

To register or not to register for value-added tax? How tax rate changes can influence the decisions of small businesses in South Africa

Anna Herculina Anculien Schoeman, Christopher C. Evans and
Hanneke Du Preez
Department of Taxation, University of Pretoria, Pretoria, South Africa

Influence the
decisions of
small
businesses

213

Received 21 May 2021
Revised 1 December 2021
20 January 2022
4 April 2022
Accepted 30 May 2022

Abstract

Purpose – Correct registration for the value-added tax (VAT) is a key aspect of tax compliance; it is vital in ensuring adequate tax revenue collection in all countries but particularly in developing countries such as South Africa. Non-registration hinders sufficient tax revenue collection, stifles economic growth and causes unfair competition with formal businesses. The purpose of this study is to determine whether changes in the VAT rate affect the registration decisions of businesses, ultimately impacting upon tax compliance behaviour and tax revenue collection.

Design/methodology/approach – An online 2×2 between-subjects field experiment was conducted, as part of a broader study, to consider compliance with registration requirements by small business entities in South Africa, specifically when there are changes in the VAT rate.

Findings – Although the study establishes that changes in the VAT rate tend not to have a significant impact on the registration decisions of such taxpayers, it nonetheless indicates that the magnitude of the change in the VAT rate may be influential on registration decisions, whether relating to compulsory or voluntary registration. More particularly, the greater the magnitude of the VAT rate decrease (increase), the more likely it is that taxpayers will register (deregister) for VAT purposes, indicating that the magnitude of changes in the VAT rate do have an impact on VAT registration decisions and therefore on tax compliance more generally.

Research limitations/implications – Not only does the study add to the limited knowledge available on registration decisions of small businesses, but also gives valuable guidance to policymakers in terms of determining the VAT rate for the country.

Originality/value – Not only does the study add to the limited knowledge available on registration decisions of small businesses, but it also gives valuable guidance to policymakers in terms of determining the VAT rate for the country.

Keywords Tax registration, Tax compliance, Small business entities, VAT rate, Field experiment

Paper type Research paper



© Anna Herculina Anculien Schoeman, Christopher C. Evans and Hanneke du Preez. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial & non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

The authors thank to Dr Marthi Pohl for your valuable guidance in analysing the data.

1. Introduction

Taxes are the lifeblood of government and no taxpayer should be permitted to escape the payment of his just share of the burden of contributing thereto. (*Vanderbilt in James, 2015a, n.p.*)

The decision as to whether a business should or should not register for the value-added tax (VAT) is a complex one that can be influenced by many factors. Any decision not to register will inevitably result in the under-collection of taxes, which places considerable additional strain on fiscal resources. The problem of tax non-compliance is especially relevant in developing countries that have large informal sectors, such as South Africa (*Fjeldstad et al., 2012*). Tax non-compliance and perceptions of corruption are key challenges to state-building in developing countries (*Rosid et al., 2018*). Many businesses, particularly small businesses, in the informal sector, do not register as taxpayers when obliged to do so and do not file appropriate returns; they also tend to under-report their income or over-report their expenses (*Morissette, 2014; Slemrod, 2019*) [1]. Non-registration of small entities remains a detrimental factor to growing the economy (*Woodruff, 2013*), which also results in tax evasion since no output tax is paid (*Harrison and Krelove, 2005; Keen and Smith, 2006*).

Revenue collected from taxes such as the VAT can be increased either by expanding the tax base, for example, through having more registered taxpayers or by increasing the tax rate. In an effort to increase the tax revenue in South Africa, the VAT rate was increased from 14% to 15% on 1 April 2018 (*Gigaba, 2018*). By increasing the VAT rate, it was anticipated that more tax revenue would be collected to help fund government expenditure. However, if such an increase leads to higher non-compliance than before, especially in hindering VAT registrations, the opposite may occur (*Matthews, 2003*). In general, tax avoidance, tax evasion and tax rate competition remain prominent issues (*Saka et al., 2019*).

The motivation for the current study is that there has been relatively little research on this topic in the past 20 years. Indeed, *Mascagni (2018)* notes that more research should be conducted on new registrations in developing countries with large informal sectors and that research in Africa remains under-explored. The contribution of the study is thus to address this need indicated by *Mascagni (2018)* by expanding on the body of knowledge regarding registration decisions in an African country.

The purpose of this study is to analyse the registration decisions of small business entities in South Africa when these business entities are faced with a change in the VAT rate, as this may influence tax compliance behaviour and, ultimately, tax revenue collection. The main question guiding the study is: how and to what extent will registration decisions impact the tax compliance behaviour of small businesses in South Africa when the small businesses are confronted with changes in the VAT rate? In answering the question, the direction and magnitude of the change in the VAT rate and the impact these factors have on the registration compliance behaviour of potential VAT vendors is taken into consideration. Further, the difference in VAT registration compliance behaviour with regard to compulsory versus voluntary registration is considered. The outcomes of the study, and further contribution on a practical level, will be to help policymakers from developing countries with large informal sectors to determine the possible effect a change in the VAT rate may have on VAT registration compliance behaviour before any such change is practically implemented.

The South African Revenue Service (SARS) has identified the small business sector as a risky sector in terms of tax compliance, as tax registration is often low in this sector. SARS

has thus indicated that they will increase their focus on VAT in the small business sector and audit a large number of small businesses in general (SARS, 2012; SARS, 2017). For this reason, the current study focused only on small business entities. A small business entity was defined, for the purposes of the study, as a business where the gross income was less than R 20m in a 12-month period [in accordance with section 12E(4)(a) of the Income Tax Act (South Africa, 1962)] [2].

This study used an experiment as the research instrument in testing registration compliance with regard to changes in the VAT rate in South Africa. An online 2×2 between-subjects field experiment was conducted. A pre-test and post-test design was implemented, where the recruited participants – all of whom held managerial roles in small business entities – were asked a series of questions before a simulated VAT rate change. Following this first stage, the participants were allocated to one of four treatment groups [3]. Further questions relating to hypothetical changes in the VAT rate (a small decrease, a large decrease, a small increase and a large increase) were asked of members of each treatment group. The results were then analysed to determine the effect of the independent variable (a change in the VAT rate) on the dependent variable (tax compliance behaviour). A total of 131 valid responses were received [4] from individuals occupying managerial positions in small business entities.

The next section of the article considers the background of the study and explores relevant literature that has considered the registration decision in the context of VAT. This is followed by an outline of the research design that was applied in the study. The results are then discussed and analysed, and the article concludes by identifying limitations and highlighting possible areas for future research.

2. Background and literature review

2.1 Tax compliance

Since the aim of this study is to determine whether changes in the VAT rate may affect the registration decisions of small business entities, one needs to understand what tax compliance is. Tax compliance, in its broadest and operational sense, is when a person who is obliged to do so registers as a taxpayer. Registered taxpayers also need to complete and submit their tax returns accurately and in a timely manner and then need to pay the applicable tax liability in full, also in a timely manner (OECD, 2008). The focus in the remainder of this article, however, is solely on the registration aspect of tax compliance. Non-compliance due to non-registration as a taxpayer when a taxpayer is obliged to register is potentially illegal and can amount to tax evasion (Alm, 2018).

Non-registration, and thus non-compliance, is not always intentional. People who are less educated than others, for example, may be less compliant, as they might not know that they need to register for VAT purposes or they might make unintentional mistakes due to a lack of tax knowledge (Hofmann *et al.*, 2017; Kosonen and Ropponen, 2013; Mascagni and Santoro, 2018).

Tax compliance is a topic that has encompassed research from many disciplines, including law, accounting, economics, sociology, psychology, political sciences and other fields (Jackson and Milliron, 1986). Extensive research has been undertaken on factors influencing tax compliance using a variety of methodologies, including experimental research, surveys, regression modelling and analytical studies. However, the results have often proved to be either indeterminate or mixed, indicating that further research is still necessary (Jackson and Milliron, 1986; Richardson and Sawyer, 2001; Yong *et al.*, 2019). The majority of tax compliance studies have been done in developed countries. Some studies have considered the

effect of “mental accounting” in relation to VAT (taxpayers being more willing to comply once they have made a mind shift that the money they have collected does not belong to them but to the revenue authority) (Adams and Webley, 2001; Olsen *et al.*, 2019) or the impact of replacing sales tax by VAT (Hoseini and Briand, 2020). However, the effect of changes in the VAT rate on VAT registration and the accompanying tax compliance behaviour has not been considered. Policymakers might want to increase the VAT rate to increase tax revenue collection but may be unaware of the possible increase in tax non-compliance, especially regarding the registration of VAT vendors.

One approach to the exploration of the factors influencing tax compliance behaviour has come to be known as the economic deterrence approach, drawing on concepts initially developed in theories seeking to explain criminal behaviour (Becker, 1968). Building on the theory of criminal behaviour and directing it towards tax compliance behaviour, Allingham and Sandmo (1972) 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. A person would thus consider the chances of an uncertain outcome happening and the associated consequences thereof (Hamid, 2013). The economic deterrence explanation of tax compliance behaviour thus considers that a number of factors will be taken into account by the rational actor, typically including the probability of being audited, the possibility of fines and penalties and – the focus of this article – the tax rate (Hamid, 2013).

The focus of the majority of the studies conducted on tax rates and their effect on tax compliance behaviour is on income tax rates; very few studies consider the effect of a change in the VAT rate on VAT registrations (Alm, 2018; Jackson and Milliron, 1986; Matthews, 2003; Richardson and Sawyer, 2001). In the context of VAT, Matthews (2003) conducted a study based on European countries where the findings indicate that VAT evasion and non-compliance increase through the possibility of the deregistration of small businesses as VAT vendors when there is an increase in the VAT rate.

Not only have there been very few studies on the effect of a change in the VAT rate on tax compliance behaviour but there have also been very few studies which have used an experimental approach (Harju *et al.*, 2014). This study, therefore, adds to the limited body of knowledge on the registration compliance decisions of potential VAT vendors of small business entities in South Africa when considering the effect of VAT rate changes.

The next section explains when an entity is liable to register as a VAT vendor, and explores the literature related to VAT registration.

2.2 Value-added tax registration

The implementation of VAT systems has spread globally to over 170 countries and territories (OECD, 2020). VAT contributes, on average, 20% of the total tax revenue for Organisation for Economic Co-operation and Development countries (OECD, 2019b); VAT accounts for 30% of the total tax revenue in New Zealand (OECD, 2019a) and 24.5% of the total tax revenue in South Africa (National Treasury and SARS, 2018, p. viii). The South African VAT system is based on that of New Zealand.

Registration is a critical component of the successful operation of VAT systems wherever they are operated in the world. Once an entity is registered for VAT, a number of administrative matters need to be complied with; for example, tax invoices need to be issued on the sale of supplies; VAT returns need to be completed and submitted and the net VAT

amount payable or refundable needs to be accounted for. Penalties and interest can be levied for non-compliance with these regulations. The compliance burden is thus time-consuming and costly, especially for small, start-up businesses (Moodaley, 2015), often leading to non-compliance. The registration threshold, therefore, needs to be set at an appropriate level.

In the majority of countries, an entity only has to register for VAT once its turnover has reached the minimum compulsory threshold amount for a 12-month period. The main purpose of a threshold is to prevent the mostly unwanted situation in which very small businesses have to register for VAT, as the compliance costs for small businesses are disproportionately high in comparison to those of large businesses (Evans, 2003). Adhering to regulatory requirements, in general, is burdensome, especially on small and medium enterprises, and it inhibits their growth opportunities (Hansford *et al.*, 2003). Where compliance costs are high, it is difficult for a small business to be profitable. If small businesses are obliged to register for VAT, 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 (Ebrill *et al.*, 2001; James, 2015b; Schenk *et al.*, 2015). In developing countries, as is the case in more developed economies, a compulsory threshold amount is crucial, as the collection of VAT revenue should be maximised and simultaneously provide sufficient support to small business entities (Ebrill *et al.*, 2001).

Even though it may not be compulsory for an entity to register for VAT, the entity may nonetheless be allowed to register voluntarily if it earns above the minimum turnover in a 12-month period (Ebrill *et al.*, 2001). In setting the appropriate thresholds, the administrative 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 on 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 entities. This is not practical, however (Ebrill *et al.*, 2001; James, 2015b; Schenk *et al.*, 2015), and a balance, therefore, needs to be struck between the size of an entity and the potential VAT revenue to be collected, keeping the operational costs (compliance costs for the business and administrative costs for the revenue authority) in mind.

Studies that have been conducted on the VAT registration thresholds reveal the bunching effect, which is where many businesses' taxable supplies lie just below the compulsory registration threshold. Although 43% of respondents in a study conducted by Liu *et al.* (2019) indicated that they voluntarily registered for VAT, the bunching effect was evident where entities purposefully restricted their sales to remain below the compulsory registration threshold. Harju *et al.* (2015) noted a similar trend where many businesses "bunched" just below the registration threshold; however, they made it clear that there was no evidence in their study of tax avoidance or evasion.

Steps taken to remain under the compulsory registration threshold include actively reducing sales in legal and illegal ways, closing some businesses, ceasing advertising, turning down work, advising customers to purchase their own materials, reducing prices of products or splitting the business into various businesses (Klahr *et al.*, 2017). This skewed focus on avoiding the payment of VAT by remaining small simply to remain under the radar and unregistered suppresses the business and economic growth opportunities. Some of the small businesses eventually grow, yet they are so used to trading in the informal sector that they remain there (Woodruff, 2013).

Whether an entity is obliged to register or it voluntarily registers for VAT, there are a number of advantages to being a registered VAT vendor: the entity can claim back the input

tax on its purchases (Ebrill *et al.*, 2001; Harju *et al.*, 2015; James, 2015b; Schenk *et al.*, 2015); some large businesses and government departments require their suppliers to be registered for VAT, and thus only VAT-registered entities are used as suppliers (Moodaley, 2015); the entity can benefit from an improved reputation; and the entity has better credibility (Klahr *et al.*, 2017). Further advantages of registering for VAT are avoiding the payment of fines for non-registration and expanding the customer base due to the fact that the business can issue official receipts (Le *et al.*, 2020).

Apart from the advantages of being registered as a VAT vendor, other possible reasons that entities register as VAT vendors when not obliged to do so (voluntary registration) are that the entities expect to reach the registration threshold soon or they have been advised by an agent to register (Klahr *et al.*, 2017).

A disadvantage of registering for VAT is that the business may be inspected by tax officials (Le *et al.*, 2020); although businesses in the informal sector may also be subject to scrutiny if the revenue authority becomes aware of their existence. Further reasons for non-registration for VAT include the lack of awareness of the advantages of being VAT registered, high compliance costs and the complexity of the VAT refund system. The administrative burden associated with registration is also a deterrent (Klahr *et al.*, 2017).

Non-registration for VAT results in unfair market competition due to the prices of registered vendors being higher, as VAT is included in the selling price. Therefore, a higher VAT rate can lead to an increase in unfair market competition (Enyew and Andargie, 2018).

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 purchasing business is unable to claim this input tax back due to the business not being a registered VAT vendor (Ebrill *et al.*, 2001; Krever, 2008).

Research indicates that the most efficient and effective VAT system will have a sufficiently high compulsory registration threshold to reduce compliance costs, yet still maintain a tax base sufficient for revenue generation (OECD, 2012). Each country has its opportunities and challenges and, therefore, needs to evaluate and apply the most appropriate VAT threshold applicable to its own circumstance.

The focus country of this research is South Africa: a developing country with a substantial informal sector. Every entity that makes taxable supplies in a 12-month period of more than R 1m–US\$67,244.60 on 17 March 2021 (Oanda, 2021) – (compulsory threshold) is required to register as a VAT vendor; however, any entity making taxable supplies of more than R 50,000–US\$3,362.23 on 17 March 2021 (Oanda, 2021) – (voluntary threshold) may register as a VAT vendor [according to section 23 of the VAT Act (South Africa, 1991)]. The high compulsory threshold ensures that small businesses for whom the tax compliance costs would be high are excluded (Owens *et al.*, 2011).

South Africa’s informal sector employed 18% of the labour force for Quarter 4 of 2019 (Statistics South Africa, 2019). Although the vast majority (around 73%) of the individuals in the informal sector of South Africa do not need to register for VAT, as their turnover characteristically falls below the compulsory registration threshold (Rogan and Skinner, 2019), some are supposed to register but do not register and are therefore non-compliant.

Drawing from the literature discussed above, and according to the expected utility theory, an entity may be non-compliant by not registering for VAT when obliged to do so (compulsory registration), as it is perceived that the benefits of evading the tax outweigh the penalty payable if caught. When there is an increase in the VAT rate, even fewer entities might register (or more entities might deregister) as the benefits of evading tax increase. Conversely, when there is a decrease in the VAT rate, the benefits for evading tax are less

appealing and more entities may, therefore, decide to register. And the greater the magnitude of the change, the greater this effect is likely to be.

In discussing these hypotheses, it should be noted that the two groups experiencing a decrease in the VAT rate were asked whether they thought a person would register for VAT, whereas the two groups contemplating an increase in the VAT rate were asked whether they thought a person would deregister as a VAT vendor.

Based upon the literature and the theoretical underpinnings, the following hypotheses are offered:

For the questions relating to registration decisions where the business meets the compulsory registration threshold:

H1. A larger decrease in the VAT rate will result in small business entities being more likely to register for VAT when it is compulsory to be registered.

H2. A larger increase in the VAT rate will result in small business entities being more likely to deregister for VAT when it is compulsory to be registered.

Due to the disadvantages attached to being a registered VAT vendor [being subject to scrutiny, high compliance costs, complexity of the VAT refund system and the administrative burden attached to being registered (Klahr *et al.*, 2017; Le *et al.*, 2020)], it is not expected that with a decrease in the VAT rate, businesses who are not registered VAT vendors would register as such if they do not meet the compulsory registration threshold (thus would not register voluntarily). In contrast, there are several advantages to being a registered VAT vendor, such as claiming back the input tax on its purchases (Ebrill *et al.*, 2001); winning tenders or being the preferred supplier of other VAT vendors (Moodaley, 2015); improved reputation and better credibility (Klahr *et al.*, 2017). Given these stated advantages and disadvantages and determining whether the advantages outweigh the disadvantages mentioned, the following hypothesis is derived for the treatment groups experiencing a decrease in the VAT rate and for whom it is not compulsory to be a registered VAT vendor:

H3. A larger decrease in the VAT rate will result in small business entities being more likely to register for VAT when it is not compulsory to be registered.

Support for the hypothesis will imply that the advantages were considered more important, while the rejection of the hypothesis would imply the disadvantages outweighed the advantages.

Similarly, due to the disadvantages attached to being a registered VAT vendor, it is expected that voluntarily registered VAT vendors would deregister when there is an increase in the VAT rate. The following hypothesis is thus derived for the treatment groups experiencing an increase in the VAT rate and for whom it is not compulsory to be a registered VAT vendor:

H4. A larger increase in the VAT rate will result in small business entities being more likely to deregister for VAT when it is not compulsory to be registered.

The next section outlines the research design applied in testing these hypotheses.

3. Research design

Obtaining valid data on the tax compliance behaviour of small business entities is challenging, as people may be reluctant to provide honest answers if they are, in fact, not

complying (Alm, Jackson and McKee, 1992). The current study adopted a quantitative research approach, using a pre-test and post-test online field experimental design [5] (Leedy and Ormrod, 2015; Sekaran and Bougie, 2013) to determine the relationship between a change in the VAT rate and the registration compliance behaviour of small business entities. An experiment is the ideal data collection instrument, as experiments find a way around the problem of potentially getting dishonest answers for difficult questions such as that of how compliant a participant is (Alm, 1991; Torgler, 2003): a real-world scenario is sketched using hypothetical scenarios, permitting the participants to not feel targeted regarding their own compliance. Also, conducting an experiment means that nuisance factors can be eliminated, drawing the focus solely to testing the effect of the factor in question (Burtless, 1995). Conducting an experiment produces a research design which can be replicated in other countries. Furthermore, through an experiment, the effect of a proposed policy change, such as a change in the VAT rate, can be simulated and measured before the change is introduced in practice. It could happen that policymakers assume certain responses to changes in legislation, but to test this assumption, they could perform an experiment to ensure that the results do indeed reflect the anticipated direction (Burtless, 1995; Hofstee, 2011; Maines *et al.*, 2006).

Prior to the conducting of the experiment, non-probability purposive sampling was used to recruit participants for three rounds of pilot testing. This was done with the purpose of ensuring that people with the relevant knowledge could assist in improving the content and processes of the experiment (content validity). Responses were received from 18 participants who were either academics or business persons (Leedy and Ormrod, 2015; Saunders *et al.*, 2016).

Once the wording of the experiment was finalised after the pilot tests, volunteer sampling, convenience sampling, snowball sampling and non-purposive sampling were used to select the participants for the actual experiment. A link to the experiment was sent, using social media, to the researchers' friends and family members. The Organisation Undoing Tax Abuse posted the link on their Facebook page, and the South African Institute of Tax Practitioners sent the link to their members via their newsletter. In addition, 15,158 email addresses were obtained from LinkedIn, which is in the public domain, and a link to the experiment was emailed to each of them. All of the people reached could thus receive the link and decide whether to participate or not. The participants were also asked in the message containing the link to send the link to others whom they thought would likewise be qualifying participants (Saunders *et al.*, 2016). As a result of this entire process, and as noted above, 131 participants were ultimately recruited. A qualifying participant was a person involved in the financial decisions of a business entity (including a sole proprietor, practice, partnership or any other form of business), identified by means of screening questions.

An online 2×2 between-subjects field experiment was conducted in the period between June 2018 and January 2019. For each participant, the experiment started with a brief introduction to the experiment. Very little information was given at the outset so that the participants were not influenced by the researchers' expectations or what the participants thought the expectations were (Saunders *et al.*, 2016).

To ensure that participants were attentive throughout the experiment and that valid responses were received, manipulation/attention checks were included (Libby *et al.*, 2002), asking the participants to click on "5" on a seven-point Likert scale and also to indicate the change in the VAT rate they experienced in their treatment group.

When choosing the different VAT rates for application in the current experiment in South Africa, broad trends in VAT rates in Africa as well as in the rest of the world were considered. For instance, the VAT rates of the countries surrounding South Africa vary between 12% and 17% (ATAF, 2018; PwC, 2018). In the continent as a whole, Madagascar

and Morocco have the highest VAT rate at 20%. This 20% VAT rate is five percentage points higher than the current VAT rate in South Africa, which is 15%. Furthermore, in European countries, fluctuations of their initial VAT rates have been seen in the form of decreases and increases ranging between 1% and 5% points (European Commission, 2018).

As a result, and to determine the effect of a change in the VAT rate on the tax compliance behaviour of small business entities, the experiment used four treatment groups that were distinguished as follows:

- (1) the large decrease group was presented with a five percentage point decrease in the VAT rate (to 10%);
- (2) the small decrease group was presented with a one percentage point decrease in the VAT rate (to 14%);
- (3) the small increase group was presented with a one percentage point increase in the VAT rate (to 16%); and
- (4) the large increase group was presented with a five percentage point increase in the VAT rate (to 20%).

Before being allocated to one of these treatment groups, participants answered a series of demographic questions and addressed a hypothetical scenario which sought information on the amounts they would declare on sales and purchases with a VAT rate of 15%. Qualtrics, the online instrument delivery service provider through which the experiment was conducted, then randomly allocated the participants to one of the four treatment groups, as shown in Table 1.

The number of responses were deemed sufficient per treatment group, as the typical sample size per treatment group for an experiment is usually between 15 and 30 participants (Daniel, 2012; Hogan *et al.*, 2013; Kim *et al.*, 2005; Rupert *et al.*, 2003).

Once randomly allocated to a treatment group, the participants were asked exactly the same question as to the hypothetical question (relating to the 15% VAT rate) but this time with a new VAT rate as determined by the treatment group [6].

To test the experiment's hypothesis, the participants in the two treatment groups experiencing a decrease in the VAT rate (of 1% or 5%) were asked (using a five-point Likert scale) whether a hypothetical person who was not registered for VAT would be likely to register as a result of the VAT rate decrease; conversely, the participants in the two treatment groups experiencing an increase in the VAT rate (of 1% or 5%) were asked (using a five-point Likert scale) whether a hypothetical person who was registered for VAT would be likely to deregister as a result of the VAT rate increase.

A final set of questions (post-experiment) sought details from the participants regarding their thoughts and decision-making processes when answering the questions.

The results from the experiment are discussed in the following section.

Treatment group	No. of responses
Large decrease group (10%)	33
Small decrease group (14%)	30
Small increase group (16%)	34
Large increase group (20%)	34

Table 1.
Allocation to the
various treatment
groups

4. Analysis of results

The impact that changes in the VAT rate may have on the registration compliance behaviour of small business entities was considered. This study observed the difference in compliance behaviour relating to the VAT registration decision when a when a one and five percentage point change in the VAT rate was applied.

Data from the experiment were analysed using *IBM SPSS Statistics 25*. Descriptive statistics were obtained to observe correlations or associations in the data set (Leedy and Ormrod, 2015). For the inferential statistics, it is evident that the data are not normally distributed, as the difference variables (difference between amounts declared in the 15% category versus those in the treatment groups) had skewness and/or kurtosis values outside the accepted thresholds (−2 and +2) (George and Mallery, 2010) for the assumptions of normality, as is evident from Table 2. Note that the values used for this test were the amounts declared for sales and purchases in the 15% category as well as in the various treatment groups; however, these results are not discussed further in this article.

4.1 Robustness checks

A series of robustness checks were performed to test the reliability and validity of the data, including obtaining the Cronbach alpha values, performing a wave analysis using the *t*-test for independent groups and comparing data to that of the target population.

4.1.1 Reliability of the data. The reliability of the instrument refers to the ability of the study to obtain consistent results over and over should the experiment be repeated on the same subjects (Dudovskiy, 2018; Middleton, 2020). The reliability of the data was tested by obtaining the Cronbach alpha values and observing differences in responses received over time. The internal consistency of two sets of Likert-scale questions yielded Cronbach alpha values of 0.713 and 0.782, exceeding the threshold of 0.6 (Hair et al., 2010). This indicates that the data are reliable.

Given the length of time over which the data were obtained (the experiment was open for eight months), it was considered appropriate to check that there were no major differences in the responses obtained from those who participated in the experiment at different times. A wave analysis was therefore conducted, with responses received from June 2018 to August 2018 referred to as the early responses and responses received from October 2018 to January 2019 referred to as the late responses. A *t*-test for independent groups based on the amounts declared in the 15% category for both sales and purchases was conducted. All participants had to answer these questions in order for their responses to be deemed valid. As no statistically significant differences were found at the 5% level of significance between the

Treatment group	N	Mean (R)	SD	Skewness	Kurtosis
<i>Sales</i>					
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
<i>Purchases</i>					
15% category	131	532,793.39	154,432.439	−0.420	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	−0.574	2.472
Small increase group (16%)	34	574,411.76	163,358.523	−0.060	1.345
Large increase group (20%)	34	580,882.35	135,967.190	1.276	−0.131

Table 2.
Descriptive statistics
for sales and
purchases declared
within the various
treatment groups

early and the late responses, the data were deemed reliable, and it was concluded that no external shocks or exogenous factors affected the results that were obtained.

4.1.2 Validity of the data. To obtain a greater understanding of the participants and their business entities, the questionnaire commenced with a series of demographic questions. The results were then compared to relevant South African data (Comparative from? column in [Table 3](#)) to determine whether the sample obtained was reasonably representative (valid) of the South African small business sector. As can be seen in [Table 3](#), the results were representative for gender, age, province, type of entity and level of income but not for ethnicity, qualifications and industry (Representative? column in [Table 3](#), comparing the sample with the comparative data obtained). Therefore, the results should not be extrapolated to the general population but should merely be seen as an indication of possible tax compliance behaviour of some small business entities in relation to VAT registration in South Africa and other similar countries.

As a result of these robustness checks, the data were deemed reliable, valid and broadly representative of certain aspects of the South African population of the small business sector.

4.2 The effect of changes in the value-added tax rate on registration decisions

The study hypothesised that changes in the VAT rate (the direction and magnitude of those changes) may have an impact on the decision of a small business to register or deregister as a VAT vendor. Based on the expected utility theory, it was anticipated that since the VAT liability would be less with a lower VAT rate, and it would, as a result, be less appealing to evade tax, more participants would be willing to register for VAT if they met the compulsory registration threshold if there were a small decrease in the VAT rate, and even more would be willing to register if there were a large decrease in the VAT rate. Where the compulsory registration threshold was not met, it was also expected that more would be willing to register as a VAT vendor due to the advantages attached to being registered for VAT and also due to the reduction in the VAT liability. Conversely, it was expected that with an increase in the VAT rate, participants would want to save money and would therefore deregister from VAT if the VAT liability were to increase. The higher the VAT rate, the greater the expected likelihood of deregistration. This was expected to hold true regardless of whether the registration threshold was met. Even where suppliers are obliged to be registered, it is expected that they would deregister as the benefits of evading outweighs the cost of compliance.

The likelihood of registration or deregistration may be influenced by whether an entity is obliged to register for VAT through exceeding the tax threshold or whether it voluntarily registers as a VAT vendor. Additionally, the registration likelihood may be influenced by the advantages and disadvantages of being registered, as discussed in the literature above. The results under the condition of compulsory registration and under the condition of voluntary registration are reported separately.

4.2.1 Compulsory registration. In the first set of questions relating to the demographic profile of the participants and their small business entities, the participants had to indicate the income level of the entity. This set of questions was designed to provide an indication of whether the businesses were potentially liable to register as VAT vendors (noting that the type of supply could influence the need to register, such as if the entity supplies zero-rated goods or services). Participants were also asked whether the entity was registered for VAT. Of the participants who should have been registered for VAT based on income level, 6% were not registered, possibly indicating real-life non-compliance, even before taking any changes in the VAT rate into account.

Demographic	Sample	Comparison	Comparative from?	Representative?
Gender	Male: 58% Female: 42%	Male: 55% Female: 45%	Workforce	Yes
Ethnicity	White: 82% Indian: 7% African: 7% Other 4%	White: 16.9% Indian: 3.6% Black: 75.1% Coloured: 4.4%	Small medium micro-sized enterprise (SMME) owners	No
Age	20–35: 30% 36–50: 37% 51–65: 28% >65: 5%	<20: 0.4% 20–34: 24.4% 35–49: 46% 50–64: 24.9% >64: 4.3%	SMME owners	Yes
Qualifications	Up to matric: 6% Post-matric: 24% Bachelor's: 44% Master's/ Doctorate: 26%	Tertiary education: 21% Secondary education: 26% Less than secondary education: 53%	SMME owners	No
Province	Gauteng: 57% Western Cape: 20% KZN: 10% Other: 13%	Gauteng: 35% Western Cape: 10% KZN: 16% Other: 39%	SMME registrations	Broadly, yes
Type of business	Private companies: 50% Close corporations (CCs): 22% Sole proprietors: 19% Other: 9%	Companies and CCs: 76% Sole proprietors: 18% Other: 6%	Registered VAT vendors	Yes
Industry	Financial services: 44% Real estate: 7% Agriculture: 5% Engineering and construction: 8% Other: 36%	Trade: 43% Manufacturing: 22% Finance and business services: 21% Transport: 7% Construction: 3% Other: 4%	Small firms (excluding agriculture)	No
Level of income	R 50,000–R 1m: 35% R 1m–R 5m: 37% R 5m–R 20m: 28%	R 50,000–R 1m: 34% R 1m–R 5m: 41% R 5m–R 20m: 25%	Registered VAT vendors with an annual turnover between R 50,000 and R 20m	Yes

Table 3.
Summary of
demographic profile

Sources: National Treasury and SARS (2018), Small Enterprise Development Agency (2019), South African Market Insights (2019) and Statistics South Africa (2018)

During the experiment, 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 thought the likelihood was that a hypothetical person making taxable supplies of R 1.1m (just above the compulsory registration threshold) would register as a VAT vendor when exposed to a decrease in the VAT rate, assuming that the hypothetical person was not registered as a VAT vendor yet. Participants

in the increase in the VAT rate groups (where the VAT rate increased to 16% or 20%) had to report what they thought the likelihood was that a hypothetical person making taxable supplies of R 1.1m would deregister as a VAT vendor when exposed to an increase in the VAT rate, assuming that the hypothetical person was already a registered VAT vendor. This is referred to as the compulsory registration question. The results, according to the descriptive statistics for the compulsory registration question, are illustrated in Figure 1 [7].

When sales were R 1.1m, only 45.5% in the large decrease group and 41.3% in the small decrease group indicated that a hypothetical person would be extremely or somewhat likely to register as a VAT vendor when the VAT rate was reduced. It was anticipated that the majority would, in fact, be prepared to register when a VAT rate reduction took place, so it was surprising that fewer than half of the participants in the decrease groups thought that a hypothetical person would register if the person were compelled to do so, indicating non-compliance in terms of registration. It was, however, also expected that more participants in the large decrease group would think that a hypothetical person would be extremely or somewhat likely to register in comparison to the small decrease group, which proved to be consistent with the actual results. *H1* is thus met, indicating that a larger decrease in the VAT rate will result in small business entities being more likely to register for VAT when it is compulsory to be registered.

With sales of R 1.1m, 73.5% in the small increase group and 64.5% in the large increase group indicated that a hypothetical person would be extremely or somewhat unlikely to deregister as VAT vendors. It was expected, consistent with the results, that fewer participants in the large increase group would think that a hypothetical person would be

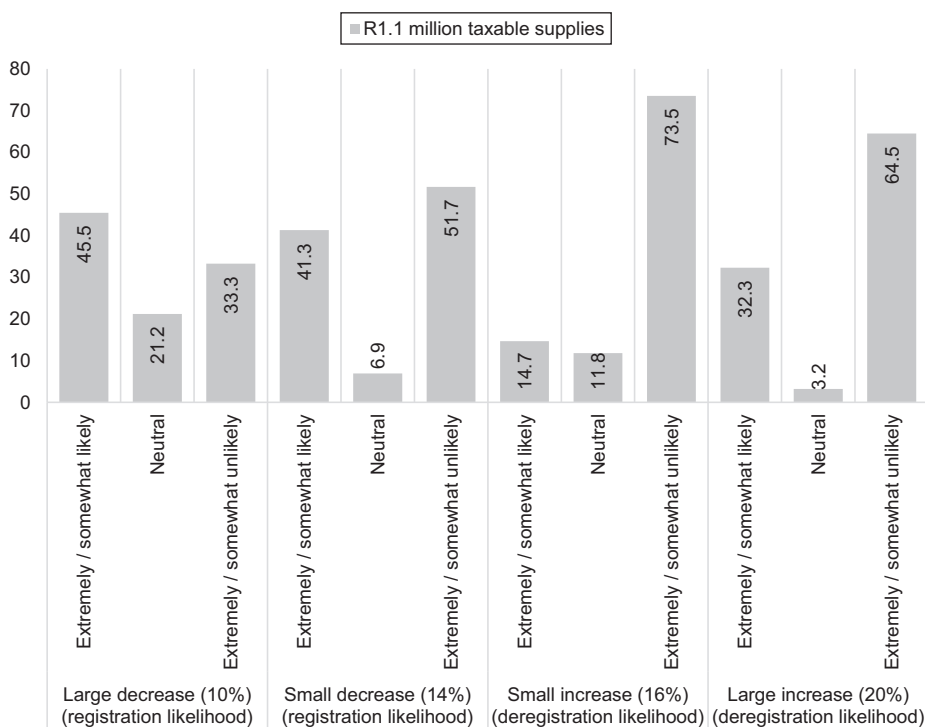


Figure 1.
Registration
decisions-compulsory
registration

extremely or somewhat unlikely to deregister as a VAT vendor in comparison to the small increase group, as the VAT liability would be larger in the larger increase group. The responses here also indicate non-compliance in terms of registration, as not all participants indicated that a hypothetical person would be extremely or somewhat unlikely to deregister as a VAT vendor. This supports the finding of [Matthews \(2003\)](#) that small businesses tend to deregister as VAT vendors when there is an increase in the VAT rate. This supports *H2*, illuding to the fact that a larger increase in the VAT rate will result in small business entities being more likely to deregister for VAT, even when it is compulsory to be registered.

4.2.2 Voluntary registration. The next question asked the participants what the likelihood was that a hypothetical person would register/deregister as a VAT vendor if the person's sales were slightly below the threshold (R 900,000). Due to the advantages of being registered as a VAT vendor and the decreased VAT liability coupling with a decrease in the VAT rate, it was expected that, for the decrease groups, most participants would think that a hypothetical person would be extremely likely to register. From a purely monetary (tax) perspective for the increase groups, it was expected that most participants would think that a hypothetical person would be extremely likely to deregister. This is because the hypothetical person would not be obliged to register as a VAT vendor, and the costs for complying as a VAT vendor for small businesses are proportionately much higher than for large businesses. One should, however, note that there are other advantages to being registered as a VAT vendor other than just the relief of claiming back input tax. The results of the descriptive statistics for the voluntary registration question are illustrated in [Figure 2](#).

When sales were below the compulsory registration threshold, at R 900,000, few participants in the large and small decrease groups thought that a hypothetical person would register as a VAT vendor. This was not expected since it was expected that more participants would think that a hypothetical person would register due to the decrease in the VAT liability and also due to the advantages attached to being a VAT vendor. In the large decrease group, only 18.2% of participants indicated that it would be extremely or somewhat likely that a hypothetical person would register as a VAT vendor, while in the small decrease group, no participants indicated that it would be extremely or somewhat likely that a hypothetical person would register as a VAT vendor. The actual results, therefore, indicated that more participants would think that a hypothetical person would register as a VAT vendor if there were a larger decrease in the VAT rate, supporting hypothesis *H3*. This may be explained by the advantages attached to being registered as a VAT vendor, such as claiming back input tax on purchases, obtaining government tenders, improved reputation and having better credibility ([Ebrill et al., 2001](#); [Moodaley, 2015](#); [Klahr et al., 2017](#)).

When sales were below the threshold, at R 900,000, more participants thought that a hypothetical person would deregister as a VAT vendor if the VAT rate were to increase. In the small increase group, 70.6% of participants indicated that it would be extremely or somewhat likely that a hypothetical person would deregister as a VAT vendor, and in the large increase group, this number rose to 78.1%. This result was expected as per *H4*, as the hypothetical person would not be compelled to remain registered as a VAT vendor. Due to the increase in the VAT liability and also the increase in the prices of the registered vendors coupled with an increase in the VAT rate, the results meet the expectation that a larger increase in the VAT rate would result in a larger inclination to deregistration when registration is voluntary. Some participants, however, indicated that the hypothetical person would remain registered as a VAT vendor, probably because the person would like to be able to claim back input tax on purchases made or for other economic reasons such as improved reputation or credibility.

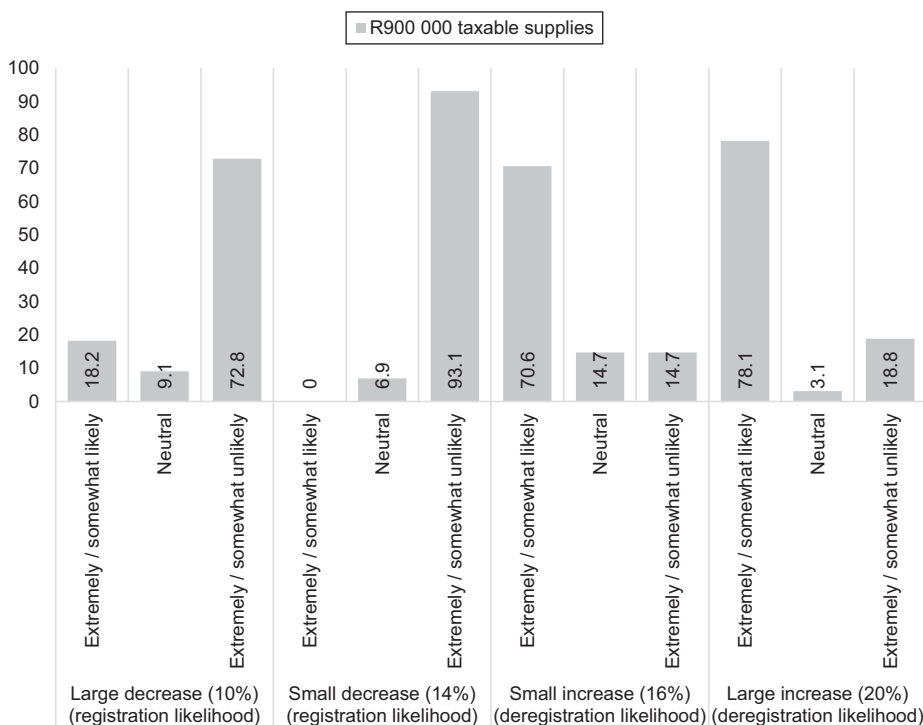


Figure 2. Registration decisions-voluntary registration

When analysing the results from the voluntary registration question, it is noted from the data that there were more participants in the increase in VAT rate treatment groups who indicated that they thought a hypothetical person would remain registered as a VAT vendor (stated differently: not indicating that it was likely that a hypothetical person would deregister as a VAT vendor, as per the wording in the experiment) than there were participants in the decrease in VAT rate treatment groups who indicated that they thought a hypothetical person would register as a VAT vendor. This was not expected, as the VAT liability would be more in the increase in VAT rate groups; it was thus expected that more participants would think that a hypothetical person would deregister as a VAT vendor in the increase groups.

4.2.3 Inferential statistics on both compulsory and voluntary registration. In considering the inferential statistics (indicating how data correlate and are associated with each other (Leedy and Ormrod, 2015; Saunders *et al.*, 2016)) to determine the difference between the increase and decrease groups and since the data are not normally distributed (as indicated in Table 2), a Mann–Whitney test was conducted. The 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 test was conducted to test the impact of the VAT rate changes on the registration decisions of participants.

In determining the statistical significance, the sample size affects the results obtained. It is possible that when the sample size is large, small differences may be identified as significant. Similarly, when the sample size is small, it is possible that large differences may

not be identified as significant. For this reason, it is important to also report the effect size in addition to the statistical significance (McLeod, 2019) since the samples for the experimental treatment groups were small. If the effect size is large, the difference is practically important. In considering the effect size of the differences, the Cohen d-value was determined: a value ≥ 0.2 indicates a small effect; a value ≥ 0.5 indicates a medium effect; and a value ≥ 0.8 indicates a large effect (Cohen, 1988).

A Mann–Whitney test both for the decrease in the VAT rate groups and the increase in the VAT rate groups was run to test the hypotheses. The results of the inferential tests are not statistically significant, as indicated in Table 4 (decrease groups) and in Table 6 (increase groups); thus, none of the hypotheses are supported. A larger decrease (increase) in the VAT rate does not result in small business entities being more likely to register (deregister) for VAT, for both the compulsory and voluntary registration. The results of this study are thus different to Matthews’s (2003) results; Matthews (2003) found that there is a possibility that small businesses may deregister as VAT vendors when there is an increase in the VAT rate.

For the decrease in VAT rate groups, the Mann–Whitney test results are presented in Table 4. The effect size is small for both the compulsory and voluntary registration questions, meaning that there are some, but very few, differences in the responses of the two treatment groups.

Even though the results are not statistically significant, the mean ranks were analysed for additional discussion purposes to see if a trend emerged and whether the changes in the VAT rate may impact registration decisions, as presented in Table 5. The Mann–Whitney test ranks score dependent variables, regardless of the group the variables are in, according to their size: the smallest rank is assigned to the smallest value. The ranks for the different groups are then obtained, and a mean rank per group is assigned. The differences between these mean ranks are then also tested by the Mann–Whitney test (Laerd Statistics, 2018).

Considering the mean ranks (trends) for the compulsory registration question, the participants in the large decrease group thought that a hypothetical person would be more likely to register as a VAT vendor (mean rank = 33.86) than what was reported by the participants in the small decrease group (mean rank = 28.81) (in support of *H1*). Similarly, considering the mean ranks for the voluntary registration question, the participants in the large decrease group also thought that a hypothetical person would be more likely to register as a VAT vendor (mean rank = 34.00) than

		R 1.1m taxable supplies (compulsory)	R 900,000 taxable supplies (voluntary)
Table 4. Decrease in VAT rate groups Mann–Whitney test	Mann–Whitney U	400.500	396.000
	Wilcoxon W	835.500	831.000
	Z	–1.133	–1.483
	Asymptotic significance	0.257	0.138
	Cohen’s d	–0.288	–0.380

Registration requirements		Group	N	Mean rank
Table 5. Mean ranks-registration for decrease in VAT rate groups	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

what was reported in the small decrease group (mean rank = 28.66) (in support of *H3*). It was expected that more participants would think that a hypothetical person would be willing to register as a VAT vendor in the large decrease group than in the small decrease group, as the VAT liability would be less with a smaller VAT rate. This is in line with the expected utility theory for the compulsory registration scenario 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 were not registered as a VAT vendor, as long as one did not get caught. This makes evasion less appealing. Further, for the voluntary registration decision, the result was also expected as the VAT liability decreases, and there are a number of advantages attached to being a registered VAT vendor.

For the increase in VAT rate groups, the Mann–Whitney test results are presented in Table 6. Again, the effect size is small for both the compulsory and voluntary registration questions, meaning that there were some, but very few, differences in the responses of the two treatment groups.

Similar to the decrease in VAT rate groups, even though the results shown above are not statistically significant, the mean ranks were analysed for additional discussion purposes to see if a trend emerged, as presented in Table 7.

Considering the mean ranks (trends) for the compulsory registration question, the participants in the small increase group thought that a hypothetical person would be less likely to deregister as a VAT vendor (mean rank = 30.57) than what was reported by the participants in the large increase group (mean rank = 35.66) (in support of *H2*). Similarly, considering the mean ranks for the voluntary registration question, the participants in the small increase group thought that a hypothetical person would be less likely to deregister as a VAT vendor (mean rank = 30.53) than what was reported by the participants in the large increase group (mean rank = 36.66) (in support of *H4*). This was expected, especially for the compulsory registration decision, as more VAT would be payable in the case of a large VAT increase, which is expected to result in more non-compliance. 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 greater if one were not registered as a VAT vendor, as long as one did not get caught. This makes evasion

Statistical terms	R 1.1m taxable supplies (compulsory)	R 900,000 taxable supplies (voluntary)
Mann–Whitney U	444.500	443.000
Wilcoxon W	1,039.500	1,038.000
Z	-1.186	-1.406
Asymptotic significance	0.236	0.160
Cohen's d	-0.291	-0.346

Table 6.
Increase in VAT rate
groups Mann–
Whitney test

Registration requirements	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

Table 7.
Mean ranks-
registration for
increase in VAT rate
groups

more appealing. For the voluntary registration decision, it was also expected that participants would expect more hypothetical persons to deregister as VAT vendors with a large increase in the VAT rate due to the larger increase in VAT liability and increase in the prices of the products. It is also not required of these persons to be registered, and therefore, the deregistration decision is even easier from a moral perspective.

In summary, a large decrease (increase) in the VAT rate does not appear to result in small business entities being more likely to register (deregister) for VAT. Thus, none of the hypotheses are supported. However, using the descriptive statistics and analysing trends noted from the inferential tests to provide more insight into the results, it is evident that a minority of the participants in the decrease in VAT rate treatment groups (fewer than 50%) seemed to think that it would be extremely or somewhat likely that a hypothetical person would register as a VAT vendor when 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%) seemed to think that it would be extremely or somewhat unlikely that a hypothetical person would deregister as a VAT vendor when obliged to be registered. This indicates more compliance for registration purposes when an increase in the VAT rate is involved than when a decrease in the VAT rate occurs, 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 suppliers are also VAT vendors. However, factors other than the tax rate may also be involved. For example, one respondent also mentioned that it is beneficial for tender purposes to be registered as a VAT vendor.

From the Mann–Whitney test mean ranks (trends), more participants thought that a hypothetical person would register as a VAT vendor if the decrease in the VAT rate were large; this result was expected for both the compulsory and voluntary registration decision. Furthermore, more participants thought that a hypothetical person would deregister as a VAT vendor if there were a large increase in the VAT rate for both the compulsory and voluntary registration decision; this result was also expected. These results are consistent with Matthews's (2003) results, which showed that there is a possibility that small businesses will deregister as VAT vendors when there is an increase in the VAT rate. Other factors influencing the registration decision that were 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, the skills of workers, opportunities for growth, access to financing and access to government services (Coolidge and Ilic, 2009). These could thus be possible reasons why participants in this study did not think that a hypothetical person would deregister as a VAT vendor if sales were under the compulsory registration threshold.

5. Conclusion

There is limited empirical research on the effect of changes in the VAT rate on tax compliance behaviour, especially in terms of the registration compliance behaviour of small business entities. The results of the experiment indicate to policymakers 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. Although the results are not statistically significant and thus do not initially support any of the hypotheses, the mean ranks were considered to identify possible trends that emerged. From the mean ranks, it was established that more participants thought that a hypothetical person would be likely to register for VAT (regardless of the registration threshold) if there were a large decrease in the VAT rate, and more participants thought that a hypothetical person would be likely to

deregister for VAT if there were a large increase in the VAT rate (regardless of the registration threshold, supporting all the hypotheses. This outcome is consistent with Matthews's (2003) results, where it was found that there is a possibility that small businesses will deregister as VAT vendors when there is an increase in the VAT rate.

No study is without its limitations, but these create opportunities for (improved) future research. Questions that should be reworded in future to allow for comparison and better analysis are those 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 be asked in the same direction (e.g. either the likelihood of registration or deregistration, not both) for the two groups.

Participants were asked about the possible registration decisions of hypothetical persons, including whether they would register as VAT vendors if their sales were just below the compulsory threshold or just above the compulsory threshold. For future research, it may also be meaningful to determine the effect of turnover well above the compulsory registration threshold on registration compliance behaviour.

The current research focused on South Africa only as its context of research and thus the findings may not be generalisable to other developing countries. Future research could also be conducted in other African and developing countries to determine whether changes in the VAT rate have the same or different effects on the registration decisions of those taxpayers. This would result in the possibility of more in-depth comparisons of the effect of changes in the VAT rate in different countries. However, if possible, it is suggested that larger sample sizes should be obtained in future studies to enrich the findings, as the small sample size (although sufficient) is a limitation in the current study.

An increase in the VAT rate could result in additional tax revenue being collected; however, at some point, policymakers need to determine when a further increase in the VAT rate might actually lead to a decrease in revenue collected due to non-compliance, such as by entities which deregister for VAT even though their taxable supplies exceed the compulsory registration threshold. "In levying taxes and in shearing sheep it is well to stop when you get down to the skin" (O'Malley in James, 2015a, n.p.).

Notes

1. Even though entities in the informal sector do not pay taxes, developing countries rely heavily on the informal sector, especially for job creation and reducing poverty (Fourie and Skinner, 2018; Rogan and Skinner, 2019). Generally, sub-Saharan African countries are associated with large informal sectors (Bird and Gendron, 2007).
2. Although this study's focus is on VAT, a small business is not defined in the VAT Act (South Africa, 1991), and thus, the definition in the Income Tax Act (South Africa, 1962) has been used. Furthermore, in the experiment, the participants were asked what their entity's gross income was (an income tax term) instead of what its taxable supplies were (a VAT term), as it was expected that not all respondents would know what their taxable supplies were but that they would know what their gross income was.
3. A treatment group is a group of participants who encountered a specific intervention in the experiment, such as a specific change in the VAT rate (Leedy and Ormrod, 2015).
4. A total of 557 participants were initially recruited; 426 were determined to be invalid for the purposes of the study, leaving 131 valid participants. Responses were invalid in the following cases: participants did not agree to participate in the study (8); participants did not meet the qualifying requirements (based on the income level of the business and the need for participants to be in a decision-making management position in the business) (211); the attention checks were

answered incorrectly (46); the experiment was not sufficiently completed for comparative purposes (160); and the participant's comments clearly indicated that the participant did not understand the experiment and therefore did not answer appropriately (1).

5. A copy of the questionnaire used in the experiment is available at: <https://doi.org/10.25403/UPresearchdata.13713121>
6. The effect of the change in the VAT rate on amounts declared is discussed in the following article: Schoeman, A.H., Evans, C.C. and Du Preez, H. (2021), "The effect of changes in the value-added tax rate on tax compliance behaviour of small businesses in South Africa: a field experiment", *Advances in Taxation*, Vol. 29, pp 65-88.
7. Descriptive statistics quantitatively summarise the collected information (Leedy and Ormrod, 2015; Saunders *et al.*, 2016).

References

- Adams, C. and Webley, P. (2001), "Small business owners' attitudes on VAT compliance in the UK", *Journal of Economic Psychology*, Vol. 22 No. 2, pp. 195-216.
- Allingham, M.G. and Sandmo, A. (1972), "Income tax evasion: a theoretical analysis", *Journal of Public Economics*, Vol. 1 Nos 3/4, pp. 323-338.
- Alm, J. (1991), "A perspective on the experimental analysis of taxpayer reporting", *The Accounting Review*, Vol. 66 No. 3, pp. 577-593.
- Alm, J. (2018), "What motivates tax compliance?", *Journal of Economic Surveys*, pp. 1-36.
- Alm, J., Jackson, B. and McKee, M. (1992), "Estimating the determinants of taxpayer compliance with experimental data", *National Tax Journal*, Vol. 45 No. 1, pp. 107-114.
- ATAF (2018), "African tax outlook 2018", available at: http://ataftaxevents.org/index.php?page=documents&func=view&document_id=17 (accessed 10 December 2018).
- Becker, G.S. (1968), "Crime and punishment: an economic approach", *Journal of Political Economy*, Vol. 76 No. 2, pp. 169-217.
- Bird, R.M. and Gendron, P. (2007), *The VAT in Developing and Transitional Countries*, Cambridge University Press, Cambridge.
- Burtless, G. (1995), "The case for randomized field trials in economic and policy research", *Journal of Economic Perspectives*, Vol. 9 No. 2, pp. 63-84.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd edition, Lawrence Erlbaum, Hillsdale, NJ.
- Coolidge, J. and Ilic, D. (2009), "Tax compliance perceptions and formalization of small businesses in South Africa", available at: <https://openknowledge.worldbank.org/bitstream/handle/10986/4183/WPS4992.pdf?sequence=1> (accessed 29 May 2020).
- Daniel, J. (2012), *Sampling Essentials: Practical Guidelines for Making Sampling Choices*, SAGE, Los Angeles, CA.
- Dudovskiy, J. (2018), "Research methodology", available at: <https://research-methodology.net/sampling-in-primary-data-collection/snowball-sampling/> (accessed 20 June 2018).
- Ebrill, L.P., Keen, M., Bodin, J. and Summers, V. (2001), *The Modern VAT*, International Monetary Fund, Washington, DC.
- Enyew, A.T. and Andargie, H. (2018), "Registration of value added tax in Ethiopia: an appraisal of the practice in Debre Markos, Finote Selam and Motta towns", *Jimma University Journal of Law*, Vol. 10, pp. 30-49.
- European Commission (2018), "VAT rates applied in the member states of the European Union – situation at 1st July 2018", available at: https://ec.europa.eu/taxation_customs/sites/taxation/

- [files/resources/documents/taxation/vat/how_vat_works/rates/vat_rates_en.pdf](#) (accessed 10 December 2018).
- Evans, C. (2003), "Studying the studies: an overview of recent research into taxation operating costs", *eJournal of Tax Research*, Vol. 1 No. 1, pp. 64-92.
- Fjeldstad, O. Schulz-Herzenberg, C. and Sjursen, I. (2012), "People's view of taxation in Africa: a review of research on determinants of tax compliance", available at: www.cmi.no/publications/file/4577-peoples-views-of-taxation-in-africa.pdf (accessed 20 February 2019).
- Fourie, F. and Skinner, C. (2018), *The South African Informal Sector: Creating Jobs, Reducing Poverty*, HSRC, Cape Town.
- George, D. and Mallery, P. (2010), *SPSS for Windows Step by Step: A Simple Guide and Reference*, 10th edition, Allyn and Bacon, Boston, MA.
- Gigaba, M. (2018), "2018 Budget speech", available at: www.treasury.gov.za/documents/national%20budget/2018/speech/speech.pdf (accessed 6 March 2018).
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), *Multivariate Data Analysis*, 7th edition, Pearson, Upper Saddle River, NJ.
- Hamid, S.A. (2013), "Tax compliance behaviour of tax agents: a comparative study of Malaysia and New Zealand", unpublished doctoral thesis, University of Canterbury, Christchurch, New Zealand, available at: <https://ir.canterbury.ac.nz/handle/10092/9426> (accessed 2 November 2016).
- Hansford, A., Hasseldine, J. and Howorth, C. (2003), "Factors affecting the costs of UK VAT compliance for small and medium-sized enterprises", *Environment and Planning C: Government and Policy*, Vol. 21 No. 4, pp. 479-492.
- Harju, J., Kosonen, T. and Ropponen, O. (2014), "Do honest hairdressers get a haircut?", available at: www.jstor.org/stable/26812271 (accessed 2 July 2020).
- Harju, J., Matikka, T. and Rauhanen, T. (2015), "The effect of VAT threshold on the behavior of small businesses: evidence and implications", Paper presented at the CESifo Area Conference on Public Sector Economics, Munich, 16-18 April.
- Harrison, G. and Krellove, R. (2005), "VAT refunds: a review of country experience", available at: www.imf.org/external/pubs/ft/wp/2005/wp05218.pdf (accessed 13 September 2016).
- Hofmann, E., Voracek, M., Bock, C. and Kirchler, E. (2017), "Tax compliance across sociodemographic categories: meta-analyses of survey studies in 111 countries", *Journal of Economic Psychology*, Vol. 62, pp. 63-71.
- Hofstee, E. (2011), *Constructing a Good Dissertation: A Practical Guide to Finishing a Master's, MBA or PhD on Schedule*, EPE, Sandton.
- Hogan, B., Maroney, J.J. and Rupert, T.J. (2013), "The relation among voice value, policy outcomes, and intensity of support on fairness assessments of tax legislation", *Journal of the American Taxation Association*, Vol. 35 No. 1, pp. 85-109.
- Hoseini, M. and Briand, O. (2020), "Production efficiency and self-enforcement in value-added tax: evidence from state-level reform in India", *Journal of Development Economics*, Vol. 144, p. 102462.
- Jackson, B.R. and Milliron, V.C. (1986), "Tax compliance research: findings, problems, and prospects", *Journal of Accounting Literature*, Vol. 5 No. 1, pp. 125-165.
- James, G. (2015a), "130 Inspirational quotes about taxes", available at: www.inc.com/geoffrey-james/130-inspirational-quotes-about-taxes.html (accessed 12 February 2020).
- James, K. (2015b), *The Rise of the Value-Added Tax*, Cambridge University Press, New York, NY.
- Keen, M. and Smith, S. (2006), "VAT fraud and evasion: what do we know and what can be done?", *National Tax Journal*, Vol. 59 No. 4, pp. 861-887.
- Kim, C.K., Evans, J.H. and Moser, D.V. (2005), "Economic and equity effects on tax reporting decisions", *Accounting, Organizations and Society*, Vol. 30 Nos 7/8, pp. 609-625.

- Klahr, R., Joyce, L., Donaldson, R., Keilloh, G. and Salmon, C. (2017), "Behaviours and experiences in relation to VAT registration", available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/659879/Behaviours_and_experiences_in_relation_to_VAT_registration.pdf (accessed 4 November 2020).
- Kosonen, T. and Ropponen, O. (2013), "The role of information in tax compliance: evidence from a natural field experiment", available at: <http://vatt.fi/documents/2956369/3012253/wp48.pdf> (accessed 7 September 2017).
- Krever, R.E. (2008), *VAT in Africa*, PULP, Pretoria.
- Laerd Statistics (2018), "Welcome to Laerd statistics!", available at: <https://statistics.laerd.com/premium/index.php> (accessed 8 March 2019).
- Le, D.T., Malesky, E. and Pham, A. (2020), "The impact of local corruption on business tax registration and compliance: evidence from Vietnam", *Journal of Economic Behavior and Organization*, Vol. 177, pp. 762-786.
- Leedy, P.D. and Ormrod, J.E. (2015), *Practical Research: Planning and Design*, 11th edition, Pearson Education, Harlow.
- Libby, R., Bloomfield, R. and Nelson, M.W. (2002), "Experimental research in financial accounting", *Accounting, Organizations and Society*, Vol. 27 No. 8, pp. 775-810.
- Liu, L., Lockwood, B., Almunia, M. and Tam, E.H. (2019), "VAT notches, voluntary registration, and bunching: theory and UK evidence", *Review of Economics and Statistics*, Vol. 103 No. 1, pp. 1-45.
- McLeod, S. (2019), "What does effect size tell you?", available at: www.simplypsychology.org/effect-size.html (accessed 16 April 2020).
- Maines, L.A., Salamon, G.L. and Sprinkle, G.B. (2006), "An information economic perspective on experimental research in accounting", *Behavioral Research in Accounting*, Vol. 18 No. 1, pp. 85-102.
- Mascagni, G. (2018), "From the lab to the field: a review of tax experiments", *Journal of Economic Surveys*, Vol. 32 No. 2, pp. 273-301.
- Mascagni, G. and Santoro, F. (2018), "What is the role of taxpayer education in Africa?", available at: <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/13704/ATAP1.pdf?sequence=85> (accessed 27 February 2019).
- Matthews, K. (2003), "VAT evasion and VAT avoidance: is there a European laffer curve for VAT?", *International Review of Applied Economics*, Vol. 17 No. 1, pp. 105-114.
- Middleton, F. (2020), "Reliability vs validity: what's the difference?", available at: www.scribbr.com/methodology/reliability-vs-validity/ (accessed 15 May 2020).
- Moodaley, V. (2015), "Voluntary VAT registration", *Tax Professional*, No. 25, pp. 14-16, available at: www.saipa.co.za/wp-content/uploads/2017/01/tax_professional_q3_2015_08_1.pdf (accessed 9 November 2020).
- Morissette, C. (2014), "The underground economy in Canada, 1992–2011", available at: www.statcan.gc.ca/pub/13-604-m/13-604-m2014073-eng.pdf (accessed 31 October 2016).
- National Treasury and SARS (2018), "Tax statistics 2018", available at: www.sars.gov.za/AllDocs/Documents/Tax%20Stats/Tax%20Stats%202018/Tax%20Stats%202018.pdf (accessed 15 January 2019).
- Oanda (2021), "Currency converter", available at: www1.oanda.com/currency/converter/ (accessed 17 March 2021).
- OECD (2008), "Compliance risk management: managing and improving tax compliance", available at: www.oecd.org/tax/administration/33818656.pdf (accessed 27 March 2019).
- OECD (2012), "Consumption tax trends 2012: VAT/GST and excise rates", *Trends and Administration Issues*, OECD, Paris.

- OECD (2019a), "Revenue statistics 2019 – New Zealand", available at: www.oecd.org/tax/revenue-statistics-new-zealand.pdf (accessed 3 February 2020).
- OECD (2019b), "Revenue statistics 2019 – tax revenue trends in the OECD", available at: www.oecd.org/tax/tax-policy/revenue-statistics-highlights-brochure.pdf (accessed 3 February 2020).
- OECD (2020), "Consumption tax trends 2020: VAT/GST and excise rates", *Trends and Policy Issues*, OECD, Paris.
- Olsen, J., Kasper, M., Kogler, C., Muehlbacher, S. and Kirchler, E. (2019), "Mental accounting of income tax and value added tax among self-employed business owners", *Journal of Economic Psychology*, Vol. 70, pp. 125-139.
- Owens, J., Battiau, P. and Charlet, A. (2011), "VAT's next half century: towards a single-rate system?", available at: http://oecdoobserver.org/news/fullstory.php/aid/3509/VAT_s_next_half_century:_Towards_a_single_rate_system_.html (accessed 10 December 2018).
- PwC (2018), "Value-added tax (VAT) rates", available at: [http://taxsummaries.pwc.com/ID/Value-added-tax-\(VAT\)-rates#K132](http://taxsummaries.pwc.com/ID/Value-added-tax-(VAT)-rates#K132) (accessed 10 December 2018).
- Richardson, M. and Sawyer, A.J. (2001), "A taxonomy of the tax compliance literature: further findings, problems and prospects", *Australian Tax Forum*, Vol. 16, pp. 137-320.
- Rogan, M. and Skinner, C. (2019), "In defence of SA's informal economy", available at: www.news.uct.ac.za/article-2019-09-12-in-defence-of-sas-informal-economy (accessed 6 April 2020).
- Rosid, A., Evans, C. and Tran-Nam, B. (2018), "Tax non-compliance and perceptions of corruption: policy implications for developing countries", *Bulletin of Indonesian Economic Studies*, Vol. 54 No. 1, pp. 25-60.
- Rupert, T.J., Single, L.E. and Wright, A.M. (2003), "The impact of floors and phase-outs on taxpayers' decisions and understanding of marginal tax rates", *Journal of the American Taxation Association*, Vol. 25 No. 1, pp. 72-86.
- Saka, C., Oshika, T. and Jimichi, M. (2019), "Visualization of tax avoidance and tax rate convergence", *Meditari Accountancy Research*, Vol. 27 No. 5, pp. 695-724.
- SARS (2012), "Compliance programme 2012/13 – 2016/17", available at: www.gov.za/sites/default/files/gcis_document/201409/sarscompliancepogram-2012final2-30-march.pdf (accessed 7 September 2020).
- SARS (2017), "Annual performance plan 2017/18", available at: www.sars.gov.za/AllDocs/SARSEntDoclib/Ent/SARS-Strat-19%20-%20SARS%20Annual%20Performance%20Plan%202017%20to%202018%20-%202015%20June%202017.pdf (accessed 15 September 2020).
- Saunders, M.N.K., Lewis, P. and Thornhill, A. (2016), *Research Methods for Business Students*, 7th edition, Pearson Education, Harlow.
- Schenk, A., Thuronyi, V. and Cui, W. (2015), *Value Added Tax: A Comparative Approach*, 2nd edition, Cambridge University Press, New York, NY.
- Sekaran, U. and Bougie, R. (2013), *Research Methods for Business: A Skill-Building Approach*, 6th edition, Wiley, Chichester, UK.
- Slemrod, J. (2019), "Tax compliance and enforcement", *Journal of Economic Literature*, Vol. 57 No. 4, pp. 904-954.
- Small Enterprise Development Agency (2019), "SMME quarterly update 3rd quarter 2018", available at: www.seda.org.za/Publications/Publications/SMME%20Quarterly_%202018-Q3.pdf (accessed 21 October 2019).
- South Africa (1962), Income Tax Act No. 58 of 1962.
- South Africa (1991), Value-Added Tax Act No. 89 of 1991.
- South African Market Insights (2019), "South Africa's small medium and micro enterprises page", available at: www.southafricanmi.com/south-africas-smme.html (accessed 28 January 2020).

- Statistics South Africa (2018), "Quarterly labour force survey, quarter 3:2018", available at: www.statssa.gov.za/publications/P0211/P02113rdQuarter2018.pdf (accessed 14 February 2019).
- Statistics South Africa (2019), "Quarterly labour force survey, quarter 4:2019", available at: www.statssa.gov.za/publications/P0211/P02114thQuarter2019.pdf (accessed 6 April 2020).
- Torgler, B. (2003), "Beyond punishment: a tax compliance experiment with taxpayers in Costa Rica", *Revista de Análisis Económico*, Vol. 18 No. 1, pp. 22-56.
- Woodruff, C. (2013), "Registering for growth: tax and the informal sector in developing countries", available at: www.chathamhouse.org/sites/default/files/public/Research/International%20Economics/0713bp_woodruff.pdf (accessed 9 November 2020).
- Yong, S., Lo, K., Freudenberg, B. and Sawyer, A.J. (2019), "Tax compliance in the new millennium: understanding the variables", *Australian Tax Forum*, Vol. 34 No. 3, pp. 766-808.

Further reading

- Becker, G.S. (1962), "Irrational behaviour and economic theory", *Journal of Political Economy*, Vol. 70 No. 1, pp. 1-13.
- Kahneman, D. and Tversky, A. (1979), "Prospect theory: an analysis of decision under risk", *Econometrica*, Vol. 47 No. 2, pp. 263-292.

Corresponding author

Anna Herculina Anculien Schoeman can be contacted at: anculien.schoeman@up.ac.za