VAT vendor, as long as one does not get caught. This makes evasion less appealing.

For the increase in the VAT rate groups, the Mann-Whitney test results are presented in Table 17. Again, the effect size is small for both the compulsory and voluntary registration questions, meaning that there were some but very few differences in responses between the two treatment groups.

Table 17:   Increase in VAT rate groups Mann-Whitney test

	R1.1 million sales (compulsory)	R900 000 sales (voluntary)
Mann-Whitney U	444.500	443.000
Wilcoxon W	1,039.500	1,038.000
Z	-1.186	-1.406

	R1.1 million sales (compulsory)	R900 000 sales (voluntary)
Asymp. Sig	0.236	0.160
Cohen's d	-0.291	-0.346

Note: Shading indicates the effect size orange – small effect)

Similarly, even though the results were not statistically significant, the mean ranks were analysed for additional discussion purposes to see if a trend emerged. This is presented in Table 18.

Table 18:   Mean ranks: Registration for increase in VAT rate groups

	Group	N	Mean Rank
Compulsory registration	Small increase group (16%)	34	30.57
	Large increase group (20%)	31	35.66
Voluntary registration	Small increase group (16%)	34	30.53
	Large increase group (20%)	32	36.66

Considering the mean ranks for the compulsory registration question, the participants in the small increase group (16%) thought that a person would be less likely to deregister as a VAT vendor (mean rank = 30.57) compared to the participants in the large increase group (20%) (mean rank = 35.66). Similarly, considering the mean ranks for the voluntary registration question, the participants in the small increase group (16%) thought that a person would be less likely to deregister as a VAT vendor (mean rank = 30.53) compared to the participants in the large increase group (20%) (mean rank = 36.66). This was expected as more VAT would be payable in the case of a large VAT increase and therefore, more non-compliance was expected. This is in line with the expected utility theory, that a rational person would weigh the cost against the benefit of not complying. With a large increase in the VAT rate, the cost-saving would be more if one is not registered as a VAT vendor, as long as one does not get caught. This makes evasion more appealing.

In summary, a large decrease (increase) in the VAT rate does not result in small business entities being more likely to register (deregister) for VAT and thus, H_{2A} is not supported. However, using the descriptive statistics to provide more insight into the results of the inferential tests, it is evident that a minority of the participants in the decrease in VAT rate treatment groups (fewer than 50 per cent) seem extremely or somewhat likely to register as

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VAT vendors when they are obliged to do so. By way of contrast, it is evident that the majority of the participants in the increase in VAT rate treatment groups (more than 50 per cent) seem extremely or somewhat unlikely to deregister as VAT vendors when they are obliged to be registered. This indicates more compliance for registration purposes with an increase in the VAT rate than with a decrease in the VAT rate, which was unexpected. This could be due to the fact that, when one remains registered as a VAT vendor, input tax can be claimed on purchases made. Therefore, the higher the VAT rate, the more the input tax that can be claimed back if your suppliers are also VAT vendors. A respondent also mentioned that it is beneficial for tender purposes to be registered as a VAT vendor.

From the Mann-Whitney test mean ranks, more participants would register as VAT vendors when the decrease in the VAT rate is large, which was expected. There would be more people deregistering as VAT vendors when there is a large increase in the VAT rate, which was also expected. The results are consistent with the results of Matthews (2003), who found that there is a possibility that small businesses deregister as VAT vendors when there is an increase in the VAT rate. Other factors influencing the registration decision identified in South Africa through a survey, include the number of cash payments received (businesses are less likely to register when more income is received in cash), the perception of problems with crime, infrastructure and skills of workers, opportunities for growth, access to financing and access to government services (Coolidge & Ilic, 2009). These could be possible reasons why participants would not deregister as VAT vendors when their sales are under the compulsory registration threshold.

Although the results mirror what a person believes of the registration decisions of others, it may very well be his or own belief based on social norm theory. The results support the prospect theory, indicating that taxpayers tend to take more risk by not registering for tax when they are in a loss position (having to pay more tax), thus becoming (more) non-compliant. The results are also in line with the expected utility theory, where taxpayers weigh the costs of not complying (such as penalties) against the benefits of not complying (saving tax due to non-registration).

5.6 THE EFFECT OF DEMOGRAPHIC VARIABLES ON TAX COMPLIANCE

In Section 5.3, the demographic profiles of participants and their businesses were discussed to indicate whether the sample of participants is representative of the target population for the extrapolation of results. It was concluded that the results may be deemed to be valid for the purposes of the research, although extrapolation of the results should be done with care. The spread of the demographic variables was also discussed in that section. The data obtained through the experiment were rich in nature and therefore more detailed analyses are now possible to determine the effect each demographic variable may have on tax compliance. These analyses may, therefore, add to the body of knowledge already available on the possible effect of the demographic variables on tax compliance. Indeed, the results may assist governments in focussing their attention for revenue collection on groups that tend to show higher levels of non-compliance.

It was hypothesised that particular demographic variables relating to the participants may have implications for the compliance decisions of those participants. More particularly, the research hypothesis to test is as follows:

- H_{3A}: Demographic variables affect amounts declared and associated compliance for the decrease and increase in VAT rate groups respectively.

The amounts declared for sales and purchases were recoded as being either tax compliant or not tax compliant by assigning a '1' to all cases where the participants were compliant and a '0' where they were non-compliant (refer to Section 5.2.3). This was used in testing hypothesis H_{3A} by looking at compliance and whether compliance changed. As illustrated in Figure 21, based on the amounts declared in the 15 per cent category by participants, the overall tax compliance was 88 per cent for sales but only 81 per cent for purchases.

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Figure 21: Compliance in the 15 per cent category
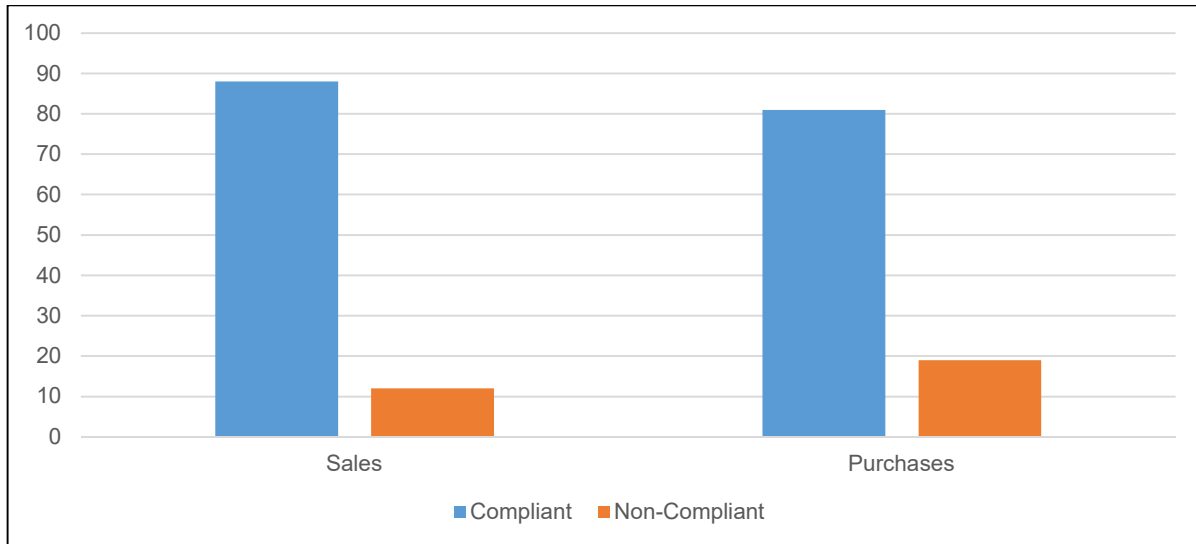
The question could, therefore, be raised as to whether there are specific demographic variables that may influence tax compliance.

The next statistical hypothesis determines whether there is an association between each demographic variable and tax compliance:

- $H_{3A1.1:0}$: There is no association between each demographic variable (gender, ethnicity, age, qualifications/education, province, type of business, industry, income level, VAT knowledge and form of return submission) and tax compliance.

Figure 22 illustrates the compliance levels per demographic characteristic for both sales and purchases in the 15 per cent category. It can be seen that the extent of compliance for sales is better than for purchases. Furthermore, it is evident that females tend to be more compliant than males; White citizens are inclined to be the least compliant of all ethnic groups (however, one should keep the limitation in mind that most participants were White and therefore not fairly representative of the population); individuals between 51 and 65 tend to be the least compliant but those over 65 the most compliant; individuals with the lowest qualifications are prone to be the least compliant; of the three most represented provinces, those individuals in Gauteng are inclined to be the most compliant; individuals trading as sole proprietors tend to be the most compliant; the financial services industry is most likely to be compliant; businesses with the highest level of income have a propensity to be the most compliant; those with the best VAT knowledge are predisposed to be the most

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compliant; and those who prepare their returns themselves tend to be more compliant than those who use tax preparers.

Figure 22: Compliance per item per demographic variable (15% category)
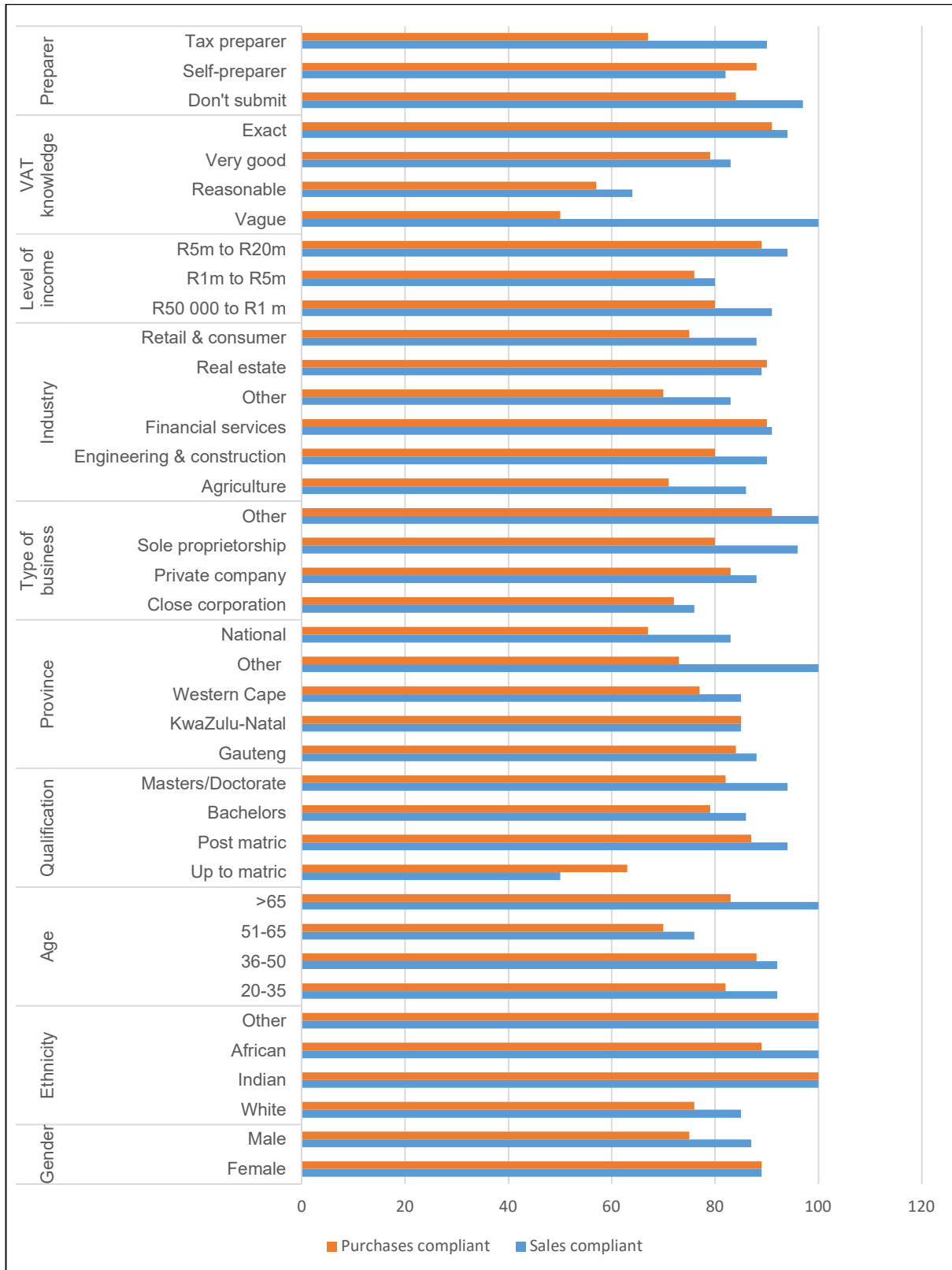
To determine whether there is an association between each demographic variable and tax compliance, the results from the amounts declared after the treatments were applied (decrease and increase in VAT rate groups) were also considered. For this, the coding was done as follows: compliance for sales and purchases are indicated as a 1 where the participant is compliant and a 0 if non-compliant for the 15 per cent category. This was done in the decrease and increase in VAT rate treatment groups respectively. The difference between the compliance results from the 15 per cent category to the decrease in VAT rate treatment group or the increase in the VAT rate treatment group was then determined. The result could be: a 0, meaning the participant remained compliant/non-compliant in both the initial scenario (15 per cent VAT rate) and the appropriate treatment group in the follow-up scenario (a decrease or increase in the VAT rate); a 1 where the participant was compliant in the 15 per cent category but then became non-compliant in the treatment group; or a -1 where the participant was not compliant in the 15 per cent category but then became compliant in the treatment group.

Figure 23 (sales) and Figure 24 (purchases) illustrate the compliance per item within each demographic variable after the treatment was applied. It is evident that even after the treatment was applied and the compliance levels mostly remained unchanged, more individuals became non-compliant after the change in the tax rate compared to individuals who became compliant.

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Figure 23: Compliance per item per demographic variable for sales after treatment

Sales
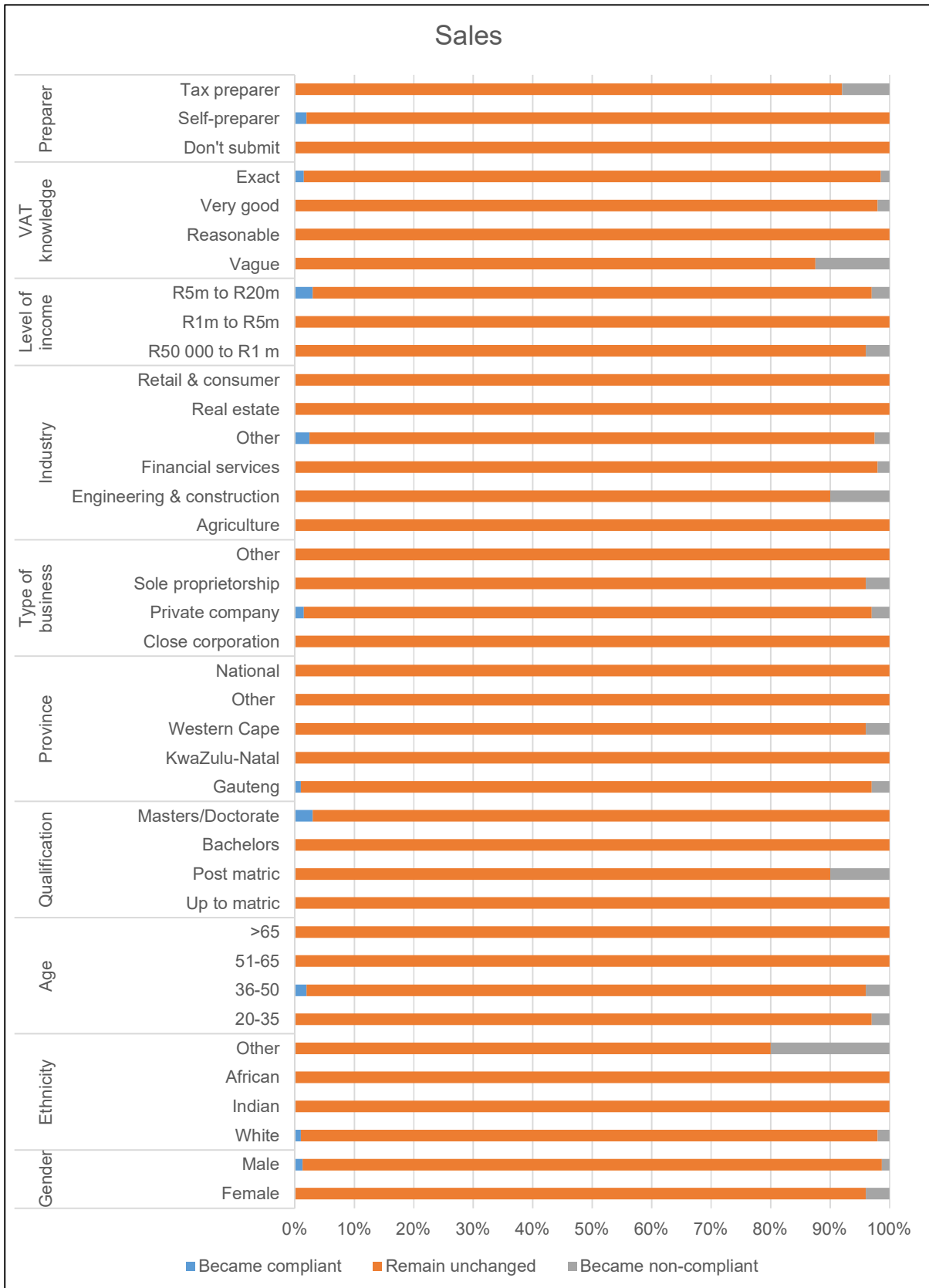
Figure 24: Compliance per item per demographic variable for purchases after treatment
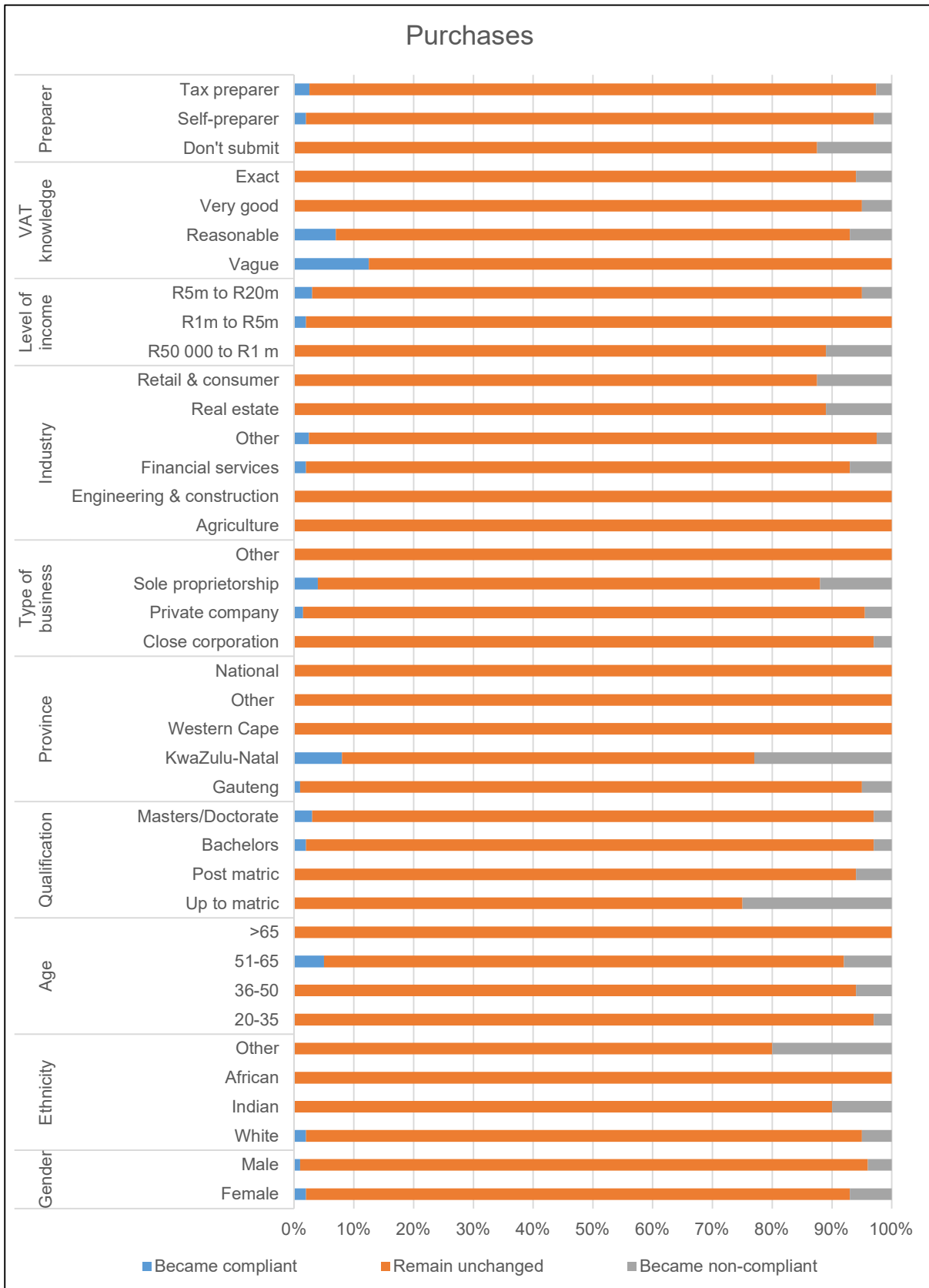
Table 19 summarises the results of the Pearson Chi-Square or Fisher Exact tests for association between the various demographic variables and tax compliance. The Cramer V values are also reported in Table 19 to show the strength of the association. Threshold values for Cramer V are (Cohen, 1988):

- >0.5 high association
- 0.3 to 0.5 moderate association
- 0.1 to 0.3 low association
- 0.0 to 0.1 little if any association

Table 19: **Pearson chi-square or Fisher Exact for the association between various demographic variables and compliance**

Variables		Pearson chi-square value	Fisher exact test (if applicable)	Exact significance (*p* value) (2-sided)	Cramer V
Before changes in VAT (15% category)					
Gender	Sales	0.15		0.791	0.034
	Purchases	4.103		**0.070***	0.177
Ethnicity	Sales		2.205	0.435	0.177
	Purchases		3.504	0.275	0.189
Age	Sales		5.81	0.103	0.238
	Purchases		4.144	0.227	0.18
Qualifications	Sales		9.525	**0.015****	0.315
	Purchases	2.666		0.455	0.143
Province	Sales		2.244	0.688	0.124
	Purchases		2.7	0.607	0.127
Type of business	Sales		5.738	0.109	0.23
	Purchases		2.143	0.548	0.133
Industry	Sales		2.319	0.819	0.116
	Purchases		7.163	0.161	0.227
Income level	Sales	5.088		**0.078***	0.197
	Purchases	2.416		0.309	0.136
VAT knowledge	Sales		9.629	**0.014****	0.297
	Purchases		13.982	**0.002*****	0.335
Return submission	Sales		4.508	**0.090***	0.189
	Purchases	7.514		**0.022****	0.239

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Variables		Pearson chi-square value	Fisher exact test (if applicable)	Exact significance (*p* value) (2-sided)	Cramer V
After changes in VAT					
Gender	Sales: Increase group		1.024	1	0.104
	Sales: Decrease group		No value	0.492	0.129
	Purchases: Increase group		2.574	0.258	0.194
	Purchases: Decrease group		1.871	1	0.178
Ethnicity	Sales: Increase group		8.245	0.347	0.237
	Sales: Decrease group		4.886	1	0.048
	Purchases: Increase group		5.997	0.505	0.141
	Purchases: Decrease group		9.778	1	0.049
Age	Sales: Increase group		4.853	0.92	0.147
	Sales: Decrease group		3.337	1	0.162
	Purchases: Increase group		4.22	0.864	0.16
	Purchases: Decrease group		8.143	0.133	0.211
Qualifications	Sales: Increase group		9.301	**0.063***	0.288
	Sales: Decrease group		3.37	0.587	0.201
	Purchases: Increase group		8.415	0.135	0.273
	Purchases: Decrease group		7.073	0.316	0.214
Province	Sales: Increase group		6.144	0.858	0.148
	Sales: Decrease group		2.699	1	0.1
	Purchases: Increase group		9.485	0.235	0.29
	Purchases: Decrease group		9.921	0.167	0.352
Type of business	Sales: Increase group		3.67	1	0.127
	Sales: Decrease group		3.593	0.317	0.238
	Purchases: Increase group		3.991	0.819	0.134
	Purchases: Decrease group		7.303	0.229	0.24

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Variables		Pearson chi-square value	Fisher exact test (if applicable)	Exact significance (*p* value) (2-sided)	Cramer V
Industry	Sales: Increase group		14.282	0.356	0.269
	Sales: Decrease group		6.077	0.603	0.201
	Purchases: Increase group		11.214	0.532	0.237
	Purchases: Decrease group		14.321	0.307	0.311
Income level	Sales: Increase group		4.055	0.276	0.176
	Sales: Decrease group		1.773	0.635	0.173
	Purchases: Increase group		6.103	0.104	0.209
	Purchases: Decrease group		3.916	0.281	0.187
VAT knowledge	Sales: Increase group		8.904	0.177	0.295
	Sales: Decrease group		3.937	0.444	0.209
	Purchases: Increase group		6.754	0.366	0.245
	Purchases: Decrease group		8.846	0.214	0.316
Return submission	Sales: Increase group		4.478	0.159	0.209
	Sales: Decrease group		2.328	0.508	0.201
	Purchases: Increase group		3.169	0.603	0.155
	Purchases: Decrease group		5.127	0.176	0.219

* significant at 10% level as p < 0.1
** significant at 5% level as p < 0.05
*** significant at 1% level as p < 0.01
Note: Shading indicates the strength of associations (red - little if any; orange – low; green – moderate)

From the results, it is evident that before there are any changes in the VAT rate, the following significant associations are noted (from Table 19) between the demographic variables and tax compliance:

- gender (purchases declared) at a 10% level of significance;

- qualifications (sales declared) at a 5% level of significance, the association being moderate;

- income level (sales declared) at a 10% level of significance;

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- VAT knowledge (sales declared) at a 5% level of significance;
- VAT knowledge (purchases declared) at a 1% level of significance, the association being moderate;
- return submission (sales declared) at a 10% level of significance; and
- return submission (purchases declared) at a 5% level of significance.

The following significant associations are noted between the demographic variables and tax compliance when there are changes in the VAT rate:
- qualifications (when there is an increase in the VAT rate, sales declared) at a 10% level of significance.

There are no significant associations with tax compliance for any of the other variables in any of the other situations (i.e. where there is a decrease in the VAT rate and where purchases are involved). It is an interesting observation that only qualifications affect tax compliance behaviour when there is a change in the VAT rate. A further discussion on the demographic variables where a significant association was identified above, namely gender, qualifications, income level, VAT knowledge and return submission now follows, as well as a comparison to available literature, where applicable.

Gender

For the scenario before a change in the VAT rate occurs, $H_{3A1.1:0}$ is rejected for the declaration of purchases as there is a low significant association between gender and tax compliance. Females were more compliant in declaring purchases than males, with females being 89 per cent compliant, whereas the males were only 75 per cent compliant.

The results thus show that gender generally does not affect tax compliance except in the case of purchases declared, where female participants were more compliant than male respondents. The result that females are more compliant than males supports the studies done by Aladejebi (2018), Bazart and Pickhardt (2011), Brockmann *et al.* (2016), Carsamer and Abbam (2020), Damayanti and Supramono (2019), D'Attoma *et al.* (2017) and Kogler *et al.* (2013), as these studies all found that males are more inclined to evade taxes and are thus more non-compliant than females.

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Qualifications

From the results regarding the 15 per cent category (before changes in VAT), $H_{3A1.1:0}$ is rejected as there is a moderately significant association between sales declared and tax compliance. The participants with the lowest qualifications (no qualifications after matric) only complied by 50 per cent in declaring sales. The group with the highest qualifications (masters and doctorate) was the most compliant at a compliance rate of 94.1 per cent. The low compliance by the participants with the lowest qualifications could be due to a lack of knowledge on VAT legislation and what compliance entails.

$H_{3A1.1:0}$ is rejected regarding sales declared when there is an increase in the VAT rate, as there is a low significant association between the qualifications obtained and tax compliance. Although the majority of the participants' compliance status did not change (100 per cent for the participants with only a matric or with a bachelors), there were some changes in compliance for participants with a post-matric qualification and also for those with masters or doctorate degrees. Of the participants with a post-matric qualification, 15.4 per cent became non-compliant, whereas 5.3 per cent of those with a masters or doctorate became compliant. The increase in non-compliance by the participants with a post-matric qualification was somewhat expected, as people would generally tend to maximise their profits and may therefore declare less sales to decrease their VAT liability. Based on this argument, it was unexpected that participants with higher qualifications would become more compliant with an increase in the VAT rate. At most, it was expected that compliance would remain the same, or decrease.

There was variation between compliance of sales and purchases between the various treatment groups but the participants with the lowest qualifications were always the least compliant. These results support the findings of Carsamer and Abbam (2020), where participants who have a higher education are more compliant. However, a high qualification obtained does not necessarily imply that it is a tax qualification. As Loo and Ho (2005) indicated, even though some participants might have a high(er) education, they might not possess the necessary tax knowledge to accurately complete their tax returns. If they lack tax knowledge, they could make unintentional errors (Kosonen & Ropponen, 2013).

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The majority of the participants (83 per cent), however, indicated that they had very good VAT knowledge. The results therefore also support the findings of Kirchler and Maiejovsky (2001), Kwok and Yip (2018) and Song and Yarbrough (1978), indicating that when individuals have a better knowledge of tax and higher levels of tax ethics, they are more compliant. Overall, education level has a significant impact on tax compliance behaviour (Devos, 2014).

Income level

Before there were changes in the VAT rate, it was evident that there is a low significant association between the level of gross income of a business and tax compliance regarding sales declared. The participants in the category R1 million to R5 million seem to be the least compliant and the businesses with the largest income the most compliant. The results support the findings of Kogler *et al.* (2013) and Song and Yarbrough (1978); that high-income earners are more compliant. The results, however, contradict those of Hasseldine *et al.* (1994), where they concluded that high-income earners were found to be less compliant than low-income earners.

When considering the association between gross income and whether tax compliance changed when there were changes in the VAT rate, the group of participants with income between R50 000 and R1 million seem to become the most non-compliant when they are exposed to the treatment groups, although the results were not statistically significant. This could be because they are on the verge of having to register as VAT vendors and are therefore understating their sales to remain below the compulsory threshold. They are, however, also overstating their purchases.

VAT knowledge

Before there was a change in the VAT rate, an association between the perceived VAT knowledge and tax compliance for both sales and purchases declared was noted. For sales declared, $H_{3A1.1:0}$ is rejected as there is a low significant association between perceived VAT knowledge and tax compliance. Although participants indicating that they have a vague

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understanding of VAT were the most compliant in reporting sales at 100 per cent, the group with a reasonable VAT knowledge was only 64 per cent compliant. The second most compliant group indicated they know exactly how to calculate VAT (94 per cent compliant) followed by the group that has a very good understanding of VAT (83 per cent compliant).

For purchases declared, $H_{3A1.1:0}$ is also rejected as there is a moderately significant association between perceived VAT knowledge and tax compliance. A tendency was noted that participants with the highest perceived VAT knowledge are the most compliant (91 per cent) and participants with a vague VAT knowledge complied the least (50 per cent). This was expected, as participants with a vague VAT knowledge probably do not know which purchases are allowed to be deducted.

The results indicated that VAT knowledge influences tax compliance, in alignment with the discussion under 'Qualifications'. Where there is an increase in the VAT rate, participants with the most VAT knowledge tend to become the most non-compliant, although the results are not statistically significant. This is expected, as those with more VAT knowledge could potentially abuse the system and identify loopholes to minimise their VAT liability.

In determining the correlation between the level of education and perceived VAT knowledge, the statistical hypothesis that was tested is:

- $H_{3A1.2:0}$: There is no difference between the levels of education with regard to their VAT knowledge level.

To establish the correlation between the levels of education and perceived levels of VAT knowledge, a Kruskal-Wallis test was run due to the ordinal nature of the education data. From Table 20 it is evident that there was no statistically significant difference between the levels of education and perceived levels of VAT knowledge.

Table 20:   Test statistics for Kruskal-Wallis: VAT knowledge perception

Total N	131
Kruskal-Wallis H Test Statistic	5.634
Asymptotic Significance	0.131
Result	Not significant

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$H_{3A1.2:0}$ is thus not rejected and it is evident that VAT knowledge is not significantly dependent on the level of education in general. VAT knowledge could be gained, for example, through practice. The fact that VAT knowledge is not dependent on the level of formal education supports the findings of Kwok and Yip (2018) and Loo and Ho (2005), stating that education and training specifically in the tax field will have a positive impact on tax compliance. One should, therefore, be careful to assume that in all cases, a higher qualification would mean that a person has sufficient tax knowledge as the qualification could have been in a completely unrelated field to tax (Kirchler, 2007; Richardson & Sawyer, 2001).

Yet, when considering the mean ranks of the different groups as per Table 21, one can deduce that there is a tendency that, as the levels of education increase, the participants' perceived VAT knowledge also increases, with a clear difference between matric or lower and any tertiary education. This supports the results of Inasius (2018) and Song and Yarbrough (1978), that tax knowledge improves with higher qualifications obtained, regardless of the field in which the qualifications were obtained.

Table 21:   Mean ranks: VAT knowledge perception

Ranks			
	Education	**N**	**Mean Rank**
Knowledge	Matric or lower	8	38.44
	Post matric	31	65.19
	Bachelors	58	68.58
	Masters or Doctorate	34	68.82
	Total	131	

Return submission

Before there was a change in the VAT rate, a correlation between the return preparer and tax compliance for both sales and purchases declared was observed. For sales declared, $H_{3A1.1:0}$ is rejected as there is a low significant association between the return preparer and tax compliance. Participants who do not submit tax returns in real life were, however, the most compliant in declaring sales in the experiment at 97 per cent. Only 82 per cent of self-preparers complied, while participants using tax preparers complied by 90 per cent. It is thus evident that those submitting their own tax returns have more opportunity not to comply.

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This confirms the results of Erard (1997), that taxpayers choose to submit their own tax returns should they deliberately wish to report their income incorrectly.

$H_{3A1.1:0}$ is also rejected for purchases declared as there is a low significant association between the return preparer and tax compliance. Participants who do not submit tax returns in real life were only 84 per cent compliant in declaring the correct amount of purchases in the experiment. Participants who are self-preparers were 88 per cent compliant and participants who use tax preparers were only 67 per cent compliant. This could indicate as to why taxpayers use tax preparers; they do not have the tax knowledge to complete their tax returns themselves or the calculation is too complex for them (Collins *et al.*, 1990).

The fact that there is a significant correlation between the tax preparer and tax compliance contrasts with the outcomes in Hasseldine *et al.* (1994), who did not note any significant effect. However, the direction of the association in the current study depended on whether the participant declared sales or purchases.

An interesting observation regarding self-preparers is that for sales declared they are the least compliant but for purchases, they become the most compliant. A further reflection is when tax preparers are used, the most non-compliance in the experiment was reported for purchases declared. Again, this is perhaps a reflection of taxpayers not having sufficient tax knowledge to prepare their own tax returns and therefore needing tax experts to assist them (Collins *et al.*, 1990).

In bringing this analysis together, several points can be made. Tax compliance is problematic for revenue collection as some participants were not compliant, even before there were any changes in the VAT rate. The correlation between the demographic variables and whether a person complies or not before a change in the VAT rate delivered the following significant results:

- females tend to be more compliant than males;
- the highest qualified in terms of levels of education are more compliant in declaring sales and also relatively more compliant in declaring purchases than those with lower levels of education;
- participants in the category earning the highest income levels tend to comply the most regarding sales;

- the better the perceived VAT knowledge, the higher the compliance regarding sales and purchases; and
- self-preparers were the least compliant in declaring sales, however, they were more compliant regarding purchases declared than those using tax preparers.

When there is a change in the VAT rate, the only demographic variable that is deemed to have a significant effect on tax compliance is the level of education/qualifications for sales declared when there is an increase in the VAT rate.

5.7 SUMMARY

This chapter has presented an analysis of the results of the experiment. The results were quantitative in nature and analysed statistically with descriptive and inferential statistics using SPSS. The description of the sample was provided and it is evident that the data are seen to be reliable and valid, although extrapolation of results to the target population should be done with care as the participants do not represent the target population in every respect.

The aim of this study is to determine the effect of changes in the VAT rate on VAT compliance behaviour of small business entities in South Africa. First, this study considered tax compliance in terms of amounts declared for sales and purchases for both the direction and magnitude of the VAT rate change. Second, this study also considered the effect of changes in the VAT rate on VAT registration decisions. Third, the effect of demographic variables on tax compliance was explored.

When there is an increase in the VAT rate, there is no significant change in the sales amount declared but more purchases are declared. Non-compliance is thus achieved by over-declaring purchases rather than under-reporting sales. The results were not as conclusive for a decrease in the VAT rate. The direction of the change in the VAT rate thus has an effect on tax compliance.

The magnitude of the change in the VAT rate also has an effect on tax compliance. Where there is a large increase in the VAT rate, lower sales amounts are declared, again resulting in non-compliance. The results were not conclusive for a decrease in the VAT rate. The

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magnitude of the VAT rate change thus has an effect on tax compliance, particularly when there is an increase in the VAT rate.

These results add to the body of knowledge as to whether the direction and magnitude of changes in a VAT rate impact on tax compliance behaviour, specifically considering the difference in amounts declared for sales and purchases, separately. These results could also be valuable to policymakers in countries contemplating a change in the VAT rate to increase VAT revenue, as the real effects of changes in the VAT rate are not known before a change is implemented. A large increase in the VAT rate may lead to increased non-compliance, resulting in a decrease in tax revenue. Not only are the results valuable to policymakers in other countries, but also to those in South Africa. Further VAT rate increases might be contemplated to raise tax revenue. Alternatively, a decrease in VAT rate might be considered to provide relief to consumers due to the Covid-19 pandemic and the associated increase in unemployment[56] and poverty situation. This study highlights the tax compliance behaviour associated with these changes in VAT rates.

The chapter also discussed the implications of VAT rate changes upon the decision as to whether a business decided to register for VAT. Of the participants who should be registered for VAT, six per cent are not registered, indicating real-life non-compliance, even before any changes in the VAT rate. Changes in the VAT rate tend not to have a significant impact on the registration decisions of taxpayers. However, there is some indication that more businesses tend to register as VAT vendors when there is a large decrease in the VAT rate. Similarly, more businesses tend to be likely to deregister as VAT vendors when there is a large increase in the VAT rate, indicating that changes in the VAT rate do have an effect on VAT registration decisions and therefore on tax compliance.

Although a sufficient number of responses were received for the experiment to be deemed valid, more responses would have resulted in a higher power of the Mann-Whitney tests used. However, detailed in-depth exploration of the results provided meaningful insights as described by considering the mean ranks.

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[56] Unemployment was at an all-time high of 50.1 per cent in Quarter 3 of 2020 in South Africa (Statistics South Africa, 2020).

Finally, there is a significant association between tax compliance and gender, qualifications, VAT knowledge, who submits the return and the level of income of the business. When there were changes in the VAT rate, the only significant correlation that existed was between qualifications and tax compliance with an increase in the VAT rate, for sales declared.

This chapter has addressed the questions of how (direction) and to what extent (magnitude), tax compliance behaviour in South Africa is likely to be affected by changes in the VAT rate. The subsequent chapter will conclude the study by revisiting the major findings of the study and highlighting the contribution made. The limitations and recommendations for future research will also be presented.

CHAPTER 6
CONCLUSION

6.1 INTRODUCTION

Now, more than ever, during this devastating social and economic pandemic (Covid-19), governments globally need funding to be able to supply the necessary goods and services to the public. The reallocation of government expenditure towards health care and education is draining an already crippled economy in South Africa where the budget deficit was the highest in 28 years, even before the pandemic (Bloomberg, 2020). National Treasury anticipates that the tax revenue for 2020/2021 will reduce by 15 to 20 per cent of the budgeted amount (South African Government News Agency, 2020). Non-compliance is a risk to the collection of already strained tax revenue and therefore steps need to be taken to ensure all possible revenue is collected. The VAT was identified as a tax where the rate could potentially be adjusted in an attempt to mobilise more tax revenue, however, the probability and consequence of non-compliance once the policy change is implemented, is relatively unknown.

The purpose of this chapter is to provide evidence, in Section 6.2, on how the three research objectives that are the foundation of this thesis were addressed. This is followed by a summary of the contributions of the study in Section 6.3. The limitations of the study are discussed in Section 6.4, followed by the recommendations for future research (Section 6.5). The chapter ends with final remarks in Section 6.6.

6.2 ADDRESSING THE RESEARCH OBJECTIVES

The specific research questions underpinning this study are: how (direction) and to what extent (magnitude), is the tax compliance behaviour of small business entities in South Africa likely to be affected by changes in the VAT rate? Three research objectives were formulated for the study in order to answer the research questions:

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- to identify factors that influence tax compliance behaviour in general and VAT specifically;

- to conduct an experiment to identify the changes (if any) in the VAT compliance behaviour of small business entities if there are changes in the VAT rate; and

- to reach a conclusion on the effect changes (direction and magnitude) in the VAT rate in South Africa will have on VAT compliance behaviour of small business entities.

Each one of the objectives was addressed as discussed below. Conclusions are also drawn.

6.2.1 <u>To identify factors that influence tax compliance behaviour in general and VAT compliance behaviour specifically, in an SME and South African context.</u>

Tax compliance can be conceptually defined simply as "the degree to which taxpayers comply with the tax law" or it can be explained as taxpayers' willingness to pay their taxes (James & Alley, 2002; Kirchler, 2007). A more operational definition was used in the study, where tax compliance involves the willingness of taxpayers to comply with the law by registering for tax when obliged to do so, submitting accurate tax returns on time, making the necessary payments on time and keeping records (OECD, 2008). Although individuals do not all like to pay taxes and some engage in different levels of non-compliance and evasion (Alm & Torgler, 2011), there are still individuals who do comply. This is often due to the ethical standards those individuals maintain (Alm & Torgler, 2011).

The two broad categories into which tax compliance theories are divided are the behavioural/psychological approach and the economic deterrence approach. The behavioural/psychological approach addresses factors which influence a taxpayer's behaviour and which are associated with the psychology and sociology disciplines, such as ethics, fairness and peer influence. The economic deterrence approach takes into account economic incentives and has a focus on costs (to the taxpayer) to comply or not to comply.

From literature, it is evident that there are various factors identified as potential variables that may affect tax compliance behaviour. An inverted-pyramid approach was adopted, where the broad factors and impact thereof on tax compliance were discussed, steadily

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narrowing down to establish the gap in the literature that this study addressed. The factors were divided into three categories: demographic, social-psychological and structural. Although the factors in all three categories were discussed in Chapter Three, the main focus of this research was on VAT rates, falling in the structural factors category. Therefore, further emphasis was placed on the impact of changes in tax rates and then specifically on the impact of such changes in the field of VAT. Support for this focus can be found in the fact that there is limited empirical evidence regarding the impact of tax rate changes in the field of VAT on tax compliance behaviour. In order to pinpoint the exact gap in knowledge, the research further concentrated on the influence of changes in the VAT rate in developing countries and more specifically on small business entities in South Africa.

6.2.2 <u>To conduct an experiment to identify the changes (if any) in the VAT compliance behaviour of small business entities if there are changes in the VAT rate</u>

In order to address this research objective, an appropriate research design was adopted where a post-positivist research philosophy was followed that culminated in an asynchronous online field experiment using a between-subject design, including a pre-test and post-test. Hypotheses were drawn from an in-depth review of existing theories with a particular focus on the expected utility theory.

The main advantages of applying this experiment can first be found in the fact that a real-life scenario could be created and results, therefore, reflected real-life behaviour to an extent. A further advantage is the ability to isolate the one factor that is tested in the study, namely the change in the VAT rate, with appropriate control over the other factors that may impact tax compliance behaviour.

Four treatment groups were used in the study, where two groups experienced a decrease in the VAT rate and two groups experienced an increase in the VAT rate. The researcher expected that where a decrease in the VAT rate is effected, taxpayers may be more compliant due to the VAT liability decreasing and it is less appealing to evade. In contrast, it was expected that taxpayers may be more non-compliant where there is an increase in the VAT rate due to the VAT liability increasing and people wanting to limit their VAT liability. With the two rates applied for both the decrease and increase treatment groups, not only

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the effect of the direction of the change in the VAT rate could be tested but also the effect of the magnitude of the change.

Three rounds of a pilot study were conducted to ensure that any problem areas were identified. The experiment was criticised and improved to ensure that it was clear before the main experiment was conducted.

The structure of the experiment entailed the following: the experiment commenced with demographic questions regarding the participant and the small business entity. The next section provided a hypothetical scenario in which the participants had to indicate how much sales and purchases they would declare, first with a 15 per cent VAT rate being applied, then with a decreased/increased VAT rate. Manipulation checks were then asked to ensure the participants were focussed in their responses. The next hypothetical scenario considered the registration decisions of the participants by considering the situation where the gross income is above the compulsory registration threshold and then below the compulsory registration threshold. Questions were then asked about the participant's own registration decisions and compliance. The experiment concluded with post-experimental questions, asking the participant about factors influencing their decisions for their responses and the perceived clarity of the experiment.

Descriptive and inferential statistical measures were utilised to analyse the data. Since the data was skewed, non-parametric measures were used to analyse the data as parametric measures were not deemed appropriate in such a case. The reliability of the data was tested by obtaining the Cronbach's alpha value for the post-experimental questions. Reliability was also tested by analysing the difference in the responses of the participants who answered early in the study, versus the late responses. Since the Cronbach's alpha value showed internal consistency and no significant differences were noted between the early and late responses, the data are deemed to be reliable.

Random allocation of the participants to the four treatment groups enhanced the validity of the data. Validity was further tested by considering the representativeness of the participants in relation to the target population. The participants were found to be representative of the target population in terms of gender, age, province, type of entity and income level but not

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representative in terms of ethnicity, qualifications and industry. Thus, any extrapolation of results to the target population should be done with caution.

The experiment was successfully conducted and the results of the experiment addressing the research questions are now briefly discussed. This will show how the study has addressed the last objective.

6.2.3 <u>To reach a conclusion on the effect changes (direction and magnitude) in the VAT rate in South Africa will have on VAT compliance behaviour of small business entities.</u>

As a result of the conduct of the experiment, 131 valid responses were analysed. Those results indicated that even before a change in the VAT rate was introduced, 88 per cent of the participants were compliant in declaring sales and 81 per cent were compliant in declaring purchases. This initial outcome suggested that purchases are the avenue taxpayers are more likely to use to limit their VAT liability. For this reason and due to time and resource constraints in conducting audits, revenue authorities could consider implementing more stringent processes in the auditing of purchases, as this is where most non-compliance occurs.

In order to address the research questions, hypotheses were formulated which aimed to determine how and to what extent tax compliance would change when there are changes in the VAT rate, considering both the direction of the tax rate change (decrease or increase) and the magnitude of the change in rate (small change or large change). Three sets of hypotheses were formulated. The first set was:

- H_{1A1}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns;

- H_{1A2}: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns;

- H_{1B1}: A larger increase (decrease) in the VAT rate will result in lower (higher) declared sales amounts by small business entities registered as VAT vendors; and

- H_{1B2}: A larger increase (decrease) in the VAT rate will result in higher (lower) declared purchases amounts by small business entities registered as VAT vendors.

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Different results were identified as a result of the experiment, depending upon whether the rate was decreased or increased. When there was a decrease in the VAT rate (either to 10% or to 14%), the results did not support the H_1 hypotheses. Fewer sales were declared in the small decrease treatment group (14%) in comparison to the 15 per cent category, but it was expected that more sales would be declared. For all other differences in the decrease treatment groups, the amounts declared (whether purchases or sales) did not change significantly. The results of the study are in contrast to the study by Artavanis (2018), who found that a decrease in the VAT rate results in improved tax compliance. In the current study, a difference in amounts declared was not evident whether the decrease in the VAT rate was small or large.

In contrast, when there was an increase in the VAT rate (whether to 16% or 20%) the purchases amount declared increased at a statistically significant level, confirming the results of Agha and Haughton (1996), Harju *et al.* (2014) and Matthews (2003) - that people become less compliant and evade more taxes when there is an increase in the VAT rate. However, the change in the sales amount declared was not statistically significant. In considering the magnitude of the change in the VAT rate, statistically significantly fewer sales were declared with the larger increase in the VAT rate than with the smaller increase but the effect of the difference in purchases was not statistically significant. In summary, H_{1A2} was supported since an increase in the VAT rate results in more purchases being declared, resulting in non-compliance. Moreover, the larger the increase in the VAT rate, the fewer the sales amounts that were declared, supporting H_{1B1}.

The hypothesis in the second set of hypotheses addressed was as follows:
- H_{2A}: A larger decrease (increase) in the VAT rate will result in small business entities being more likely to register (deregister) for VAT.

The results of the experiment indicate that, from a registration perspective, a large decrease (increase) in the VAT rate does not affect a person's decision to register (deregister) for VAT. The results were not statistically significant, thus not initially supporting H_{2A}. However, when considering mean ranks it was established that more participants are likely to register for VAT when obliged to do so when there is a large decrease in the VAT rate and more participants are likely to deregister for VAT when there is a large increase in the VAT rate,

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supporting H_{2A}. This outcome is consistent with the results of Matthews (2003), who found that there is a possibility that small businesses deregister as VAT vendors when there is an increase in the VAT rate.

Due to the rich nature of the data collected, the influence of demographic variables on tax compliance behaviour was also considered. Hence the hypothesis in the third set of hypotheses addressed was:

- H_{3A}: Demographic variables affect amounts declared and associated compliance for the decrease and increase in VAT rate groups, respectively.

The results of the experiment indicate that only a limited number of demographic variables appear to affect tax compliance under certain conditions, therefore, H_{3A} is met in limited cases. The impact of these demographic variables was considered initially in relation to all of the participants' responses to the first scenario under which a 15 per cent VAT rate prevailed and, subsequently, in relation to the changes in the VAT rate.

Before any changes in the VAT rate (the first scenario), the analysis indicated that:
- females tend to be more compliant than males regarding purchases declared;
- participants with the lowest qualifications complied the least in declaring sales and purchases, whereas those with the highest qualifications complied the most in declaring sales and those with the second highest in declaring purchases;
- participants earning the highest level of income (R5 million to R20 million in this experiment) tended to comply the most regarding sales;
- the better the perceived VAT knowledge, the higher the compliance regarding sales and purchases; and
- self-preparers were the least compliant in declaring sales, however, they were more compliant regarding purchases declared than those using tax preparers.

The only demographic variable that had a significant effect once the participants were exposed to changes in the VAT rate (the second scenario), was the level of education/ qualifications, specifically for sales declared when there was an increase in the VAT rate. The participants with the lowest qualifications became the most non-compliant. None of the

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other demographic variables had a significant effect on tax compliance once exposed to the treatment groups.

6.3 CONTRIBUTION

The contribution of the study can be found on three levels. First, the research addresses an identified knowledge gap in the literature pertaining to the effect of changes in the VAT rate on tax compliance behaviour, particularly on tax compliance behaviour of small business entities in the African and South African context. Second, on a more practical level, the research results may assist policymakers in other countries to predict the effect of a change in the VAT rate on tax compliance behaviour before the implementation of such a policy. Third, the research methodology applied, being an online field experiment, is among the first instances where this has been used to consider effects on tax compliance behaviour in an African country.

Focussing on the first contribution, limited literature was found on VAT compliance behaviour as most of the resources were written from an income tax perspective. There is limited empirical research on the effect of a change in the VAT rate on tax compliance behaviour, especially in terms of amounts declared and registration decisions of small business entities. Although some studies were conducted in developing countries, the majority of studies focussed on developed countries and relatively few compliance studies were conducted in Africa. This study has therefore contributed to this limited body of knowledge by expanding on it, firstly by focussing on VAT and not on income tax, secondly focussing on small business entities and finally, by collecting evidence in an African country. Moreover, the study considered both the direction and magnitude of a VAT rate change as this could potentially have different effects on tax compliance behaviour.

For the second contribution, the results provide practical advice to policymakers globally about the possible effects of changes in the VAT rate on tax compliance behaviour. A small increase in the VAT rate could limit the extent of non-compliance compared to when there is a large increase in the VAT rate. A graduated and carefully calibrated approach where rate increases are in prospect may, therefore, be preferable to large scale, once-off increases. The same experiment could be conducted in other countries to obtain country-

specific results, should they wish to increase the VAT rate to improve tax revenue collection or decrease the VAT rate to combat the detrimental economic effect of Covid-19 on consumers.

The third contribution focussed on the uniqueness of the research method and the geographical region. The literature on tax compliance in developing countries, especially African countries, is limited. This is the first study that used an experiment as the research instrument in testing tax compliance with regard to changes in the VAT rate in Africa and therefore fills the gap in available knowledge.

6.4   LIMITATIONS

As with all research, each study has its own strengths but also its limitations. In this thesis, limitations have been identified which relate to the scope of the study (including issues pertaining to language, the type of tax under review, the nature of the participants and the geographical scope), the design and conduct of the experiment and the generalisability of the results.

The first set of limitations relate to the scope of the study.[57] The literature review upon which the study was based only considered studies available in English. However, this is not seen as a significant limitation as most studies are available in English. Although it could be seen as a limitation that the study focussed only on VAT and not on any other tax, the advantage thereof is that an in-depth study could be performed to determine the effect of changes in the VAT rate on tax compliance behaviour, which is a very under-explored topic. There are numerous studies already available on the tax compliance behaviour relating to income tax.

The sample of participants was limited in two respects. The first is that only individuals involved in small business entities qualified to participate in the experiment. This is however also a positive aspect as tax compliance behaviour of small business entities, specifically, could be evaluated. SARS identified small business entities as being a risky sector in terms

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[57] Strictly these limitations relating to the scope of the study, initially identified in Chapter One of the thesis, might be identified as delimitations rather than limitations. They are mentioned here again for completeness.

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of tax compliance. The second is that only participants who are computer literate and have access to a computer, laptop or smart device and internet access were able to participate in this study. This automatically excludes a certain group from participating in the study. It is however assumed that this would be a lower income group if they do not have internet access and a device. This should therefore not be a risk as they would most probably not be liable to register as VAT vendors due to their income level falling below the compulsory registration threshold.

Geographically, the experiment was limited to only South Africa and therefore, the results cannot be extrapolated to other countries as such, as other country-specific factors could consequently affect the results. However, the sample of businesses that participated in the experiment are representative of the three major provinces where SMMEs are located.

The second set of limitations relate to the design and conduct of the experiment. The experiment (necessarily) adopted a simple design since complex market restructuring and other effects on prices after a change in the VAT rate were not taken into account. The study aimed to determine only the effect a change in the VAT rate would have on tax compliance and a more simple design was thus ideal as the distortion of exogenous factors on the results was minimised.

To try and incorporate the likely impact of audit probabilities and penalties, awareness was created at the start of the experiment by informing the participants that the normal audit probability that they could expect in real life should be assumed and that the penalty would be 10 per cent of the outstanding taxes. This could, however, not be implemented practically in the experiment, as it was not conducted in a controlled laboratory setting. Since the experiment was not conducted in a laboratory setting, internal validity decreased. However, (subject to the limitations of the demographic variables of the participants), external validity was enhanced.

A sufficient sample size was obtained for experimental purposes, however, the sample size was too small for the analysis to have a higher power of the tests used. Although statistical significance was tested, further analyses were performed, such as considering the effect

size and mean ranks, to determine if there were any further meaningful results, even though it is not seen as statistically significant.

Limitations regarding the instrument were identified by asking participants how well they felt they understood the experiment and if there was anything that they did not understand, what it was. The result is summarised in Figure 25. It is evident that the majority of the participants felt that they understood the experiment moderately well, very well or extremely well (99 per cent).

Figure 25: Understanding of the experiment
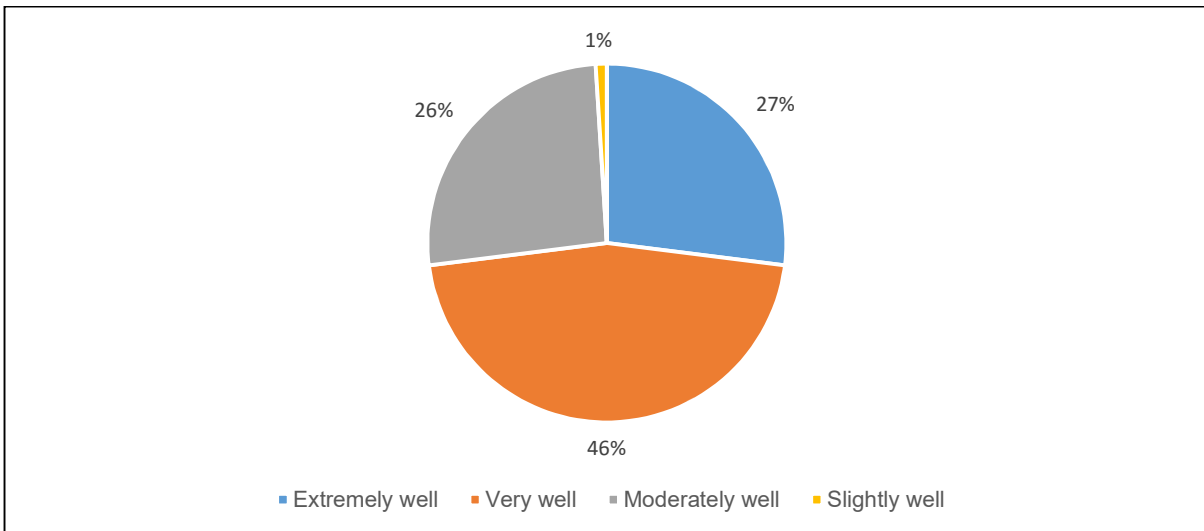
In order to assist the researcher in identifying themes of where the participants were unsure during the experiment, a frequency table was constructed from the open-ended questions. Some themes relate to uncertainties encountered, while other answers in the open-ended questions merely give an explanation or opinion. When looking at the items mentioned in the open-ended questions regarding what was unclear in the questionnaire, the following themes were identified:

- participants misread information/lacked knowledge;
- participants felt that they needed to explain why they answered the way they did/gave their own thoughts on the VAT system or the experiment;
- participants were unsure whether they should have included VAT in the amounts declared, or not; and
- participants were unsure of the purpose of the study.

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The first theme that emerged was that some participants missed/misread information and could not go back as the experiment would not allow them to. They, therefore, answered based on what they remembered. It is not seen as a risk to reliability as it is only a small percentage of people (9.2 per cent) that identified this issue. Flowing into the second theme identified, some participants stated what they simply assumed and in most cases, their assumptions were correct.

The third theme that emerged was that the participants were unsure whether they should have included VAT in the amounts declared or not. This was overcome by looking at the data during the 'cleaning the data' stage and removing VAT where it was evident that VAT was included.[58]

The final theme that emerged was that the participants were unsure as to the purpose of the study. The researcher's e-mail address was given to them at the start of the experiment and they could, therefore, contact the researcher if they wanted to know more about the study. The researcher intentionally did not give the reason for the study, as this could potentially have influenced the participants' answers. The researcher, however, did not include a debriefing paragraph after the online questionnaire was completed to inform the participants of the purpose of the experiment. Such a debriefing paragraph should be added in future by researchers.

None of the themes identified are deemed to negatively influence the reliability of the results obtained. Table 22 summarises the outcomes, showing that the most frequently identified theme was that participants misread the information but that the percentage was low.

Table 22:   Themes of uncertainty

Theme	Frequency (out of 131)	Percentage
Misread information	12	9.2
Gave explanation	8	6.1
Should VAT be included?	7	5.3
Purpose of experiment	7	5.3

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[58] Refer to Chapter Five, Section 5.2.2 for a detailed explanation of this process.

The last set of limitations relates to the generalisability of the results obtained. Although the sample was representative of gender, age, province, type of entity and income level, it was not representative in terms of ethnicity, qualifications and industry. This limitation should be kept in mind if any attempt were to be made to extrapolate the results to a broader population.

Although there were some limitations identified in the study, the results are seen as sufficiently robust for use in the analyses undertaken. The limitations identified do, however, lead to recommendations identified for future research.

6.5 FUTURE RESEARCH

Although no study is without its limitations, the limitations assist in identifying the potential areas to improve on for future research. This section will be discussed in two parts. The first part discusses recommendations for improving the actual conduct of the experiment, whereas the second part discusses future areas of research identified while conducting the current study.

6.5.1 Reflections on improving the instrument

By simply changing some wording of the experiment, future researchers may obtain more accurate or usable results. The researcher noticed that people did not necessarily understand the qualifying questions correctly, which meant that as soon as a participant answered 'No', they could not complete the rest of the experiment and the response was lost. The question asked whether people are involved in the financial decisions of a business entity. The idea of this question is to ensure that it is not the receptionist or the cleaning staff member who answers this question but someone who can influence the financial decisions, such as regarding VAT reporting. Participants, however, did not always think they are involved in the management decisions of a business if they are sole traders. The other possible wording problem identified was that the researcher wanted the participants to report amounts exclusive of VAT. It was, however, clear that many participants declared amounts inclusive of VAT, or indicated in the open-ended question that they were unsure which amount they should declare. This should be made clearer in future experiments.

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Participants were asked about their registration decisions, including whether they would register as VAT vendors when their sales are below the compulsory threshold. This question did not, however, provide meaningful results. The instrument could be improved by removing this question and rather asking about the registration decisions when sales are further above the threshold, such as sales of R2 million or more and comparing this answer to the answer when sales are R1.1 million. This should indicate whether the compliance of entities falling just above the threshold differs from that of entities that are higher above the threshold. Another question that should be reworded, is regarding the likelihood of (de)registration. The questions regarding the likelihood of registration as a VAT vendor for a decrease in the VAT rate and deregistration for an increase in the VAT rate should have been asked in the same direction (e.g. register) for the two groups in order to allow comparison and better analysis.

The post-experimental questions provided meaningful results on the factors influencing the decisions of the participants. One post-experimental question that could be removed as it did not provide meaningful results, is the one asking where the participant was when completing the questionnaire.

Another lesson learnt is that a debriefing letter should be provided to the participants at the end of the experiment to explain to them why the questions were asked and what the study was about, as this information was purposefully not contained in the introduction letter. Some participants, however, indicated in the open-ended questions that they were unsure why the questions were asked as they were.

6.5.2 <u>Areas for future research</u>

Several issues were identified in the current study which deserve further research. Very little empirical evidence is available on the effect of changes in the VAT rate on tax compliance. The findings from the current research are, to the researcher's knowledge, the first to determine the effect of changes in the VAT rate on tax compliance behaviour in Africa. Therefore, there is ample opportunity to determine the effect of changes in the VAT rate on tax compliance behaviour in all of the other African countries and even the rest of the world, which will be particularly relevant as a result of the impact of Covid-19 on stretched fiscal revenues. Governments need to secure more tax revenue to be able to provide the

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necessary public goods and services and may want to increase the VAT rate. Yet, the public needs relief from taxes to be able to cope with the economic effect of this pandemic, thus substantiating the idea of a decrease in the VAT rate such as has been recently implemented in several countries.[59] The effect on tax compliance behaviour of these changes is, however, largely unknown and critical empirical evidence can be gathered by conducting similar experiments in the relevant country before the change in the VAT rate comes into effect. Further research could also be conducted in observing the trend of people moving to the informal sector, resulting in the loss of tax revenue.

The current research was conducted through a field experiment. Future research could, however, conduct the experiment in a laboratory instead, where participants are paid based on their participation and answers in the experiment. As such, penalties and audit probabilities could be included more effectively in the design of the experiment, making it more reflective of everyday life.

An experiment is one method that was used to obtain quantitative data regarding the effect of changes in the VAT rate on tax compliance behaviour. However, other methods, even qualitative methods, could be used to further explore this relatively unexplored territory. Qualitative methods could be applied to gain a better understanding of the perceptions and feelings of people towards changes in the VAT rate. Research could be conducted in the form of an economic analysis where the supply and demand for products following a change in the VAT rate is taken into account. This would reflect what happens in real-life more efficiently.

The main focus of the study was on small businesses. Larger businesses could also be the targeted sample to determine if they are as compliant as they are expected to be. If the sample is, however, kept to small business entities, techniques should be implemented to also reach and include those participants who are not computer literate and do not have access to computers and/or the internet. This could also assist in obtaining larger sample sizes to ensure higher power of test results. Furthermore, industries which are more cash-

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[59] Kenya, Greece, Belgium, Germany, Austria, Czech Republic, Bulgaria, Cyprus, Portugal and Moldova (Asquith, 2020b).

based should be focussed on as it is expected that non-compliance would be higher in those industries.

Given the relatively recent change in the VAT rate in South Africa, regression analyses could be performed on the data for the last few years to determine whether VAT vendors who are registered as such, declared more or less VAT payable. Regression analyses could also be undertaken to determine whether the number of registered VAT vendors has increased or decreased over recent years and to determine whether a notable change is evident after the change in the VAT rate came into effect.

The focus of the study was on VAT, yet, income tax behaviour also remains relatively under-explored in African countries. Therefore, future research on tax compliance behaviour relating to income tax could be conducted as the African setting is different from that of the countries studied in other research. The effect of factors on tax compliance might well differ from the results of research conducted in other countries.

6.6 FINAL REMARKS

From the research, it is evident that tax compliance remains problematic for taxpayers and tax administrators, especially in developing countries and that many factors influence tax compliance behaviour. The better the administrators understand which factors influence taxpayers' compliance decisions, the more appropriate solutions can be implemented to curb tax evasion. Researchers can assist in this regard; as was evident from the current research, for instance, taxpayers are more inclined to evade tax by manipulating their purchases rather than the sales amount declared. Administrators could, therefore, steer their auditing efforts more effectively in that direction. The study makes a significant contribution to the body of knowledge regarding tax compliance by focussing on VAT and by using the experimental research method to gather the empirical evidence in an African country.

As Winston Churchill said, "We contend that for a nation to try to tax itself into prosperity is like a man standing in a bucket and trying to lift himself up by the handle" (LibertyTree, 2018). Although an increase in the VAT rate may be beneficial for tax revenue collection, too high an increase may well have a detrimental effect.

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APPENDIX 1

Experiment as set up in Excel

Introduction letter

Thank you for your participation.

Anculien Schoeman is a senior lecturer at the University of Pretoria, currently undertaking her PhD in Taxation.

As part of her research, she needs your assistance in obtaining your views about aspects of the South African VAT system. She has no affiliation with the

South African Revenue Service.

Participation in this online questionnaire is completely voluntary, and also completely anonymous. You cannot be identified so please answer the questions as honestly as possible.

You may withdraw from the questionnaire at any time should you wish to do so by simply closing the survey window on your device. The questionnaire should take you around 20

minutes to complete.

If you need to contact her supervisor, please contact Dr Hanneke du Preez at hanneke.dupreez@up.ac.za or 012 420 4638.

Should you wish to obtain the final results of the study after completion of the thesis, kindly send an e-mail with your request to anculien.schoeman@up.ac.za.

Please note that once you complete the questions on one screen and click on the arrow for the next screen, you will not be able to return to that screen to alter your answers.

Are you willing to participate?

       Yes

       No

[If no, go to end of survey]

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After 213 responses: (The wording was changed slightly to be clearer)

New: Are you involved in the financial decisions of a business entity (including a sole proprietor, practice, partnership or any other form ofbusiness)?

Old: 1 Are you involved in the management of the finances of a business or a practice (a practice hereafter is also referred to as a business)?

      Yes
      No

[If no, go to end of survey]

2 Was the gross income (sales) of the business for the last 12 month period more than R50 000, but less than R20 million?

      Yes
      No
[If no, go to end of survey]

The study starts off with some questions about yourself and the business. This will be followed by three scenarios where you are asked to respond to specific questions about two imaginary businesses being conducted by two made up characters: Joe and Sam. The study is then concluded with some questions regarding your thought process when answering the questions about Joe and Sam.

Profile questions

For completeness of the study, please provide the following information about yourself and the business:

1 What is your gender?

Male

Female

2 To which ethnic group do you belong?

African

White

Coloured

Indian

Other: Please specify

3 What is your age?

Younger than 20

20 to 35

36 to 50

51 to 65

Older than 65

4 What is the highest level of education that you have obtained (completed)?

Lower than matric

Grade 12/Matric

Diploma / Certificate (Post Grade 12/Matric) Bachelor's degree

Master's degree Doctorate

5 How would you describe your level of VAT knowledge?

I have no idea how to calculate VAT payable

I have a vague idea how to calculate VAT payable

I have a reasonable idea how to calculate VAT payable

I have a very good understanding how to calculate VAT payable

I know exactly how to calculate VAT payable

6 In which province in South Africa does the business operate?

Gauteng

Western Cape

Eastern Cape

Northern Cape

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North-West Limpopo

Free State

Mpumalanga KwaZulu-Natal

[able to select more than one option]

7 How is the business structured? As a_____.

Sole proprietorship

Partnership

Close Corporation

Private Company

Public Company

Non-profit Organisation

Associate

Other: Please specify

8 What was the gross income (sales excluding VAT) of the business during the last 12 month period?

Less than R50 000

R50 000 to R1 million

Between R1 million and R5 million

Between R5 million and R20 million

More than R20 million

9 In which industry is the business?

Agriculture

Automotive

Engineering & Construction

Entertainment & Media

Financial services

Healthcare

Higher Education

Hospitality & Leisure

Industrial manufacturing

Legal services

Metals & mining

Real Estate

Retail & Consumer

Telecommunications

Transport & Logistics

Other: Please specify

10 Is the business registered for VAT in South Africa?

Yes

No

11 Who completes the VAT returns?

Myself

Someone who I pay (eg a tax practitioner or accountant)

Someone who does it free of charge (eg a friend or family member)

I do not submit VAT returns

12 What is the current standard VAT rate in South Africa?

[Block to type it in]

Hypotheses addressed:	• H1$_{A1}$: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns, • H1$_{A2}$: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns, • H1$_{B1}$: The larger the increase (decrease) in the VAT rate, the fewer (higher) will be the sales that small business entities registered as VAT vendors will declare, and • H1$_{B2}$: The larger the increase (decrease) in the VAT rate, the higher (fewer) will be the purchases amount that small business entities registered as VAT vendors will declare.

Scenario 1

Following is a short scenario about a business owner called Joe. Please read the scenario carefully and then answer the questions that follow

Joe is a sole proprietor and supplies the same products or services as you do. Assume the following information for this scenario:
- None of the supplies or purchases made are exempt from VAT nor is a VAT rate of 0% applicable.
- All transactions are **cash** only.
- Joe is a registered VAT vendor.
- The VAT rate is **15%**.
- Joe faces the same likelihood of being audited as currently exists for all such businesses in South Africa.
- If an audit is conducted and it is found that Joe declared an incorrect amount of VAT, the penalty will be 10% of the outstanding

taxes 1 During the current 12 month period, Joe made sales worth R2 million (excluding VAT), in cash.

What is the total amount of **sales** that you think Joe would be likely to report for VAT purposes?
Assume that SARS will automatically calculate the VAT applicable from the amount that you report here [Text entry]

2 Joe also made the following purchases in cash in this 12 month period:

- R500 000 for business purposes, for which he has valid tax invoices
- R250 000 for business purposes, for which he does not have valid tax invoices
- R100 000 for personal expenses

What is the total amount of **purchases** that you think Joe would be likely to report for VAT purposes?

Assume that SARS will automatically calculate the VAT applicable from the amount that you report here [Text entry]

Hypotheses addressed:	• H1$_{A1}$: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring fewer (more) sales on their VAT returns,
	• H1$_{A2}$: An increase (decrease) in the VAT rate will result in small business entities registered as VAT vendors declaring more (fewer) purchases on their VAT returns,
	• H1$_{B1}$: The larger the increase (decrease) in the VAT rate, the fewer (higher) will be the sales that small business entities registered as VAT vendors will declare, and
	• H1$_{B2}$: The larger the increase (decrease) in the VAT rate, the higher (fewer) will be the purchases amount that small business entities registered as VAT vendors will declare.

Scenario 2

Here is a second scenario for Joe. Some of the facts may have changed from Scenario 1 to Scenario 2, so please review the information carefully before responding to the questions.

Joe is a sole proprietor and supplies the same products or services as you do. Assume the following information for this scenario:
- None of the supplies or purchases made are exempt from VAT nor is a VAT rate of 0% applicable.
- All transactions are cash only.
- Joe is a registered VAT vendor.
- The VAT rate is [**10%/14%/16%/20%**].   [Each group is exposed to one treatment only]
- Joe faces the same likelihood of being audited as currently exists for all such businesses in South Africa.
- If an audit is conducted and it is found that Joe declared an incorrect amount of VAT, the penalty will be 10% of the outstanding taxes

1 During the current 12 month period, Joe made sales worth R2 million (excluding VAT), in cash. What is the total amount of **sales** that you think Joe would be likely to report for VAT purposes?
Assume that SARS will automatically calculate the VAT applicable from the amount that you report here [Text entry]

2 Joe also made the following purchases in cash in this 12 month period:
- R500 000 for business purposes, for which he has valid tax invoices
- R250 000 for business purposes, for which he does not have valid tax invoices
- R100 000 for personal expenses

What is the total amount of **purchases** that you think Joe would be likely to report for VAT purposes?

Assume that SARS will automatically calculate the VAT applicable from the amount that you report here [Text entry]

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1   Would you say that the VAT rate increased, decreased, or remained the same from scenario 1 to scenario 2?

The VAT rate increased by 1 percentage point

The VAT rate increased by 5 percentage points

The VAT rate decreased by 1 percentage point

The VAT rate decreased by 5 percentage points

The VAT rate remained at the same rate.

I do not know

2   Before you continue with the questionnaire, please select option five below:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

for VAT. [only participants in the 1% or 5% increase treatment groups (thus 16% or 20%) will get these questions]

Scenario 3

Following is a short scenario about another business owner, this time called Sam. Please read the scenario carefully and then answer the questions that follow.

A person is required to register as a VAT vendor in South Africa when his/her taxable supplies (sales of products or services on which VAT can be levied) exceeds R1 million in a 12 month period.

Ignore any information obtained from the previous questions.

Sam trades with the same products or services as you do.
Assume the following information:
- None of the supplies or purchases made are exempt from VAT nor is a VAT rate of 0% applicable.
- All transactions are cash only.
- Sam is a registered VAT vendor.
- The VAT rate is **15%**.
- Sam faces the same likelihood of being audited as currently exists for all such businesses in South Africa.
- If an audit is conducted and it is found that Sam declared an incorrect amount of VAT, the penalty will be 10% of the outstanding taxes.

1 Sam made sales of **R1.1 million** in a 12 month period and did not make any purchases on which he can claim back any input tax. The VAT rate now increases to [16%/20%]. What do you think is the likelihood that Sam will deregister as a VAT vendor?
[each treatment group will only be exposed to one of the 2 treatments]

      Extremely unlikely   Somewhat unlikely   Neither likely nor unlikely   Somewhat likely   Extremely likely

2 Sam made sales of **R900 000** in a 12 month period and did not make any purchases on which he can claim back any input tax. The VAT rate now increases to [16%/20%]. What do you think is the likelihood that Sam will deregister as a VAT vendor?
[each treatment group will only be exposed to one of the 2 treatments]

      Extremely unlikely   Somewhat unlikely   Neither likely nor unlikely   Somewhat likely   Extremely likely

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Scenario 3

Following is a short scenario about another business owner, this time called Sam. Please read the scenario carefully and then answer the questions that follow.

A person is required to register as a VAT vendor in South Africa when his/her taxable supplies (sales of products or services on which VAT can be levied) exceeds R1 million in a 12 month period.

Ignore any information obtained from the previous questions.

Sam trades with the same products or services as you do. Assume the following information:
- None of the supplies or purchases made are exempt from VAT nor is a VAT rate of 0% applicable.
- All transactions are cash only.
- Sam is **NOT** registered as a VAT vendor.
- The VAT rate is **15%**.
- Sam faces the same likelihood of being audited as currently exists for all such businesses in South Africa.
- If an audit is conducted and it is found that Sam declared an incorrect amount of VAT, the penalty will be 10% of the outstanding taxes.

1 Sam made sales of **R1.1 million** in a 12 month period and did not make any purchases on which he can claim back any input tax. The VAT rate now decreases to [10%/14%]. What do you think is the likelihood that Sam will register as a VAT vendor?
[each treatment group will only be exposed to one of the 2 treatments]

Extremely unlikely   Somewhat unlikely   Neither likely nor unlikely   Somewhat likely   Extremely likely

2 Sam made sales of **R900 000** in a 12 month period and did not make any purchases on which he can claim back any input tax. The VAT rate now decreases to [10%/14%]. What do you think is the likelihood that Sam will register as a VAT vendor?
[each treatment group will only be exposed to one of the 2 treatments]

Extremely unlikely   Somewhat unlikely   Neither likely nor unlikely   Somewhat likely   Extremely likely

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VAT compliance

A person is required to register as a VAT vendor in South Africa when his/her taxable supplies (sales of products or services on which VAT can be levied) exceeds R1 million in a 12 month period.

1 Indicate to what extent you agree or disagree with the following information:

You made taxable supplies of more than R1 million in a 12 month period. You would register as a VAT vendor.

    Strongly disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Strongly agree

2 What factors would influence whether you would register as a VAT vendor or not?

[type answer here]

3 On a scale of -3 to 3, how big is the tendency in your industry to comply with VAT legislation? (-3: tendency is greatest not comply; 3: the tendency is to comply 100%)

    -3   -2   -1   0   1   2   3   Don't know

Post-experiment questions

Finally, I would like to understand some of your thought processes as you answered some of the questions

1 Where were you when you completed the online questionnaire?
        Home Office
        Cafe or any other public place
        Elsewhere: please specify

2 How well did you feel you understood what was required of you in the questionnaire?
        Extremely well
        Very well
        Moderately well
        Slightly well
        Not well at all

3 If there was anything you did not understand, what did you not understand?
[type here]

4 Please think about the approach you followed in deciding on the amounts (sales and purchases) Joe would report for VAT purposes when there is a[n] [increase/decrease] in the VAT rate (scenario 2).
How much do you agree or disagree with the following statements:
a   I assumed Joe would report the correct amounts because it is the right thing to do.
                [Strongly agree to strongly disagree, 5 points]
b   I assumed Joe would report the correct amounts because evasion is unfair to others.
                [Strongly agree to strongly disagree, 5 points]
c   I did not even think of not reporting the correct amounts for Joe.
                [Strongly agree to strongly disagree, 5 points]
d   I did not put a lot of thought into the amounts I reported for Joe, I just reported what he earned/spent
                [Strongly agree to strongly disagree, 5 points]
e   Not reporting all of Joe's sales would make me feel guilty.
                [Strongly agree to strongly disagree, 5 points]
f   I wanted to provide honest answers.
                [Strongly agree to strongly disagree, 5 points]
g   I assumed Joe would report the correct amounts because the possibility of getting caught is too great
                [Strongly agree to strongly disagree, 5 points]
h   I assumed that Joe would report the correct amounts because the possible penalties for cheating are high.
                [Strongly agree to strongly disagree, 5 points]
i   I did not think I can report incorrect amounts as the device on which I completed the questions would know how much I should have reported for Joe
                [Strongly agree to strongly disagree, 5 points]

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My answer for scenario 2 where Joe is exposed to a[n] **[increase/decrease]** in the VAT rate would have been different had the question asked me how much sales or purchases I would report in 5 real life instead of how much Joe would report.

        Very unlikely   Somewhat unlikely   Neither likely nor unlikely   Somewhat likely   Very likely

6 Please think about the approach you followed in deciding whether Sam would [deregister/register] as a VAT vendor when there is a[n] [increase/decrease] in the VAT rate scenario 3). How much do you agree or disagree with the following statements:

a   I assumed Sam would register as a VAT vendor if it was compulsory to do so because it is the right thing to do.
               [Strongly agree to strongly disagree, 5 points]

b   I assumed Sam would register as a VAT vendor if it was compulsory to do so because evasion is unfair to others.
               [Strongly agree to strongly disagree, 5 points]

c   I did not even think that Sam would not register as a VAT vendor if it was compulsory to do so.
               [Strongly agree to strongly disagree, 5 points]

d   I did not put a lot of thought into considering whether Sam would register as a VAT vendor as it was compulsory to do so.
               [Strongly agree to strongly disagree, 5 points]

e   If I reported that Sam is not a registered VAT vendor and it is compulsory for him to be registered, it would make me feel guilty
               [Strongly agree to strongly disagree, 5 points]

f   I wanted to provide honest answers.
               [Strongly agree to strongly disagree, 5 points]

g   I assumed Sam would register as a VAT vendor if it was compulsory to do so because the possibility of getting caught is too great
               [Strongly agree to strongly disagree, 5 points]

h   I assumed Sam would register as a VAT vendor if it was compulsory to do so because the possible penalties for cheating are high
               [Strongly agree to strongly disagree, 5 points]

i   I did not think I can choose that Sam would not be a registered VAT vendor if it was compulsory to do so as the device on which I completed the questions would know if he should be registered.
               [Strongly agree to strongly disagree, 5 points]

APPENDIX 2

This appendix contains details of amounts that were changed in the cleaning of the data and the reasoning behind it. The main reason for having to change amounts is because the participants did not understand the instructions well enough and therefore included VAT in the amounts declared, where they were supposed to have declared the amounts exclusive of VAT.

Sales

The researcher assumes that no one would declare a sales amount more than what they are obliged to, as this would not make practical sense. All amounts above R2 million declared for sales was thus limited to R2 million. Table 23 provides the detail of the amounts that were changed and the reason for the change.

Table 23:   Amounts changed in the data set – sales

Amount reported by participant (R)	Number of these observations	Amount changed to (R)	Reason for change	Extra comments
15% category				
2 300 000	38	2 000 000	VAT included @ 15%	
23 000 000	2	2 000 000	VAT included @ 15%, plus an extra 0 (typing error)	
2 280 000	1	2 000 000	VAT included @14% (previous VAT rate)	
2 240 000	1	2 000 000	Practically, people would not report more than R2 million for sales	
2 260 870	1	2 000 000		
2 286 667	1	2 000 000		Included VAT @14% in that category
2 800 000	1	2 000 000		
13 800 000	1	2 000 000		Included VAT @14% in that category
10% category				
2 200 000	9	2 000 000	VAT included @ 10%	
2 100 000	1	2 000 000	Practically, people would not report	

Amount reported by participant (R)	Number of these observations	Amount changed to (R)	Reason for change	Extra comments
			more than R2 million for sales	
14% category				
2 280 000	5	2 000 000	VAT included @ 14%	
16% category				
2 320 000	12	2 000 000	VAT included @ 16%	
3 200 000	1	2 000 000	Practically, people would not report more than R2 million for sales	
20% category				
2 400 000	14	2 000 000	VAT included @ 20%	

Purchases

The researcher did not change any further amounts, other than removing VAT from the amounts if it was evident that VAT at the correct rate for that category was included. Table 24 provides the detail of the amounts that were changed and the reason for the change.

Table 24: Amounts changed in the data set – purchases

Amount reported by participant (R)	Number of these observations	Amount changed to (R)	Reason for change
15% category			
575 000	5	500 000	VAT included @15%
862 500	1	750 000	VAT included @15%
977 500	1	850 000	VAT included @15%
10% category			
550 000	1	500 000	VAT included @10%
14% category			
No changes			
16% category			
580 000	1	500 000	VAT included @16%

Amount reported by participant (R)	Number of these observations	Amount changed to (R)	Reason for change
870 000	1	750 000	VAT included @16%
986 000	1	850 000	VAT included @16%
20% category			
600 000	3	500 000	VAT included @20%

APPENDIX 3

Participants from many industries participated in the study. Table 25 contains a summary of the various industries represented in the study. The majority of the participants trade in the financial services sector (43.5 per cent).

Table 25:   Summary of industries represented by the participants

Industry	% of participants
Agriculture	5.3
Engineering & construction	7.6
Financial services	43.5
Healthcare	4.6
Higher education	0.8
Industrial manufacturing	3.1
Legal services	2.3
Metals & mining	0.8
Other	13.7
Real estate	6.9
Retail & consumer	6.1
Telecommunications	1.5
Transport & logistics	2.3
Entertainment & media	0.8
Hospitality & leisure	0.8

The 'other' category represents 3 participants in consulting, and all the other industries mentioned in the 'other' category just had 1 participant each.

APPENDIX 4

SPSS outputs

Chapter 5, 5.2.4 Reliability

Cronbach's alpha

Reliability Statistics

Cronbach's Alpha	N of Items
.713	9

Reliability Statistics

Cronbach's Alpha	N of Items
.782	9

Difference between early and late responses

VAR00001		N	Mean	Std. Deviation
Q3.2_Sales (15%)	Early	69	1822476.37	424873.070
	Late	62	1931129.03	338676.812
Q3.3_Purchases (15%)	Early	69	536535.28	169929.457
	Late	62	528629.03	136394.346
Q4.2_Sales (10%)	Early	18	1944444.44	235702.260
	Late	15	1981212.12	51936.145
Q4.3_Purchases (10%)	Early	18	525000.00	84453.259
	Late	15	534848.48	92065.160
Q5.2_Sales (14%)	Early	15	1567707.60	668325.165
	Late	15	1880000.00	464758.002
Q5.3_Purchases (14%)	Early	15	551520.43	246028.291
	Late	15	516666.67	64549.722
Q6.2_Sales (16%)	Early	18	1944444.44	235702.260
	Late	16	2000000.00	0.000
Q6.3_Purchases (16%)	Early	18	588888.89	149071.198
	Late	16	558125.00	181630.348
Q7.2_Sales (20%)	Early	18	1651851.83	588003.454
	Late	16	1912500.00	262995.564
	Early	18	566666.67	123669.388

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Q7.3_Purchases (20%)	2 Late	16	596875.00	151072.554

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Q3.2_Sales (15%)	Equal variances assumed	9.257	0.003	-1.606	129	0.111
	Equal variances not assumed			-1.626	127.245	0.106
Q3.3_Purchases (15%)	Equal variances assumed	2.035	0.156	0.292	129	0.771
	Equal variances not assumed			0.295	127.437	0.769
Q4.2_Sales (10%)	Equal variances assumed	1.730	0.198	-0.591	31	0.559
	Equal variances not assumed			-0.643	18.960	0.528
Q4.3_Purchases (10%)	Equal variances assumed	0.432	0.516	-0.320	31	0.751
	Equal variances not assumed			-0.318	28.840	0.753
Q5.2_Sales (14%)	Equal variances assumed	7.364	0.011	-1.486	28	0.149
	Equal variances not assumed			-1.486	24.974	0.150
Q5.3_Purchases (14%)	Equal variances assumed	11.121	0.002	0.531	28	0.600
	Equal variances not assumed			0.531	15.918	0.603
Q6.2_Sales (16%)	Equal variances assumed	4.000	0.054	-0.941	32	0.354
	Equal variances not assumed			-1.000	17.000	0.331
Q6.3_Purchases (16%)	Equal variances assumed	0.015	0.904	0.542	32	0.591
	Equal variances not assumed			0.536	29.127	0.596
Q7.2_Sales (20%)	Equal variances assumed	9.855	0.004	-1.632	32	0.113
	Equal variances not assumed			-1.699	24.128	0.102
Q7.3_Purchases (20%)	Equal variances assumed	2.436	0.128	-0.641	32	0.526
	Equal variances not assumed			-0.633	29.086	0.532

Frequency tables for demographics:

Q2.3_Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	55	42.0	42.0	42.0
	Male	76	58.0	58.0	100.0
	Total	131	100.0	100.0	

Q2.4_Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	107	81.7	81.7	81.7
	Indian	10	7.6	7.6	89.3
	African	9	6.9	6.9	96.2
	Other	5	3.8	3.8	100.0
	Total	131	100.0	100.0	

Q2.5_Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 to 35	39	29.8	29.8	29.8
	36 to 50	49	37.4	37.4	67.2
	51 to 65	37	28.2	28.2	95.4
	>65	6	4.6	4.6	100.0
	Total	131	100.0	100.0	

Q2.6_Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grade 12/Matric and lower	8	6.1	6.1	6.1
	Diploma / Certificate (Post Grade 12/Matric)	31	23.7	23.7	29.8
	Bachelor's degree	58	44.3	44.3	74.0
	Master's degree and Doctorate	34	26.0	26.0	100.0
	Total	131	100.0	100.0	

Q2.8_Province

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Gauteng	75	57.3	57.3	57.3
	KwaZulu-Natal	13	9.9	9.9	67.2
	Western Cape	26	19.8	19.8	87.0
	Other	11	8.4	8.4	95.4
	National	6	4.6	4.6	100.0
	Total	131	100.0	100.0	

Q2.9 _Type of business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Close corporation	29	22.1	22.1	22.1
	Private company	66	50.4	50.4	72.5
	Sole proprietorship	25	19.1	19.1	91.6
	Other	11	8.4	8.4	100.0
	Total	131	100.0	100.0	

Q2.11_Industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	7	5.3	5.3	5.3
	Engineering & construction	10	7.6	7.6	13.0
	Financial services	57	43.5	43.5	56.5
	Other	40	30.5	30.5	87.0
	Real estate	9	6.9	6.9	93.9
	Retail & consumer	8	6.1	6.1	100.0
	Total	131	100.0	100.0	

Q2.10_Income level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	R50 000 to R1 million	46	35.1	35.1	35.1
	Between R1 million and R5 million	49	37.4	37.4	72.5
	Between R5 million and R20 million	36	27.5	27.5	100.0
	Total	131	100.0	100.0	

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Crosstabulation: income level and registration

Q2.10 (income level) * Q2.12 (VAT registration) Crosstabulation

			Q2.12			Total
			Yes	No	Blank	
Q2.10	R50 000 to R1 million	Count	15	31	0	46
		% within Q2.10	32.6%	67.4%	0.0%	100.0%
		% within Q2.12	15.8%	91.2%	0.0%	35.1%
	Between R1 million and R5 million	Count	45	3	1	49
		% within Q2.10	91.8%	6.1%	2.0%	100.0%
		% within Q2.12	47.4%	8.8%	50.0%	37.4%
	Between R5 million and R20 million	Count	35	0	1	36
		% within Q2.10	97.2%	0.0%	2.8%	100.0%
		% within Q2.12	36.8%	0.0%	50.0%	27.5%
Total		Count	95	34	2	131
		% within Q2.10	72.5%	26.0%	1.5%	100.0%
		% within Q2.12	100.0%	100.0%	100.0%	100.0%

Q2.7_VAT_Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have a vague idea how to calculate VAT payable	8	6.1	6.1	6.1
	I have a reasonable idea how to calculate VAT payable	14	10.7	10.7	16.8
	I have a very good understanding how to calculate VAT payable	42	32.1	32.1	48.9
	I know exactly how to calculate VAT payable	67	51.1	51.1	100.0
	Total	131	100.0	100.0	

Q2.13 _Return_submission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I do not submit VAT returns	32	24.4	24.4	24.4
	Myself	60	45.8	45.8	70.2
	Someone else	39	29.8	29.8	100.0
	Total	131	100.0	100.0	

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Q2.14_VAT_rate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Blank	9	6.9	6.9	6.9
	15%	121	92.4	92.4	99.2
	14%	1	.8	.8	100.0
	Total	131	100.0	100.0	

Chapter 5, 5.4 Amounts declared

Frequency tables – Sales and purchases declared
Key:
3.2 = 15% category - Sales
3.3 = 15% category - Purchases

4.2 = 10% treatment - Sales
4.3 = 10% treatment - Purchases

5.2 = 14% treatment - Sales
5.3 = 14% treatment - Purchases

6.2 = 16% treatment - Sales
6.3 = 16% treatment - Purchases

7.2 = 20% treatment - Sales
7.3 = 20% treatment - Purchases

Q3.2_Sales (15%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30000	1	.8	.8	.8
	200000	1	.8	.8	1.5
	260870	1	.8	.8	2.3
	300000	1	.8	.8	3.1
	750000	1	.8	.8	3.8
	990000	1	.8	.8	4.6
	1000000	5	3.8	3.8	8.4
	1200000	1	.8	.8	9.2
	1500000	1	.8	.8	9.9
	1600000	1	.8	.8	10.7
	1750000	1	.8	.8	11.5
	1900000	1	.8	.8	12.2
	2000000	115	87.8	87.8	100.0
	Total	131	100.0	100.0	

Q3.3_Purchases (15%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	500	1	.8	.8	.8
	50000	1	.8	.8	1.5
	65217	1	.8	.8	2.3
	65217	1	.8	.8	3.1
	75000	1	.8	.8	3.8
	90000	1	.8	.8	4.6
	500000	100	76.3	76.3	80.9
	600000	2	1.5	1.5	82.4
	700000	1	.8	.8	83.2
	750000	11	8.4	8.4	91.6
	800000	1	.8	.8	92.4
	850000	10	7.6	7.6	100.0
	Total	131	100.0	100.0	

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Frequency table statistics – Amounts declared

		Q3.2_Sales	Q3.3_Purchases	Q4.2_Sales	Q4.3_Purchases	Q5.2_Sales	Q5.3_Purchases
N	Valid	131	131	33	33	30	30
	Missing	0	0	98	98	101	101
Mean		1873899.77	532793.39	1961157.02	529476.58	1723853.80	534093.55
Median		2000000	500000	2000000.00	500000.00	2000000.00	500000.00
Std. Deviation		388859.362	154432.439	176180.680	86730.093	587474.678	177614.762
Skewness		-3.275	-0.42	-5.410	2.940	-1.900	-0.574
Std. Error of Skewness		0.212	0.212	0.409	0.409	0.427	0.427
Kurtosis		10.212	3.222	30.113	7.669	2.180	2.472
Std. Error of Kurtosis		0.42	0.42	0.798	0.798	0.833	0.833
Minimum		30000	500	1000000	500000	200000	61403
Maximum		2000000	850000	2000000	850000	2000000	850000

		Q6.2_Sales	Q6.3_Purchases	Q7.2_Sales	Q7.3_Purchases
N	Valid	34	34	34	34
	Missing	97	97	97	97
Mean		1970588.24	574411.76	1774509.79	580882.35
Median		2000000.00	500000.00	2000000.00	500000.00
Std. Deviation		171498.585	163358.523	476435.228	135967.190
Skewness		-5.831	-0.060	-2.222	1.276
Std. Error of Skewness		0.403	0.403	0.403	0.403
Kurtosis		34.000	1.345	4.373	-0.131
Std. Error of Kurtosis		0.788	0.788	0.788	0.788
Minimum		1000000	80000	133333	500000
Maximum		2000000	850000	2000000	850000

Wilcoxon Signed Rank Test

Test Statistics[a] (divide by 2 for 1-tailed result)

	Q4.2_Sales - Q3.2_Sales	Q5.2_Sales - Q3.2_Sales	Q6.2_Sales - Q3.2_Sales	Q7.2_Sales - Q3.2_Sales
Z	-1.000[b]	-1.342[b]	.000[c]	-1.262[b]
Asymp. Sig. (2-tailed)	0.317	0.180	1.000	0.207

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. The sum of negative ranks equals the sum of positive ranks.

d. Based on negative ranks.

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Test Statistics[a] (divide by 2 for 1-tailed result)

	Q4.3_Purchases - Q3.3_Purchases	Q5.3_Purchases - Q3.3_Purchases	Q6.3_Purchases - Q3.3_Purchases	Q7.3_Purchases - Q3.3_Purchases
Z	-.535[b]	-1.214[d]	-1.841[d]	-1.590[d]
Asymp. Sig. (2-tailed)	0.593	0.225	0.066	0.112

Mann-Whitney test for differences in amounts declared: Ranks and test statistics

Ranks

	Group	N	Mean Rank	Sum of Ranks
Diff_Decr_sales	1 – 10%	33	31.48	1039.00
	2 – 14%	30	32.57	977.00
	Total	63		

Test Statistics[a]

	Diff_Decr_sales
Mann-Whitney U	478.000
Wilcoxon W	1039.000
Z	-.634
Asymp. Sig. (2-tailed)	.526

a. Grouping Variable: Group

Ranks

	Group	N	Mean Rank	Sum of Ranks
Diff_Decr_purch	1 – 10%	33	32.97	1088.00
	2 – 14%	30	30.93	928.00
	Total	63		

Test Statistics[a]

	Diff_Decr_purch
Mann-Whitney U	463.000
Wilcoxon W	928.000
Z	-.761
Asymp. Sig. (2-tailed)	.447

a. Grouping Variable: Group

Ranks

	Group	N	Mean Rank	Sum of Ranks
Diff_Inc_sales	3 – 16%	34	32.50	1105.00
	4 – 20%	34	36.50	1241.00
	Total	68		

Test Statistics[a]

	Diff_Inc_sales
Mann-Whitney U	510.000
Wilcoxon W	1105.000
Z	-1.491
Asymp. Sig. (2-tailed)	.136

a. Grouping Variable: Group

Ranks

	Group	N	Mean Rank	Sum of Ranks
Diff_Inc_purch	3 – 16%	34	33.81	1149.50
	4 – 20%	34	35.19	1196.50
	Total	68		

Test Statistics[a]

	Diff_Inc_purch
Mann-Whitney U	554.500
Wilcoxon W	1149.500
Z	-.468
Asymp. Sig. (2-tailed)	.640

a. Grouping Variable: Group

Mean differences for increase and decrease groups, for sales and purchases

Report

Group		Diff_Inc_sales	Diff_Inc_purch	Diff_Decr_sales	Diff_Decr_purch
1 – 10%	Mean			5509.64	5371.90
	Minimum			0	-250000
	Maximum			181818	350000
2 – 14%	Mean			1175.18	-34729.07
	Minimum			0	-499500
	Maximum			20000	3814
3 – 16%	Mean	.00	-25147.06		
	Minimum	0	-350000		
	Maximum	0	0		
4 – 20%	Mean	44019.62	-37058.82		
	Minimum	-1970000	-510000		
	Maximum	1000000	200000		
Total	Mean	22009.81	-31102.94	3445.61	-13723.80
	Minimum	-1970000	-510000	0	-499500
	Maximum	1000000	200000	181818	350000

Chapter 5, 5.5 Registration

Frequency tables for registration likelihood reported

Q4.7 (registration likelihood R1.1 million – 10%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	4	3.1	12.1	12.1
	Somewhat likely	7	5.3	21.2	33.3
	Neutral	7	5.3	21.2	54.5
	Somewhat likely	3	2.3	9.1	63.6
	Extremely likely	12	9.2	36.4	100.0
	Total	33	25.2	100.0	
Missing	System	98	74.8		
Total		131	100.0		

255

Q5.7 (registration likelihood R1.1 million – 14%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	5	3.8	17.2	17.2
	Somewhat likely	10	7.6	34.5	51.7
	Neutral	2	1.5	6.9	58.6
	Somewhat likely	5	3.8	17.2	75.9
	Extremely likely	7	5.3	24.1	100.0
	Total	29	22.1	100.0	
Missing	System	102	77.9		
Total		131	100.0		

Q6.7 (registration likelihood R1.1 million – 16%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	20	15.3	58.8	58.8
	Somewhat likely	5	3.8	14.7	73.5
	Neutral	4	3.1	11.8	85.3
	Somewhat likely	2	1.5	5.9	91.2
	Extremely likely	3	2.3	8.8	100.0
	Total	34	26.0	100.0	
Missing	System	97	74.0		
Total		131	100.0		

Q7.7 (registration likelihood R1.1 million – 20%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	15	11.5	48.4	48.4
	Somewhat likely	5	3.8	16.1	64.5
	Neutral	1	.8	3.2	67.7
	Somewhat likely	2	1.5	6.5	74.2
	Extremely likely	8	6.1	25.8	100.0
	Total	31	23.7	100.0	
Missing	System	100	76.3		
Total		131	100.0		

Q4.8 (registration likelihood R900 000 – 10%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	22	16.8	66.7	66.7
	Somewhat likely	2	1.5	6.1	72.7
	Neutral	3	2.3	9.1	81.8
	Somewhat likely	5	3.8	15.2	97.0
	Extremely likely	1	.8	3.0	100.0

256

		Frequency	Percent	Valid Percent	Cumulative Percent
	Total	33	25.2	100.0	
Missing	System	98	74.8		
Total		131	100.0		

Q5.8 (registration likelihood R900 000 – 14%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	23	17.6	79.3	79.3
	Somewhat likely	4	3.1	13.8	93.1
	Neutral	2	1.5	6.9	100.0
	Total	29	22.1	100.0	
Missing	System	102	77.9		
Total		131	100.0		

Q6.8 (registration likelihood R900 000 – 16%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	5	3.8	14.7	14.7
	Neutral	5	3.8	14.7	29.4
	Somewhat likely	10	7.6	29.4	58.8
	Extremely likely	14	10.7	41.2	100.0
	Total	34	26.0	100.0	
Missing	System	97	74.0		
Total		131	100.0		

Q7.8 (registration likelihood R900 000 – 20%)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Extremely unlikely	3	2.3	9.4	9.4
	Somewhat likely	3	2.3	9.4	18.8
	Neutral	1	.8	3.1	21.9
	Somewhat likely	5	3.8	15.6	37.5
	Extremely likely	20	15.3	62.5	100.0
	Total	32	24.4	100.0	
Missing	System	99	75.6		
Total		131	100.0		

257

Mann-Whitney test results for VAT registration decisions

Ranks

	Decr_Groups	N	Mean Rank	Sum of Ranks
Q.7 (R1.1m registration)	1 – 10%	33	33.86	1117.50
	2 – 14%	29	28.81	835.50
	Total	62		
Q.8 (R900' registration)	1 – 10%	33	34.00	1122.00
	2 – 14%	29	28.66	831.00
	Total	62		

Test Statistics[a]

	Q.7 (R1.1m registration)	Q.8 (R900' registration)
Mann-Whitney U	400.500	396.000
Wilcoxon W	835.500	831.000
Z	-1.133	-1.483
Asymp. Sig. (2-tailed)	.257	.138

a. Grouping Variable: Decr_Groups

Ranks

	Incr_Groups	N	Mean Rank	Sum of Ranks
Q.7 (R1.1m registration)	3 – 16%	34	30.57	1039.50
	4 – 20%	31	35.66	1105.50
	Total	65		
Q.8 (R900' registration)	3 – 16%	34	30.53	1038.00
	4 – 20%	32	36.66	1173.00
	Total	66		

Test Statistics[a]

	Q.7 (R1.1m registration)	Q.8 (R900' registration)
Mann-Whitney U	444.500	443.000
Wilcoxon W	1039.500	1038.000
Z	-1.186	-1.406
Asymp. Sig. (2-tailed)	.236	.160

a. Grouping Variable: Incr_Groups

Key for demographic factor * difference in amounts:

0 = the participant remained compliant/non-compliant

1 = the participant was compliant in the 15% category but then became non-compliant in the treatment group

-1 = the participant was not compliant in the 15% category, but then became compliant in the treatment group

Q3.2_Sales_Comply * Q2.3_Gender

Crosstab

| | | | Q2.3_Gender | | |
			Female	Male	Total
Q3.2_Sales_Comply	0	Count	6	10	16
		% within Q3.2_Sales_Comply	37.5%	62.5%	100.0%
		% within Q2.3_Gender	10.9%	13.2%	12.2%
	1	Count	49	66	115
		% within Q3.2_Sales_Comply	42.6%	57.4%	100.0%
		% within Q2.3_Gender	89.1%	86.8%	87.8%
Total		Count	55	76	131
		% within Q3.2_Sales_Comply	42.0%	58.0%	100.0%
		% within Q2.3_Gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.150[a]	1	.698	.791	.458	
Continuity Correction[b]	.014	1	.906			
Likelihood Ratio	.152	1	.697	.791	.458	
Fisher's Exact Test				.791	.458	
Linear-by-Linear Association	.149[c]	1	.699	.791	.458	.200
N of Valid Cases	131					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.72.

b. Computed only for a 2x2 table

c. The standardized statistic is -.386.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	-.034	.698	.791
	Cramer's V	.034	.698	.791
N of Valid Cases		131		

Q3.3_Purch_Comply * Q2.3_Gender

Crosstab

			Q2.3_Gender		Total
			Female	Male	
Q3.3_Purch_Comply	0	Count	6	19	25
		% within Q3.3_Purch_Comply	24.0%	76.0%	100.0%
		% within Q2.3_Gender	10.9%	25.0%	19.1%
	1	Count	49	57	106
		% within Q3.3_Purch_Comply	46.2%	53.8%	100.0%
		% within Q2.3_Gender	89.1%	75.0%	80.9%
Total		Count	55	76	131
		% within Q3.3_Purch_Comply	42.0%	58.0%	100.0%
		% within Q2.3_Gender	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.103[a]	1	.043	.070	.034	
Continuity Correction[b]	3.241	1	.072			
Likelihood Ratio	4.327	1	.038	.046	.034	
Fisher's Exact Test				.046	.034	
Linear-by-Linear Association	4.071[c]	1	.044	.070	.034	.023
N of Valid Cases	131					

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.50.

b. Computed only for a 2x2 table

c. The standardized statistic is -2.018.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	-.177	.043	.070
	Cramer's V	.177	.043	.070
N of Valid Cases		131		

Q2.3_Gender * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			Total
			-1	0	1	
Q2.3_Gender	Female	Count	0	23	1	24
		% within Q2.3_Gender	0.0%	95.8%	4.2%	100.0%
		% within Inc_Sales_diff_coding	0.0%	35.4%	50.0%	35.3%
	Male	Count	1	42	1	44
		% within Q2.3_Gender	2.3%	95.5%	2.3%	100.0%
		% within Inc_Sales_diff_coding	100.0%	64.6%	50.0%	64.7%
Total		Count	1	65	2	68
		% within Q2.3_Gender	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.735[a]	2	.692	1.000		
Likelihood Ratio	1.052	2	.591	1.000		
Fisher's Exact Test	1.024			1.000		
Linear-by-Linear Association	.605[b]	1	.437	.574	.423	.342
N of Valid Cases	68					

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .35.

b. The standardized statistic is -.778.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.104	.692	1.000
	Cramer's V	.104	.692	1.000
N of Valid Cases		68		

261

Q2.3_Gender * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		Total
			0	1	
Q2.3_Gender	Female	Count	30	1	31
		% within Q2.3_Gender	96.8%	3.2%	100.0%
		% within Decr_Sales_diff_coding	48.4%	100.0%	49.2%
	Male	Count	32	0	32
		% within Q2.3_Gender	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	51.6%	0.0%	50.8%
Total		Count	62	1	63
		% within Q2.3_Gender	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.049[a]	1	.306	.492	.492	
Continuity Correction[b]	.000	1	.987			
Likelihood Ratio	1.435	1	.231	.492	.492	
Fisher's Exact Test				.492	.492	
Linear-by-Linear Association	1.032[c]	1	.310	.492	.492	.492
N of Valid Cases	63					

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .49.

b. Computed only for a 2x2 table

c. The standardized statistic is -1.016.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	-.129	.306	.492
	Cramer's V	.129	.306	.492
N of Valid Cases		63		

262

Q2.3_Gender * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			
			-1	0	1	Total
Q2.3_Gender	Female	Count	1	20	3	24
		% within Q2.3_Gender	4.2%	83.3%	12.5%	100.0%
		% within Inc_Purch_diff_coding	100.0%	32.8%	50.0%	35.3%
	Male	Count	0	41	3	44
		% within Q2.3_Gender	0.0%	93.2%	6.8%	100.0%
		% within Inc_Purch_diff_coding	0.0%	67.2%	50.0%	64.7%
Total		Count	1	61	6	68
		% within Q2.3_Gender	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.569[a]	2	.277	.346		
Likelihood Ratio	2.796	2	.247	.346		
Fisher's Exact Test	2.574			.258		
Linear-by-Linear Association	.036[b]	1	.849	1.000	.576	.304
N of Valid Cases	68					

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .35.

b. The standardized statistic is -.190.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.194	.277	.346
	Cramer's V	.194	.277	.346
N of Valid Cases		68		

263

Q2.3_Gender * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			
			-1	0	1	Total
Q2.3_Gender	Female	Count	0	30	1	31
		% within Q2.3_Gender	0.0%	96.8%	3.2%	100.0%
		% within Decr_Purch_diff_coding	0.0%	49.2%	100.0%	49.2%
	Male	Count	1	31	0	32
		% within Q2.3_Gender	3.1%	96.9%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	50.8%	0.0%	50.8%
Total		Count	1	61	1	63
		% within Q2.3_Gender	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.001[a]	2	.368	1.000		
Likelihood Ratio	2.773	2	.250	1.000		
Fisher's Exact Test	1.871			1.000		
Linear-by-Linear Association	1.969[b]	1	.161	.508	.254	.254
N of Valid Cases	63					

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .49.

b. The standardized statistic is -1.403.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.178	.368	1.000
	Cramer's V	.178	.368	1.000
N of Valid Cases		63		

264

Q3.2_Sales_Comply * Q2.4_Ethnicity

Crosstab

			Q2.4_Ethnicity				Total
			White	Indian	African	Other	
Q3.2_Sales_Comply	0	Count	16	0	0	0	16
		% within Q3.2_Sales_Comply	100.0%	0.0%	0.0%	0.0%	100.0%
		% within Q2.4_Ethnic	15.0%	0.0%	0.0%	0.0%	12.2%
	1	Count	91	10	9	5	115
		% within Q3.2_Sales_Comply	79.1%	8.7%	7.8%	4.3%	100.0%
		% within Q2.4_Ethnic	85.0%	100.0%	100.0%	100.0%	87.8%
Total		Count	107	10	9	5	131
		% within Q3.2_Sales_Comply	81.7%	7.6%	6.9%	3.8%	100.0%
		% within Q2.4_Ethnic	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.088[a]	3	.252	.260		
Likelihood Ratio	6.958	3	.073	.086		
Fisher's Exact Test	2.205			.435		
Linear-by-Linear Association	3.320[b]	1	.068	.077	.031	.031
N of Valid Cases	131					

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .61.

b. The standardized statistic is 1.822.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.177	.252	.260
	Cramer's V	.177	.252	.260
N of Valid Cases		131		

265

Q3.3_Purch_Comply * Q2.4_Ethnicity

Crosstab

			Q2.4_Ethnicity				Total
			White	Indian	African	Other	
Q3.3_Purch_Comply	0	Count	24	0	1	0	25
		% within Q3.3_Purch_Comply	96.0%	0.0%	4.0%	0.0%	100.0%
		% within Q2.4_Ethnic	22.4%	0.0%	11.1%	0.0%	19.1%
	1	Count	83	10	8	5	106
		% within Q3.3_Purch_Comply	78.3%	9.4%	7.5%	4.7%	100.0%
		% within Q2.4_Ethnic	77.6%	100.0%	88.9%	100.0%	80.9%
Total		Count	107	10	9	5	131
		% within Q3.3_Purch_Comply	81.7%	7.6%	6.9%	3.8%	100.0%
		% within Q2.4_Ethnic	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.684[a]	3	.196	.182		
Likelihood Ratio	7.519	3	.057	.077		
Fisher's Exact Test	3.504			.275		
Linear-by-Linear Association	3.219[b]	1	.073	.080	.037	.023
N of Valid Cases	131					

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .95.

b. The standardized statistic is 1.794.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.189	.196	.182
	Cramer's V	.189	.196	.182
N of Valid Cases		131		

266

Q2.4_Ethnicity * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			
			-1	0	1	Total
Q2.4_Ethnic	White	Count	1	50	1	52
		% within Q2.4_Ethnic	1.9%	96.2%	1.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	76.9%	50.0%	76.5%
	Indian	Count	0	6	0	6
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	9.2%	0.0%	8.8%
	African	Count	0	6	0	6
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	9.2%	0.0%	8.8%
	Other	Count	0	3	1	4
		% within Q2.4_Ethnic	0.0%	75.0%	25.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	4.6%	50.0%	5.9%
Total		Count	1	65	2	68
		% within Q2.4_Ethnic	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.665[a]	6	.264	.347		
Likelihood Ratio	4.184	6	.652	.347		
Fisher's Exact Test	8.245			.347		
Linear-by-Linear Association	2.785[b]	1	.095	.146	.111	.085
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is 1.669.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.336	.264	.347
	Cramer's V	.237	.264	.347
N of Valid Cases		68		

267

Q2.4_Ethnicity * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding 0	Decr_Sales_diff_coding 1	Total
Q2.4_Ethnic	White	Count	54	1	55
		% within Q2.4_Ethnic	98.2%	1.8%	100.0%
		% within Decr_Sales_diff_coding	87.1%	100.0%	87.3%
	Indian	Count	4	0	4
		% within Q2.4_Ethnic	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	6.5%	0.0%	6.3%
	African	Count	3	0	3
		% within Q2.4_Ethnic	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	4.8%	0.0%	4.8%
	Other	Count	1	0	1
		% within Q2.4_Ethnic	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	1.6%	0.0%	1.6%
Total		Count	62	1	63
		% within Q2.4_Ethnic	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.148[a]	3	.986	1.000		
Likelihood Ratio	.274	3	.965	1.000		
Fisher's Exact Test	4.886			1.000		
Linear-by-Linear Association	.120[b]	1	.729	1.000	.873	.873
N of Valid Cases	63					

a. 7 cells (87.5%) have expected count less than 5. The minimum expected count is .02.

b. The standardized statistic is -.347.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.048	.986	1.000
	Cramer's V	.048	.986	1.000
N of Valid Cases		63		

268

Q2.4_Ethnicity * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.4_Ethnic	White	Count	1	47	4	52
		% within Q2.4_Ethnic	1.9%	90.4%	7.7%	100.0%
		% within Inc_Purch_diff_coding	100.0%	77.0%	66.7%	76.5%
	Indian	Count	0	5	1	6
		% within Q2.4_Ethnic	0.0%	83.3%	16.7%	100.0%
		% within Inc_Purch_diff_coding	0.0%	8.2%	16.7%	8.8%
	African	Count	0	6	0	6
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	9.8%	0.0%	8.8%
	Other	Count	0	3	1	4
		% within Q2.4_Ethnic	0.0%	75.0%	25.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	4.9%	16.7%	5.9%
Total		Count	1	61	6	68
		% within Q2.4_Ethnic	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.714[a]	6	.844	.577		
Likelihood Ratio	2.995	6	.810	.692		
Fisher's Exact Test	5.997			.505		
Linear-by-Linear Association	.616[b]	1	.432	.522	.264	.103
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is .785.

Symmetric Measures

	Value	Approximate Significance	Exact Significance

269

Nominal by Nominal	Phi	.200	.844	.577
	Cramer's V	.141	.844	.577
N of Valid Cases		68		

Q2.4_Ethnicity * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.4_Ethnic	White	Count	1	53	1	55
		% within Q2.4_Ethnic	1.8%	96.4%	1.8%	100.0%
		% within Decr_Purch_diff_coding	100.0%	86.9%	100.0%	87.3%
	Indian	Count	0	4	0	4
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	6.6%	0.0%	6.3%
	African	Count	0	3	0	3
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	4.9%	0.0%	4.8%
	Other	Count	0	1	0	1
		% within Q2.4_Ethnic	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	1.6%	0.0%	1.6%
Total		Count	1	61	1	63
		% within Q2.4_Ethnic	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.300[a]	6	.999	1.000		
Likelihood Ratio	.553	6	.997	1.000		
Fisher's Exact Test	9.778			1.000		
Linear-by-Linear Association	.000[b]	1	1.000	1.000	.882	.765
N of Valid Cases	63					

a. 11 cells (91.7%) have expected count less than 5. The minimum expected count is .02.

b. The standardized statistic is .000.

Symmetric Measures

	Value	Approximate Significance	Exact Significance

270

Nominal by Nominal	Phi	.069	.999	1.000
	Cramer's V	.049	.999	1.000
N of Valid Cases		63		

Q3.2_Sales_Comply * Q2.5_Age

Crosstab

			Q2.5_Age				Total
			20 to 35	36 to 50	51 to 65	>65	
Q3.2_Sales_ Comply	0	Count	3	4	9	0	16
		% within Q3.2_Sales_Comply	18.8%	25.0%	56.3%	0.0%	100.0%
		% within Q2.5_Age	7.7%	8.2%	24.3%	0.0%	12.2%
	1	Count	36	45	28	6	115
		% within Q3.2_Sales_Comply	31.3%	39.1%	24.3%	5.2%	100.0%
		% within Q2.5_Age	92.3%	91.8%	75.7%	100.0%	87.8%
Total		Count	39	49	37	6	131
		% within Q3.2_Sales_Comply	29.8%	37.4%	28.2%	4.6%	100.0%
		% within Q2.5_Age	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.389[a]	3	.060	.063		
Likelihood Ratio	7.329	3	.062	.065		
Fisher's Exact Test	5.810			.103		
Linear-by-Linear Association	2.130[b]	1	.144	.170	.097	.042
N of Valid Cases	131					

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .73.

b. The standardized statistic is -1.459.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.238	.060	.063
	Cramer's V	.238	.060	.063
N of Valid Cases		131		

Q3.3_Purch_Comply * Q2.5_Age

Crosstab

271

			Q2.5_Age				Total
			20 to 35	36 to 50	51 to 65	>65	
Q3.3_Purch_ Comply	0	Count	7	6	11	1	25
		% within Q3.3_Purch_Comply	28.0%	24.0%	44.0%	4.0%	100.0%
		% within Q2.5_Age	17.9%	12.2%	29.7%	16.7%	19.1%
	1	Count	32	43	26	5	106
		% within Q3.3_Purch_Comply	30.2%	40.6%	24.5%	4.7%	100.0%
		% within Q2.5_Age	82.1%	87.8%	70.3%	83.3%	80.9%
Total		Count	39	49	37	6	131
		% within Q3.3_Purch_Comply	29.8%	37.4%	28.2%	4.6%	100.0%
		% within Q2.5_Age	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.255[a]	3	.235	.246		
Likelihood Ratio	4.127	3	.248	.295		
Fisher's Exact Test	4.144			.227		
Linear-by-Linear Association	1.084[b]	1	.298	.311	.181	.059
N of Valid Cases	131					

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.15.

b. The standardized statistic is -1.041.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.180	.235	.246
	Cramer's V	.180	.235	.246
N of Valid Cases		131		

272

Q2.5_Age * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			
			-1	0	1	Total
Q2.5_Age	20 to 35	Count	0	18	1	19
		% within Q2.5_Age	0.0%	94.7%	5.3%	100.0%
		% within Inc_Sales_diff_coding	0.0%	27.7%	50.0%	27.9%
	36 to 50	Count	1	23	1	25
		% within Q2.5_Age	4.0%	92.0%	4.0%	100.0%
		% within Inc_Sales_diff_coding	100.0%	35.4%	50.0%	36.8%
	51 to 65	Count	0	20	0	20
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	30.8%	0.0%	29.4%
	>65	Count	0	4	0	4
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	6.2%	0.0%	5.9%
Total		Count	1	65	2	68
		% within Q2.5_Age	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.953[a]	6	.815	.920		
Likelihood Ratio	3.864	6	.695	.920		
Fisher's Exact Test	4.853			.920		
Linear-by-Linear Association	.535[b]	1	.465	.540	.348	.198
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -.731.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.208	.815	.920
	Cramer's V	.147	.815	.920
N of Valid Cases		68		

273

Q2.5_Age * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		
			0	1	Total
Q2.5_Age	20 to 35	Count	20	0	20
		% within Q2.5_Age	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	32.3%	0.0%	31.7%
	36 to 50	Count	23	1	24
		% within Q2.5_Age	95.8%	4.2%	100.0%
		% within Decr_Sales_diff_coding	37.1%	100.0%	38.1%
	51 to 65	Count	17	0	17
		% within Q2.5_Age	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	27.4%	0.0%	27.0%
	>65	Count	2	0	2
		% within Q2.5_Age	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	3.2%	0.0%	3.2%
Total		Count	62	1	63
		% within Q2.5_Age	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.651[a]	3	.648	1.000		
Likelihood Ratio	1.956	3	.581	1.000		
Fisher's Exact Test	c3.337			1.000		
Linear-by-Linear Association	.000[b]	1	.985	1.000	.698	.381
N of Valid Cases	63					

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is -.019.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.162	.648	1.000
	Cramer's V	.162	.648	1.000
N of Valid Cases		63		

274

Q2.5_Age * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.5_Age	20 to 35	Count	0	18	1	19
		% within Q2.5_Age	0.0%	94.7%	5.3%	100.0%
		% within Inc_Purch_diff_coding	0.0%	29.5%	16.7%	27.9%
	36 to 50	Count	0	22	3	25
		% within Q2.5_Age	0.0%	88.0%	12.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	36.1%	50.0%	36.8%
	51 to 65	Count	1	17	2	20
		% within Q2.5_Age	5.0%	85.0%	10.0%	100.0%
		% within Inc_Purch_diff_coding	100.0%	27.9%	33.3%	29.4%
	>65	Count	0	4	0	4
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	6.6%	0.0%	5.9%
Total		Count	1	61	6	68
		% within Q2.5_Age	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	3.502[a]	6	.744	.792		
Likelihood Ratio	3.916	6	.688	.790		
Fisher's Exact Test	4.220			.864		
Linear-by-Linear Association	.082[b]	1	.774	.833	.476	.164
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -.287.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.227	.744	.792
	Cramer's V	.160	.744	.792
N of Valid Cases		68		

275

Q2.5_Age * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			
			-1	0	1	Total
Q2.5_Age	20 to 35	Count	0	20	0	20
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	32.8%	0.0%	31.7%
	36 to 50	Count	0	24	0	24
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	39.3%	0.0%	38.1%
	51 to 65	Count	1	15	1	17
		% within Q2.5_Age	5.9%	88.2%	5.9%	100.0%
		% within Decr_Purch_diff_coding	100.0%	24.6%	100.0%	27.0%
	>65	Count	0	2	0	2
		% within Q2.5_Age	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	3.3%	0.0%	3.2%
Total		Count	1	61	1	63
		% within Q2.5_Age	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.589[a]	6	.471	.133		
Likelihood Ratio	5.421	6	.491	.133		
Fisher's Exact Test	8.143			.133		
Linear-by-Linear Association	.000[b]	1	1.000	1.000	.654	.309
N of Valid Cases	63					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is .000.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.298	.471	.133
	Cramer's V	.211	.471	.133
N of Valid Cases		63		

276

Q3.2_Sales_Comply * Q2.6_Education

Crosstab

			Q2.6_Educ				Total
			Grade 12/Matric and lower	Diploma / Certificate (Post Grade 12/Matric)	Bachelor's degree	Master's degree and Doctorate	
Q3.2_Sales_Comply	0	Count	4	2	8	2	16
		% within Q3.2_Sales_Comply	25.0%	12.5%	50.0%	12.5%	100.0%
		% within Q2.6_Educ	50.0%	6.5%	13.8%	5.9%	12.2%
	1	Count	4	29	50	32	115
		% within Q3.2_Sales_Comply	3.5%	25.2%	43.5%	27.8%	100.0%
		% within Q2.6_Educ	50.0%	93.5%	86.2%	94.1%	87.8%
Total		Count	8	31	58	34	131
		% within Q3.2_Sales_Comply	6.1%	23.7%	44.3%	26.0%	100.0%
		% within Q2.6_Educ	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	13.019[a]	3	.005	.006		
Likelihood Ratio	9.572	3	.023	.027		
Fisher's Exact Test	9.525			.015		
Linear-by-Linear Association	3.976[b]	1	.046	.061	.035	.018
N of Valid Cases	131					

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .98.

b. The standardized statistic is 1.994.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.315	.005	.006
	Cramer's V	.315	.005	.006
N of Valid Cases		131		

277

Q3.3_Purch_Comply * Q2.6_Education

Crosstab

			Q2.6_Educ				Total
			Grade 12/Matric and lower	Diploma / Certificate (Post Grade 12/Matric)	Bachelor's degree	Master's degree and Doctorate	
Q3.3_Purch_Comply 0	Count		3	4	12	6	25
	% within Q3.3_Purch_Comply		12.0%	16.0%	48.0%	24.0%	100.0%
	% within Q2.6_Educ		37.5%	12.9%	20.7%	17.6%	19.1%
1	Count		5	27	46	28	106
	% within Q3.3_Purch_Comply		4.7%	25.5%	43.4%	26.4%	100.0%
	% within Q2.6_Educ		62.5%	87.1%	79.3%	82.4%	80.9%
Total	Count		8	31	58	34	131
	% within Q3.3_Purch_Comply		6.1%	23.7%	44.3%	26.0%	100.0%
	% within Q2.6_Educ		100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.666[a]	3	.446	.455		
Likelihood Ratio	2.456	3	.483	.530		
Fisher's Exact Test	2.702			.429		
Linear-by-Linear Association	.155[b]	1	.694	.700	.393	.094
N of Valid Cases	131					

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 1.53.

b. The standardized statistic is .394.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.143	.446	.455
	Cramer's V	.143	.446	.455
N of Valid Cases		131		

Q2.6_Education * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			Total
			-1	0	1	
Q2.6_Educ	Grade 12/Matric and lower	Count	0	4	0	4
		% within Q2.6_Educ	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	6.2%	0.0%	5.9%
	Diploma / Certificate (Post Grade 12/Matric)	Count	0	11	2	13
		% within Q2.6_Educ	0.0%	84.6%	15.4%	100.0%
		% within Inc_Sales_diff_coding	0.0%	16.9%	100.0%	19.1%
	Bachelor's degree	Count	0	32	0	32
		% within Q2.6_Educ	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	49.2%	0.0%	47.1%
	Master's degree and Doctorate	Count	1	18	0	19
		% within Q2.6_Educ	5.3%	94.7%	0.0%	100.0%
		% within Inc_Sales_diff_coding	100.0%	27.7%	0.0%	27.9%
Total		Count	1	65	2	68
		% within Q2.6_Educ	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.279[a]	6	.080	.105		
Likelihood Ratio	9.412	6	.152	.034		
Fisher's Exact Test	9.301			.063		
Linear-by-Linear Association	4.131[b]	1	.042	.082	.046	.038
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -2.033.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.407	.080	.105
	Cramer's V	.288	.080	.105
N of Valid Cases		68		

279

Q2.6_Education * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding 0	Decr_Sales_diff_coding 1	Total
Q2.6_Educ	Grade 12/Matric and lower	Count	4	0	4
		% within Q2.6_Educ	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	6.5%	0.0%	6.3%
	Diploma / Certificate (Post Grade 12/Matric)	Count	17	1	18
		% within Q2.6_Educ	94.4%	5.6%	100.0%
		% within Decr_Sales_diff_coding	27.4%	100.0%	28.6%
	Bachelor's degree	Count	26	0	26
		% within Q2.6_Educ	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	41.9%	0.0%	41.3%
	Master's degree and Doctorate	Count	15	0	15
		% within Q2.6_Educ	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	24.2%	0.0%	23.8%
Total		Count	62	1	63
		% within Q2.6_Educ	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.540[a]	3	.468	.587		
Likelihood Ratio	2.546	3	.467	.587		
Fisher's Exact Test	3.370			.587		
Linear-by-Linear Association	.912[b]	1	.340	.587	.349	.286
N of Valid Cases	63					

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -.955.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.201	.468	.587
	Cramer's V	.201	.468	.587
N of Valid Cases		63		

280

Q2.6_Education * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.6_Educ	Grade 12/Matric and lower	Count	0	2	2	4
		% within Q2.6_Educ	0.0%	50.0%	50.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	3.3%	33.3%	5.9%
	Diploma / Certificate (Post Grade 12/Matric)	Count	0	12	1	13
		% within Q2.6_Educ	0.0%	92.3%	7.7%	100.0%
		% within Inc_Purch_diff_coding	0.0%	19.7%	16.7%	19.1%
	Bachelor's degree	Count	1	29	2	32
		% within Q2.6_Educ	3.1%	90.6%	6.3%	100.0%
		% within Inc_Purch_diff_coding	100.0%	47.5%	33.3%	47.1%
	Master's degree and Doctorate	Count	0	18	1	19
		% within Q2.6_Educ	0.0%	94.7%	5.3%	100.0%
		% within Inc_Purch_diff_coding	0.0%	29.5%	16.7%	27.9%
Total		Count	1	61	6	68
		% within Q2.6_Educ	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	10.113[a]	6	.120	.122		
Likelihood Ratio	6.663	6	.353	.344		
Fisher's Exact Test	8.415			.135		
Linear-by-Linear Association	3.128[b]	1	.077	.106	.064	.040
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -1.769.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.386	.120	.122
	Cramer's V	.273	.120	.122
N of Valid Cases		68		

Q2.6_Education * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.6_Educ	Grade 12/Matric and lower	Count	0	4	0	4
		% within Q2.6_Educ	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	6.6%	0.0%	6.3%
	Diploma / Certificate (Post Grade 12/Matric)	Count	0	17	1	18
		% within Q2.6_Educ	0.0%	94.4%	5.6%	100.0%
		% within Decr_Purch_diff_coding	0.0%	27.9%	100.0%	28.6%
	Bachelor's degree	Count	0	26	0	26
		% within Q2.6_Educ	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	42.6%	0.0%	41.3%
	Master's degree and Doctorate	Count	1	14	0	15
		% within Q2.6_Educ	6.7%	93.3%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	23.0%	0.0%	23.8%
Total		Count	1	61	1	63
		% within Q2.6_Educ	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.761[a]	6	.451	.316		
Likelihood Ratio	5.436	6	.489	.316		
Fisher's Exact Test	7.073			.316		
Linear-by-Linear Association	2.634[b]	1	.105	.222	.111	.096
N of Valid Cases	63					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -1.623.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.302	.451	.316
	Cramer's V	.214	.451	.316
N of Valid Cases		63		

282

Q3.2_Sales_Comply * Q2.8_Province

Crosstab

			Q2.8_Province					Total
			Gauteng	KwaZulu-Natal	Western Cape	Other	National	
Q3.2_Sales_Comply 0	Count		9	2	4	0	1	16
	% within Q3.2_Sales_Comply		56.3%	12.5%	25.0%	0.0%	6.3%	100.0%
	% within Q2.8_Province		12.0%	15.4%	15.4%	0.0%	16.7%	12.2%
1	Count		66	11	22	11	5	115
	% within Q3.2_Sales_Comply		57.4%	9.6%	19.1%	9.6%	4.3%	100.0%
	% within Q2.8_Province		88.0%	84.6%	84.6%	100.0%	83.3%	87.8%
Total	Count		75	13	26	11	6	131
	% within Q3.2_Sales_Comply		57.3%	9.9%	19.8%	8.4%	4.6%	100.0%
	% within Q2.8_Province		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.010[a]	4	.734	.758		
Likelihood Ratio	3.312	4	.507	.623		
Fisher's Exact Test	2.244			.688		
Linear-by-Linear Association	.038[b]	1	.846	.915	.479	.085
N of Valid Cases	131					

a. 4 cells (40.0%) have expected count less than 5. The minimum expected count is .73.

b. The standardized statistic is .195.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.124	.734	.758
	Cramer's V	.124	.734	.758
N of Valid Cases		131		

283

Q3.3_Purchases_Comply * Q2.8_Province

Crosstab

			Q2.8_Province					Total
			Gauteng	KwaZulu-Natal	Western Cape	Other	National	
Q3.3_Purch_Comply 0	Count		12	2	6	3	2	25
	% within Q3.3_Purch_Comply		48.0%	8.0%	24.0%	12.0%	8.0%	100.0%
	% within Q2.8_Province		16.0%	15.4%	23.1%	27.3%	33.3%	19.1%
1	Count		63	11	20	8	4	106
	% within Q3.3_Purch_Comply		59.4%	10.4%	18.9%	7.5%	3.8%	100.0%
	% within Q2.8_Province		84.0%	84.6%	76.9%	72.7%	66.7%	80.9%
Total	Count		75	13	26	11	6	131
	% within Q3.3_Purch_Comply		57.3%	9.9%	19.8%	8.4%	4.6%	100.0%
	% within Q2.8_Province		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.112[a]	4	.715	.727		
Likelihood Ratio	1.976	4	.740	.780		
Fisher's Exact Test	2.700			.607		
Linear-by-Linear Association	1.929[b]	1	.165	.177	.100	.027
N of Valid Cases	131					

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 1.15.

b. The standardized statistic is -1.389.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.127	.715	.727
	Cramer's V	.127	.715	.727
N of Valid Cases		131		

284

Q2.8_Province * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			
			-1	0	1	Total
Q2.8_Province	Gauteng	Count	1	34	1	36
		% within Q2.8_Province	2.8%	94.4%	2.8%	100.0%
		% within Inc_Sales_diff_coding	100.0%	52.3%	50.0%	52.9%
	KwaZulu-Natal	Count	0	9	0	9
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	13.8%	0.0%	13.2%
	Western Cape	Count	0	10	1	11
		% within Q2.8_Province	0.0%	90.9%	9.1%	100.0%
		% within Inc_Sales_diff_coding	0.0%	15.4%	50.0%	16.2%
	Other	Count	0	6	0	6
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	9.2%	0.0%	8.8%
	National	Count	0	6	0	6
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	9.2%	0.0%	8.8%
Total		Count	1	65	2	68
		% within Q2.8_Province	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.997[a]	8	.935	.858		
Likelihood Ratio	3.487	8	.900	1.000		
Fisher's Exact Test	6.144			.858		
Linear-by-Linear Association	.155[b]	1	.694	.860	.418	.149
N of Valid Cases	68					

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .09.

b. The standardized statistic is .393.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.210	.935	.858
	Cramer's V	.148	.935	.858
N of Valid Cases		68		

285

Q2.8_Province * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		Total
			0	1	Total
Q2.8_Province	Gauteng	Count	38	1	39
		% within Q2.8_Province	97.4%	2.6%	100.0%
		% within Decr_Sales_diff_coding	61.3%	100.0%	61.9%
	KwaZulu-Natal	Count	4	0	4
		% within Q2.8_Province	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	6.5%	0.0%	6.3%
	Western Cape	Count	15	0	15
		% within Q2.8_Province	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	24.2%	0.0%	23.8%
	Other	Count	5	0	5
		% within Q2.8_Province	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	8.1%	0.0%	7.9%
Total		Count	62	1	63
		% within Q2.8_Province	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.625[a]	3	.891	1.000		
Likelihood Ratio	.969	3	.809	1.000		
Fisher's Exact Test	2.699			1.000		
Linear-by-Linear Association	.538[b]	1	.463	.937	.619	.619
N of Valid Cases	63					

a. 6 cells (75.0%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is -.733.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.100	.891	1.000
	Cramer's V	.100	.891	1.000
N of Valid Cases		63		

Q2.8_Province * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.8_Province	Gauteng	Count	0	32	4	36
		% within Q2.8_Province	0.0%	88.9%	11.1%	100.0%
		% within Inc_Purch_diff_coding	0.0%	52.5%	66.7%	52.9%
	KwaZulu-Natal	Count	1	6	2	9
		% within Q2.8_Province	11.1%	66.7%	22.2%	100.0%
		% within Inc_Purch_diff_coding	100.0%	9.8%	33.3%	13.2%
	Western Cape	Count	0	11	0	11
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	18.0%	0.0%	16.2%
	Other	Count	0	6	0	6
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	9.8%	0.0%	8.8%
	National	Count	0	6	0	6
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	9.8%	0.0%	8.8%
Total		Count	1	61	6	68
		% within Q2.8_Province	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.437[a]	8	.178	.254		
Likelihood Ratio	10.433	8	.236	.117		
Fisher's Exact Test	9.485			.235		
Linear-by-Linear Association	1.546[b]	1	.214	.260	.136	.057
N of Valid Cases	68					

a. 10 cells (66.7%) have expected count less than 5. The minimum expected count is .09.

b. The standardized statistic is -1.243.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.410	.178	.254
	Cramer's V	.290	.178	.254
N of Valid Cases		68		

287

Q2.8_Province * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.8_Province	Gauteng	Count	1	38	0	39
		% within Q2.8_Province	2.6%	97.4%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	62.3%	0.0%	61.9%
	KwaZulu-Natal	Count	0	3	1	4
		% within Q2.8_Province	0.0%	75.0%	25.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	4.9%	100.0%	6.3%
	Western Cape	Count	0	15	0	15
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	24.6%	0.0%	23.8%
	Other	Count	0	5	0	5
		% within Q2.8_Province	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	8.2%	0.0%	7.9%
Total		Count	1	61	1	63
		% within Q2.8_Province	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	15.584[a]	6	.016	.129		
Likelihood Ratio	6.708	6	.349	.167		
Fisher's Exact Test	9.921			.167		
Linear-by-Linear Association	.437[b]	1	.508	.559	.279	.075
N of Valid Cases	63					

a. 10 cells (83.3%) have expected count less than 5. The minimum expected count is .06.

b. The standardized statistic is .661.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phic	.497	.016	.129
	Cramer's V	.352	.016	.129
N of Valid Cases		63		

288

Q3.2_Sales_Comply * Q2.9 Type of business

Crosstab

			Q2.9				Total
			Close corporation	Private company	Sole proprie-torship	Other	
Q3.2_Sales_Comply	0	Count	7	8	1	0	16
		% within Q3.2_Sales_Comply	43.8%	50.0%	6.3%	0.0%	100.0%
		% within Q2.9	24.1%	12.1%	4.0%	0.0%	12.2%
	1	Count	22	58	24	11	115
		% within Q3.2_Sales_Comply	19.1%	50.4%	20.9%	9.6%	100.0%
		% within Q2.9	75.9%	87.9%	96.0%	100.0%	87.8%
Total		Count	29	66	25	11	131
		% within Q3.2_Sales_Comply	22.1%	50.4%	19.1%	8.4%	100.0%
		% within Q2.9	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	6.950[a]	3	.074	.074		
Likelihood Ratio	8.041	3	.045	.063		
Fisher's Exact Test	5.738			.109		
Linear-by-Linear Association	6.512[b]	1	.011	.012	.006	.004
N of Valid Cases	131					

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is 1.34.

b. The standardized statistic is 2.552.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.230	.074	.074
	Cramer's V	.230	.074	.074
N of Valid Cases		131		

289

Q3.3_Purchases_Comply * Q2.9 Type of business

Crosstab

			Q2.9				Total
			Close corporation	Private company	Sole proprie-torship	Other	
Q3.3_Purch_Comply	0	Count	8	11	5	1	25
		% within Q3.3_Purch_Comply	32.0%	44.0%	20.0%	4.0%	100.0%
		% within Q2.9	27.6%	16.7%	20.0%	9.1%	19.1%
	1	Count	21	55	20	10	106
		% within Q3.3_Purch_Comply	19.8%	51.9%	18.9%	9.4%	100.0%
		% within Q2.9	72.4%	83.3%	80.0%	90.9%	80.9%
Total		Count	29	66	25	11	131
		% within Q3.3_Purch_Comply	22.1%	50.4%	19.1%	8.4%	100.0%
		% within Q2.9	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.332[a]	3	.506	.528		
Likelihood Ratio	2.350	3	.503	.525		
Fisher's Exact Test	2.143			.548		
Linear-by-Linear Association	1.323[b]	1	.250	.300	.154	.055
N of Valid Cases	131					

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 2.10.

b. The standardized statistic is 1.150.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.133	.506	.528
	Cramer's V	.133	.506	.528
N of Valid Cases		131		

290

Q2.9 (Type of business)* Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			
			-1	0	1	Total
Q2.9	Close corporation	Count	0	12	0	12
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	18.5%	0.0%	17.6%
	Private company	Count	1	37	2	40
		% within Q2.9	2.5%	92.5%	5.0%	100.0%
		% within Inc_Sales_diff_coding	100.0%	56.9%	100.0%	58.8%
	Sole proprietor-ship	Count	0	11	0	11
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	16.9%	0.0%	16.2%
	Other	Count	0	5	0	5
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	7.7%	0.0%	7.4%
Total		Count	1	65	2	68
		% within Q2.9	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.197[a]	6	.901	1.000		
Likelihood Ratio	3.280	6	.773	.761		
Fisher's Exact Test	3.670			1.000		
Linear-by-Linear Association	.009[b]	1	.923	1.000	.625	.308
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .07.

b. The standardized statistic is -.097.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.180	.901	1.000
	Cramer's V	.127	.901	1.000
N of Valid Cases		68		

291

Q2.9 (Type of business) * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		Total
			0	1	
Q2.9	Close corporation	Count	17	0	17
		% within Q2.9	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	27.4%	0.0%	27.0%
	Private company	Count	26	0	26
		% within Q2.9	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	41.9%	0.0%	41.3%
	Sole proprietor-ship	Count	13	1	14
		% within Q2.9	92.9%	7.1%	100.0%
		% within Decr_Sales_diff_coding	21.0%	100.0%	22.2%
	Other	Count	6	0	6
		% within Q2.9	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	9.7%	0.0%	9.5%
Total		Count	62	1	63
		% within Q2.9	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	3.556[a]	3	.314	.317		
Likelihood Ratio	3.065	3	.382	.317		
Fisher's Exact Test	3.593			.317		
Linear-by-Linear Association	.862[b]	1	.353	.587	.317	.222
N of Valid Cases	63					

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .10.

b. The standardized statistic is .928.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.238	.314	.317
	Cramer's V	.238	.314	.317
N of Valid Cases		63		

292

Q2.9 (Type of business) * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			
			-1	0	1	Total
Q2.9	Close corporation	Count	0	11	1	12
		% within Q2.9	0.0%	91.7%	8.3%	100.0%
		% within Inc_Purch_diff_coding	0.0%	18.0%	16.7%	17.6%
	Private company	Count	1	36	3	40
		% within Q2.9	2.5%	90.0%	7.5%	100.0%
		% within Inc_Purch_diff_coding	100.0%	59.0%	50.0%	58.8%
	Sole proprietor-ship	Count	0	9	2	11
		% within Q2.9	0.0%	81.8%	18.2%	100.0%
		% within Inc_Purch_diff_coding	0.0%	14.8%	33.3%	16.2%
	Other	Count	0	5	0	5
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	8.2%	0.0%	7.4%
Total		Count	1	61	6	68
		% within Q2.9	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.457[a]	6	.873	.861		
Likelihood Ratio	3.005	6	.808	.861		
Fisher's Exact Test	3.991			.819		
Linear-by-Linear Association	.028[b]	1	.868	1.000	.521	.189
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .07.

b. The standardized statistic is .166.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.190	.873	.861
	Cramer's V	.134	.873	.861
N of Valid Cases		68		

293

Q2.9 (Type of business)* Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			
			-1	0	1	Total
Q2.9	Close corporation	Count	0	17	0	17
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	27.9%	0.0%	27.0%
	Private company	Count	0	26	0	26
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	42.6%	0.0%	41.3%
	Sole proprietor-ship	Count	1	12	1	14
		% within Q2.9	7.1%	85.7%	7.1%	100.0%
		% within Decr_Purch_diff_coding	100.0%	19.7%	100.0%	22.2%
	Other	Count	0	6	0	6
		% within Q2.9	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	9.8%	0.0%	9.5%
Total		Count	1	61	1	63
		% within Q2.9	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.230[a]	6	.300	.229		
Likelihood Ratio	6.253	6	.396	.229		
Fisher's Exact Test	7.303			.229		
Linear-by-Linear Association	.000[b]	1	1.000	1.000	.645	.290
N of Valid Cases	63					

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .10.

b. The standardized statistic is .000.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.339	.300	.229
	Cramer's V	.240	.300	.229
N of Valid Cases		63		

294

Q3.2_Sales_Comply * Q2.11 (Industry)

Crosstab

				Q2.11					Total
			Agriculture	Engineering & construction	Financial services	Other	Real estate	Retail & consumer	
Q3.2_Sales_Comply 0	Count		1	1	5	7	1	1	16
	% within Q3.2_Sales_Comply		6.3%	6.3%	31.3%	43.8%	6.3%	6.3%	100.0%
	% within Q2.11		14.3%	10.0%	8.8%	17.5%	11.1%	12.5%	12.2%
1	Count		6	9	52	33	8	7	115
	% within Q3.2_Sales_Comply		5.2%	7.8%	45.2%	28.7%	7.0%	6.1%	100.0%
	% within Q2.11		85.7%	90.0%	91.2%	82.5%	88.9%	87.5%	87.8%
Total	Count		7	10	57	40	9	8	131
	% within Q3.2_Sales_Comply		5.3%	7.6%	43.5%	30.5%	6.9%	6.1%	100.0%
	% within Q2.11		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.757[a]	5	.882	.909		
Likelihood Ratio	1.712	5	.887	.946		
Fisher's Exact Test	2.319			.819		
Linear-by-Linear Association	.212[b]	1	.645	.719	.365	.085
N of Valid Cases	131					

a. 5 cells (41.7%) have expected count less than 5. The minimum expected count is .85.

b. The standardized statistic is -.460.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.116	.882	.909
	Cramer's V	.116	.882	.909
N of Valid Cases		131		

295

Q3.3_Purchases_Comply * Q2.11 (Industry)

Crosstab

			Q2.11						Total
			Agriculture	Engineering & construction	Financial services	Other	Real estate	Retail & consumer	
Q3.3_Purch_Comply	0	Count	2	2	6	12	1	2	25
		% within Q3.3_Purch_Comply	8.0%	8.0%	24.0%	48.0%	4.0%	8.0%	100.0%
		% within Q2.11	28.6%	20.0%	10.5%	30.0%	11.1%	25.0%	19.1%
	1	Count	5	8	51	28	8	6	106
		% within Q3.3_Purch_Comply	4.7%	7.5%	48.1%	26.4%	7.5%	5.7%	100.0%
		% within Q2.11	71.4%	80.0%	89.5%	70.0%	88.9%	75.0%	80.9%
Total		Count	7	10	57	40	9	8	131
		% within Q3.3_Purch_Comply	5.3%	7.6%	43.5%	30.5%	6.9%	6.1%	100.0%
		% within Q2.11	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	6.755[a]	5	.239	.231		
Likelihood Ratio	6.819	5	.234	.323		
Fisher's Exact Test	7.163			.161		
Linear-by-Linear Association	.344[b]	1	.557	.618	.312	.067
N of Valid Cases	131					

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is 1.34.

b. The standardized statistic is -.587.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.227	.239	.231
	Cramer's V	.227	.239	.231
N of Valid Cases		131		

296

Q2.11 (Industry) * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			
			-1	0	1	Total
Q2.11	Agriculture	Count	0	5	0	5
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	7.7%	0.0%	7.4%
	Engineering & construction	Count	0	3	1	4
		% within Q2.11	0.0%	75.0%	25.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	4.6%	50.0%	5.9%
	Financial service	Count	0	31	1	32
		% within Q2.11	0.0%	96.9%	3.1%	100.0%
		% within Inc_Sales_diff_coding	0.0%	47.7%	50.0%	47.1%
	Other	Count	1	21	0	22
		% within Q2.11	4.5%	95.5%	0.0%	100.0%
		% within Inc_Sales_diff_coding	100.0%	32.3%	0.0%	32.4%
	Real estate	Count	0	3	0	3
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	4.6%	0.0%	4.4%
	Retail & consumer	Count	0	2	0	2
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	3.1%	0.0%	2.9%
Total		Count	1	65	2	68
		% within Q2.11	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	9.857[a]	10	.453	.365		
Likelihood Ratio	6.876	10	.737	.386		
Fisher's Exact Test	14.282			.356		
Linear-by-Linear Association	1.685[b]	1	.194	.250	.148	.090
N of Valid Cases	68					

a. 16 cells (88.9%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is -1.298.

297

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.381	.453	.365
	Cramer's V	.269	.453	.365
N of Valid Cases		68		

Q2.11 (Industry) * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		Total
			0	1	
Q2.11	Agriculture	Count	2	0	2
		% within Q2.11	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	3.2%	0.0%	3.2%
	Engineering & construction	Count	6	0	6
		% within Q2.11	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	9.7%	0.0%	9.5%
	Financial service	Count	25	0	25
		% within Q2.11	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	40.3%	0.0%	39.7%
	Other	Count	17	1	18
		% within Q2.11	94.4%	5.6%	100.0%
		% within Decr_Sales_diff_coding	27.4%	100.0%	28.6%
	Real estate	Count	6	0	6
		% within Q2.11	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	9.7%	0.0%	9.5%
	Retail & consumer	Count	6	0	6
		% within Q2.11	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	9.7%	0.0%	9.5%
Total		Count	62	1	63
		% within Q2.11	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.540[a]	5	.770	.603		
Likelihood Ratio	2.546	5	.770	.603		
Fisher's Exact Test	6.077			.603		

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Linear-by-Linear Association	.114[b]	1	.736	1.000	.476	.286
N of Valid Cases	63					

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is .338.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.201	.770	.603
	Cramer's V	.201	.770	.603
N of Valid Cases		63		

Q2.11 (Industry) * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.11	Agriculture	Count	0	5	0	5
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	8.2%	0.0%	7.4%
	Engineering & construction	Count	0	4	0	4
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	6.6%	0.0%	5.9%
	Financial service	Count	1	27	4	32
		% within Q2.11	3.1%	84.4%	12.5%	100.0%
		% within Inc_Purch_diff_coding	100.0%	44.3%	66.7%	47.1%
	Other	Count	0	21	1	22
		% within Q2.11	0.0%	95.5%	4.5%	100.0%
		% within Inc_Purch_diff_coding	0.0%	34.4%	16.7%	32.4%
	Real estate	Count	0	3	0	3
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	4.9%	0.0%	4.4%
	Retail & consumer	Count	0	1	1	2
		% within Q2.11	0.0%	50.0%	50.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	1.6%	16.7%	2.9%
Total		Count	1	61	6	68
		% within Q2.11	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.649[a]	10	.663	.438		
Likelihood Ratio	7.175	10	.709	.453		
Fisher's Exact Test	11.214			.532		
Linear-by-Linear Association	.922[b]	1	.337	.347	.218	.096
N of Valid Cases	68					

a. 16 cells (88.9%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is .960.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.335	.663	.438
	Cramer's V	.237	.663	.438
N of Valid Cases		68		

Q2.11 (Industry) * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.11	Agriculture	Count	0	2	0	2
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	3.3%	0.0%	3.2%
	Engineering & construction	Count	0	6	0	6
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	9.8%	0.0%	9.5%
	Financial service	Count	0	25	0	25
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	41.0%	0.0%	39.7%
	Other	Count	1	17	0	18
		% within Q2.11	5.6%	94.4%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	27.9%	0.0%	28.6%
	Real estate	Count	0	5	1	6
		% within Q2.11	0.0%	83.3%	16.7%	100.0%
		% within Decr_Purch_diff_coding	0.0%	8.2%	100.0%	9.5%
	Retail & consumer	Count	0	6	0	6

300

			0.0%	100.0%	0.0%	100.0%
		% within Q2.11	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	9.8%	0.0%	9.5%
Total		Count	1	61	1	63
		% within Q2.11	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	12.164[a]	10	.274	.307		
Likelihood Ratio	7.378	10	.689	.307		
Fisher's Exact Test	14.321			.307		
Linear-by-Linear Association	.356[b]	1	.551	.744	.372	.194
N of Valid Cases	63					

a. 13 cells (72.2%) have expected count less than 5. The minimum expected count is .03.

b. The standardized statistic is .597.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.439	.274	.307
	Cramer's V	.311	.274	.307
N of Valid Cases		63		

Q3.2_Sales_Comply * Q2.10 * (Income level)

Crosstab

			Q2.10			
			R50 000 to R1 million	Between R1 million and R5 million	Between R5 million and R20 million	Total
Q3.2_Sales_Comply	0	Count	4	10	2	16
		% within Q3.2_Sales_Comply	25.0%	62.5%	12.5%	100.0%
		% within Q2.10	8.7%	20.4%	5.6%	12.2%
	1	Count	42	39	34	115
		% within Q3.2_Sales_Comply	36.5%	33.9%	29.6%	100.0%
		% within Q2.10	91.3%	79.6%	94.4%	87.8%
Total		Count	46	49	36	131
		% within Q3.2_Sales_Comply	35.1%	37.4%	27.5%	100.0%
		% within Q2.10	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.088[a]	2	.079	.078		
Likelihood Ratio	5.027	2	.081	.105		
Fisher's Exact Test	4.559			.104		
Linear-by-Linear Association	.069[b]	1	.793	.867	.465	.129
N of Valid Cases	131					

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.40.

b. The standardized statistic is .263.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.197	.079	.078
	Cramer's V	.197	.079	.078
N of Valid Cases		131		

Q3.3_Purch_Comply * Q2.10 (Income level)

Crosstab

			Q2.10			Total
			R50 000 to R1 million	Between R1 million and R5 million	Between R5 million and R20 million	
Q3.3_Purch_Comply 0		Count	9	12	4	25
		% within Q3.3_Purch_Comply	36.0%	48.0%	16.0%	100.0%
		% within Q2.10	19.6%	24.5%	11.1%	19.1%
	1	Count	37	37	32	106
		% within Q3.3_Purch_Comply	34.9%	34.9%	30.2%	100.0%
		% within Q2.10	80.4%	75.5%	88.9%	80.9%
Total		Count	46	49	36	131
		% within Q3.3_Purch_Comply	35.1%	37.4%	27.5%	100.0%
		% within Q2.10	100.0%	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.416[a]	2	.299	.309		
Likelihood Ratio	2.563	2	.278	.284		
Fisher's Exact Test	2.385			.308		
Linear-by-Linear Association	.756[b]	1	.385	.403	.234	.078
N of Valid Cases	131					

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.87.

b. The standardized statistic is .870.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.136	.299	.309
	Cramer's V	.136	.299	.309
N of Valid Cases		131		

Q2.10 (Income level) * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			Total
			-1	0	1	
Q2.10	R50 000 to R1 million	Count	0	23	1	24
		% within Q2.10	0.0%	95.8%	4.2%	100.0%
		% within Inc_Sales_diff_coding	0.0%	35.4%	50.0%	35.3%
	Between R1 million and R5 million	Count	0	26	0	26
		% within Q2.10	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	40.0%	0.0%	38.2%
	Between R5 million and R20 million	Count	1	16	1	18
		% within Q2.10	5.6%	88.9%	5.6%	100.0%
		% within Inc_Sales_diff_coding	100.0%	24.6%	50.0%	26.5%
Total		Count	1	65	2	68
		% within Q2.10	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.221[a]	4	.377	.380		
Likelihood Ratio	4.766	4	.312	.380		
Fisher's Exact Test	4.055			.276		
Linear-by-Linear Association	.450[b]	1	.502	.725	.387	.232
N of Valid Cases	68					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .26.

b. The standardized statistic is -.671.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.249	.377	.380
	Cramer's V	.176	.377	.380
N of Valid Cases		68		

Q2.10 (Income level) * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		
			0	1	Total
Q2.10	R50 000 to R1 million	Count	21	1	22
		% within Q2.10	95.5%	4.5%	100.0%
		% within Decr_Sales_diff_coding	33.9%	100.0%	34.9%
	Between R1 million and R5 million	Count	23	0	23
		% within Q2.10	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	37.1%	0.0%	36.5%
	Between R5 million and R20 million	Count	18	0	18
		% within Q2.10	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	29.0%	0.0%	28.6%
Total		Count	62	1	63
		% within Q2.10	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

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Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.894[a]	2	.388	.635		
Likelihood Ratio	2.134	2	.344	.635		
Fisher's Exact Test	1.773			.635		
Linear-by-Linear Association	1.390[b]	1	.238	.635	.349	.349
N of Valid Cases	63					

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .29.

b. The standardized statistic is -1.179.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.173	.388	.635
	Cramer's V	.173	.388	.635
N of Valid Cases		63		

Q2.10 (Income level) * Inc_Purch_diff_coding
Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.10	R50 000 to R1 million	Count	0	20	4	24
		% within Q2.10	0.0%	83.3%	16.7%	100.0%
		% within Inc_Purch_diff_coding	0.0%	32.8%	66.7%	35.3%
	Between R1 million and R5 million	Count	1	25	0	26
		% within Q2.10	3.8%	96.2%	0.0%	100.0%
		% within Inc_Purch_diff_coding	100.0%	41.0%	0.0%	38.2%
	Between R5 million and R20 million	Count	0	16	2	18
		% within Q2.10	0.0%	88.9%	11.1%	100.0%
		% within Inc_Purch_diff_coding	0.0%	26.2%	33.3%	26.5%
Total		Count	1	61	6	68
		% within Q2.10	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

305

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.920[a]	4	.205	.127		
Likelihood Ratio	8.163	4	.086	.100		
Fisher's Exact Test	6.103			.104		
Linear-by-Linear Association	.592[b]	1	.442	.476	.305	.148
N of Valid Cases	68					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .26.

b. The standardized statistic is -.769.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.295	.205	.127
	Cramer's V	.209	.205	.127
N of Valid Cases		68		

Q2.10 (Income level) * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.10	R50 000 to R1 million	Count	0	21	1	22
		% within Q2.10	0.0%	95.5%	4.5%	100.0%
		% within Decr_Purch_diff_coding	0.0%	34.4%	100.0%	34.9%
	Between R1 million and R5 million	Count	0	23	0	23
		% within Q2.10	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	37.7%	0.0%	36.5%
	Between R5 million and R20 million	Count	1	17	0	18
		% within Q2.10	5.6%	94.4%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	27.9%	0.0%	28.6%
Total		Count	1	61	1	63
		% within Q2.10	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

306

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.402[a]	4	.354	.281		
Likelihood Ratio	4.648	4	.325	.281		
Fisher's Exact Test	3.916			.281		
Linear-by-Linear Association	3.120[b]	1	.077	.203	.101	.101
N of Valid Cases	63					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .29.

b. The standardized statistic is -1.766.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.264	.354	.281
	Cramer's V	.187	.354	.281
N of Valid Cases		63		

Q3.2_Sales_Comply * Q2.7_Knowledge

Crosstab

			Q2.7_Knowledge				Total
			Vague	Reasonable	Very good	Exact	
Q3.2_Sales_Comply	0	Count	0	5	7	4	16
		% within Q3.2_Sales_Comply	0.0%	31.3%	43.8%	25.0%	100.0%
		% within Q2.7_Knowledge	0.0%	35.7%	16.7%	6.0%	12.2%
	1	Count	8	9	35	63	115
		% within Q3.2_Sales_Comply	7.0%	7.8%	30.4%	54.8%	100.0%
		% within Q2.7_Knowledge	100.0%	64.3%	83.3%	94.0%	87.8%
Total		Count	8	14	42	67	131
		% within Q3.2_Sales_Comply	6.1%	10.7%	32.1%	51.1%	100.0%
		% within Q2.7_Knowledge	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.537[a]	3	.009	.014		
Likelihood Ratio	10.845	3	.013	.011		
Fisher's Exact Test	9.629			.014		

Linear-by-Linear Association	2.749[b]	1	.097	.099	.071	.030
N of Valid Cases	131					

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is .98.

b. The standardized statistic is 1.658.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.297	.009	.014
	Cramer's V	.297	.009	.014
N of Valid Cases		131		

Q3.3_Purch_Comply * Q2.7_Knowledge

Crosstab

			Q2.7_Knowledge				Total
			Vague	Reasonable	Very good	Exact	
Q3.3_Purch_Comply	0	Count	4	6	9	6	25
		% within Q3.3_Purch_Comply	16.0%	24.0%	36.0%	24.0%	100.0%
		% within Q2.7_Knowledge	50.0%	42.9%	21.4%	9.0%	19.1%
	1	Count	4	8	33	61	106
		% within Q3.3_Purch_Comply	c3.8%	7.5%	31.1%	57.5%	100.0%
		% within Q2.7_Knowledge	50.0%	57.1%	78.6%	91.0%	80.9%
Total		Count	8	14	42	67	131
		% within Q3.3_Purch_Comply	6.1%	10.7%	32.1%	51.1%	100.0%
		% within Q2.7_Knowledge	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	14.676[a]	3	.002	.003		
Likelihood Ratio	13.451	3	.004	.004		
Fisher's Exact Test	13.982			.002		
Linear-by-Linear Association	14.215[b]	1	.000	.000	.000	.000
N of Valid Cases	131					

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.53.

b. The standardized statistic is 3.770.

308

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.335	.002	.003
	Cramer's V	.335	.002	.003
N of Valid Cases		131		

Q2.7_Knowledge * Inc_Sales_diff_coding

Crosstab

			Inc_Sales_diff_coding			Total
			-1	0	1	
Q2.7_Knowledge	Vague	Count	0	2	1	3
		% within Q2.7_Knowledge	0.0%	66.7%	33.3%	100.0%
		% within Inc_Sales_diff_coding	0.0%	3.1%	50.0%	4.4%
	Reasonable	Count	0	8	0	8
		% within Q2.7_Knowledge	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	12.3%	0.0%	11.8%
	Very good	Count	0	25	0	25
		% within Q2.7_Knowledge	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	38.5%	0.0%	36.8%
	Exact	Count	1	30	1	32
		% within Q2.7_Knowledge	3.1%	93.8%	3.1%	100.0%
		% within Inc_Sales_diff_coding	100.0%	46.2%	50.0%	47.1%
Total		Count	1	65	2	68
		% within Q2.7_Knowledge	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.862[a]	6	.065	.140		
Likelihood Ratio	6.856	6	.334	.204		
Fisher's Exact Test	8.904			.177		
Linear-by-Linear Association	2.437[b]	1	.119	.165	.112	.080
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .04.

b. The standardized statistic is -1.561.

309

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.418	.065	.140
	Cramer's V	.295	.065	.140
N of Valid Cases		68		

Q2.7_Knowledge * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding		Total
			0	1	
Q2.7_Knowledge	Vague	Count	5	0	5
		% within Q2.7_Knowledge	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	8.1%	0.0%	7.9%
	Reasonable	Count	6	0	6
		% within Q2.7_Knowledge	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	9.7%	0.0%	9.5%
	Very good	Count	16	1	17
		% within Q2.7_Knowledge	94.1%	5.9%	100.0%
		% within Decr_Sales_diff_coding	25.8%	100.0%	27.0%
	Exact	Count	35	0	35
		% within Q2.7_Knowledge	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	56.5%	0.0%	55.6%
Total		Count	62	1	63
		% within Q2.7_Knowledge	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.750[a]	3	.432	.444		
Likelihood Ratio	2.664	3	.446	.444		
Fisher's Exact Test	3.937			.444		
Linear-by-Linear Association	.104[b]	1	.747	1.000	.444	.270
N of Valid Cases	63					

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is .08.

b. The standardized statistic is -.322.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.209	.432	.444
	Cramer's V	.209	.432	.444
N of Valid Cases		63		

Q2.7_Knowledge * Inc_Purch_diff_coding

Crosstab

			Inc_Purch_diff_coding			Total
			-1	0	1	
Q2.7_Knowledge	Vague	Count	0	3	0	3
		% within Q2.7_Knowledge	0.0%	100.0%	0.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	4.9%	0.0%	4.4%
	Reasonable	Count	1	6	1	8
		% within Q2.7_Knowledge	12.5%	75.0%	12.5%	100.0%
		% within Inc_Purch_diff_coding	100.0%	9.8%	16.7%	11.8%
	Very good	Count	0	23	2	25
		% within Q2.7_Knowledge	0.0%	92.0%	8.0%	100.0%
		% within Inc_Purch_diff_coding	0.0%	37.7%	33.3%	36.8%
	Exact	Count	0	29	3	32
		% within Q2.7_Knowledge	0.0%	90.6%	9.4%	100.0%
		% within Inc_Purch_diff_coding	0.0%	47.5%	50.0%	47.1%
Total		Count	1	61	6	68
		% within Q2.7_Knowledge	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	8.163[a]	6	.226	.225		
Likelihood Ratio	5.205	6	.518	.418		
Fisher's Exact Test	6.754			.366		
Linear-by-Linear Association	.601[b]	1	.438	.500	.303	.147
N of Valid Cases	68					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .04.

b. The standardized statistic is .775.

311

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.346	.226	.225
	Cramer's V	.245	.226	.225
N of Valid Cases		68		

Q2.7_Knowledge * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			Total
			-1	0	1	
Q2.7_Knowledge	Vague	Count	1	4	0	5
		% within Q2.7_Knowledge	20.0%	80.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	6.6%	0.0%	7.9%
	Reasonable	Count	0	6	0	6
		% within Q2.7_Knowledge	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	9.8%	0.0%	9.5%
	Very good	Count	0	17	0	17
		% within Q2.7_Knowledge	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	27.9%	0.0%	27.0%
	Exact	Count	0	34	1	35
		% within Q2.7_Knowledge	0.0%	97.1%	2.9%	100.0%
		% within Decr_Purch_diff_coding	0.0%	55.7%	100.0%	55.6%
Total		Count	1	61	1	63
		% within Q2.7_Knowledge	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	12.570[a]	6	.050	.161		
Likelihood Ratio	6.422	6	.378	.214		
Fisher's Exact Test	8.846			.214		
Linear-by-Linear Association	5.048[b]	1	.025	.090	.045	.045
N of Valid Cases	63					

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .08.

b. The standardized statistic is 2.247.

312

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.447	.050	.161
	Cramer's V	.316	.050	.161
N of Valid Cases		63		

Q3.2_Sales_Comply * Q2.13 (return submission)

Crosstab

			Q2.13			
			Don't submit	Myself	Someone else	Total
Q3.2_Sales_Comply	0	Count	1	11	4	16
		% within Q3.2_Sales_Comply	6.3%	68.8%	25.0%	100.0%
		% within Q2.13	3.1%	18.3%	10.3%	12.2%
	1	Count	31	49	35	115
		% within Q3.2_Sales_Comply	27.0%	42.6%	30.4%	100.0%
		% within Q2.13	96.9%	81.7%	89.7%	87.8%
Total		Count	32	60	39	131
		% within Q3.2_Sales_Comply	24.4%	45.8%	29.8%	100.0%
		% within Q2.13	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	4.700[a]	2	.095	.090		
Likelihood Ratio	5.382	2	.068	.090		
Fisher's Exact Test	4.508			.090		
Linear-by-Linear Association	.603[b]	1	.437	.474	.277	.107
N of Valid Cases	131					

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.91.

b. The standardized statistic is -.777.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.189	.095	.090
	Cramer's V	.189	.095	.090
N of Valid Cases		131		

313

Q3.3_Purch_Comply * Q2.13 (return submission)

Crosstab

			Q2.13			Total
			Don't submit	Myself	Someone else	
Q3.3_Purch_Comply	0	Count	5	7	13	25
		% within Q3.3_Purch_Comply	20.0%	28.0%	52.0%	100.0%
		% within Q2.13	15.6%	11.7%	33.3%	19.1%
	1	Count	27	53	26	106
		% within Q3.3_Purch_Comply	25.5%	50.0%	24.5%	100.0%
		% within Q2.13	84.4%	88.3%	66.7%	80.9%
Total		Count	32	60	39	131
		% within Q3.3_Purch_Comply	24.4%	45.8%	29.8%	100.0%
		% within Q2.13	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.514[a]	2	.023	.022		
Likelihood Ratio	7.096	2	.029	.030		
Fisher's Exact Test	6.963			.027		
Linear-by-Linear Association	4.041[b]	1	.044	.050	.030	.016
N of Valid Cases	131					

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.11.

b. The standardized statistic is -2.010.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.239	.023	.022
	Cramer's V	.239	.023	.022
N of Valid Cases		131		

314

Q2.13 (return submission) * Inc_Sales_diff_coding

Crosstab

| | | | \multicolumn{3}{c}{Inc_Sales_diff_coding} | Total |
			-1	0	1	
Q2.13	Don't submit	Count	0	18	0	18
		% within Q2.13	0.0%	100.0%	0.0%	100.0%
		% within Inc_Sales_diff_coding	0.0%	27.7%	0.0%	26.5%
	Myself	Count	1	28	0	29
		% within Q2.13	3.4%	96.6%	0.0%	100.0%
		% within Inc_Sales_diff_coding	100.0%	43.1%	0.0%	42.6%
	Someone else	Count	0	19	2	21
		% within Q2.13	0.0%	90.5%	9.5%	100.0%
		% within Inc_Sales_diff_coding	0.0%	29.2%	100.0%	30.9%
Total		Count	1	65	2	68
		% within Q2.13	1.5%	95.6%	2.9%	100.0%
		% within Inc_Sales_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	5.918[a]	4	.205	.159		
Likelihood Ratio	6.502	4	.165	.159		
Fisher's Exact Test	4.478			.159		
Linear-by-Linear Association	2.209[b]	1	.137	.262	.139	.113
N of Valid Cases	68					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .26.

b. The standardized statistic is 1.486.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.295	.205	.159
	Cramer's V	.209	.205	.159
N of Valid Cases		68		

315

Q2.13 (return submission) * Decr_Sales_diff_coding

Crosstab

			Decr_Sales_diff_coding 0	Decr_Sales_diff_coding 1	Total
Q2.13	Don't submit	Count	14	0	14
		% within Q2.13	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	22.6%	0.0%	22.2%
	Myself	Count	31	0	31
		% within Q2.13	100.0%	0.0%	100.0%
		% within Decr_Sales_diff_coding	50.0%	0.0%	49.2%
	Someone else	Count	17	1	18
		% within Q2.13	94.4%	5.6%	100.0%
		% within Decr_Sales_diff_coding	27.4%	100.0%	28.6%
Total		Count	62	1	63
		% within Q2.13	98.4%	1.6%	100.0%
		% within Decr_Sales_diff_coding	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	2.540[a]	2	.281	.508		
Likelihood Ratio	2.546	2	.280	.508		
Fisher's Exact Test	2.328			.508		
Linear-by-Linear Association	1.740[b]	1	.187	.508	.286	.286
N of Valid Cases	63					

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .22.

b. The standardized statistic is 1.319.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.201	.281	.508
	Cramer's V	.201	.281	.508
N of Valid Cases		63		

316

Q2.13 (return submission) * Inc_Purch_diff_coding

Crosstab

| | | | Inc_Purch_diff_coding | | | |
			-1	0	1	Total
Q2.13	Don't submit	Count	0	15	3	18
		% within Q2.13	0.0%	83.3%	16.7%	100.0%
		% within Inc_Purch_diff_coding	0.0%	24.6%	50.0%	26.5%
	Myself	Count	1	26	2	29
		% within Q2.13	3.4%	89.7%	6.9%	100.0%
		% within Inc_Purch_diff_coding	100.0%	42.6%	33.3%	42.6%
	Someone else	Count	0	20	1	21
		% within Q2.13	0.0%	95.2%	4.8%	100.0%
		% within Inc_Purch_diff_coding	0.0%	32.8%	16.7%	30.9%
Total		Count	1	61	6	68
		% within Q2.13	1.5%	89.7%	8.8%	100.0%
		% within Inc_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	3.268[a]	4	.514	.579		
Likelihood Ratio	3.455	4	.485	.603		
Fisher's Exact Test	3.169			.603		
Linear-by-Linear Association	1.282[b]	1	.258	.316	.192	.109
N of Valid Cases	68					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .26.

b. The standardized statistic is -1.132.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.219	.514	.579
	Cramer's V	.155	.514	.579
N of Valid Cases		68		

317

Q2.13 (return submission) * Decr_Purch_diff_coding

Crosstab

			Decr_Purch_diff_coding			
			-1	0	1	Total
Q2.13	Don't submit	Count	0	13	1	14
		% within Q2.13	0.0%	92.9%	7.1%	100.0%
		% within Decr_Purch_diff_coding	0.0%	21.3%	100.0%	22.2%
	Myself	Count	0	31	0	31
		% within Q2.13	0.0%	100.0%	0.0%	100.0%
		% within Decr_Purch_diff_coding	0.0%	50.8%	0.0%	49.2%
	Someone else	Count	1	17	0	18
		% within Q2.13	5.6%	94.4%	0.0%	100.0%
		% within Decr_Purch_diff_coding	100.0%	27.9%	0.0%	28.6%
Total		Count	1	61	1	63
		% within Q2.13	1.6%	96.8%	1.6%	100.0%
		% within Decr_Purch_diff_coding	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	6.066[a]	4	.194	.176		
Likelihood Ratio	5.579	4	.233	.176		
Fisher's Exact Test	5.127			.176		
Linear-by-Linear Association	3.906[b]	1	.048	.129	.065	.065
N of Valid Cases	63					

a. 6 cells (66.7%) have expected count less than 5. The minimum expected count is .22.

b. The standardized statistic is -1.976.

Symmetric Measures

		Value	Approximate Significance	Exact Significance
Nominal by Nominal	Phi	.310	.194	.176
	Cramer's V	.219	.194	.176
N of Valid Cases		63		

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Kruskal-Wallis Test

Test Statistics[a,b]

	Q2.7_Knowledge
Kruskal-Wallis H	5.634
df	3
Asymp. Sig.	.131

a. Kruskal Wallis Test

b. Grouping Variable: Q2.6_Educ

Ranks

	Q2.6_Educ	N	Mean Rank
Q2.7_Knowledge	2	8	38.44
	3	31	65.19
	4	58	68.58
	5	34	68.82
	Total	131	

Chapter 6, Limitations

Understanding of the experiment frequency table

Q.15

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Slightly well	1	.8	.8	.8
	Moderately well	33	25.2	26.6	27.4
	Very well	57	43.5	46.0	73.4
	Extremely well	33	25.2	26.6	100.0
	Total	124	94.7	100.0	
Missing	System	7	5.3		
Total		131	100.0		

Understanding of the experiment themes

16_VAT_incl (Unsure if VAT must be included)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	124	94.7	94.7	94.7
	Yes	7	5.3	5.3	100.0
	Total	131	100.0	100.0	

16_Purpose of experiment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	124	94.7	94.7	94.7
	Yes	7	5.3	5.3	100.0
	Total	131	100.0	100.0	

16_Missed_info

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	119	90.8	90.8	90.8
	Yes	12	9.2	9.2	100.0
	Total	131	100.0	100.0	

16_Explanation (People gave explanation of what they did)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	123	93.9	93.9	93.9
	Yes	8	6.1	6.1	100.0
	Total	131	100.0	100.0	

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