

**DEVELOPING A FEASIBILITY FRAMEWORK BASED ON THE
CHARACTERISTICS OF BIG DATA TO REDUCE THE TAXATION GAP IN
SOUTH AFRICA**

by

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ABSTRACT

The purpose of this study was to develop a conceptual framework to aid in the reduction of the taxation gap in South Africa (SA) through the use of third-party data and information technology.

In order to develop a framework to prevent non-compliance, an understanding was required of the areas that would enable such a framework to be successful. Since governance, risk and compliance (GRC) is an emerging area in the corporate and information technology domain, organisations, including revenue bodies, are confronted with an increased risk and a growing number of regulatory, legal and other compliance requirements. The frame of reference for integrated governance, risk and compliance was used as base to determine the areas that had to be included in the new feasibility framework for the South African Revenue Service (SARS) in order for the framework to enhance compliance. Thus, the frame of reference for integrated governance, risk and compliance provided a contextual understanding of the areas that had to be reviewed in order to ensure that the framework that was developed adhered to all aspects that would make it a suitable and acceptable framework within SARS.

Since the new conceptual framework will be used to address compliance and risk management, existing frameworks had to be considered – one in particular, namely the Compliance Risk Management Process as described by the Organisation for Economic Co-operation and Development (OECD). The OECD guidance note outlines compliance risk management as a structured iterative process for the “systematic identification, assessment, ranking, and treatment of tax compliance risks” that will enhance decision-making. This structural process is depicted in the Compliance Risk Management Process which can be used by revenue bodies, including SARS. Thus, once the different areas had been identified, discussed and understood, the existing Compliance Risk Management Process as described by the OECD was discussed to identify how the new conceptual framework that would be developed as part of this study could enhance this existing framework.

Finally the framework was developed by making use of an extended literature review on the main characteristics of ‘big data’, which was then tested with the use of two

selected case studies and concluded with a comparative analysis of the case studies.

Overall, the framework will aid to determine whether it is feasible to continue with a project to use third-party data and information technology to automate the detection and prevention of taxation gaps before spending too many resources without any significant effect on diminishing the taxation gap. It is therefore recommended that SARS implement this new feasibility framework as a pre-check in order to determine whether:

- there is third-party data available for a specific type of transaction that will result in the reduction of the taxation gap;
- the third-party data is reliable and usable. If not, which changes are required from the third party in order to ensure that it can be linked to specific taxpayers (for example, such as capturing additional data or changing the format of existing data that had been captured in order to ease the extraction process);
- any tax acts or legal aspects should be enhanced to ensure all relevant taxpayer information is available from a specific third party; and
- both organisations (SARS and the third party) have the relevant information technology to ensure SARS can extract, store and manipulate the data in a timely fashion in order to obtain the maximum effect.

In conclusion, a new feasibility framework was developed as part of this study in order to aid SARS with the reduction of the taxation gap by using third-party data and information technology. The purpose of the new feasibility framework is to identify whether there is third-party data available and whether any changes are required to the data in order to provide SARS with a mechanism to link it to specific taxpayers. This will provide SARS with guidance as to the steps that are required in order to automate the process of collecting third-party data through by using information technology. The feasibility framework would also indicate whether it is feasible to continue with such an automation project before exhausting too many resources without any significant effect on reducing the taxation gap.

KEY TERMS: Taxation gap; Framework; Big data; Information systems; Information technology, Compliance, Tax evasion, Tax avoidance, Third party

DECLARATION

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Developing a feasibility framework based on the characteristics of big data to reduce the taxation gap in South Africa

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

SIGNATURE

DATE

ACKNOWLEDGEMENTS

The completion of this dissertation would not have been possible without the support of many people.

Firstly, I would like to thank God for the strength and courage to complete this dissertation – Philippians 4:13 (New International Version [NIV]): I can do all this through Him who gives me strength.

In addition, I would also like to express my gratitude to my supervisors, Prof. Margaretha Nieuwoudt and Prof. Jolani Wilcocks, for reading my numerous revisions and providing me with useful comments and remarks. Your guidance and support through this learning process, called a master's dissertation, were invaluable.

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DEDICATION

This dissertation is dedicated to my daughter, Benicia Sumay Cilliers, to show that with the help of God and through dedication and hard work, all things are possible.

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DECLARATION OF ADHERENCE TO ETHICAL CONSIDERATIONS



COLLEGE OF ACCOUNTING SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

Date: 6 September 2016

Dear Ms Du Rand

Ref: 2016_CAS_045

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Ms Du Rand

Student/Staff #: 41779304

Decision: Ethics Approval

Name: Ms Du Rand
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Title: The Strategic Approach of Using Information Systems to Reduce the Taxation Gap in South Africa.

Qualification: Master's degree

Thank you for the application for research ethics clearance by the College of Accounting Sciences Research Ethics Review Committee for the above mentioned research. Final approval is granted for the completion of the research.

For full approval: The conceptual data application was reviewed in compliance with the Unisa Policy on Research Ethics by the College of Accounting Sciences Research Ethics Review Committee on 6 September 2016.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the College of Accounting Sciences Research Ethics Review Committee. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.
- 3) The researcher will ensure that the research project adheres to any applicable



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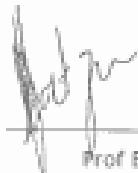
Note:

The reference number [top right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the College of Accounting Sciences RERC.

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ACRONYMS AND ABBREVIATIONS

AFRITAC	Africa Regional Technical Assistance Center
AICPA	American Institute of Certified Public Accountants
BEPS	base erosion and profit shifting
CART	classification and regression tree
CHAID	chi-square automatic interaction detector
CIAT	Centre of Tax Administration
CIMA	Chartered Institute of Management Accountants
CIT	corporate income tax
DHA	Department of Home Affairs
EFT	electronic fund transfer
EMP201	monthly employer declarations
EMP501	employer reconciliation declaration
ETI	employment tax incentives
EU	European Union
FICA	Financial Intelligence Centre Act, No. 38 of 2001
FM	Financial Management
GRC	governance, risk and compliance
IBSG	Internet Business Solutions Group
ICT	information and communications technology
ID	identification (document)
IMF	International Monetary Fund
IoT	Internet of Things
IRP5	employee tax certificate
IRP6	return for payment of provisional tax
ISO	International Organization for Standardization

IT	information technology
IT3(b)	certificate of income investments, property rights and royalties
IT3(c)	certificate of income regarding disposal of unit trusts or other financial instruments
ITR12	income tax return for individuals
M2M	machine-to-machine
NCOP	National Council of Provinces Committee
MIT	Massachusetts Institute of Technology
NIV	New International Version
OECD	Organisation for Economic Co-Operation and Development
PAIA	Promotion of Access to Information Act, No. 2 of 2000
PAN	permanent account number
PAYE	pay as you earn
PIT	personal income tax
PoPI	Protection of Personal Information
PTI	Press Trust of India
RICA	Regulation of Interception of Communications and Provision of Communication-related Information Act, No. 70 of 2002
RSA	Republic of South Africa
SA	South Africa
Sa	sine anno (without year)
SANRAL	South African National Roads Agency Limited
SARS	South African Revenue Service
SDL	skills development levy
SI	sine loco (without place of publication)
Sp	sine page (without page)
UIF	unemployment insurance fund

Unisa	University of South Africa
VAT	value-added tax
VDP	voluntary disclosure programme
WEF	World Economic Forum

CHAPTER 1

INTRODUCTION

Benjamin Franklin wrote, “In this world nothing can be said to be certain, except death and taxes” (BrainyQuote 2017b:s.p.). What if taxes could be more certain? What if the South African Revenue Service (SARS) can trace each taxpayer’s income and expenditure?

1.1 BACKGROUND

Since 1914, the Union of South Africa (SA) has levied income taxes (Oberholzer 2007:1) based on the Income Tax Act, 28 of 1914 which was introduced on 20 July 1914 (SARS 2016a:s.p.). The Minister of Finance presents the annual budget every year, and this outlines the total government expenditure for the following financial year and the ways in which this expenditure will be financed (Mohr, Van der Merwe, Botha & Inggs 1995:72; SARS 2013c:s.p.; Venter, De Hart, Coetzee & Koekemoer 2014:5).

On 24 February 2016, the Minister of Finance, Pravin Gordhan, announced the proposed budget for 2016/17. The projected tax revenue for 2017/18 is R1,41 trillion (Ministry of Finance 2017:10). In South Africa, most of the government expenditure is funded by means of revenue generated from tax levies (Oberholzer 2007:1; Venter et al. 2014:5–6) of which the main source of income is generally from personal income tax (Oberholzer 2007:1–2; National Treasury & SARS 2016:9; Venter et al. 2014:6). As stated by the former Minister of Finance, Nhlanhla Nene, “If we do not achieve growth, revenue will not increase. If revenue does not increase, expenditure cannot be expanded” (Ministry of Finance 2015:4).

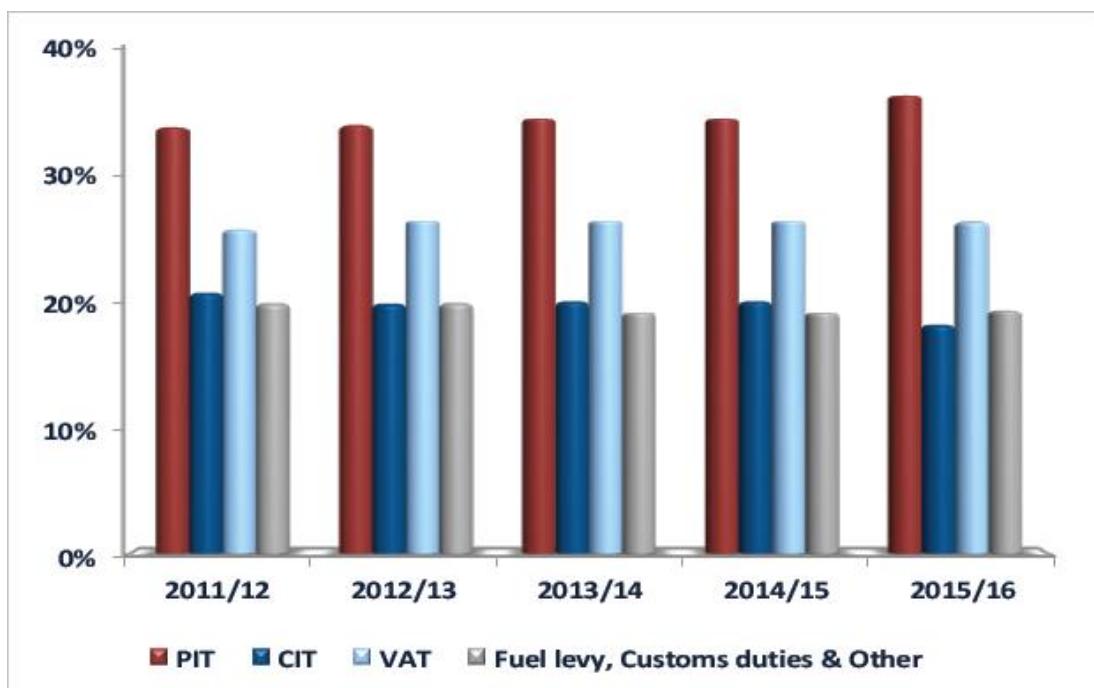


Figure 1.1: Relative composition of main sources of tax revenue, 2011/12–2015/16

Source: National Treasury and SARS (2016:9)

According to the report from National Treasury and SARS (2016:viii, 9) on the tax statistics for 2015/16, the current global economic crisis has changed the relative contributions of the various taxes over the past five years. The personal income tax (PIT) contribution has increased to 36,4% during 2015/16 fiscal year as a result of the corporate income tax (CIT) contribution, which has declined to 18,1% in 2015/16 from 20,6% in the 2011/12 fiscal year.

Composition of main sources of tax revenue

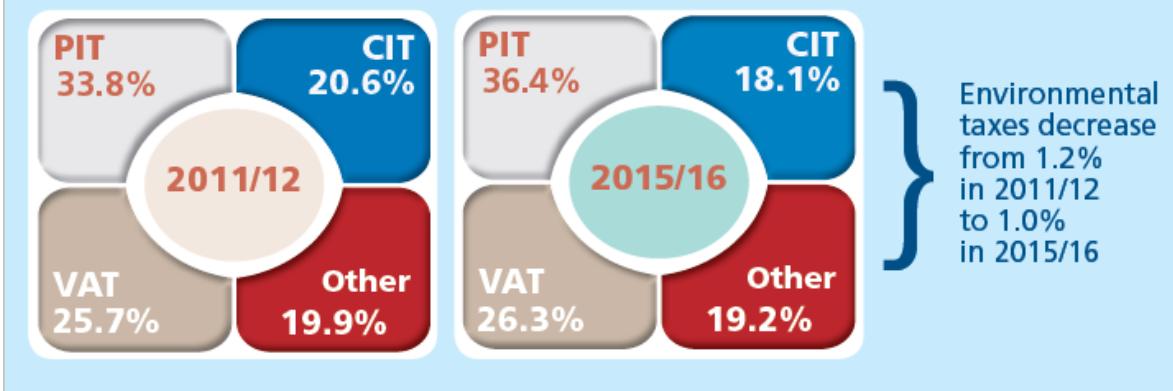


Figure 1.2: Composition of main sources of tax revenue, 2011/12 versus 2015/16

Source: National Treasury and SARS (2016:viii)

The fact that personal income tax is the main source of tax revenue emphasises the importance of effective revenue collection from all personal income taxpayers. Based on the 2016 mid-year population estimates for South Africa, the total number of individuals in South Africa is approximately 55,9 million (Statistics South Africa [Stats SA] 2016:3). It is estimated that about 8% of the population is older than 60 years, about 30% of the population is aged between 0 and 14 years and another 8,7% is aged at between 15 and 19 years. This leaves about 29,75 million individuals (Stats SA 2016:9) who are within an eligible age to earn income and pay tax, but the unemployment rate is estimated at 26,5% (Trading Economics 2017:s.p.). Taking unemployment estimates into account, about 23 million individuals are expected to be registered for tax. This is about 3,95 million more than the number of individuals currently registered (National Treasury & SARS 2016:3), which could be one of the possible causes of the personal income taxation gap in South Africa. Ways to identify these individuals, ways they evade tax as well as the total value of the shortfall created by this gap, should be investigated and prevented in order to grow South Africa's tax revenue and reduce the taxation gap.

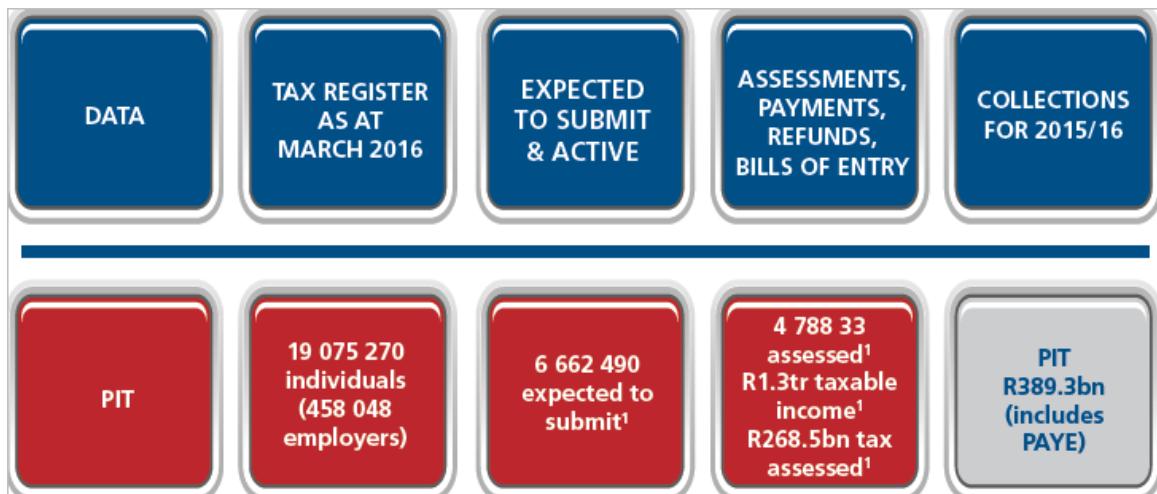


Figure 1.3: 2016 Tax statistics at a glance – personal income tax

Source: National Treasury and SARS (2016:iv)

A system, which ensures optimum and effective revenue collection, is important and essential in government's aim to meet its socio-economic goals, such as health care, education, infrastructure, employment and growth (SARS 2011:3; Venter et al. 2014:2). The functioning of the public sector is dependent on collecting all budgeted revenue with any revenue loss affecting the capacity of the public sector to finance its expenses, which could result in a reduction in service delivery and achieving the objectives set by government (Franzoni 1998:1). At the conclusion of a tax gap analysis seminar that was held in Johannesburg, South Africa, from 25–28 June 2012 by the International Monetary Fund's Africa Regional Technical Assistance Center South (AFRITAC South), Mr Vitaliy Kramarenko, the then Africa Regional Technical Assistance Center South coordinator, said that the key to resource mobilisation is strengthening the revenue base in order to achieve a sustainable development, poverty reduction and resilience of public finances to shocks (International Monetary Fund [IMF] 2012:s.p.). The system implemented by government must ensure that the desired revenue is collected. To this end, different resources should be incorporated to reduce any potential taxation gap.

The taxation gap can be described as the difference between what government should have received, if all taxpayers registered for tax and/or did not overstate their deductions or underestimate their income, and the amount government actually received during a specific tax year, which results in less income for government due to taxpayers who pay less tax than necessary (Gcabo & Robinson 2007:358). In South

Africa, both the Margo Commission (1986:405–408, 411) and the Katz Commission (1994:62–66) have dealt with taxation morality and the taxation gap. The Katz Commission (1994:62) defines the taxation gap as “... the difference between the taxes that the law seeks to collect and those in fact collected”. The Margo Commission (1986:406) indicated that the taxation gap is caused by both tax avoidance and tax evasion. Further to this, the taxation gap challenge is a global issue, for example the Secretary-General of the Organisation for Economic Co-operation and Development (OECD), Angel Gurria (2013:s.p.), presented the OECD report “Addressing base erosion and profit shifting” (BEPS), which recognises the root causes of the erosion of the base erosion and profit shifting, to the G20 finance ministers. As a result, the ministers called for the development of a comprehensive action plan to address these root causes of base erosion and profit shifting. This action plan will attempt to prevent multinational entities from artificially shifting profits that result in very low taxes or even double non-taxation which erodes the taxation base.

Torgler and Schaltegger (2006:396) define **tax evasion** as the extent to which taxpayers do not pay their taxes as per legislation through the use of deceitful measures. Prebble and Prebble (2010:702) define tax evasion as the taxpayer trying to pay the least taxes or no tax by violating the tax legislation, for example, revenue is not declared in full, or not at all, or fake expenses are generated, or the taxpayer does not register as a taxpayer. Tax evasion therefore normally involves criminal fraud, and is unlawful (Fuest & Riedel 2009:5; Prebble & Prebble 2010:702) since a taxpayer breaks the law when tax evasion is committed (Prebble & Prebble 2010:702; Sandmo 2005:645).

On the other hand, **tax avoidance** is to find legal ways to pay the least or no amount of tax. It means taxpayers find loopholes in the tax legislation and use it to their advantage, therefore staying within the boundaries of the tax legislation (Sandmo 2005:645).

It is therefore difficult to distinguish between tax evasion and tax avoidance, because there is a thin line between the two (Fuest & Riedel 2009:5). The taxpayer behaviour involved is similar, but the legal approach taken differs as one use illegal ways and the other legal ways to pay the least or no amount of tax at all (Prebble & Prebble 2010:702).

Venter (2011:42) states that the source of income is a prominent factor influencing tax evasion in both First World and developing countries. The only difference is that developing countries have more self-employed taxpayers than First World countries which make it easier to evade tax in these developing countries as there is no withholding tax on this type of income. It is therefore easier for self-employed taxpayers to under-declare their taxable income. Aguirre and Rocha (2010:19) also state that self-employed taxpayers are more disinclined to pay their taxes than salaried taxpayers (although this study was based on Latin American and Caribbean countries).

Although it is known that a taxation gap exists for South Africa, it seems that there is no exact figure showing what this gap is. Both the Margo Commission (1986:406) and the Katz Commission (1994:62) indicate that for First World and Third World countries, the taxation gap is respectively approximately 10% and 33% (or even more). At that stage, the Katz Commission (1994:66) estimated the taxation gap for South Africa to be approximately 20%. More recent to this, several studies have been done and are underway, both deductive and imputed, and findings suggest that South Africa is probably around the middle range of the estimated taxation gap in developing countries (between 15% and 30%) (Carolissen 2010:9; Sizwe Ntsaluba Gobodo 2014:s.p.; Steyn 2014:s.p.). The OECD (2015:132–133) does not provide any taxation gap estimation for South Africa, and therefore it is assumed that there are no formal figures available on the taxation gap for South Africa.

Taking the most recent available estimation and assuming a midpoint of 22,5% for all types of taxes in South Africa, the taxation gap on the expected tax revenue for 2017/18 (of R1,41 trillion) is estimated to be R317,25 billion (Steyn 2014:s.p.). This estimated leakage implies that additional loans of R150 billion have to be taken out to meet the expenditure needs of R1,56 trillion in order for the government to meet its public sector objectives (Ministry of Finance 2017:10). Whereas, if the estimated R317,25 billion taxation gap is reduced by only 50%, there will be more than enough tax revenue to meet this budget deficit (Steyn 2014:s.p.).

As part of government programmes to reduce the taxation gap, the Voluntary Disclosure Programme (VDP) was implemented in November 2010 (Hogan Lovells 2016:s.p.). During this programme, approximately 18 000 applications were received, which yielded almost R1 billion in additional tax income (Ministry of

Finance 2012:18). Previous amnesty programmes yielded similar results, namely the:

- Exchange Control Amnesty in 2003 which dealt with a total of 42 672 applications and the disclosure of a total of R68,6 billion in foreign assets. The declared income tax base was also raised by some R1,4 billion (Ministry of Finance 2006:10); and
- Small Business Tax Amnesty in 2006 to 2007, which received 356 426 applications of which 44 997 (13%) were new taxpayers. The total yielded from this programme was R13,485 million (R0,657 million in 2007 and R12,828 in 2008) (SARS 2008:46, 61–62, 135).

Based on the above, it seems that each time a voluntary disclosure programme or amnesty is launched, there are several legal entities (registered and non-registered) who are willing to disclose their details and pay their outstanding taxes. This can be viewed as a sign that taxpayers are becoming more aware of the risk of being caught and are therefore more compliant as a result of risk management and enforcement applied by SARS.

Various studies concluded that tax evasion is negatively correlated with the possibility of being caught and the punishment associated with the offence (Allingham & Sandmo 1972:323–338; Slemrod 2007:35–36; Manolas, Sfakianakis & Vavouras 2013:29). Credible, legitimate and firm enforcement of the appropriate sanctions will discourage tax evasion and therefore result in tax compliance (Carolissen 2010:13). This theory can be displayed as follows:

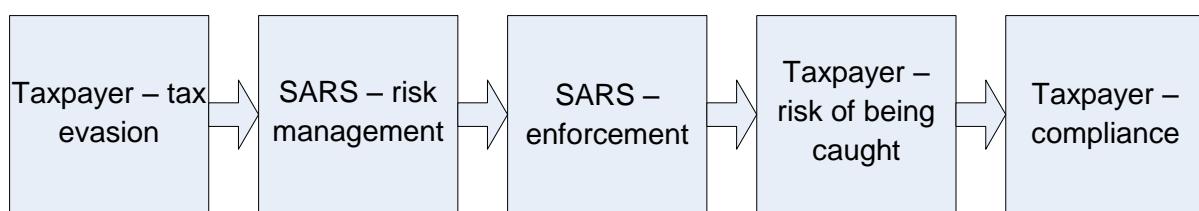


Figure 1.4: Taxpayer reaction to SARS risk management and enforcement

Source: Author's own compilation

This was confirmed in a study done by Venter (2011:41), who states that individuals are less likely to evade tax if:

- the likelihood of detection increased;
- harsher penalties were imposed; and

- more sufficient tax administration was administered.

The increased tax compliance as a result of these voluntary disclosure programmes and amnesty could serve as further proof that not all legal entities are registered for tax and those who are registered for tax are not all declaring and paying the taxes that they are supposed to pay. To address this matter and to identify whether and how a strategy could be formed using third-party data and information technology, the following important questions should be asked:

- Are there measures, which could improve or prevent the taxation gaps utilising information technology and third-party data?
 - If yes, what are these measures?
- Are these measures already implemented or in the process of being implemented?
 - If yes, can these measures be enhanced?
- Is it possible for SARS to detect the correct amount owed by an individual from third-party sources?
- What will the effect be on individuals and on government if the taxation gap can be reduced or even eliminated?

These questions will help to determine whether information technology could be used in conjunction with third-party data to prevent taxation gaps and implement a solution. This is a complicated and lengthy process, but as John Heywood stated, “Rome was not built in one day” (BrainyQuote 2017c:s.p.), which denotes that a solution cannot be implemented overnight. A phased approach should therefore be used, and in this study, only the first step of such an approach was investigated and defined, which included the development of a generic feasibility framework that could be used.

This study aimed to investigate different data sources that could be incorporated in the tax collection system to assist in reducing the taxation gap. Therefore, an understanding was required of the possible enhancements that could be made to the SARS information systems with the use of these data sources (namely third-party data) in order to reduce the taxation gap.

1.2 PROBLEM STATEMENT

Oberholzer (2007:II) states that a substantial difference exists between the taxes that should theoretically be paid by economically active people in South Africa and the taxes that are actually being paid. She states that non-compliance by taxpayers and potential taxpayers with tax legislation is one of the main reasons for the taxation gap.

This non-compliance can be identified using third-party data. In 2010, for instance, it was announced that more than 12 million individuals' income was tracked through information that was received from third-party sources (Carolissen 2010:22). These third-party sources relate to employers who submitted their employees' employee tax certificate (IRP5) information on behalf of the employees to SARS. Thus, third-party data was already used by SARS to reduce the taxation gap.

The Information Age in which we live (Shih & Mills 2007:8) assists individuals and businesses to perform transactions based on their needs and wants on a daily basis by using information systems, which capture the details of these transactions. However, the Information Age is actually already old news as the world is transitioning into the Hybrid Age (Khanna & Khanna s.a.:s.p.). The Hybrid Age is fundamentally distinct from the previous ages as a result of the following five features:

- **ubiquitous**: computers and technology have become cheaper and more powerful at the same time which makes it more accessible to everyone;
- **intelligent**: technologies will become intelligent, understanding the data collected and working autonomously and in concert with each other through the use of artificial intelligence and will therefore no longer be just repositories of information, which require people to understand and process them;
- **social**: the shape and form of technologies will both become anthropomorphic, thus voice- and gesture-based commands will make interaction with machines more natural even though they would be more intelligent than us;
- **integrated**: new technologies are combining different scientific fields; and
- **disruptive**: technology will disrupt older business models and labour markets and force individuals and organisations to adapt at a faster rate than is

comfortable for them, through the rapid introduction of new products and services (Khanna & Khanna s.a.:s.p.).

Technology has a growing influence on individual's daily lives as well as on the way that these individuals do business. As stated by Khanna and Khanna (s.a.:s.p.), Hewlett Packard estimated that by 2015, there will be one trillion devices connected to the Internet, constantly recording and sharing information, and that by 2020, the world will literally live in technology. This concept is referred to as the Internet of Things (IoT) (Evans 2011:2). These estimates, as predicted by Hewlett Packard, were a little far-fetched. More realistically, Cisco estimated in 2013 that about 15 billion devices will be connected to the Internet by 2015, and around 40 billion devices by 2020, based on the fact that Cisco believed that the number of Internet-connected devices reached 8,7 billion in 2012 (Forbes 2013:s.p.). This differs from Cisco Internet Business Solutions Group's (IBSG's) estimate in 2011 where they estimated that about 25 billion devices will be connected to the Internet by 2015 and around 50 billion devices by 2020 (as illustrated in Figure 1.5) (Evans 2011:3). This has decreased even further when Gartner estimated in 2014 that about 4,9 billion devices will be connected to the Internet by 2015, and around 25 billion devices by 2020 (Gartner 2014:s.p.). It is therefore difficult to estimate the Internet of Things (Evans 2011:2), but based on the above it is clear that the Internet of Things is growing each year which means that more data is transmitted via electronics and therefore saved for further usage.

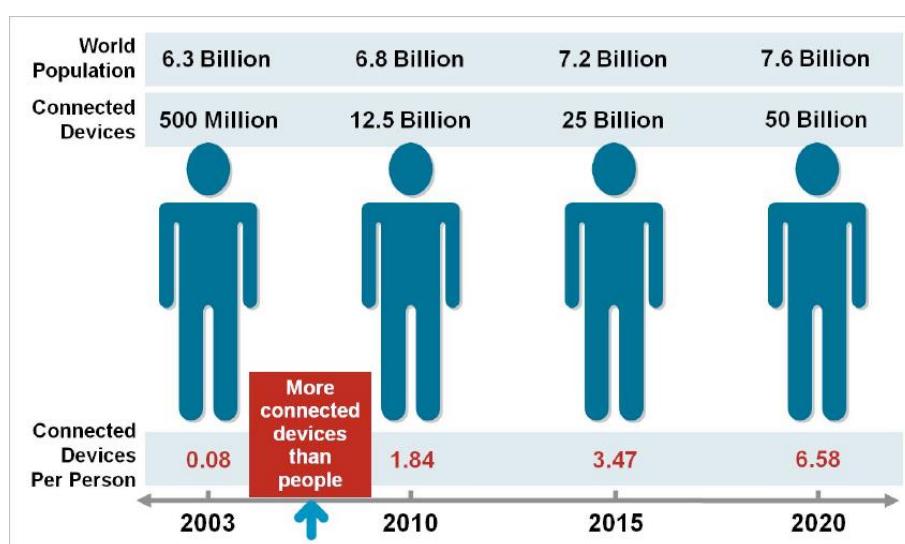


Figure 1.5: The Internet of Things was ‘born’ between 2008 and 2009

Source: Evans (2011:3)

This all leads to a phenomenon everyone seems to be talking about these days, namely ‘big data’ (Chartered Institute of Management Accountants [CIMA] 2014b:1). In an article by Joachim (2013:s.p.), titled “Big data – the latest talk in business circles”, he addresses the question of how the concept ‘big data’ is changing the business world and how organisations, including revenue bodies, should react.

So what is ‘big data’? ‘Big data’ offers detailed information (often in real time) that makes it possible to measure the properties and patterns associated with human behaviour, which could not be measured in the past (Franke et al. 2016:372).

To date the South African government has benefited in many ways from the use of information technology (Jankeeparsad 2013:ii). Therefore, ‘big data’ (explained in Chapter 4) was a very important concept for purposes of this study and was used to develop the new feasibility framework, which could assist SARS in preventing the taxation gap through the use of external third-party data and information technology.

Stewart Brand said, “Once a new technology rolls over you, if you’re not part of the steamroller, you’re part of the road” (BrainyQuote 2017e:s.p.). Therefore, in order to reap further benefits, SARS has to make use of the concept ‘big data’ as well as available information technology and third-party data to integrate this data into its information systems. This leads us to the research objectives of this study.

1.3 RESEARCH OBJECTIVES

The primary objective of this study was to develop a generic framework that would aid SARS to determine whether it is feasible to incorporate and use third-party data in conjunction with information technology to validate taxpayers’ information that is submitted to SARS in order to flag potential non-compliance, tax evasion and tax avoidance. Since the taxation gap involves multiple areas of taxation (such as rental income, travel allowances and medical expenses), which each contributes to the overall taxation gap, the feasibility framework would enable SARS to identify and focus on a specific area (at a time), which makes a substantial contribution to the taxation gap in order to break down the taxation gap piece by piece.

The following additional objectives were identified and assisted in achieving the primary objective:

- determine the components that would enable the generic feasibility framework to be successful in assisting SARS in the prevention of non-compliance and tax evasion;
- evaluate the existing Compliance Risk Management Process (OECD 2004:9) that would be affected by the new feasibility framework;
- identify the characteristics that makes third-party data relevant and usable;
- identify the main characteristics of ‘big data’ and demonstrate how they apply to SARS; and
- test the feasibility framework through the use of case studies in order to determine whether the new framework is theoretically viable and whether any adjustments are required.

1.4 THESIS STATEMENT

In light of the above, this study aimed to develop a generic framework to determine whether it would be feasible to reduce the taxation gap by automating the detection of any non-compliance, tax evasion and tax avoidance by taxpayers, using third-party data as well as information technology.

The feasibility framework is based on the main characteristics of ‘big data’, since third-party data is classified as ‘big data’ in most instances and therefore shares the main characteristics of ‘big data’, namely it can be high in volume, velocity, variety, variability, complexity and virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76). Thus, by using these main characteristics to build the feasibility framework, the framework could assist SARS to identify the elements that are required to automate the detection of any non-compliance, tax evasion and tax avoidance by taxpayers through the utilisation of third-party data and information technology for a specific area that contributes to the taxation gap. If these elements required for automatic detection are not available, or if the costs are too high, development could cease before too many resources have been spent and/or wasted.

The research methods that were used to achieve the aim of this study and build the relevant feasibility framework, are discussed in the next section.

1.5 RESEARCH METHODS

The overall approach that would be used for purposes of the current study comprised a variation of techniques, namely:

- **Extended literature reviews**

In order to develop a framework to prevent non-compliance, an understanding was required of the areas that will enable such a framework to be successful. Since governance, risk and compliance (GRC) is an emerging area in the corporate and information technology (IT) domain (Racz, Wieppl et al. 2010:106), organisations, such as revenue bodies, are confronted with an increased risk and a growing number of regulatory, legal and other compliance requirements (Racz, Panitz et al. 2010:1). The frame of reference for integrated governance, risk and compliance (Racz, Wieppl et al. 2010:113) was used as basis to determine the areas that had to be included in the new feasibility framework for SARS in order for it to enhance compliance. Thus, the frame of reference for integrated governance, risk and compliance (Racz, Wieppl et al. 2010:113) provided a contextual understanding of the areas that had to be reviewed in order to ensure that the framework that was developed adhered to all aspects that would make it a suitable and acceptable framework within SARS.

Since the new conceptual framework would be used to address compliance and risk management, existing frameworks had to be considered – one in particular, namely the Compliance Risk Management Process as described by the OECD (2004:9). The OECD (2004:8) guidance note outlines **compliance risk management** as a structured iterative process for the “systematic identification, assessment, ranking, and treatment of tax compliance risks” that will enhance decision-making. This structural process is depicted in the Compliance Risk Management Process, which can be used by revenue bodies, including SARS. Thus, once the different areas had been identified, discussed and understood, the existing Compliance Risk Management Process as described by the OECD (2004:9) will be discussed to identify how the new conceptual framework that was developed as part of this study could enhance this existing framework.

In addition, the main influences relating to the proposed feasibility framework (namely third-party data and information technology) will be discussed in detail in order to understand their importance and connotation with the proposed feasibility framework better (see 2.4.1 and 2.4.2). This comprises the following six distinct factors as a framework for evaluating information-reporting requirements from third parties (Lederman 2010:1733) in order to ensure the third-party data that SARS receives is of value:

- arm's-length third parties;
- infrastructure for bookkeeping;
- centralisation of data;
- complete reporting;
- limited alternative arrangements; and
- tax gap contributor (Lederman 2010:1739–1741).

Finally, in Chapter 4, the concept of 'big data' will be explored and, for purposes of this study, it was applied in order to understand how it could assist SARS to automate the detection and prevention of taxation gaps caused by tax evasion. Thus, 'big data' was used to develop the new feasibility framework that could assist SARS in preventing the taxation gap through the use of external third-party data and information technology. The new feasibility framework was based on the main characteristics of 'big data', namely:

- volume;
- velocity;
- variety;
- variability;
- complexity; and
- virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

This had to help ensure that the focus was kept during the use of the case studies as well as the comparative analysis (Hofstee 2006:121).

- **Case studies**

Once the feasibility framework had been developed based on the main characteristics of ‘big data’ (namely volume, velocity, variety, variability, complexity and virtue) (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76), two detailed case studies were used to test the framework – one, which contained periodic data (see 2.2.3) and another, which contained continuous data (see 2.2.3). These case studies were chosen based on the frequency of data, the volume of data, the availability of third-party information systems and the need for taxpayers to be registered and/or subscribed with a specific third party in order to make a tax claim.

- **Comparative analysis**

Once the case studies had been completed, the conclusions reached were compared to achieve an overall result and to validate whether any enhancements were required to the initial generic feasibility framework that was developed.

The challenges and limitations of using each of these methods will be discussed in detail in Chapter 3. However, the overall delineations and limitations for purposes of this study are discussed in the next section.

1.6 DELINEATIONS AND LIMITATIONS

The following are delineations and limitations in terms of this study:

- The study only focussed on revenue collection by SARS due to time constraints and scope limitations. However, it is suspected that the feasibility framework could be applied to other revenue collection organisations also, although this has not been tested;
- In light of the previous point, only local data was considered for purposes of this study;
- The study was focussed on personal income tax, because as indicated earlier (see 1.1), personal income tax is the main contributor of revenue for SARS. This study therefore excluded corporate income tax, value-added tax (VAT) and other taxes;

- The current Compliance Model used by SARS consists of three legs, namely enforcement, service and education (Carolissen 2010:13), which indicates the areas on which SARS focusses to encourage compliance. However, for purposes of this study, only the ‘enforcement leg’ of the SARS Compliance Model was considered;
- The study did not deal with the effect of required changes on the third-party systems and/or updating and aligning these systems (including their data) because the costs would have been too high, for example because –
 - the transactional and master data needed to be aligned to an acceptable standard in order to be able to integrate these systems with the SARS system; and
 - the integrity of the data that was received from the third-party systems would need to be checked, as low data integrity might have posed a high risk.
- Since section 26 of the Tax Administration Act, No. 28 of 2011 states that the Commissioner of SARS may request, by means of a public notice, any third party to submit information by a specified date (as indicated in the notice) in the prescribed form and manner to SARS, the study excluded a detailed analysis of the legislations and laws (such as the privacy laws) that would have been affected as they did not have any bearing on this study;
- The study excluded an investigation of any technologies that could be used to store, update, manipulate or report the information gathered from third parties due to time constraints and scope limitations;
- The study provided a framework and guidance as to how the feasibility framework could be applied by using two case studies, but as this was a strategic approach, it was assumed to be the ‘perfect world’ and application in the ‘real world’ would not necessarily be as easy;
- The outcomes achieved through the application of the two case studies selected for purposes of this study on the new feasibility framework might differ significantly from the outcomes reached in this study if made by experts at SARS as a result of additional information, knowledge and experience that might be available; and

- The overall risk management strategy depends on the risk appetite of SARS, which for purposes of this study was unknown.

The next section lists some of the key terms used in this study, together with their definitions for purposes of this study.

1.7 DEFINITION OF TERMS

This study involved a number of key terms and concepts. These terms and concepts were defined as follows for purposes of this study:

Big data – is defined as high-volume, high-velocity, high-variety, high-variability and/or high-complexity data assets that require virtue and new forms of processing to enable enhanced decision-making, insight discovery and process optimisation (see 4.3).

Data – is defined as “information in raw or unorganized form such as alphabets, numbers or symbols ...” (Al-Hamami & Al-Saadoon 2015:367; BusinessDictionary 2017b:s.p.).

Framework (also referred to a ‘conceptual framework’) – contains a set of broad areas and principles drawn from a field of study and used to arrange an instructional presentation (Kobelski & Reichel 1987:3). For purposes of this study, the set of broad areas and principles was mainly based on the main characteristics of ‘big data’. The framework itself formed part of the **agenda for negotiation** in order to be examined and verified, reviewed and restructured as a result of the research as a result of the investigation (Guba & Lincoln 1989:265–269; Smyth 2004:168).

Governance, Risk and Compliance Framework – for the purposes of this study, governance, risk and compliance were described as comprising an integrated, holistic approach to organisation-wide governance, risk and compliance to ensure that SARS as well as the taxpayers act ethically correct and in accordance with internal policies, risk appetite and external regulations of SARS through the alignment of the processes, technology, strategy and people, thus improving efficiency and effectiveness (Racz, Weippl et al. 2010:113). This definition can be entered into a high-level frame of reference, which will be referred to throughout the rest of the study as the **Governance, Risk and Compliance Framework**.

Information – is defined as “Data that is (1) accurate and timely, (2) specific and organised for a purpose, (3) presented within context that gives it meaning and relevance, and (4) can lead to an increase in understanding and decrease in uncertainty” (BusinessDictionary 2017c:s.p.).

Information system (also referred to as ‘systems’) – is defined as “... any combination of information technology and people’s activities that support operations, management and decision making. In a very broad sense, the term information system is frequently used to refer to the interaction between people, processes, data and technology” (Kroenke 2016:6).

Information technology (also referred to as ‘technology’, or IT) – is defined as “The study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information” (English Oxford Living Dictionaries 2017c:s.p.).

Risk engine – is defined as “... the advanced statistical analysis that is performed systematically, and which is programmed on the probability of compliance risk” (SARS 2014a:s.p.).

Tax compliance – is defined as “... true reporting of the tax base; correct computation of the liability; timely filing of the return; and timely payment of the amounts due” (Franzoni 1998:5).

Tax avoidance – refers to finding legal ways to pay the least or no amount of tax. It means taxpayers find loopholes in the tax legislation and use it to their advantage, therefore staying within the boundaries of the tax legislation (Sandmo 2005:645).

Tax evasion – for purposes of this study, **tax evasion** referred to the unlawful activities, which a taxpayer deliberately undertakes to decrease a tax burden, for example when a taxpayer does not declare his or her full amount of revenue earned, or does not declare revenue earned at all, or generates fake expenses (Lewis 1982:123, Oberholzer 2007:9; OECD 2016:s.p.; Prebble & Prebble 2010:702; Torgler & Schaltegger 2006:396; Webley, Robben, Elffers & Hessing 1991:2).

Taxpayer – is defined by section 1 of the Income Tax Act, No. 58 of 1962 as “any person chargeable with any tax leviable under this Act and includes every person required by this Act to furnish any return”, however, for the purposes of this study, a **taxpayer** was referred to as any economically active person (Oberholzer 2007:7).

Third party – for purposes of this study, **third party** referred to any other person or business that has information relating to a particular transaction of the taxpayer in which SARS has an interest.

Some basic assumptions were made for purposes of this study. These are listed in the 1.8.

1.8 ASSUMPTIONS

The following underlying assumptions were made based on section 26 of the Tax Administration Act, No. 28 of 2011, which states that the Commissioner of SARS may request by means of a public notice any third party to submit required information by a specified date (as indicated in the notice) in the prescribed form and manner to SARS:

- third-party data, which is required by SARS, is captured and stored using information systems;
- third-party data is in the format that is required by the SARS systems;
- third-party organisations are willing to implement the relevant updates required by SARS to their information systems; and
- third-party organisations are prepared to share their captured and stored information timeously with SARS.

To highlight the importance of this study, the significance of the study is explained in the next section.

1.9 SIGNIFICANCE (RATIONALE)

The results of this study could be of great value to SARS. The objective of SARS, as stated in section 3 of the South African Revenue Service Act, No. 34 of 1997, is the effective and efficient collection of revenue. Non-compliance, tax evasion and tax avoidance by taxpayers prevent SARS from fully achieving their objective. Therefore, in order to aid SARS with the effective and efficient collection of revenue by trying to automate the detection of any non-compliance, tax evasion and tax avoidance by taxpayers, this study developed a new feasibility framework to determine whether it would be feasible to reduce the taxation gap through the use of third-party data in conjunction with information technology.

Not only will the new feasibility framework aid in the automatic detection of any non-compliance, tax evasion and tax avoidance by taxpayers, but it will also encourage compliance from taxpayers. Taxpayers are becoming more aware of being caught and are therefore more compliant as a result of risk management and enforcement (Allingham & Sandmo 1972:323–338; Carolissen 2010:13; Manolas et al. 2013:29; Slemrod 2007:35–36; Venter 2011:41) by SARS.

The next section will explain how the development of the new feasibility framework was undertaken throughout the study.

1.10 CHAPTER STRUCTURES

As can be seen from the above, it is clear that South Africa has a taxation gap. The exact amount or percentage of the taxation gap is uncertain, but it is estimated to be around a fifth to a third of the revenue that is collected each year.

It has also been indicated that we are now living in a world that is driven by information technology. Almost everything that people do, is done by using information technology, and this leaves an audit trail that can be used by SARS.

Therefore, in the next few chapters, it is reported how a framework that could assist SARS to evaluate whether it is possible and/or feasible to reduce the taxation gap through the use of third-party data and information technology was developed and tested. A summary of the chapters follows.

Chapter 2: Literature overview

In order to develop a framework to prevent non-compliance, an understanding was required of the areas that would enable such a framework to be successful. Since governance, risk and compliance is an emerging area in the corporate and information technology domain (Racz, Weippl et al. 2010:106), organisations, including revenue bodies, are confronted with an increased risk and a growing number of regulatory, legal and other compliance requirements (Racz, Panitz et al. 2010:1). The frame of reference for integrated governance, risk and compliance (Racz, Weippl et al. 2010:113) was used as basis to determine the areas that had to be included in the new feasibility framework for SARS in order for it to enhance compliance. Thus, the frame of reference for integrated governance, risk and compliance (Racz, Weippl et al. 2010:113) provided a contextual understanding of the areas that had to be reviewed in order to ensure that the framework that was

developed adhered to all aspects that would make it a suitable and acceptable framework within SARS.

Since the new conceptual framework would be used to address compliance and risk management, existing frameworks had to be considered – one in particular, namely the Compliance Risk Management Process as described by the OECD (2004:9). The OECD (2004:8) guidance note outlines compliance risk management as a structured iterative process for the “systematic identification, assessment, ranking, and treatment of tax compliance risks” that will enhance decision-making. This structural process is depicted in the Compliance Risk Management Process, which can be used by revenue bodies, including SARS. Thus, once the different areas had been identified, discussed and understood, the existing Compliance Risk Management Process as described by the OECD (2004:9) is discussed to identify how the new conceptual framework that was developed as part of this study could enhance this existing framework.

Finally, third-party data and information technology are discussed in more detail to ensure it is fully understood.

Chapter 3: Research methods

This section presents a discussion on the overall approach that was followed for purposes of the current study in order to develop and test the generic feasibility framework. A variety of techniques were used, namely:

- extended literature reviews;
- case studies; and
- comparative analysis.

Although the focus was mainly on the case study technique, each of these is discussed to see how it could contribute to the study as well as to ensure that all were relevant to the study.

Chapter 4: Development of the feasibility framework

A phenomenon that has been the focus of many discussions, namely ‘big data’, its application and the risks associated are discussed. A discussion then follows on how the main characteristics of ‘big data’ (namely volume, velocity, variety, variability, complexity and virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri

& Biswas 2015:80; Moorthy et al. 2015:75–76) were used to develop the feasibility framework that could assist SARS in minimising the taxation gap through the use of external third-party data and information technology.

Chapter 5: Testing of the feasibility framework

Two case studies were selected to test the proposed feasibility framework, as discussed in Chapter 4. This chapter outlines and discusses these case studies in detail in order to show the reader that the feasibility framework is theoretically viable and whether any adjustments were required.

Chapter 6: Summary and conclusions

The final chapter concludes the study. It summarises the findings, discusses any problems, conclusions, implications for existing theories, recommendations for implementation and a summary of contributions. In addition, it also lists suggestions for future research.

CHAPTER 2

LITERATURE OVERVIEW

2.1 INTRODUCTION

The objective of SARS, as stated in section 3 of the South African Revenue Service Act, No. 34 of 1997, is the effective and efficient collection of revenue. The taxation gap, as discussed in Chapter 1, however prevents SARS from fully achieving this objective. As part of this study, a feasibility framework to reduce the taxation gap using third-party data and information technology was developed.

However, in order to develop a framework to prevent non-compliance, an understanding was required of the areas that would enable such a framework to be successful. Since governance, risk and compliance comprise an emerging area in the corporate and information technology domain (Racz, Weippl et al. 2010:106), organisations, including revenue bodies, are confronted with an increased risk and a growing number of regulatory, legal and other compliance requirements (Racz, Panitz et al. 2010:1). The frame of reference for integrated governance, risk and compliance (Racz, Weippl et al. 2010:113) was used as basis to determine the areas that had to be included in the new feasibility framework for SARS in order for it to enhance compliance. Thus, the frame of reference for integrated governance, risk and compliance (Racz, Weippl et al. 2010:113) provided a contextual understanding of the areas that had to be reviewed in order to ensure that the framework that was developed adhered to all aspects that would make it a suitable and acceptable framework within SARS.

Since the new conceptual framework was going to be used to address compliance and risk management, existing frameworks had to be considered – one in particular, namely the Compliance Risk Management Process as described by the OECD (2004:9). The OECD (2004:8) guidance note outlines compliance risk management as a structured iterative process for the “systematic identification, assessment, ranking, and treatment of tax compliance risks” that will enhance decision-making. This structural process is depicted in the Compliance Risk Management Process, which could be used by revenue bodies, including SARS. Thus, once the different areas have been identified, discussed and understood, the existing Compliance Risk Management Process as described by the OECD (2004:9) will be discussed to

identify how the new conceptual framework that was developed as part of this study could enhance this existing framework.

Finally, the main influences relating to the proposed feasibility framework (namely third-party data and information technology) will be discussed in more detail in order to understand their importance and connotation with the proposed feasibility framework better. This comprises the following six distinct factors as a framework for evaluating information-reporting requirements from third parties (Lederman 2010:1733) to ensure that the third-party data, which SARS receives is of value:

- arm's-length third parties;
- infrastructure for bookkeeping;
- centralisation of data;
- complete reporting;
- limited alternative arrangements; and
- tax gap contributor (Lederman 2010:1739–1741).

2.2 GOVERNANCE, RISK MANAGEMENT AND COMPLIANCE FRAMEWORK

Governance, risk and compliance can be described as an integrated, holistic approach to organisation-wide governance, risk and compliance to ensure that SARS as well as the taxpayers act ethically correct and in accordance with the internal policies, risk appetite and external regulations of SARS through the alignment of the processes, technology, strategy and people, thus improving efficiency and effectiveness (Racz, Weippl et al. 2010:113). This definition can be inserted into a high-level frame of reference as illustrated in Figure 2.1 below and will be referred to as the Governance, Risk and Compliance Framework throughout the rest of the study.

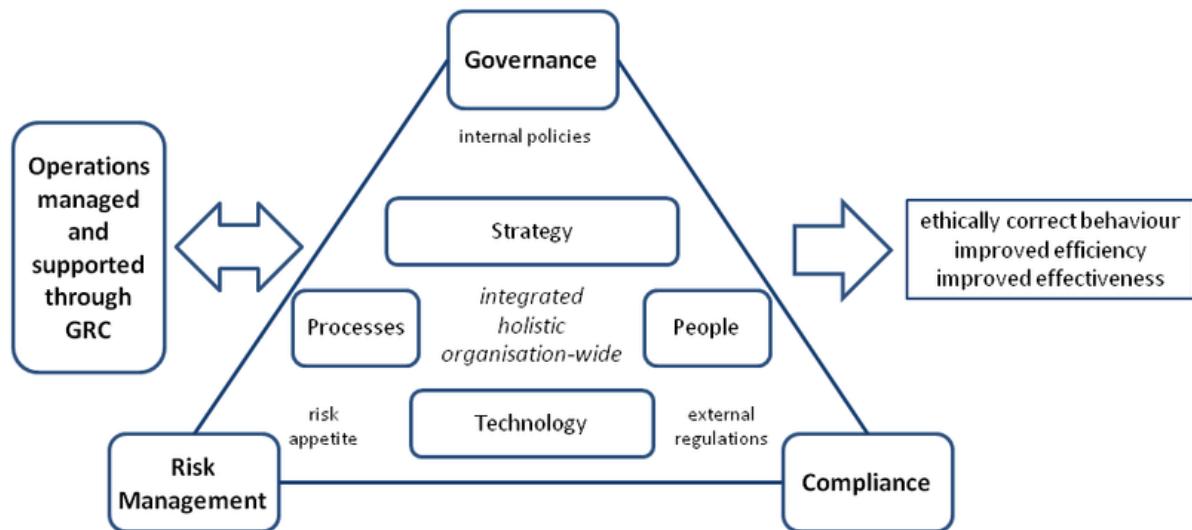


Figure 2.1: Frame of reference for integrated governance, risk and compliance

Source: Racz, Weippl et al. (2010:113)

For the purpose of this study, the Governance, Risk and Compliance Framework was used to aid the development of a generic feasibility framework that would assist SARS in reducing the taxation gap by identifying the areas that were required to ensure the new feasibility framework is suitable and acceptable for purposes of enhancing taxpayer compliance.

As described in the definition above and illustrated in Figure 2.1, the operations, governance, risk management and compliance, strategy, processes, people and technology all form part of the Governance, Risk and Compliance Framework to achieve an outcome of ethically correct behaviour, improved efficiency and improved effectiveness (Racz, Weippl et al. 2010:113). Thus, for purposes of this study the Governance, Risk and Compliance Framework formed the basis of the areas that had to be present in our new feasibility framework to achieve an outcome of ethically correct behaviour, improved efficiency and improved effectiveness, as stated by Racz, Weippl et al. (2010:113), from both SARS and the relevant taxpayers.

Each area is discussed in detail below to understand these areas and how they relate to both SARS and the new feasibility framework fully.

2.2.1 The operations of SARS

The Governance, Risk and Compliance Framework starts with the operations of SARS that should be managed and supported. The SARS Act, No. 34 of 1997

sections 3 and 4 gives SARS the mandate to perform certain objectives and functions which are summarised as follows:

- collect all revenues that are due;
- ensure maximum compliance with the legislation; and
- provide a customs service that will maximise revenue collection, protect our borders and facilitate trade (SARS 2013b:s.p.).

As mentioned in Chapter 1, government requires the revenue collected to fulfil its objectives, namely to:

- fund social and economic programmes; and
- provide public goods and services, for example schools, universities, hospitals, clinics and roads, as well as defence and security (SARS 2013e:s.p.).

The OECD (2004:7) states that the primary goal of a revenue authority is to collect the duties and taxes that are payable in accordance with the law, and to do this in a manner that will sustain the confidence in the tax system and its administration. The taxpayers' actions – whether due to carelessness, ignorance, recklessness or deliberate evasion – as well as weaknesses in the tax administration mean that instances of failure to comply with the law are inevitable. Strategies and structures should be in place through tax administration to ensure that non-compliance with the tax law is kept to a minimum. It is therefore very important that SARS fulfils its mandate to increase the revenue that is available to government for purposes of rebuilding the country and creating an economic order in which all South Africans are prosperous. This is something of which SARS is conscious and therefore they are working hard to turn an entrenched culture of non-compliance into one of voluntary compliance and increasing the tax base while reducing the cost of collection (National Treasury 2011:s.p.).

Based on the integrated Governance, Risk and Compliance Framework (Racz, Weippl et al. 2010:113), a culture of voluntary compliance could be formed by incorporating the right balance between the three legs of the Governance, Risk and Compliance Framework, namely governance, risk management and compliance. These are explained in more detail in 2.2.2.

2.2.2 Governance, risk management and compliance

For purposes of this study, governance, risk management and compliance were interpreted as follows:

- **Governance**

Governance normally refers to the internal policies of an organisation, which assist in controlling and directing an entity (Fasset 2012:5), but for purposes of this study **governance** referred to the Tax Administration Act, No. 28 of 2011 as well as the individual tax acts (for example, the Income Tax Act, No. 58 of 1962 for personal income tax), which guide taxpayers on the preparation, submission and payment of their tax returns.

- **Risk management**

Risk as defined in ISO 31000 is “the effect of uncertainty on objectives” (International Organization for Standardization [ISO] 2009:s.p.), and can therefore be seen as events that are preventing SARS from achieving the objectives as set out in the mandate (Fasset 2012:29–30). For purposes of the present study, risk management was therefore described as “the identification, assessment, and prioritisation of risks, followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events” (Hubbard 2009:10). Organisations manage a wide range of risks on a daily basis (Steinberg 2011:81), for example social and ethical risks, financial risks, operational risks, information technological risks and external legal and regulatory compliance risks of taxpayers (Fasset 2012:30). Thus, in the case of the present study, the overall risk management strategy depended on the risk appetite of researcher rather than SARS. This will differ in practice.

- **Compliance**

Compliance is defined as “the action or fact of complying with a wish or command” or “the state or fact of according with or meeting rules or standards” (Oxford Dictionary of English 2010b:357). A major concern for all governments is tax compliance (Franzoni 1998:1). According to the OECD

(2004:7), compliance relates to the extent to which a taxpayer meets the four broad categories of taxpayer obligations as listed below:

- registration as a taxpayer within the system;
- filing or lodgement of required tax information on time;
- reporting of complete and accurate information, which includes good record keeping; and
- timely payment of tax obligations.

OECD (2004:7) further states that if a taxpayer fails to meet any of the obligations as listed above, it may be seen as non-compliance. Franzoni (1998:5) also lists the last three items in his study, namely –

- accurate reporting and correct computation of the tax base and liability;
- timely filing of the tax return; and
- timely payment of the relevant tax amounts due.

However, Franzoni (1998:5) indicates that the bulk of tax evasion involves the inaccurate reporting of the relevant tax base as most tax evaders do not declare their liability at all, or declare only a portion of it. For purposes of this study, **compliance** referred to favourable response of taxpayers on the registration, accurate preparation, timely submission and payment of their tax returns or as defined more formally by SARS (s.a.:4), “the degree to which taxpayers and traders, along with intermediaries like practitioners and clearing agents, meet their legal obligations”.

SARS has developed its own Compliance Model, which is based on three pillars, namely:

- education;
- service; and
- enforcement (Carolissen 2010:13; National Council of Provinces Committee [NCOP] Finance 2014:s.p.; Richer 2012:8; SARS 2014b:13).

In a presentation presented at the 44th General Assembly of the Inter-America Centre of Tax Administration (CIAT) and prepared by Carolissen (2010:13), a group executive at SARS, the Compliance Model was depicted as illustrated in Figure 2.2 below.

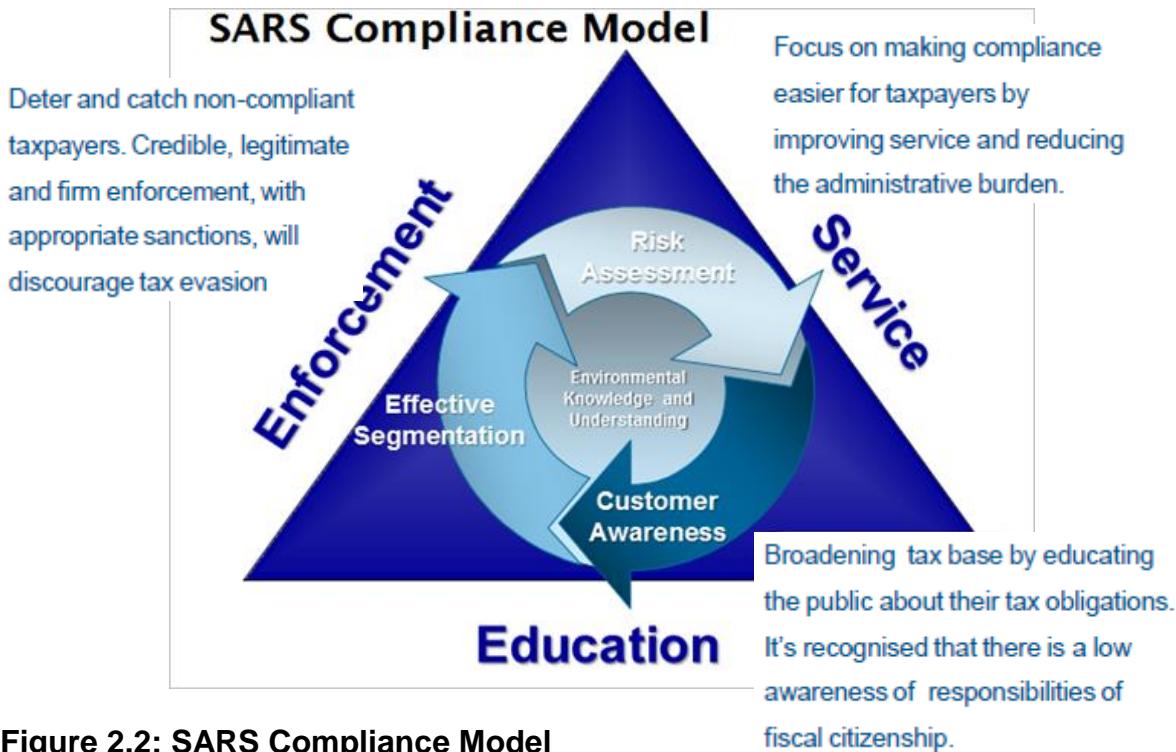


Figure 2.2: SARS Compliance Model

Source: Adapted from Carolissen (2010:13)

The proposed feasibility framework that was developed as part of this study fits into the enforcement leg of this Compliance Model, and is therefore aligned with the statement “Deter and catch non-compliant taxpayers” (Carolissen 2010:13).

In order to achieve the relevant level of governance, risk management and compliance, the SARS strategy, processes, people and technology should be aligned accordingly. The next section therefore presents a discussion in more detail of the areas that should be aligned.

2.2.3 Strategy, processes, people and technology

The SARS strategy, processes, people and technology work together and assist in achieving the required level of governance, risk management and compliance. For purposes of this study, these four elements were understood as follows:

- **Strategy**

A **strategy** can be defined as “A method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem” (BusinessDictionary 2017d:s.p.). The European Union (EU) (2010:17) simplifies it slightly by defining it as “... an approach that is used in order to reach an objective”. Therefore, for purposes of this study, the strategy

referred to the new feasibility framework that was developed and which is reported on in Chapter 4 during an in-depth look at the main characteristics (namely volume, velocity, variety, variability, complexity and virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76) of a phenomenon called ‘big data’.

- **Processes**

A **business process** can be defined as “A series of logically related activities or tasks ... performed together to produce a defined set of results” (BusinessDictionary 2017a:s.p.). Processes, for purposes of this study, referred to the current business processes that were in place at both organisations (SARS and the third party) as well as enhancements that were required for the current processes in order to make the new feasibility framework more effective. It also referred to the processes that were used in order to gather the required information to apply the new feasibility framework, for example:

- The income tax return for individuals (ITR12) that has to be completed (with an individual’s income and expenses) and submitted by personal income taxpayers on a yearly basis;
- The tax legislation (for example, the Tax Administration Act, No. 28 of 2011 and the Income Tax Act, No. 58 of 1962 for personal income tax), which define the guidelines and requirements relating to personal income tax as well as third-party data; and
- The enhancement of third-party information systems and data in order to ensure the integrity, quality and timeliness of the data provided to SARS.

- **Technology**

Digital data gathering is crucial for tax administration purposes as it allows for improvement opportunities through the intensive use of **information technology**. Information technology allows for:

- reliable and updated taxpayer records; and
- cross-checking possibilities against third-party data.

Therefore, the availability of information technology tools are of great importance to SARS as well as access to data (such as third-party data), as these advanced tools are of no use to SARS if the data access is poor (EU 2010:16).

Designing an information system that would provide SARS with a competitive advantage requires at least two things, namely:

- firstly, an understanding of the business problem that should be resolved, for example a specific issue that is contributing to the taxation gap; and
- secondly, an understanding of available technologies in order to know which ones to use in designing a creative solution for the business problem (Ramey 2012:s.p.).

The second option, however, was not part of the scope of this study due to time constraints and scope limitations.

- **People**

For purposes of the present study, **people** referred to the payers of personal tax and the way their taxation information was integrated. The OECD (2015:293) provided a summary of taxpayer identifiers used for personal income tax across a number of OECD and non-OECD countries as indicated in Table 2.1 below (based on Tax Administration 2015 surveys [see OECD 2015]). From this table, it can be seen that countries use either:

- a unique tax number (such as South Africa);
- the citizen identification (ID) number; or
- a social security number.

Country	Nature of identifier			Features of identifier			Number registered end 2013 (millions)	Registrations as % of	
	Unique TIN	Citizen ID number*	SSC number	N or AN	No. of digits	Check digit		Labour force	Citizen population
OECD countries									
Australia	✓			N	9	✓	X	27.2	223 118
Austria	✓			N	9	✓	X	6.9	157 81
Belgium		✓		N	11	✓	✓	6.83	138 61
Canada			✓	N	9	✓	X	28.8 /1	150 82
Chile		✓		N	8	✓	X	8.88	106 51
Czech Republic	✓			AN	10	✓	✓	2.92	55 28
Denmark	✓			N	10	✓	✓	5.00	173 89
Estonia		✓		N	11	✓	✓	0.55 /1	81 42
Finland			✓	AN	10	✓	✓	5.4	201 99
France	✓			N	13	✓	✓	36.5 /1	128 56
Germany	✓			N	11	✓	X	62.92	147 77
Greece	✓			N	9	X	X	11.85	238 107
Hungary	✓			N	10	✓	✓	5.19	118 52
Iceland		✓		N	10	✓	✓	0.26	144 81
Ireland		✓		AN	9	✓	X	2.72	126 59
Israel		✓ /1		N	9	✓	X	7.22 /1	196 90
Italy	✓			AN	16	✓	✓	41.41 /1	162 68
Japan	-	-	-	-	-	-	-	22.0 /1	33 17
Korea		✓		N	13	✓	✓	21.4 /1	83 43
Luxembourg		✓		N	11	✓	✓	1.10	440 204
Mexico	✓			AN	13	✓	✓	9.76	19 8
Netherlands		✓		N	9	✓	X	7.85	88 47
New Zealand	✓			N	9	✓	X	3.70	153 83
Norway		✓		N	11	-	✓	3.4	126 67
Poland		✓		N	10 /1	✓	✓	17.27	99 45
Portugal	✓			N	9	✓	X	7.0	130 65
Slovak Republic	✓			N	10	✓	X	0.66 /1	24 12

Figure 2.3: System of taxpayer identifiers used and numbers of registrations – personal income tax

Source: OECD (2015:293)

Country	Nature of identifier			Features of identifier			Number registered end 2013 (millions)	Registrations as % of	
	Unique TIN	Citizen ID number*	SSC number	N or AN	No. of digits	Check digit		Labour force	Citizen population
Slovenia	✓			N	8	✓	x	1.01	100 49
Spain		✓		AN	9	✓	✓	19.4 /1	84 42
Sweden		✓		N	12	✓	✓	7.5	146 78
Switzerland			✓	N	Vary	x	x	4.8 /1	103 60
Turkey	✓			N	11	✓	x	1.79	6 2
United Kingdom			✓	N	10	✓	x	39.0	121 62
United States			✓	N	9	x	x	283.1 /1	181 90
Non-OECD countries									
Argentina	✓			N	11	✓	✓	4.4	23 11
Brazil	✓			N	11	✓	x	25.6	25 13
Bulgaria	✓			N	10	✓	✓	2.6	77 36
China	✓			AN	18	x	✓	n.a.	n.a. n.a.
Colombia	✓			AN	9	✓	x	1.56	n.a. 3
Costa Rica		✓		N	12	✓	x	0.33*	15 7
Croatia		✓		N	11	✓	x	0.10 /1	6 2
Cyprus	✓			AN	9	✓	✓	0.36	84 41
Hong Kong, China	✓			AN	7	✓	x	3.30	85 46
India	✓			AN	10	✓	✓	32.50	n.a. 3
Indonesia	✓			N	15	✓	x	25.06	21 10
Latvia		✓		N	11	✓	✓	0.91	90 45
Lithuania	✓			N	9-11	✓	✓	1.40	95 47
Malaysia	✓			AN	11	✓	x	6.79	51 23
Malta		✓		AN	Vary	x	✓	0.28	147 67
Morocco	✓			N	8	x	x	4.5	n.a. 14
Romania		✓		N	13	✓	✓	0.56 /1	6 3
Russia	✓			N	10	✓	x	145.3 /1	192 101
Saudi Arabia	-			-	-	-	-	/1	n.a. n.a.
Singapore		✓		AN	7	✓	x	2.0 /1	93 37
South Africa	✓			N	10	✓	x	15.7 /1	79 30
Thailand		✓		N	13	✓	x	16.76	42 25

* Citizen ID number = national personal/individual identity card number (or equivalent ID used across Government).

Figure 2.3: System of taxpayer identifiers used and numbers of registrations – personal income tax (continued)

Source: OECD (2015:293)

One of the specific challenges that SARS has regarding third-party data is achieving accuracy in matching the identities of taxpayers contained in third-party reports with the identities contained in SARS records (OECD 2015:136). The reason for this is that there are three types of identifications numbers used in South Africa, namely:

- *Identification (ID) number*

As summarised by the Department of Home Affairs (DHA), in terms of the Births and Deaths Registration Act, No. 51 of 1992, all babies that are born in South Africa must be registered within 30 days of their birth. Once successfully registered, the baby is issued with an unabridged birth certificate, which contains a unique identification number comprising 13 digits used to identify an individual (DHA 2016a:s.p.). This unique identification number could change in some rare instances, for example when an individual undergoes a sex change as the 7th to 10th digits indicate the individual's gender as well as the number of individuals registered on that particular date (Dickens 2009:s.p.; MacLean 2009:s.p.). The ID number could also change if an individual becomes a non-refugee or citizen as the 11th digit would change to indicate the new status of the individual (Dickens 2009:s.p.). Both these changes could result in a change in the 13th digit in order to meet the algorithm requirements of the Department of Home Affairs (Dickens 2009:s.p.).

- *Passport number*

Individuals who were not born in South Africa and who are not permanent residents within South Africa will have a unique passport number issued by the specific individual's national government in order to certify the identify and nationality of the specific individual (DHA 2016b:s.p.).

Passports are only valid for a number of years after which they expire and cannot be renewed (DHA 2016b:s.p.). Thus, once the application for a new passport is granted, the individual will be issued with a new unique passport number.

However, in South Africa, if an individual applies for a passport the Department of Home Affairs requires the individual to have a South African ID number (DHA 2016b:s.p.), which means the passport numbers of individuals are linked to their respective ID numbers. The same rule is most likely applied in other countries and that therefore there is a link between an individual's ID number and his or her passport numbers, and this information can be shared with SARS, if necessary. The only concern is the number of national governments from which this information should be gathered.

In addition, if an individual who is not a permanent resident of South Africa is granted permanent residency and/or citizenship, such person will be issued with a South African ID number (DHA 2016c:s.p.).

- *Taxation number*

SARS uses a specific taxation number to identify an individual. However, when registering as a taxpayer, an individual has to visit a SARS branch in order to have his or her identity, address and bank details verified (SARS 2016b:s.p.). Thus, an individual's tax number is linked to his or her unique ID number and/or passport number.

SARS may therefore face certain challenges when identifying individuals because the more general form of identification used by third parties is the ID number and/or passport number and, from the above, it is clear that these can change in certain circumstances. Some third parties, such as medical schemes and pension-related companies, have started to capture the taxation number of an individual, which would assist in the matching process. There are however still third parties that do not capture the taxation number (as a mandatory field) and this would have to be considered when developing and using the new feasibility framework. Examples of such third parties that did not capture the taxation number (at the time of the study) and who probably should require the taxation number in the future are doctors and pharmacies, mobile phone networks such as MTN and Vodacom, rental agencies, NetStar, etcetera.

Overall, based on the above discussion, it was clear that all areas within the Governance, Risk and Compliance Framework are needed to achieve the correct level of governance, risk management and compliance. All these areas therefore had to be incorporated into the new feasibility framework that was developed as part of this study.

In the next section, the current Compliance Risk Management Process as described by the OECD is reviewed in detail to ensure the new feasibility framework aligns and complements the existing framework.

2.3 THE COMPLIANCE RISK MANAGEMENT PROCESS

Compliance risk management is an organised process in which a tax administration, for example SARS, makes thoughtful decisions on which treatment mechanisms could be used to encourage compliance effectively and efficiently in order to prevent non-compliance, based on the knowledge of all taxpayers' behaviour and taking into account the available capacity of resources. Thus, the objective of compliance risk management can be summarised as enabling a tax administration to achieve its strategic objectives by aiding management to make better choices (EU 2010:5).

As highlighted by the OECD (2004:8), the benefits of pursuing a risk management approach are well established and for a revenue authority, they include:

- a structured basis for strategic planning;
- a focus on the underlying drivers (not symptoms) of non-compliance, and promotion of diversity in the treatment of major tax compliance risks, rather than the adoption of a 'one-size-fits-all' approach;
- better outcomes in terms of programme efficiency and effectiveness (for example, improved compliance with tax laws leading to increased tax collections and improved taxpayer service);
- a defensible approach that can withstand external scrutiny (for example, by external audit officials); and
- a strong foundation for evidence-based evaluation.

The use of multi-faceted approaches and an understanding of the risks involved provide a more holistic approach (OECD 2015:123). The OECD (2004:8–9) explains how a risk management approach could help SARS to prioritise risks and choose appropriate risk treatments to ensure limited resources are used optimally. Further to

this, the OECD (2004:8–9) explains that using such a framework (as displayed in the Figure 2.4 below), could assist SARS to:

- respond to changing conditions in a timely fashion;
- ensure that the highest priorities are treated with the relevant strategies and that these strategies have a high probability of success;
- leverage the effect of interventions; and
- meet the objectives of SARS by optimising revenue collections and maintaining the taxpayer's confidence in the systems that are used by SARS.

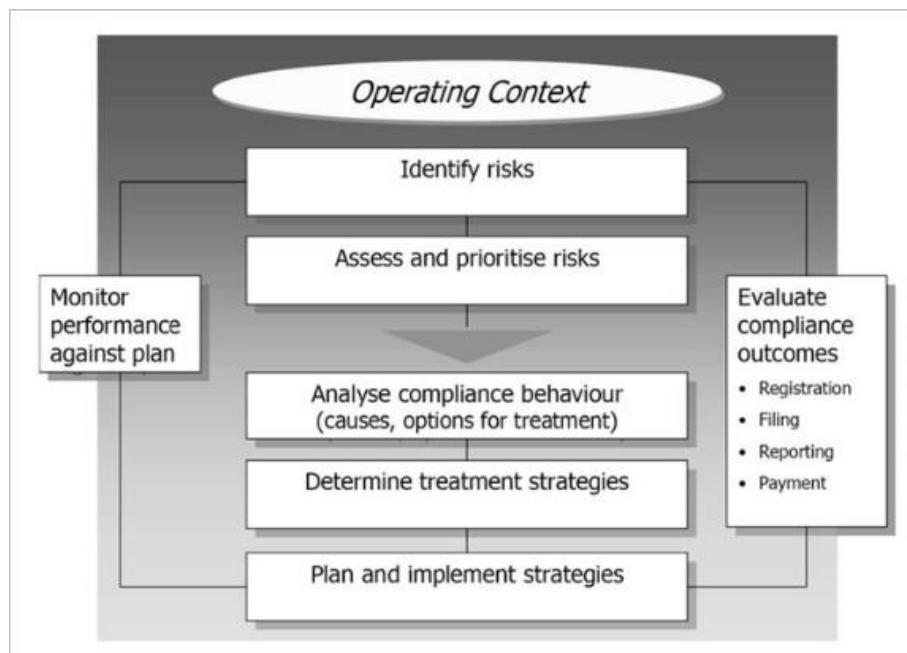


Figure 2.4: The Compliance Risk Management Process

Source: OECD (2004:9)

As per Figure 2.4, the Compliance Risk Management Process consists of seven steps, namely:

- Step 1: Identify risks
- Step 2: Assess and prioritise risks
- Step 3: Analyse compliance behaviour (causes and options for treatment)
- Step 4: Determine the treatment strategies
- Step 5: Plan and implement strategies
- Step 6: Monitor performance against plan
- Step 7: Evaluate compliance outcomes (registration, filing, reporting and payment)

The first five steps, as listed above, follow sequentially. Steps 1 to 3 identify, assess, prioritise and analyse the risks associated with the taxation gap. Once the risks are understood, the next two steps (steps 4 and 5) are used to determine, plan and implement the proposed solution related to a specific risk. Finally, steps 6 and 7 are performed in parallel to determine whether the solution that has been implemented meets the planned outcome in terms of diminishing the taxation gap.

The new feasibility framework that was developed as part of this study complements the existing Compliance Risk Management Process by expanding or addressing certain components in steps 3 and 4 of the Compliance Risk Management Process. However, to ensure the Compliance Risk Management Process is fully understood as well as for completeness, all steps are discussed below:

- **Step 1: Identify risks**

In order for SARS to recognise where and what their risks are, it has to be clear on its mission and objectives (EU 2010:13; Price & Smith 2000:4). Based on the discussions above, the objective of SARS, as stated in section 3 of the South African Revenue Service Act, No. 34 of 1997, is the effective and efficient collection of revenue which can be achieved through voluntary compliance.

In order to incorporate the right balance and build a culture of voluntary compliance for purposes of increasing the tax base and reducing the cost of collection, SARS needs to understand the complexities resulting in the taxation gap. In a presentation to the Standing Committee on Public Accounts, SARS (2003:37) outlined the complexities of the personal income taxation gap as indicated below in Figure 2.5.

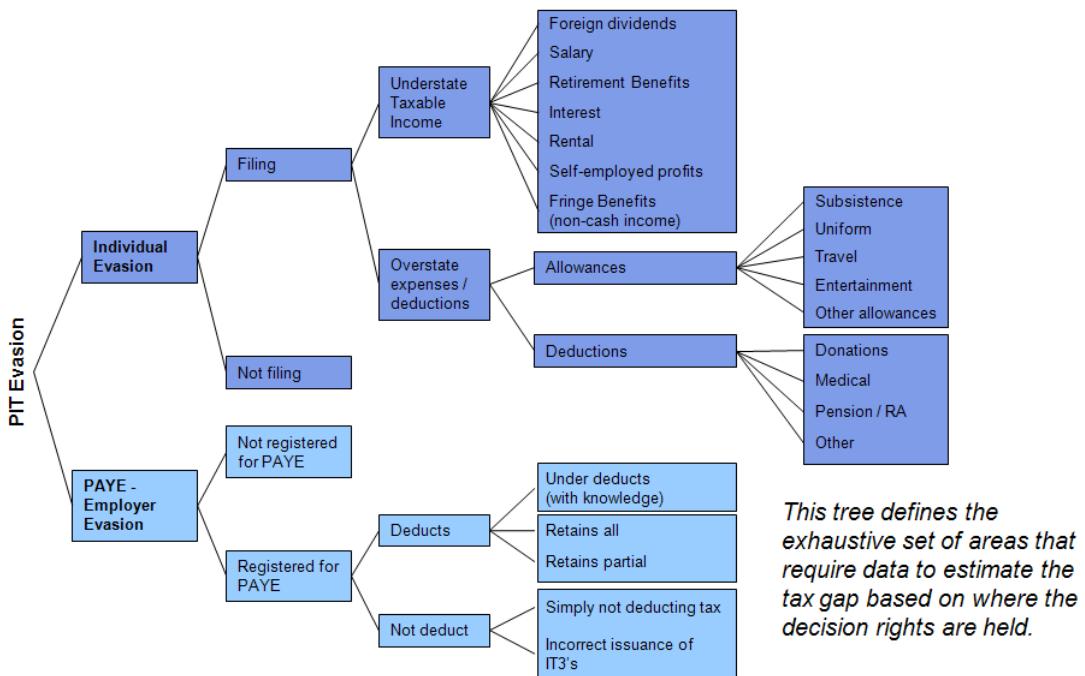


Figure 2.5: Complexities of the personal income taxation gap

Source: SARS (2003:37)

In Figure 2.5 above, the complexities of the personal income taxation gap is indicated as a result of **tax evasion**, which refers to when taxpayers make use of illegal methods, like failing to report certain income or the inaccurate reporting of income and deductions or expenses, to avoid tax. All these complexities make it difficult to estimate the taxation gap for personal income tax, even though it is a complete set of the areas, which contribute to the taxation gap.

Since 2003, some of these complexities have been mitigated through the use of third-party data, for example:

- Monthly employer declarations (EMP201) have to be submitted to SARS by the employer. This is a payment declaration in which the employer declares the total payment made to an employee as well as allocations related to pay as you earn (PAYE), skills development levy (SDL), unemployment insurance fund (UIF) and/or employment tax incentives (ETI) amounts. On an annual basis, the employer is required to submit an accurate employer reconciliation declaration (EMP501) to SARS as well as issue an employee tax certificate (IRP5) to each

employee who earned a remuneration during the year of assessment (from the specific employer). The employee tax certificate (IRP5) discloses the total employment remuneration earned as well as the total deductions (from a specific employer) for the year of assessment (SARS 2017a:s.p.). The information that was submitted by the employer to SARS, is used by SARS to auto-populate an individual's income tax return for individuals (ITR12) which has to be completed (with an individual's income and expenses) and submitted by the individual on an annual basis (TaxTim 2017:s.p.).

- Certificate of income investments, property rights and royalties (IT3(b)), certificate of income regarding disposal of unit trusts or other financial instruments (IT3(c)) and other certificates that are now generated by financial institutions and medical schemes (for items such as interest, foreign dividends, medical contributions, pension contributions, etc.). This information is also sent to SARS (SARS 2016d:s.p.) for comparison purposes to flag possible non-compliance through differences on the individual's income tax return for individuals (ITR12) that has been submitted.

One of the special initiative programmes used by SARS to address the taxation gap and optimise revenue collections in the 2009/10 financial year was third-party validations by means of a risk engine (Carolissen 2010:27) which is defined by SARS (2017d:s.p.) as "... the advanced statistical analysis that is performed systematically, and which is programmed on the probability of compliance risk". Some of the results achieved are displayed in the Table 2.1 below.

Table 2.1: Examples of taxpayer activism

	2007	2008	2009
Initiative	Introduce third-party data to validate taxpayer information	Refine the use of third-party data resulting in the pre-population of personal income tax returns	Introduce new third-party data 'Interest Income' and 'Directives for lump sums'
Outcome	400 000 declaration variance cases created	Reduced to only 130 000 declaration variance cases created	210 000 declaration variance cases created Note: Year-on-year increase in cases resulted from 'Interest Income' and 'Directives for lump sums'
Initiative	Introduce new 'risk engine'	Refine the risk rules in the 'risk engine'	Refine the risk rules in the 'risk engine'
Outcome	Yield R1,4 billion	Yield R2,1 billion	Estimated yield R1 billion (Actual year-to-date R750 million)

Source: Adapted from Carolissen (2010:27)

This shows the significant role that both third-party information and information technology could have in reducing the taxation gap through eliminating the complexities that are creating or increasing the taxation gap.

The complexities that are caused by tax evasion affect the welfare of the country because they break and disturb both the horizontal equity as well as vertical equity (Carrasco 2011:25). **Horizontal equity** implies that all individuals are given the same treatment in the same situation, while **vertical equity** implies that individuals with a higher income should pay more tax (Tax Division of the American Institute of Certified Public Accountants [AICPA] 2007:3). Therefore, these complexities can also be described as risks, according to the ISO 31000, as they cause uncertainty (ISO 2009:s.p.) on the objectives set for SARS through legislation (see sections 3 and 4 of the South African Revenue Service Act, No. 34 of 1997), namely the collection of revenue and ensuring maximum compliance with the legislation (SARS 2013b:s.p.).

- **Step 2: Access and prioritise risks**

The potential risks listed in step 1 could be mitigated by avoiding, eliminating (for example, through transfer), accepting or reducing the exposure of SARS to them (Fasset 2012:36; Price & Smith 2000:24). Unfortunately, SARS only has the option of accepting or reducing these risks, and in order to prevent or limit the taxation gap, SARS has to reduce the risks. In order to prevent these potential risks, each of them has to be managed through controls (Fasset 2012:36–37).

Step 2 would therefore be to analyse each risk to determine its priority and the importance of addressing the risk. In April 2012, SARS (2013a:s.p.) launched their compliance programme to the public. As part of this programme, they announced seven priority areas where they would improve compliance, namely:

- wealthy South Africans and their trusts;
- large businesses and transfer pricing;
- construction sector: government tenders;
- illicit cigarettes;
- clothing and textiles: undervalued imports;
- tax practitioners and the improvement of their own trade compliance; and
- small businesses where the cost of compliance should be reduced by SARS.

Further to this, SARS also listed other areas of focus such as:

- organised tax and customs evasion schemes found within legitimate businesses;
- ‘corporate theft’, for example persons within businesses that steal and defraud the shareholders and investors;
- investor fraud associated with share dealings, property and evaluations;
- schemes aimed at abusing the trust of ordinary citizens through investments, for example pyramid schemes;
- fraud associated with procurement and tenders – government incentive schemes; and

- the taxi industry and the crimes associated with certain persons in this area.
- **Step 3: Analyse compliance behaviour (causes and options for treatment)**

This is one of the most important steps in the framework – the analysis of the underlying drivers of taxpayer behaviour – as the effective treatment strategies can only be determined once these drivers are properly understood (OECD 2015:123).

Multiple studies have been done on the compliance behaviour of individuals (EU 2010:21–23; Oberholzer 2007; Stiglingh 2008). The analysis of compliance behaviour fell outside the scope of this study and for purposes of the new feasibility framework, compliance behaviour was only considered where it led to behaviour that could increase the taxation gap. Causes and options for treatment with the use of the new feasibility framework were considered in these circumstances, for example:

- overstatements of specific expenses that can be identified and treated with the use of the new feasibility framework;
- understatement of specific income or specific expenses that can be identified and treated with the use of the new feasibility framework; and
- non-declarations of specific personal income taxes that can be identified and treated with the use of the new feasibility framework.

Once the causes and options for treatment are properly understood, the new feasibility framework can be used to determine the possible options for using third-party data in conjunction with information technology to identify these potential non-compliances and tax evasions (in the next step).

Tax evasion and non-compliance are criminal offences which are punishable by law as set out in sections 234 and 235 of the Tax Administration Act, No. 28 of 2011. This is an example of proper risk management, which will increase taxpayers' voluntary compliance, due to fear of being caught and the consequences and penalties that may result (SARS s.a.:11). Refer to Figure 2.6 below for a summary of the penalty system for legal entities that do not

comply with their tax obligations, and which will assist in increased compliance and a decrease in the taxation gap.

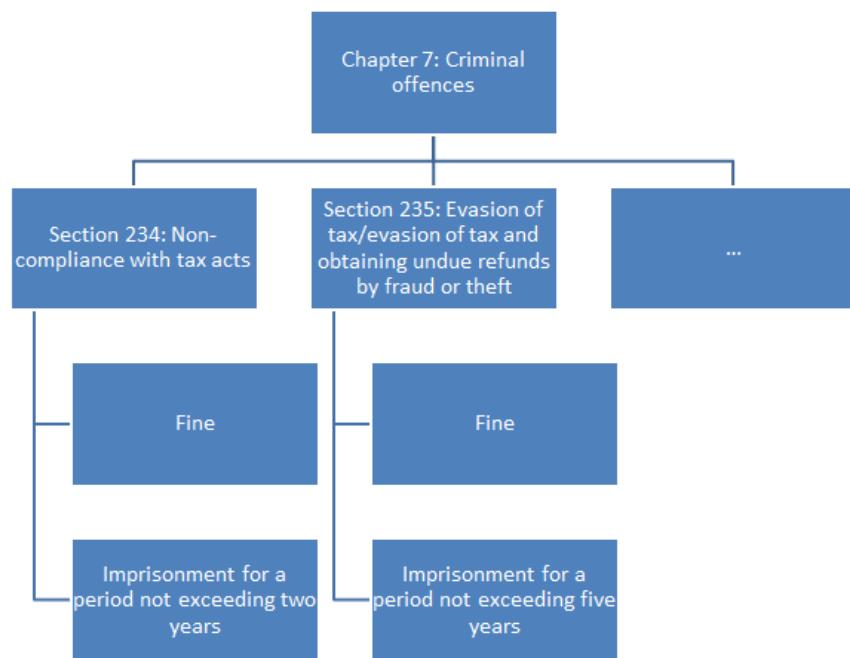


Figure 2.6: Penalty system

Source: Adapted from sections 234 and 235 of the Tax Administration Act, No. 28 of 2011

- **Step 4: Determine the treatment strategies**

This is the step that will mainly be enhanced by the new feasibility framework. If the new treatment strategy involves the use of third-party data and information technology, the new feasibility framework (that was developed and on which is reported in Chapter 4) will be executed as part of this step in order to determine whether the solution to use third-party data and information technology is a viable solution as a treatment strategy, before too many resources are exhausted. Thus, the case studies (reported in Chapter 5) are simulations of this particular step with the use of the new feasibility framework.

As mentioned earlier, steps 5, 6 and 7 of the existing Compliance Risk Management Process were be enhanced by this study. However, to ensure the Compliance Risk Management Process is fully understood as well as for completeness, these steps are discussed below:

- **Step 5: Plan and implement strategies**

This step fell outside of the scope of the study, but would be used to plan the execution and implementation of the viable solution as determined in step 4, using the new feasibility framework. This step is very important as ‘downtime’ for implementation purposes might be required for some of the systems, such as the e-filing system. This has to be planned properly in order to limit the effect on the taxpayers and individuals who use those systems.

A very important aspect of risk is that it continuously changes and therefore the controls will have to be reviewed and updated or enhanced regularly (Price & Smith 2000:26). Step 6 and 7 as indicated below are therefore very important.

- **Step 6: Monitor performance against plan**

This step would determine whether the desired outcome was achieved and whether any enhancements to the solution are required. This could also be the result of new taxation evasion or avoidance schemes that were either identified or formed as a result of the implementation of a previous enhancement as identified by the feasibility framework.

- **Step 7: Evaluate compliance outcomes (registration, filing, reporting and payment)**

This step would allow SARS to measure the effect of the implemented solution based on the extent to which the taxpayers meet the four broad categories of taxpayer obligations as discussed earlier (see 2.2.2). It is, however, important that evaluation criteria be identified as part of the development process (for case-based risk identification and assessment systems). This will ensure that the correct indicators are selected to help determine whether the risks are declining and the systems used for identification are improving over time (OECD 2004:23–24).

As described above, controls should be put in place to manage risks of non-compliance. One of the options available is using third-party data. This will result in large volumes of data that would have to be processed and thus creating the need for information technology to support the process. These two concepts are in the next section.

2.4 CONCEPTS ENABLING THE NEW FEASIBILITY FRAMEWORK

The following concepts enabled the development of the new feasibility framework to determine whether it would be feasible to reduce the taxation gap by automating the detection of any non-compliance, tax evasion and tax avoidance by taxpayers:

2.4.1 The use of third-party data

To ensure that non-compliance with the tax law is kept to a minimum, many countries need to include reporting requirements on third parties such as employers (in terms of employment income), financial institutions (in terms of interest income) and public companies (in terms of dividends) to provide revenue bodies with an extensive source of information that could be used to verify compliance by taxpayers with tax laws (OECD 2015:135).

SARS needs to develop capabilities of receiving and accurately processing large volumes of third-party reports with tax reports over a considerable period of time (OECD 2015:135). SARS started to introduce controls by using third-party data for validation purposes as they stated, ‘Taxpayer activism works!’ (Carolissen 2010:29).

SARS has also noted the following potential to revolutionise risk management:

- ability to deal with large volumes of data;
- new techniques for finding outliers not possible with manual methods;
- development of sophisticated risk engines, which continuously learns or improves;
- use of third-party data to provide corroborating evidence, which reduces the need for manual effort; and
- ‘get next’, which relates to randomly assigning cases identified by the risk engine within SARS to inspectors (Magashule 2011:s.p.), which ensures priority for highest probability and highest yield cases (Carolissen 2010:25).

This means an action of vigorous campaigning to bring about voluntary compliance (Oxford Dictionary of English 2010a:17) is used by SARS. This will enable SARS to move from the traditional ‘gatekeeper’ style of managing compliance to a risk management style. For example:

- In the legislative framework (see Widdowson 2005), SARS has recognised that they also have a responsibility in achieving regulatory compliance. This is

indicated by the SARS Compliance Model (as explained in 2.2.2), which includes service delivery and education as legs to enhance compliance (Carolissen 2010:13).

- In the administrative framework, SARS has moved from a ‘one-size-fits-all’ compliance strategy to a strategy that is linked to the degree of the taxpayer’s compliance (Carolissen 2011:11) as illustrated in Figure 2.8 below.



Figure 2.7: Compliance philosophy

Source: SARS (s.a.:4)

- In the risk management framework, in order to increase compliance, SARS has moved from ‘Indiscriminate intervention or 100% check’ to focussing on areas with high risk, thus, minimising intervention in low-risk areas. This required SARS to segment taxpayers based on their level of risks as well as their respective service needs, which ultimately required SARS to be more data-driven in order to match its response to the profile of each of the respective segments (SARS 2013d:23).
- In the information technology framework, SARS is focussing on providing automated processing and clearance arrangements through an information technology infrastructure, for example e-filing.

A summary of the differences between these two compliance management styles are listed in Figure 2.9 below.

	Traditional ‘Gatekeeper’ Style	↔	Risk Management Style
Legislative Framework	Legislative base provides for a ‘one size fits all’ approach to compliance management	↔	Legislative base provides for flexibility and tailored solutions to enable relevant risk management & administrative strategies to be implemented
	Onus for achieving regulatory compliance is placed solely on the trading community	↔	Legislative base recognises responsibilities for both government & the trading community in achieving regulatory compliance
	Sanctions for non-compliers	↔	Sanctions for non-compliers
Administrative Framework	‘One size fits all’ compliance strategy	↔	Strategy dependent upon level of risk
	Control focus	↔	Balance between regulatory control and trade facilitation
	Enforcement focus	↔	Dual enforcement/client service focus
	Unilateral approach	↔	Consultative, cooperative approach
	Focus on assessing the veracity of transactions	↔	Focus on assessing the integrity of trader systems and procedures
	Inflexible procedures	↔	Administrative discretion
	Focus on real-time intervention and compliance assessment	↔	Increased focus on post-transaction compliance assessment
	Lack of/ineffective appeal mechanisms	↔	Effective appeal mechanisms
Risk Management Framework	Indiscriminate intervention or 100% check	↔	Focus on high-risk areas, with minimal intervention in low risk areas
	Physical control focus	↔	Information management focus
	Focus on identifying non-compliance	↔	Focus on identifying both compliance and non-compliance
	Post-arrival import clearance	↔	Pre-arrival import clearance
	Physical control maintained pending revenue payment	↔	Breaks nexus between physical control and revenue liability
	No special benefits for recognised compliers	↔	Rewards for recognised compliers
	Enablers		
IT Framework	Legislative provisions provide the trading community with electronic as well as paper-based reporting, storage and authentication options. Such provisions should enable regulators to rely on commercially-generated data to the greatest extent possible		
	Appropriate communications and information technology infrastructure to provide for automated processing and clearance arrangements. Regulators should seek to achieve maximum integration with commercial systems		
	Consultative business process re-engineering prior to automation		

Figure 2.8: Compliance management styles

Source: Widdowson (2005:95)

SARS, however, also has specific challenges regarding third-party data, which include:

- standardisation of electronic reports by third parties;
- ensuring timely reporting compliance by third parties;
- achieving accuracy in matching the identities of taxpayers contained in third-party reports with the identities contained in SARS records;
- identifying potential ‘at-risk’ cases once the identities of taxpayers are matched;
- dealing with large numbers of ‘at-risk’ cases in a cost-effective way; and
- finding cost-effective means for using ‘unmatched’ third-party reports (OECD 2015:136).

Furthermore, since third-party data is used in the new feasibility framework, each third-party dataset should be evaluated, for each specific case, to ensure the selected dataset meets the necessary criteria that would make it efficient when used for that particular case. In an overseas study, Lederman (2010:1759) found that third-party data is a well-known method that can be used to increase compliance as it reduces information differences. As each situation is unique, third-party data is not guaranteed to work equally well in all cases. Thus, Lederman (2010:1739–1741) identified six factors that should be used for evaluating whether information received from third parties is likely to be efficient when used in a specific context. These six factors are explained and then tested in the SARS compliance environment.

- *Arm’s-length third parties*

As SARS will use third-party data to verify and confirm the values that the taxpayer has entered into his or her tax return, third-party data would be more useful if the opportunity of collusion is fairly small. This therefore means that the likelihood of collusion is reduced when the third parties involved in a specific transaction acts at arm’s length and is therefore more suitable to provide third-party data.

Lederman (2010:1739) also states that the likelihood of collusion to falsify or avoid inclusion in third-party data is reduced when the third party gets a tax benefit that is linked to the value of the amount; thus, the higher the amount, the higher the tax benefit.

- *Infrastructure for bookkeeping*

Third-party data is more efficient and reliable when the third party has a bookkeeping infrastructure (Lederman 2010:1740). For example, if a third party has a proper bookkeeping infrastructure, which ensures all transactions are recorded accurately and timeously, it would prevent, for example:

- transactions from accidentally being missed and therefore not recorded at all;
- the incorrect recording of specific details related to transactions;
- fraud related to transactions intentionally being missed; and
- the late recording of transactions.

- *Centralisation of data*

Centralisation can be defined as “the action or process of bringing activities together in one place” (English Oxford Living Dictionaries 2017a:s.p.). Although this is not always possible with third-party data, the data will be more efficient if the number of third parties is smaller than the number of personal income taxpayer returns. For example, if the number of employers is smaller than the number of employees (Lederman 2010:1740), this allows for the employee tax certificate (IRP5) submissions to be more efficient and the auditing function to be more centralised.

- *Complete reporting*

As previously discussed, third-party data is only effective if it can be matched by SARS to the relevant taxpayer’s tax return. Therefore, the more complete the third-party data is, the more efficient it would be for purposes of enforcement (Lederman 2010:1740). For example, if a third party captures an individual’s ID number as well as taxation number, these numbers can be used by SARS to link the specific transaction to a taxpayer for validation purposes. Whereas, if neither an ID number nor taxation number is captured by the third party, SARS cannot match the information to a taxpayer and therefore the data from the third party is of no use to SARS.

- *Limited alternative arrangements*

If there are ways for third parties (and even taxpayers) to avoid providing third-party data to SARS at a minimal cost, the probability is that those avenues would be taken as it would result in less of a burden on the third party than to comply with the third-party data requirements. Thus, the ideal is to limit these alternatives in order for the third-party data to be more effective and have less distortion (Lederman 2010:1740).

- *Taxation gap contributor*

The prime targets for third-party data should be those taxes whose taxation gap contribution is substantial enough to justify the cost of gathering the third-party data and matching it to the relevant taxpayers (Lederman 2010:1741). For example, a taxation gap contributor who does not justify the cost of gathering third-party data and matching it to the relevant taxpayer is entertainment costs. It would be far too expensive and time-consuming to gather data from all possible third parties (such as restaurants, entertainment venues and such places) across South Africa as well as internationally and matching them to the relevant taxpayers – specifically because most of these organisations do not even capture the specific individual's ID numbers and/or taxation number.

On the other hand, transactions, such as pay as you earn, which is one of the biggest contributors to personal income tax, used to be an area of concern. However, new legislation requires all employers to store an individual's taxation number and to submit an employee tax certificate (IRP5) to SARS declaring the income paid to each individual, thus, enabling SARS to gather and match information without exhausting too many resources.

When evaluating whether third-party data is available using the new feasibility framework, which is discussed in Chapter 4, these six factors should be considered (see Chapter 5).

In addition, information technology would be used to process all this data and therefore, in order to develop the new feasibility framework, a better understanding of the benefits that information technology could provide was needed. Information technology is therefore described in the next section.

2.4.2 The use of information technology

In this age of information technology, SARS can gain a competitive advantage when they use information technology to its fullest. SARS can therefore increase their efficiency by embracing information technology as it is being used in almost every sector of life today, by both individuals and businesses using it to their advantage (Ramey 2012:s.p.).

Through data analytics and ‘big data’ (see 4.3–4.4), SARS can provide a service in a way that taxpayers will value and that will assist in increased voluntary compliance by using third-party data to flag potential non-compliance, tax evasion and tax avoidance. However, it is not the information technology that will provide SARS with the competitive advantage, but the innovative manner in which SARS uses information technology (Ramey 2012:s.p.). As stated by Steve Ballmer (BrainyQuote 2017d:s.p.), the CEO of Microsoft –

The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn’t think they could learn before, and so in a sense it is all about potential.

Over the last couple of years, there has been a rapid increase in the use of information technology in the business environment and, as a result, timely reports can be provided by third parties to revenue bodies at minimal compliance costs (OECD 2015:135). SARS has become more innovative in their use of the information reported. They can detect non-compliance or send prefilled tax returns (or similar documents) to taxpayers for verification and in this way, reduce taxpayers’ compliance burden as well as reducing errors that might otherwise arise (OECD 2015:135).

Figure 2.10 shows some results achieved by SARS with the use of information technology, for example, SARS has moved from –

- multi-page static forms to a single-page dynamic form, which provides only the sections relevant to a specific taxpayer based on the selections made on the initial page of the form;
- manual data capturing on forms to digital scanning of forms, which saves time and reduces errors as a result of manual intervention;
- paper-based submissions to online submissions by using e-filing;

- human-intensive, non-value-adding, manual processes to automated processes, which add value, for example by using a risk engine;
- a gatekeeping style, which required high volumes to be checked and which resulted in a low yield to a risk-managed style, which segments taxpayers and only targets the high-risk areas (see 2.4.1) and results in a high yield; and
- limited validation, which was based on the information that was declared by a taxpayer manually capturing his or her information on the tax form to third-party validation, which allows automatic verifications as well as pre-population of tax forms. For example, an employee's employee tax certificate (IRP5) (see 2.3) is pre-populated on an employee's income tax return for individuals (ITR12) and medical aid contributions are automatically verified by comparing values submitted by the taxpayer to values received from the respective third parties.

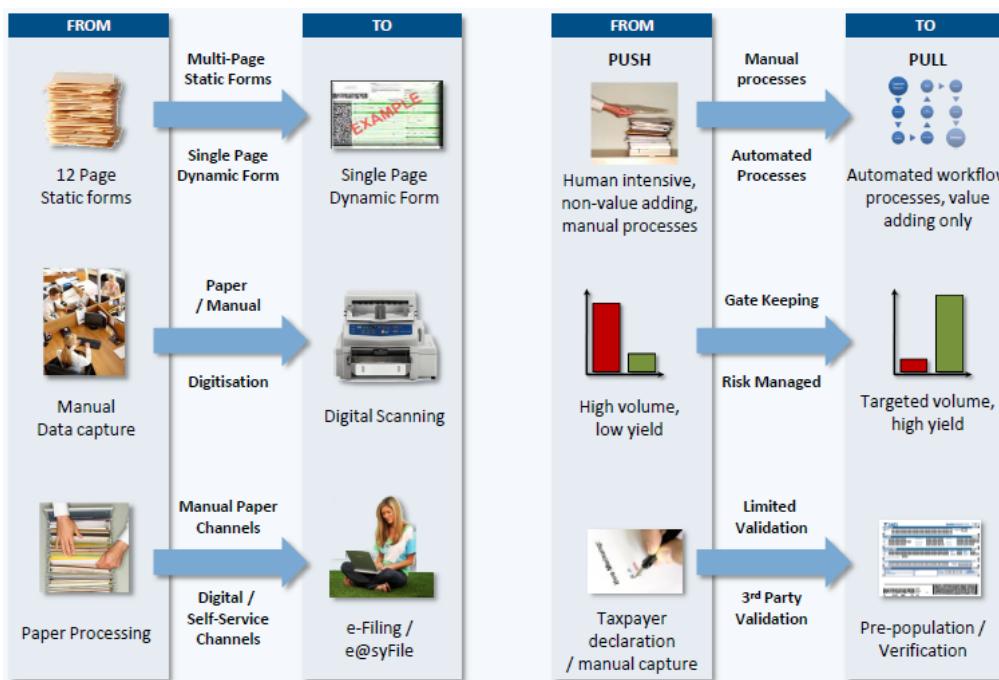


Figure 2.9: SARS modernisation results I

Source: Richer (2012:5)

As illustrated in Figure 2.10, SARS has moved from human-intensive, non-value-adding, manual processes to automated processes, which add value. This resulted, as illustrated in Figure 2.11, in the reduction of the average turnaround time for:

- processing a taxpayer's return from 55 working days in 2006 to less than a day in 2011/2012; and
- processing of a refund from 45% within 5 working days in 2006 to 85,44% paid within 72 hours in 2011/2012.

Personal Income Tax (PIT)	Benefit	2006	2007	2008	2009	2010/2011	2011/2012
RETURN PROCESSING							
Average turnaround time for processing of a return	± 55 working days	± 30 working days	± 15.8 working days	± 1.8 working days	± 1.7 working days	± 0.711 working days	
REFUND PROCESSING							
Average turnaround time for processing of a refund	± 45% within 5 working days	± 78% within 5 working days*	± 52.46% within 5 working days**	± 83.16% within 5 working days	± 74.28% paid within 72 hours	± 85.44% paid within 72 hours	

*2010/2012 – 99.68% were processed within one day.
– No document took longer than three days to be processed.*

Note:

PIT returns submitted for all tax years during specific Filing Seasons
 * Efficiency increased due to the introduction of eFiling
 ** Reduction due to increase in IRPS Mismatch and Banking Detail control measures

Figure 2.10: SARS modernisation results II

Source: Richer (2012:6)

In addition:

- the average processing turnaround time for personal income tax returns improved even more from 0,26 days (in 2012/13) to 0,16 days (2013/14) and to 0,05 days in (2014/15); and
- before the SARS Modernisation Programme started in 2007, only 2,6% of personal income tax returns were processed within 48 hours. During the 2013/14 tax year, 94,5% of all personal income tax returns filed were processed within 3 seconds (National Treasury & SARS 2015:35).

The findings are summarised in the next section.

2.5 CONCLUSION

Tax evasion occurs when taxpayers deliberately fail to comply with their tax obligations in accordance with tax legislation. This results in a loss of tax revenue,

which may cause serious damage to the proper functioning of the public sector as it might struggle to finance its basic expenses (Franzoni 1998:1). This highlights a compliance risk, which results in a taxation gap and which can affect the proper functioning of the public sector.

However, as mentioned in 1.3, the desired outcome of this study was a generic feasibility framework that was intended to be used to improve taxpayer compliance and reduce or eliminate the taxation gap of South Africa by using information technology for the identification and/or flagging of potential non-compliant individuals through third-party data in order to ensure SARS achieves its objective of effectively and efficiently collecting South African revenue and ensuring maximum compliance with legislation (SARS 2013b:s.p.).

In order for the new feasibility framework to be a suitable and acceptable framework that would ensure that SARS as well as the taxpayers act ethically correct and in accordance with the internal policies, risk appetite and external regulations of SARS, the correct balance of governance, risk and compliance should be achieved through the alignment of the processes, technology, strategy and people (Racz, Weippl et al. 2010:113). This was done by ensuring all these relevant areas were included in the new feasibility framework (see Chapter 4).

In addition, it is believed the new feasibility framework that was developed as part of this study will complement the existing Compliance Risk Management Process by expanding or addressing certain components more effectively in steps 3 and 4 of this Compliance Risk Management Process as follows:

- **Step 3: Analyse compliance behaviour (causes and options for treatment)** – for purposes of the new feasibility framework, compliance behaviour was only considered where it led to behaviour that could increase the taxation gap.

Once the causes and options for treatment are properly understood, the new feasibility framework could be used to determine the possible options for using third-party data in conjunction with information technology to identify these potential non-compliances and tax evasions (see the next step).

- **Step 4: Determine the treatment strategies** – this is the step that will mainly be enhanced by the new feasibility framework. If the proposed treatment

strategy involves the use of third-party data and information technology, the new feasibility framework (see Chapter 4) should be executed as part of this step in order to determine whether the solution to use third-party data and information technology is a viable solution, as a treatment strategy, before too many resources are exhausted. The case studies (see Chapter 5) were simulations of this particular step with the use of the new feasibility framework.

Finally, the main influences relating to the proposed feasibility framework (namely third-party data and information technology) were discussed in detail in order to understand their importance and connotation with the proposed feasibility framework better. This included six distinct factors as a framework for evaluating information reporting requirements from third parties (Lederman 2010:1733) in order to ensure the selected third-party dataset meets the necessary criteria that will make it efficient when used for a particular case:

- arm's-length third parties;
- infrastructure for bookkeeping;
- centralisation of data;
- complete reporting;
- limited alternative arrangements; and
- tax gap contributor (Lederman 2010:1739–1741).

This study is therefore important as it will assist SARS in establishing whether an individual is paying and declaring taxes accurately, which in turn can assist SARS in reducing the taxation gap and relieve the tax on individuals through possibly preventing additional taxes (such as e-toll) to be introduced as well as reducing the current tax rates.

Before the new feasibility framework was developed (see Chapter 4) and tested (see Chapter 5), a research design and methodology had to be established in order to ensure the overall approach that was used for purposes of the present study, namely to develop and test a generic feasibility framework, is fully understood. The next chapter therefore reports on a discussion of such a research design and methodology.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 BACKGROUND

One of the main causes in South Africa for the significant gap between the amount of tax theoretically collectable from economically active persons and that actually collected, is non-compliance by taxpayers (Oberholzer & Stack 2009:737), which justifies the objective of the present research, namely the development of a generic feasibility framework that uses information technology to validate the taxpayers' information submitted to SARS using third-party data. Using the framework, potential non-compliance due to tax evasion and tax avoidance will be flagged and investigated. The feasibility framework is an essential means to reduce the taxation gap and to improve voluntary compliance.

Researchers generally learn by studying the innovations put in place by specialists, rather than by providing the initial wisdom for these new ideas (Benbasat, Goldstein & Mead 1987:370). Before cases can be formulated, the research has to be planned. The research design and methodology can be defined as a blueprint of the study, and deals with the logic of the study rather than the logistics (University of California 2004:5). This chapter therefore provides detail of the research design and methodology that was applied during the study. It outlines the details of the research design, the definition of a case study for purposes of the present research, the unit of analysis, the data collection method and process, and the data analysis. The reliability of the research process followed was also evaluated and the questions and steps that were followed to ensure reliability were listed. Finally, the chapter presents the interpretation of the data.

This chapter therefore provides details of the method that was used to develop and test the generic feasibility framework in order to ensure it is relevant for the purposes of the present study.

3.2 RESEARCH DESIGN

The nature of the research topic and the goals of the researcher influence the selection of a strategy (Ashenhurst 1984:257). This section lists and provides a discussion on the overall approach that was used for purposes of the present study

in order to develop and test the generic feasibility framework. A variety of techniques were used, namely:

- extended literature reviews;
- case studies; and
- comparative analysis.

Although the focus is mainly on the case study technique, each of these are discussed to see how they contributed to the study as well as to ensure that they were relevant to the study.

3.2.1 Extended literature reviews

In order to provide an overview of the study in a specific aspect of a field, or of a field in its entirety, an extended literature review is performed (Hofstee 2006:121). The theory that is embodied in the literature of a discipline is important as it assists in pointing towards the appropriate research questions. These research questions should be translated into propositions which are required for descriptive and explanatory studies (Rowley 2002:19). This is normally a very difficult technique as it requires extensive reading and in general cannot produce anything significantly new. It can however produce a new view on what has been done before (Hofstee 2006:121).

For purposes of this study, an extended literature review on the characteristics of 'big data' was performed in order to develop a generic feasibility framework that could be tested by using case studies. This helped to ensure that the focus was kept during the use of the case studies as well as the comparative analysis (Hofstee 2006:121). The extended literature review also helped to explain 'big data' for those who do not know the phenomenon very well or not at all.

Unfortunately, another concern was the sources used as it was not possible to cover everything due to time factors and the scope of the study (Hofstee 2006:121). The focus was therefore only on the characteristics as well as the security aspects of 'big data' for purposes of fraud detection.

3.2.2 Case studies

A case study can be defined as an intensive analysis of an individual unit (person, group or event), which emphasises the developmental factors in relation to context

(Hofstee 2006:123; Merriam-Webster Online Dictionary 2017:s.p.; Yin 2014:15–16). Cases may be prospective, which means that the criteria are established and cases fitting the criteria are included as they become available or, in the terms of the present research, retrospective which means that the criteria were established for selecting cases from historical records for inclusion in the study (Porta 2017:19; Porta & Keating 2008:289).

The intention of case studies is to portray, examine and interpret the uniqueness of real situations through accessible accounts and to present and represent reality (Cohen, Manion & Morris 2011:129). Case studies are aimed at solving particular problems, applying theories into practice, generating hypotheses and providing illustrations (Wallace 1998:164). The case study method is used in many disciplines by researchers to build upon theory in order to produce new theory and explain a specific situation. This method also assists in providing a basis to apply solutions to situations and explore or describe a phenomenon or object. Case studies generally involve multiple sources of data and may include multiple cases within a specific study, which provides large amounts of data for analysis and which are therefore complex. The applicability to real-life and current human situations is an advantage, and this facilitates an understanding of real-life situations and directly relates to the reader's everyday experience (Soy 1997:s.p.).

Case studies are particularly appropriate for research and theory that are in their early, formative stages (Roethlisberger 1977, in Benbasat et al. 1987:369), and “sticky, practice-based problems where the experiences of the actors are important and the context of action is critical” (Bonomo 1983, in Benbasat et al. 1987:369). Benbasat et al. (1987:370) consider the case study strategy as a suitable tool for capturing the knowledge of specialists and developing theories or frameworks from it. As the information systems area is characterised by continuous technological change and innovation, researchers in the information systems area often find themselves trailing behind specialists in proposing changes or in evaluating methods for developing new systems (Benbasat et al. 1987:370).

The objective of the present study was to investigate how information systems could assist in reducing the taxation gap through validation with third-party data. Benbasat et al. (1987:370) state the three reasons why case study research is a viable information systems research strategy, namely:

- Information systems can be studied by the researcher in a natural setting that allows the researcher to learn about the state of the situation, and generate theories from practice.
- The case study method allows the researcher to answer ‘how’ and ‘why’ questions in order to understand the complexity and nature of the processes taking place.
- A case study approach is an appropriate way to research an area in which few previous studies have been carried out, especially with the rapid pace of change in the information systems field for which valuable understandings can be gained through the use of case study research.

Based on the specific research question, it must be determined whether the case study method is a useful approach and appropriate for the specific study. This can be done by ensuring that certain key characteristics are present (Benbasat et al. 1987:372). Below are the key characteristics of case studies as summarised by Benbasat et al. (1987:371), as well as an indication in the last column of whether or not each of these characteristics was applicable to the present study.

Table 3.1: Key characteristics of case studies

No.	Key characteristics	Applicability to study
1.	Phenomenon is examined in a natural setting.	Yes
2.	Data are collected by multiple means.	Yes
3.	One or a few entities (person, group, or organisation) are examined.	Yes
4.	The complexity of the unit is studied intensively.	Yes
5.	The researcher should have a receptive attitude towards exploration as case studies are especially suitable for the exploration, classification and hypothesis developments stages of the knowledge building process.	Yes
6.	No experimental controls or manipulation are involved.	Yes
7.	The researcher may not specify the set of independent and dependent variables in advance.	Yes
8.	The results derived depend heavily on the integrative powers of the researcher.	Yes
9.	Changes in data collection methods could take place as the researcher develops new hypotheses.	Yes
10.	Case research is useful in the study of ‘why’ and ‘how’ questions because these deal with operational links to be traced over time rather than with frequency or incidence.	Yes
11.	The focus is on current events.	Yes

Source: Adapted from Benbasat et al. (1987:371)

These are all elements and characteristics that were applicable to the present study in order to achieve its objective; hence, providing a firm basis for using the case study method as research method. This part of the research could therefore be categorised as case study research, which is defined by Yin (2014:16) as an empirical inquiry that investigates a contemporary phenomenon within its real-life context in which multiple sources of evidence are used, specifically when the boundaries between phenomenon and context are not clearly evident. The case studies used for purposes of the present study were based on practical real-life events that were applied to the generic feasibility framework that was developed based on the characteristics of ‘big data’, in order to verify whether the feasibility framework was practical.

Evidence that is gathered from two or more sources will converge to support the research findings (Benbasat et al. 1987:374). Several sources of evidence that work well in case study research have been identified by Yin (2014:105–118), namely:

- documentation: written material ranging from memoranda to newspaper clippings to formal reports;
- archival records: organisation charts, service, personnel or financial records;
- interviews: open-ended or focussed;
- direct observation: absorbing and noting details, actions or subtleties of the field environments; and
- physical artefacts: devices, outputs, tools.

For purposes of the present study, the direct observation source of evidence was used. The application of these real-life events to the generic feasibility framework used the skill, knowledge and experience of the researcher in alignment with the characteristics that were mentioned in Chapter 1 (see 1.4 and 1.5) and which were used to develop the feasibility framework, discussed in Chapter 4.

Case studies can be used for exploratory, descriptive or explanatory research as they are useful in providing answers to ‘how?’ and ‘why?’ questions (Cohen et al. 2011:289; Rowley 2002:16). The explanatory research type was used to explore the connection (of the steps in the new feasibility framework) in order to find the underlying principles (Porta 2017:19). Zucker (2009:2) indicates that the case study method is often taught as part of qualitative research methods.

An essential part of the case study research design is to decide whether to include one or several case studies (Benbasat et al. 1987:373). For purposes of the present research objective, two case studies were used. This was aligned with the preferred design of a multiple case design (Benbasat et al. 1987:373; Rowley 2002:21) and is desirable when the intention of the research is description, theory building or theory testing. Multiple case designs allow cross-case analysis and the extension of theory; however, the results yielded are more general research results (Benbasat et al. 1987:373). These case studies were not embedded to achieve an overall result as only a single unit of analysis was used, namely personal income taxpayers, although different taxes are tested in the case studies selected. The case study design, for purposes of this study, can therefore be classified as holistic (single unit of analysis) design type 3, as per Figure 3.1 below.

	<i>Single Case Designs</i>	<i>Multiple Case Designs</i>
Holistic (single unit of analysis)	Type 1	Type 3
Embedded (multiple units of analysis)	Type 2	Type 4

Figure 3.1: Case study designs

Source: Rowley (2002:21)

Critics of the case study methodology are of the opinion that the study of a small number of cases cannot offer grounds for establishing reliability or generality of findings. Others feel that the intense exposure to study of the case biases the findings (McDonough & McDonough 1997:216–217). However, using numerous methods of data collection offers the opportunity for triangulation and presents greater support to the researcher's conclusions. A strong chain of evidence should be established and presented, which means that the researcher's thinking in establishing cause and effect or defining hypotheses should clearly be stated and defended (Benbasat et al. 1987:374).

The risks therefore with the case study technique are:

- the risk of losing focus;
- the generalisability of the results; and
- subjectivity (Hofstee 2006:123).

In the present study, these risks were mitigated by the use of the generic feasibility framework that was developed during the extended literature review as well as the use of multiple case studies for comparative analysis.

3.2.3 Comparative analysis

A comparative analysis involves the in-depth investigation of two or more items, in a focussed and organised manner, in order to compare them to each other to find the reasons for differences and similarities. This is an ideal technique to use in an experimental setting (such as a case study) where most of the variables are within the control of the researcher (Hofstee 2006:124). Thus, the comparative analysis technique was ideal for this study as most of the variables used were based on the selected case studies.

A concern, however, is the choice of cases (Hofstee 2006:124). For purposes of this study, two case studies were compared, namely:

- one, which contains periodic data, for example data that was only gathered from time to time (InvestorWords 2017:s.p.), for instance on a monthly or yearly basis; and
- another, which contains continuous data, for example data that was generated without interruption (English Oxford Living Dictionaries 2017b:s.p.), for instance on a daily basis.

This was done to ensure the generic feasibility framework that had been developed was flexible enough to be applied to both cases. If incompatibility with the generic feasibility framework were found with any of the cases during the comparative analysis, some changes might have been necessary to the initial generic feasibility framework that was developed.

Focus and complexity are also concerns relating to this technique (Hofstee 2006:124). As the comparative analysis was performed based on the generic feasibility framework that had already been developed, this was not a problem in the present study as the feasibility framework ensured focus was kept and the conclusions were based on whether or not the feasibility framework could be applied.

The details of how these techniques were implemented follow in the Methodology section below (see 3.3).

3.3 METHODOLOGY

This section reports on the use of the techniques discussed in the Research Design section (3.2).

3.3.1 The unit of analysis

Maxfield and Babbie (2012:71) define unit of analysis as “people or things whose characteristics researchers observe, describe and explain”. Thus, for purposes of this study, the unit of analysis comprised all those individuals who were receiving any form of employment income (including those who were below the tax threshold) and who had to be registered with SARS in terms of the announcement made in Parliament by the Minister of Finance, Pravin Gordhan, in 2010 (Bridge 2010:s.p.).

3.3.2 Research instruments

For purposes of this study, purely textual data was used to develop the generic feasibility framework. The literature reviewed comprised mainly journal articles and books based on the characteristics of ‘big data’. Thus, the reliability of the data used for purposes of developing the generic feasibility framework was ensured using multiple textual sources.

Once the new feasibility framework had been developed, it was tested by means of two case studies (see Chapter 5). Case studies, however, typically use multiple data collection methods (Benbasat et al. 1987:374). Therefore, to test the feasibility framework, multiple data collection methods were used, for example observations, speeches and news articles.

Finally, the two case studies were compared in a comparative analysis to generalise the feasibility framework. This was done to increase the possibility of applying the feasibility framework to other tax areas, which contribute to the taxation gap.

3.3.3 Data

Since the generic feasibility framework developed was primarily based on the main characteristics of ‘big data’ that was gathered from the literature reviewed, the feasibility framework may be incomplete and could be expanded as part of future studies.

Besides this, the representation of the feasibility framework and the sequence of the steps within the feasibility framework were based on the discretion of the researcher.

For purposes of this study, this was perceived to be the optimal sequence of events to ensure the least number of resources are wasted by SARS before coming to the conclusion that there is no feasible solution to reduce a specific tax area, which contributes to the taxation gap, with the use of third-party data in conjunction with information technology.

3.3.4 Analysis

The analysis was performed by using case studies. These case studies were used to test the generic feasibility framework developed. Among other factors, the selection of case studies depended on the current understanding of the issue (namely the specific tax areas that contributes to the South African taxation gap) and the nature of this issue (Benbasat et al. 1987:376–377). As previously mentioned (see 1.5 and 3.2.3), two case studies were used – one that contained periodic data and another that contained continuous data. These case studies were chosen based on the frequency of data, the volume of data, the use of third-party information systems, required registrations and subscriptions and any other relevant criteria. Once completed, these cases studies were compared to achieve an overall result to validate whether any enhancements were required to the initial generic feasibility framework that was developed.

The first case study focussed on rental income from residential accommodation, for example:

- holiday homes;
- bed and breakfast (B&B) establishments;
- guesthouses;
- sub-renting part of a house, for example a room or a granny flat;
- dwelling houses; and
- other similar residential dwellings.

Rental income from residential accommodation (in terms of Income Tax Act, No. 58 of 1962) is earned when an individual rents out a property (whether personally owned or rented) and receives rental income in return. This rental income is subject to tax and should be added the other income of the taxpayer (in terms of section 8(4) of Income Tax Act, No. 58 of 1962). However, the rental amount can be reduced by

operational (non-capital) expenses, which occurred during the year of assessment for the period the property was let, for example:

- rates and taxes;
- bond interest;
- advertisements;
- agency fees of estate agents;
- insurance (only homeowners insurance; not household contents);
- garden services;
- repairs in respect of the area let; and
- security and property levies (SARS 2017c:s.p.).

The reasons for the selection of this case study were:

- there are third-party companies, such as rental agencies, that capture information relating to rental income. In addition, the tenant can also be viewed as a third party for verification purposes;
- there is no real available balance control to ensure the value submitted or not submitted by a taxpayer is correct. It is therefore anticipated to be an area of concern still; and
- the data volumes are limited and contain periodic values.

The second case study focussed on travel allowance, which is given as a reimbursement to an employee based on the actual kilometres travelled. Thus, a travel allowance can be described as any allowance or advance paid to an individual in respect of travelling expenses for purposes of business. It should however be noted that:

- any allowance or advance given to an employee in respect of travelling expenses that was not spent on business travelling is deemed as spent on private travelling; and
- travelling between an employee's place of residence and place of employment is deemed as private travelling (SARS 2017b:s.p.).

The taxable amount related to a reimbursive allowance depends on a set of conditions, namely a non-taxable reimbursive allowance is a reimbursive amount which:

- is consumed on business travelling as deemed to be in terms of the Income Tax Act, No. 58 of 1962; and
- does not exceed the rate per kilometre as set by the Minister of Finance.

Furthermore, it should be noted that –

- the total business kilometres reimbursed for during the year of assessment should not exceed 12 000 kilometres (SARS s.a.:s.p.); and
- no other form of compensation should have been given to the employee (for example a fixed travel allowance) (SARS 2017b:s.p.).

Therefore, the sections of the Income Tax Act, No. 58 of 1962 that were affected by this case study were 8(1)(a), 8(1)(b), 8(1)(c) and paragraph 1 of the Fourth Schedule.

The reasons for the selection of this case study were as follows:

- there are third-party companies, such as Tracker and NetStar, which capture information relating to travel as they advertise that they can provide you with a tax compliant logbook if registered;
- SARS has made previous amendments to the travel rules due to tax avoidance schemes that were used by taxpayers, for example Government Gazette No 27815 (Notice No 743) where the deemed private kilometres have been increased from 14 000 Kilometres to 16 000 kilometres. This is therefore anticipated to be an area of concern, especially when relating to individuals who submit travel allowance claims. Most individuals spoken to, repeatedly (if not every time), are identified by the risk engine for an audit when they submit a travel claim;
- in the 2015/2016 tax year, travel allowance (of R25,3 billion) continues to be the largest of the total allowances assessed for individuals, even though it has steadily decreased (in relative terms) from 31% in 2012/13 to 25,5% in 2015/16 (National Treasury & SARS 2016:31, 52); and
- the volume of data would be relatively high as the data is captured on a daily basis for multiple owners or drivers.

There are five components to be considered in a case study research design, namely:

- the study questions;
- the propositions of the study (if any);
- the unit(s) of analysis of the study;
- the logic linking the data to the propositions; and
- the criteria for interpreting the findings (Rowley 2002:19; Yin 2014:29–37).

For purposes of the current study, the information was as follows:

- **The study question:** How does the feasibility framework that was developed based on the characteristics of ‘big data’ assist in reducing the taxation gap in South Africa?
- **The propositions (if any) of the study:** The generic feasibility framework that was developed during the extensive literature review on ‘big data’ which incorporates the use of third-party data and information technology.
- **The unit(s) of analysis of the study:** As discussed above (see 3.3.1), all those individuals who were receiving any form of employment income (including those who were below the tax threshold) and who had to be registered with SARS in terms of the announcement made in Parliament by the Minister of Finance, Pravin Gordhan, in 2010 (Bridge 2010:s.p.).
- **The logic linking the data to the propositions:** The use of two case studies as described above to test the generic feasibility framework that had been developed.
- **The criteria for interpreting the findings:** The skill, knowledge and experience of the researcher in alignment with the theoretical characteristics that were discussed to develop the feasibility framework.

The analysis of case study data depends generally on the integrative powers of the researcher (Benbasat et al. 1987:374). As stated by Atkins and Sampson (2002:101), numerous authors have provided guidance on the conduct of high-quality interpretative research (for example Klein and Myers 1999; McKay and Marshall 2000; Miles and Huberman 1994) and case studies, in particular (for example Darke et al. 1998; Walsham 1995; Yin 1984) although some are often focussed on either specific aspects or on specific problems. Greenhalgh (2006:170–177) proposes nine questions (as listed in Table 3.2 below) for evaluating papers that describe qualitative research in general. Atkins and Sampson (2002:101) also

states that these questions are based on Greenhalgh's own research and from the research of Denzin and Lincoln (1994), Mays and Pope (1996) and Britten et al. (1995) and were used in the current study to ensure quality, validity and reliability.

Table 3.2: Nine guidelines for evaluating qualitative papers

No.	Guidelines
1.	Did the paper describe an important clinical problem addressed via a clearly formulated question?
2.	Was a qualitative approach appropriate?
3.	How were the setting and the subjects selected?
4.	What was the researcher's perspective, and has this been taken into account?
5.	Which methods did the researcher use for collecting data, and are these described in enough detail?
6.	Which methods were used to analyse the data, which quality control measures were implemented?
7.	Are the results credible, and if so, are they clinically important?
8.	Which conclusions were drawn, and are they justified by the results?
9.	Are the findings of the study transferable to other clinical settings?

Source: Greenhalgh (2006:170–177)

These nine questions were used to evaluate the quality, validity and reliability of the present study by ensuring that these questions were all addressed within the study.

3.4 RESEARCH DESIGN LIMITATIONS

Limitations are inherent in academic work. The following were seen as limitations with regard to the research design and methodology that were used:

- Only two case studies were used to test the feasibility framework developed. It would have been better if more case studies could have been performed based on differing selection criteria and real-life scenarios. Time constraints however did not permit this; and
- It would have been ideal if SARS could have been involved with the research and its design, as this study may benefit them in the future. If SARS were involved, the research might have been directed on real issues that were experienced and this might have ensured that the case studies selected were more relevant for purposes of usage by SARS.

3.5 ETHICAL CONSIDERATIONS

Initially, there was an ethical concern as the researcher was an employee of SARS (currently a former employee). The University of South Africa (Unisa) provided approval to continue with the study based on the formal approval that was received from SARS.

The approval received from SARS stated that the research could continue as long as no form of internal data or information is used. All data and/or information used for purposes of this study are therefore based on data and/or information that are publicly available.

In addition, an application for review and clearance of a conceptual research project was submitted to the College of Accounting Sciences Research Ethics Review Committee. The Committee granted the ethical clearance in September 2016.

There were no other ethical considerations required by the policies of Unisa. All ethical requirements were adhered to.

3.6 CONCLUSION

This chapter described the research design, which listed the techniques and the overall approach that were used for purposes of this study. The techniques that were discussed and selected as relevant were:

- Extensive research reviews (literature review) – the extensive research review method was chosen to develop the generic feasibility framework based on the characteristics of ‘big data’.
- Case studies – after the development of the feasibility framework, the case study method was chosen as the main method to test the generic feasibility framework, because it:
 - deals with a technically unique situation in which the data points would be far less than the variables of interest (as one result);
 - depends on numerous sources of evidence, with the need for data to converge in a triangulating manner (as another result); and
 - profits from prior developments of theoretical propositions to guide data collection and analysis (Yin 2014:17).

- Comparative analysis – The comparative analysis method was chosen because most of the variables used were based on the case studies selected and were therefore within an experimental setting that was in the control of the researcher (Hofstee 2006:124). Thus, by comparing the two case studies, the feasibility framework could probably be generalised, therefore increasing the possibility of applying the feasibility framework to other tax areas that contribute to the taxation gap.

Further to this, this chapter described the methodology that was used, which included the unit of analysis, research instruments, data and analysis. The reliability of the research process followed was also evaluated, and the questions and steps that were followed to ensure reliability were listed. Finally, in this chapter, the limitations related to the research design as well as ethical considerations relating to this study were discussed.

Chapter 2 explained how the development of a new feasibility framework would enhance the compliance objectives of SARS. The next step was to develop this new feasibility framework. In a CIMA research initiative, they posted the following questions with regard to **governance**:

- “What is the potential of Big Data for better informing corporate governance?”
- “What governance issues are involved in the coordination of Big Data?”
- “What systems, human systems as well as computer software, are needed to exploit the opportunities which Big Data offer?” (CIMA 2014a:1).

CIMA (2014a:1) continued by asking the following questions with regard to **business performance management**:

- “What is the potential of Big Data for improving business performance; for instance through improved strategy formulation, management decision-making, performance monitoring and *risk management?*” (emphasis added)
- “How can the benefits of Big Data be realised by ... businesses ...?”
- “Alternatively, what are the opportunities that are more appropriate to particular types/sizes of business?”

Finally, CIMA (2014a:1) ask a question about the skills and knowledge required if a company, including revenue bodies, would need if it wants to make use of the opportunities presented by ‘big data’.

Therefore, in Chapter 4, we will explore the concept of ‘big data’, as well as its main characteristics (namely volume, velocity, variety, variability, complexity and virtue) (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76) as the questions referred to above clearly indicate that ‘big data’ had the potential to assist with developing the new feasibility framework.

CHAPTER 4

DEVELOPMENT OF THE FEASIBILITY FRAMEWORK

4.1 INTRODUCTION

In Chapter 2 (the literature review chapter), a contextual understanding has been provided of the areas that had to be reviewed in order to ensure that the new feasibility framework that was developed adhered to all aspects that would make it a suitable and acceptable framework to be utilised by SARS to ensure governance, risk and compliance (see 2.2).

In this chapter, the discussion revolves primarily around what ‘big data’ is. As briefly introduced in Chapter 1 (see 1.2), ‘big data’ offers detailed information (often in real time) that makes it possible to measure the properties and patterns associated with human behaviour, which could not be measured in the past (Franke et al. 2016:372). Therefore, the concept of ‘big data’ was explored and, for purposes of this study, applied in order to understand how it could assist SARS to automate the detection and prevention of taxation gaps caused by tax evasion. Thus, ‘big data’ was used to develop the new feasibility framework that could assist SARS in preventing the taxation gap through the use of external third-party data and information technology.

To understand the concept of ‘big data’ fully and to ensure that the data gathered through the feasibility framework that was based on the concept of ‘big data’ was useful, an understanding of the term ‘data’ was required, as well as how it differs from information, as ultimately data is not useful until it is interpreted (Al-Hamami & Al-Saadoon 2015:367; BusinessDictionary 2017b:s.p.; BusinessDictionary 2017c:s.p.).

4.2 DATA VERSUS INFORMATION

Leininger and Parker (2014:469) indicate that a distinction is sometimes made between data and information. This is aligned with a quote from Daniel Keys Moran, “You can have data without information, but you cannot have information without data” (BrainyQuote 2017a:s.p.). Therefore, for purposes of this study, the distinction was acknowledged and a clarification of and differentiation between these two terms, namely data and information, were required.

Data is defined as:

- “information in raw or unorganized form such as alphabets, numbers or symbols ...” (Al-Hamami & Al-Saadoon 2015:367; BusinessDictionary 2017b:s.p.); or
- “Computers: Symbols or signals that are input stored and processed by a computer for output as usable information” (BusinessDictionary 2017b:s.p.).

Therefore, it is important to recognise two very important characteristics of data as indicated above. Firstly, data is raw and unorganised, therefore it does not really have any meaning. Secondly, data can be processed for use in order to provide usable information, which has meaning. This type of data is also sometimes called **raw data** to reflect the fact that the data has not yet been processed for use (Leininger & Parker 2014:469).

Ever since intelligent human activity began, data has been created. However, developments in other fields, such as taxation, are what made data into the most important business driver of the future (Joachim 2013:s.p.). Data is the new raw material of creation; it is a source of vast economic and social value (Tene & Polonetsky 2013:239).

Information is defined as:

- “Data that is (1) accurate and timely, (2) specific and organized for a purpose, (3) presented within context that gives it meaning and relevance, and (4) can lead to an increase in understanding and decrease in uncertainty” (BusinessDictionary 2017c:s.p.).

The four characteristics of information are clearly indicated above. Therefore, information can be seen as the end product of data processing (Leininger & Parker 2014:469). BusinessDictionary (2017c:s.p.) also states how valuable information is, because it can affect behaviour, a decision or an outcome. This dictionary further states that if things remain unchanged after receiving the information, that the piece of information can be considered valueless.

In summary and to understand the process better, data can be seen as the lowest level from which information is generated through organising the data and giving it context. Once this information is given meaning, the information is transformed into knowledge and further becomes wisdom as it is given insight (Joachim 2013:s.p.;

Saunder 2014:s.p.). The transformation from data through to wisdom is illustrated in Figure 4.1 below.

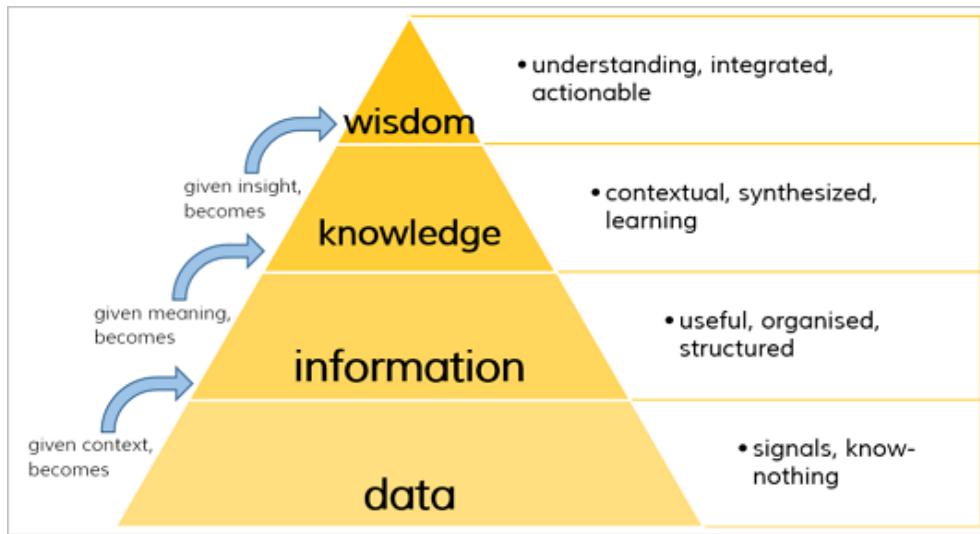


Figure 4.1: Wisdom pyramid

Source: Saunder (2014:s.p.)

People are the biggest contributors to data and information (Joachim 2013:s.p.). Tene and Polonetsky (2013:240) state that data is generated through various methods such as online transactions, email, video, images, clickstream, logs, search queries, health records and social networking interactions. These data records are then gathered from increasingly universal devices deployed in infrastructure, such as communications networks, electric grids, global positioning satellites, roads, bridges, homes, clothing and mobile phones. Presently, over one billion individuals are using the Internet and this is projected to grow to over two billion in a couple of years (Saunder 2014:s.p.). In 2012, a new 'Big Data Research and Development Initiative' was launched by the United States' Obama Administration. This initiative was aimed to improve the tools and technologies required to access, organise, manage, analyse, share and collect information from large, diverse, distributed and heterogeneous data sets (United States, Executive Office of the President 2012:1). As stated by Tene and Polonetsky (2013:241), this initiative was based on the recognition that this digital data provides an opportunity to create economic and social value with the intention to unleash it in order to progress it from data to knowledge to action (World Economic Forum [WEF] 2011:5).

In South Africa, initiatives such as the ones listed below are examples of where data is gathered in order to develop it to knowledge and then action:

- The Regulation of Interception of Communications and Provision of Communication-related Information Act, No. 70 of 2002 (RICA), which states that it is compulsory for everyone in South Africa to register their mobile phone number(s) by means of showing the relevant proof of identity. The purpose of RICA is to regulate the interception of communications and associated processes, but ultimately to ensure that the information of each person with his or her relevant contact number is against the correct identification number.
- The Financial Intelligence Centre Act, No. 38 of 2001 (FICA), which came into effect to combat financial crime, such as money laundering activities and related activities such as tax evasion and terrorist financing. This act requires an individual to show relevant proof of identity as well as relevant proof of address, which should be less than three months old on date of submission, for example, when an individual opens a new bank account. This ultimately ensures that the information of each person with his or her most recent address is stored against the correct identification number.

Through the concept of ‘big data’ this information can be shared between various government institutions (including SARS) and can be used in combination with existing information using the individuals’ identification numbers as identifiers to provide more data that could be used to gain information and knowledge regarding a particular individual. Gauteng e-Toll is an example of the use of ‘big data’ based on a presentation entitled “The integration of structured data from traditional data sources into the realm of BIG DATA for increased mobility” presented by Steenkamp (2016:1).

Even though the detail of this presentation is not available, based on the fact that Gauteng e-Toll accounts were sent to numerous individuals across Gauteng without the respective individuals providing the South African National Roads Agency Limited (SANRAL) with their respective car registration and contact information, it can be assumed that ‘big data’ was used for this exercise. For example, suppose each e-Toll gate recorded the car registration number of each car that passed it

(which can amount to a large volume), this information is then linked to the respective details of each car owner by means of the car registration number, which is stored and updated on a yearly basis when car licences are renewed. Thus, providing the South African National Roads Agency Limited with the updated contact details of each car owner who passed a specific e-Toll gate and enabling the South African National Roads Agency Limited to charge the respective car owners. Hence, a better understanding of the concept of 'big data' is needed to understand the concept and its capabilities fully.

4.3 WHAT IS BIG DATA?

The vast increase in computing and processing power as well as data storage capacity leads to advances in data mining and analytical tools which have expanded by orders of magnitude the scope of information available for businesses and government (Tene & Polonetsky 2013:239). The daily generation of massive streams of data is a result of the confluence of numerous key socio-economic and technological trends (OECD 2012:s.p.). The OECD (2012:s.p.) lists the following as some of the major trends:

- **The growing migration of social and economic activities online.** At the start of 2012, Facebook, which is a social network site, tallied over 900 million active individuals around the globe (OECD 2012:s.p.; Statista 2016b:s.p.). producing more than 1 500 status updates every second about these individuals' interests and whereabouts (OECD 2012:s.p.). In the last quarter of 2016, the number of active Facebook users had grown to 1,86 billion (Statista 2016b:s.p.). eBay, an e-commerce platform, gathered data in 2011 on more than 100 million active users as well as the 6 million new products they offered every day (OECD 2012:s.p.). In the last quarter of 2016, the number of active e-Bay users had grown to 167 million (Statista 2016a:s.p.).
- **The sturdy decline in the cost of data collection, storage, transportation, and processing.** The average cost of consumer hard disk drives (HDDs) per gigabyte, for example dropped on average by almost 40% per year between 1998 (USD56 per gigabyte) and 2012 (USD0,05 per gigabyte). As another example, in 1995, consumers in France paid the equivalent of USD75 per month for a dial-up connection(56 Kb/s), while in 2011, they paid the

equivalent of USD33 per month for a broadband connection(51 Mb/s), which was almost 1 000 times faster (OECD 2012:s.p.).

- **The growing deployment of ‘smart’ information and communications technology (ICT) applications such as smart grids and smart transportations based on machine-to-machine (M2M) communication.** Linking one million families to a smart grid may generate as much as 11 gigabytes of data per day. A network with a minimum capacity of up to 1 Mbit/s dedicated to machine-to-machine communication is required to accommodate for hourly readings through smart meters (OECD 2012:s.p.).
- **The continuous development of mobile communication.** In 2011, there were 780 million smartphones worldwide capable of collecting and transmitting geo-location data, which generated more than 600 petabytes (millions of gigabytes) of data every month. In 2012, it was estimated that the global data traffic generated by mobile communication (including machine-to-machine-enabled smart devices) will almost double every year to reach 11 exabytes (billions of gigabytes) per month by 2016 (OECD 2012:s.p.). However, global mobile traffic only reached 7,2 exabytes per month at the end of 2016. This is a 63% increase from 4,4 exabytes per month at the end of 2015 (Cisco 2017:s.p.).

OECD (2012:s.p.) goes further by explaining that through data analytics, the collection and exploitation of these large data flows, are resulting in a move towards a data-driven socio-economic model, which is commonly referred to as ‘big data’. So what is ‘big data’? As stated by Joachim (2013:s.p.),

Every so often a new word or phrase is introduced into the business lexicon which can influence or shape the future of the business world. Within the last few years the phrase ‘big data’ has certainly been gathering momentum. Today it is the most talked about, researched and perhaps most interesting development that will significantly change the way business and commerce is done in the future.

This means that ‘big data’ is a big subject (CIMA 2014b:1). As the term ‘big data’ means many things to many different people (IBM & Said Business School 2012:1), let us start by defining the term ‘big data’ – what is ‘big data’? There is no single universally accepted definition for the term ‘big data’ (CIMA 2014b:1), but based on the details provided above, the term ‘big data’ in simplistic terms can be seen as lots

of data that has not yet been processed and organised and therefore does not yet have any meaning.

Passarelli, Straubhaar and Cuevas-Cervero (2016:14) define ‘big data’ as a “broad term for data sets so large or complex that traditional data processing applications are inadequate. Challenges include analysis, capture, data curation, search, sharing storage, transfer, visualization, and information privacy.” Moorthy et al. (2015:75) agree with this definition by stating that technology professionals view ‘big data’ as “large data sets that require supercomputers to collate, process and analyse to draw meaningful conclusions”.

IBM and Said Business School (2012:3) conducted a study to see how individuals define the term ‘big data’. They asked 1 144 individuals to select up to two characteristics of ‘big data’. This clearly indicated that individuals were divided in their views as no single characteristic dominated. The selections have been abbreviated and normalised to equal 100% and were divided as follows with no unrivalled leader –

- 18% – “a greater scope of information”
- 16% – “new kinds of data and analysis”
- 15% – “real-time information”
- 13% – “data influx from new technologies”
- 13% – “non-traditional forms of media”
- 10% – “large volumes of data”
- 8% – “the latest buzzword”
- 7% – “social media data”.

If two characteristics had to be selected for purposes of this study, the most relevant definitions listed above would probably have been:

- data influx from new technologies; and
- large volumes of data.

This seems to resemble the definition by Gartner IT consultancy in 2012 more closely, which defined it as “high-volume, high-velocity and/or high-variety data assets that require new forms of processing to enable enhanced decision-making, insight discovery and process optimisation” (CIMA 2014b:1; Moorthy et al. 2015:75–76).

However, even though this seemed to be the definition that was most suited for purposes of this study, it was missing some additional main characteristics of ‘big data’, namely variability, complexity and virtue that were significant to this study. The complete list of ‘big data’ characteristics that therefore had to be incorporated into the definition were as follows:

- volume;
- velocity;
- variety;
- variability;
- complexity; and
- virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

Hence, to ensure the definition contained all the main characteristics of ‘big data’ (as listed above) it was enhanced for purposes of this study as follows: high-volume, high-velocity, high-variety, high-variability and/or high-complexity data assets that require virtue and new forms of processing to enable enhanced decision-making, insight discovery and process optimisation.

CIMA’s study notes (2014b:1) also state that ‘big data’ is the collection and analysis of data in huge quantities, which have a significant effect on many organisations because it can:

- assist organisations with change;
- retain talent;
- improve an organisation’s understanding of and access to customers; and
- identify the root causes of complex and costly problems.

Based on the above, it is clear that SARS as a government organisation could be significantly affected by ‘big data’. ‘Big data’ could assist SARS with change by reducing the taxation gap through identifying individuals who commit fraud through tax evasion. These taxpayers and their data can then be analysed to improve SARS’s understanding of **why** these taxpayers avoid paying their taxes, **how** they avoid paying their taxes and which characteristics these taxpayers have in common in order to identify potential future tax evaders. Furthermore, these taxpayers can then be penalised and closely monitored, which might possibly assist in changing

these taxpayers' behaviours resulting in retaining tax income as well as growing income through the prevention of future tax evasion. It is therefore very clear that SARS could use 'big data' in order to prevent the taxation gap in South Africa. The executive director and general manager of public sector at Dell UK, Claire Vyvyan, was quoted in *The Guardian* as saying, "Joining up public sector data sources can make government more efficient, save money, identify fraud and help public bodies better serve their citizens" (Rutter 2014:s.p.).

A news report from November 2013 indicated that India planned to take the leap to improve their tax collection by using 'big data'. The news report stated that the government of India was planning to use 'big data' with analytics to improve tax collection (Press Trust of India [PTI] 2013:s.p.). India has a mandatory permanent account number (PAN) which is a ten-digit alphanumeric number, which is issued in the form of a laminated card by the Income Tax Department of India. The permanent account number is mandatory for numerous activities, including all bank accounts (including credit cards) as well as tax returns (Government of India, Income Tax Department s.a.:s.p.).

This is similar to South Africa's tax number, which provides the tax authority, namely SARS, with a unique key to help trail an individual's expenses in relation to his or her declared income and taxes. This data (income, expenses and taxes) is however kept in distinct silos by the tax authority and other government entities, which still allow non-compliant taxpayers to reduce their tax burdens through tax evasion by under-reporting income (Sanyal & Ranjan 2015:86). Silos, related to information, refer to "An information management system that is unable to freely communicate with other information management systems" (Investopedia 2017:s.p.). For example, even though an audit trail is left behind when transacting, these audit trails lie scattered all over within different entities (both public and private) and are of no use to SARS for verification purposes of an individual's income, expenses and taxes. Therefore, in order for the information related to the audit trail to be useful to SARS, it should be shared with SARS (and brought under one umbrella) in order for SARS to have easy access to it when needed.

Based on a more recent article, it seems that the Indian government started to adapt a 'big data' analytics tool in May 2016, which basically identifies suspicious transactions from the total income tax data (Dave 2016:s.p.).

Therefore, if the tax authority uses a broad-based approach and uses ‘big data’ to bring these numerous data silos under a single umbrella, the tax authority will be able to improve tax collections significantly through the reduction in tax evasion, which in turn will result in a reduction in the taxation gap. As previously stated (see 1.1), the cash economy, as a result of high self-employment rates, is a significant contributor to the taxation gap due to a weakness in the attempts to collect income and expenditure data in its entirety. However, third-party data collected through large purchases by households like cars, homes or foreign travels can be traile and matched with an individual’s declared income levels. Regression techniques, like logistic regression, or decision tree techniques, like classification and regression tree (CART) or chi-square automatic interaction detector (CHAID) analysis can then be used on the combined data sets to detect fraud (Sanyal & Ranjan 2015:86). These are all approaches that use the data to construct predictions models.

These applications of ‘big data’ are discussed in more detail in 4.4.

4.4 APPLICATIONS FOR ‘BIG DATA’

Organisations, including revenue bodies, are using ‘big data’ to enhance their knowledge of the commercial situation, understand their taxpayers better, improve procedures and ensure tax collections, and services are provided more effectively and efficiently. There are five main areas in which organisations can benefit from the use of ‘big data’ (CIMA 2014b:1), but for purposes of this study, the following four were the most relevant to SARS for purposes of reducing the taxation gap.

4.4.1 Decision-making

A strong connection exists between effective data management strategy and the financial performance of an organisation. The organisations that stand out from the rest, for example in terms of increased productivity, improved public sector administration and analysing information to devise strategic plans, are those that use data most effectively (Tene & Polonetsky 2013:243–244). It has been shown, based on research that was conducted at the Massachusetts Institute of Technology (MIT), that companies enjoy a 5% to 6% increase in productivity when they use “data driven decision making” (Brynjolfsson, Hitt, Kim 2011:1; Tene & Polonetsky 2013:243).

Therefore, organisations are constantly striving to make better and faster decisions (CIMA 2014b:1), especially in the economic condition in which South Africa currently finds itself.

'Big data' allows government entities to improve their public sector administration and it assists in analysing information to devise strategic planning (Tene & Polonetsky 2013:243–244).

4.4.2 Developing new products and services

Through the analysis of taxpayer data, SARS could identify areas where taxpayers are more likely to evade tax, for example as a result of a loophole or due to a lack of knowledge. This information can then be used by SARS to either update the rules and regulations relating to a specific tax or enhance the services that are provided to taxpayers.

4.4.3 Marketing

'Big data' could assist SARS to determine who their taxpayers are, where they are, as well as identify factors that could influence specific taxpayers to evade their taxes. This information can then be used to determine the optimum communication and marketing across multiple channels (CIMA 2014b:1). As mentioned previously (see 1.1), taxpayers are less likely to evade or omit their taxes if the possibility of being caught or the penalty relating to such an omission and/or evasion is high.

4.4.4 Detecting fraud

'Big data' is analysed by financial services providers and government entities to uncover hidden trends and events that are indicative of fraud. The detection process involves the investigation of various attributes of transactions and then deciding which ones to review in more detail. As the volume of transactions increases, the threshold for intervention also increases, thus, increasing the likelihood that fraudulent activities may be missed. Fortunately, with the use of 'big-data', organisations are now able to scan a larger number of transactions effectively and ensure that criminals' activities are kept to a minimum (CIMA 2014b:1).

Thus, to summarise, from the above it is clear that SARS could use 'big data' in numerous ways. Therefore, in 4.5, it is reported how the feasibility framework

specific to SARS was developed based on the main characteristics of ‘big data’, namely:

- volume;
- velocity;
- variety;
- variability;
- complexity; and
- virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

4.5 FEASIBILITY FRAMEWORK

To understand better how ‘big data’ assisted in developing the feasibility framework for SARS, a set of distinguishing characteristics, namely, the three Vs (volume, velocity and variety) that were derived from the definition of ‘big data’ as supplied by Gartner IT consultancy in 2012 (CIMA 2014b:1; Moorthy et al. 2015:75–76) as discussed above (see 4.3), as well as the additional dimensions (namely variability, complexity and virtue) (CIMA 2014b:1; Lahiri & Biswas 2015:80; Moorthy et al. 2015:76–77) that have been added by other organisations, are explained in more detail below:

4.5.1 Volume

Volume can be described as the amount of data generated, stored and used (IBM & Said Business School 2012:4; Moorthy et al. 2015:76). The volume of data that SARS generates and stores itself, as well as the volume of data that other organisations generate and store that could be used by SARS, comes from a number of sources. These sources may include –

- transaction-based data (such as the number of payments made by a taxpayer during a specific tax year versus income received, or the number of car services and frequency) collected over several years;
- unstructured data collated from social media (such as Facebook and Twitter); and/or
- increasing amounts of sensor data and information sent from machine to machine (such as banking transactions or online payments) (CIMA 2014b:1).

The cost of electronic storage space continues to fall and therefore the challenge for organisations is to determine what is relevant in this huge amount of data and how to extract value from it (CIMA 2014b:1). As per an article posted by CIMA in *Financial Management (FM)*, a chief executive called the ‘big data’ explosion “crippling”. He continues to state that it is difficult to make a decision when there is too much information and therefore more data seldom results in a more focussed and proactive business strategy because everyone gets too caught up in the analysis (CIMA 2013:s.p.).

So how can this issue be resolved? The ideal would be to start small by identifying a specific goal, and working up by adding another goal once the previous goal has been reached. This would aid the reduction of the taxation gap by focussing on a specific challenge and its associated small data set, capturing only the most important bits of information and knowledge available and disregarding any other unnecessary pieces of information that do not add value for the specific goal at hand (CIMA 2013:s.p.).

Thus, in order to ensure that only relevant data is stored and that the most value is extracted, SARS has to define the goal of the specific taxation gap area that it would like to prevent clearly. Once the goal is defined, it should be determined whether there are any third-party organisations that would have data that could aid SARS in the prevention of the taxation gap area as specified in the goal. This follows the same principle as the basic accounting equation, namely that the debit entry (for example, the data provided by the taxpayer) equals the credit entry (for example the data provided by the third-party organisation’s transactional records). More than one third-party organisation might be required because of taxpayers’ preferences, for example, some taxpayers might have a mobile phone contract at MTN while others have one at CellC or Vodacom.

The goal as determined in conjunction with the specific income tax laws and the third-party organisation(s) would provide guidelines with regard to the data that is required from the specific third party (or parties) and might differ depending on the area of tax evasion or avoidance that needs to be addressed. If the third-party organisation does not have the relevant data fields required, an alternative third party might have to be identified or laws might have to be adjusted in order to ensure that third parties capture the information required, for example RICA and FICA, where

additional legislations were promulgated. If no third-party organisation exists, it would not be worth continuing as there is no organisation or individual with data to verify the data as supplied by the taxpayer.

The above information was interpreted graphically as follows in order to start the building of the feasibility framework:

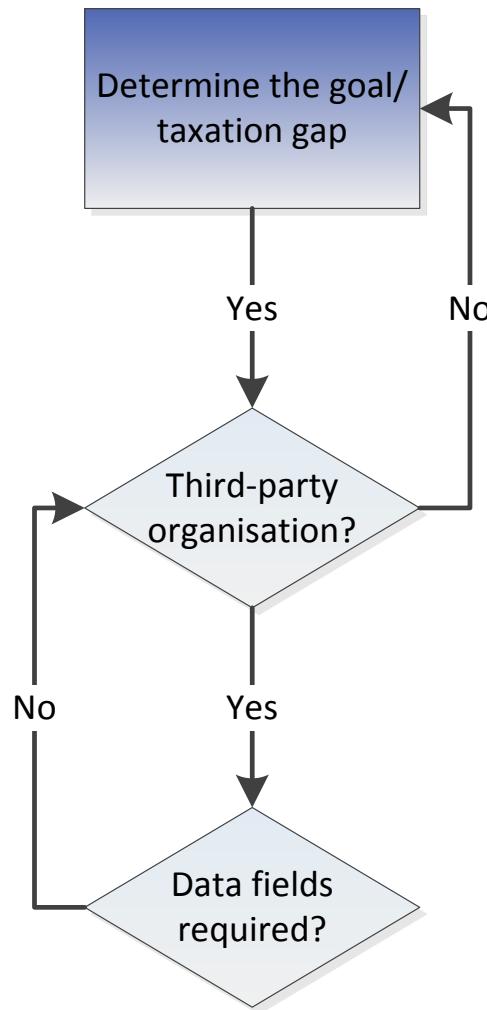


Figure 4.2: Feasibility framework – volume

Source: Author's own compilation

'Big data' requires exceptional processing power to process the vast quantities of data sufficiently and quickly to enable effective decision-making (CIMA 2014b:1). The information technology used to capture, store and analyse the 'big data' fell outside the scope of this study, but most relational database management systems and desktop statistical management packages are not adequate for this task of processing the data (CIMA 2014b:1). Thus, some examples of special 'big data' technologies that could be used were SAP HANA, Big Data Integration, MapR and Statistica (Capterra s.a.:s.p.).

4.5.2 Velocity

Velocity relates to the speed of data generation and exchange, both within and outside SARS, as large volumes of data are streaming in and out of organisations at high speed (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Moorthy et al. 2015:76). The challenge for SARS will be to deal with this data in a timely fashion, if not in real time.

Two factors will influence whether SARS would be able to deal with the data from third parties in real time or in a timely fashion. These are:

- **1st factor:** 'Timely' would depend on the frequency with which SARS receives information from the taxpayer in order to compare taxpayers' information to the information from the third party, for example annual tax returns or six-monthly provisional tax returns. This would also depend on what the processing capacity of the systems and the information technology used by SARS is.
- **2nd factor:** Whether the third-party system would be able to provide this information to SARS in real time or in a timely fashion depends both on how the third-party processes the information (online or batch) as well as whether or not the systems and information technology used would be capable of transferring the information to SARS in real time or in a timely fashion.

The above information was depicted graphically as indicated in the red section below in order to advance the building of the feasibility framework:

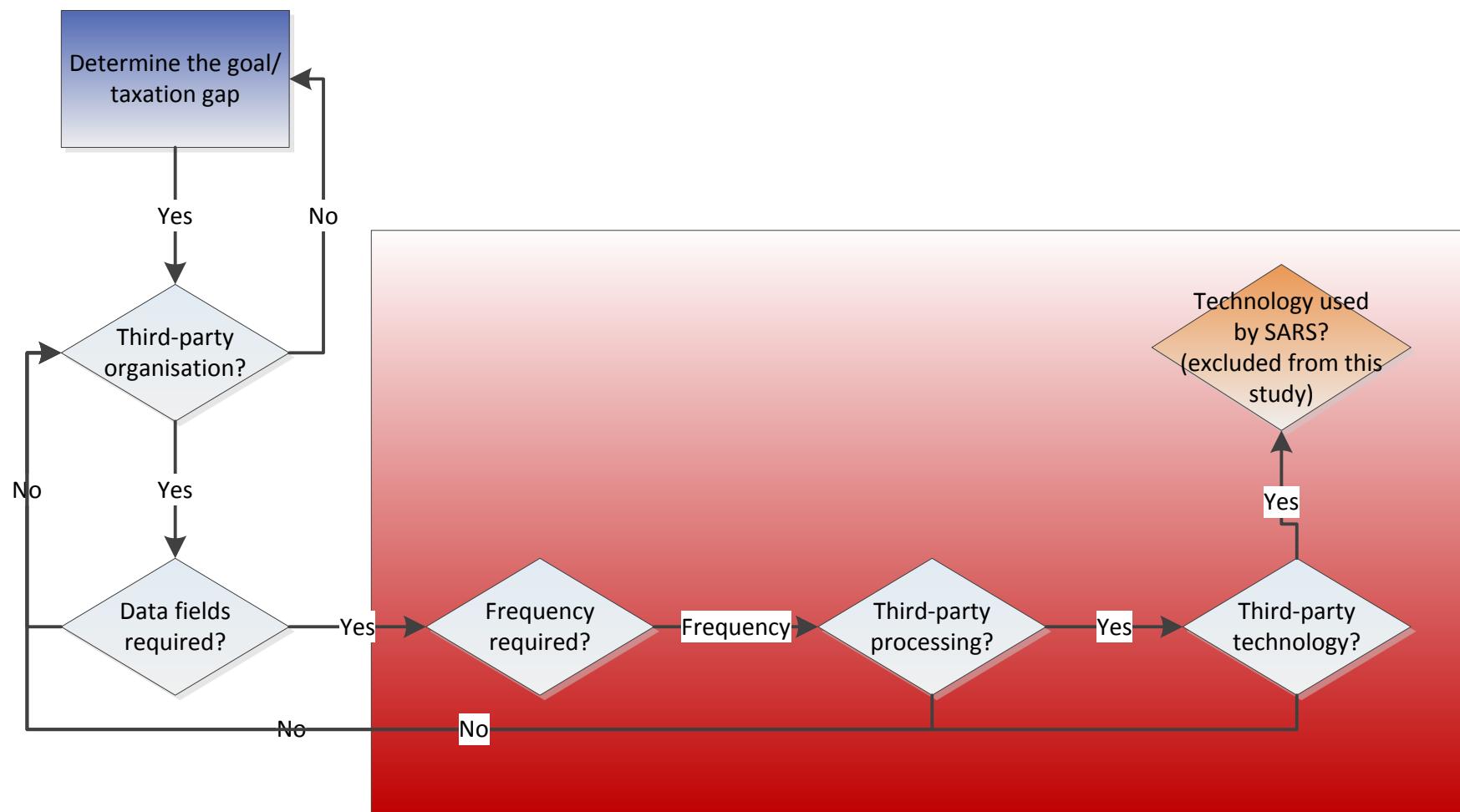


Figure 4.3: Feasibility framework – velocity

Source: Author's own compilation

4.5.3 Variety

Variety relates to the range of data types and sources. Typical data types that are contained in traditional business applications are structured, numeric or statistical data. Unstructured data in the form of texts, emails, audio footage, videos and social media updates may also be gathered (CIMA 2014b:1; IBM & Said Business School 2012:4; Moorthy et al. 2015:76) by SARS. A key challenge for SARS would be to deal with the extensive range of sources (CIMA 2014b:1; IBM & Said Business School 2012:4).

Some conversion might be required in order to convert the data into a format that is suitable for the SARS systems, but ultimately SARS will have to verify that the data from the third party is reliable and usable. This relates to the well-known saying of ‘garbage in; garbage out’.

The above information was graphically depicted as indicated in the red below section in order to advance the building of the feasibility framework:

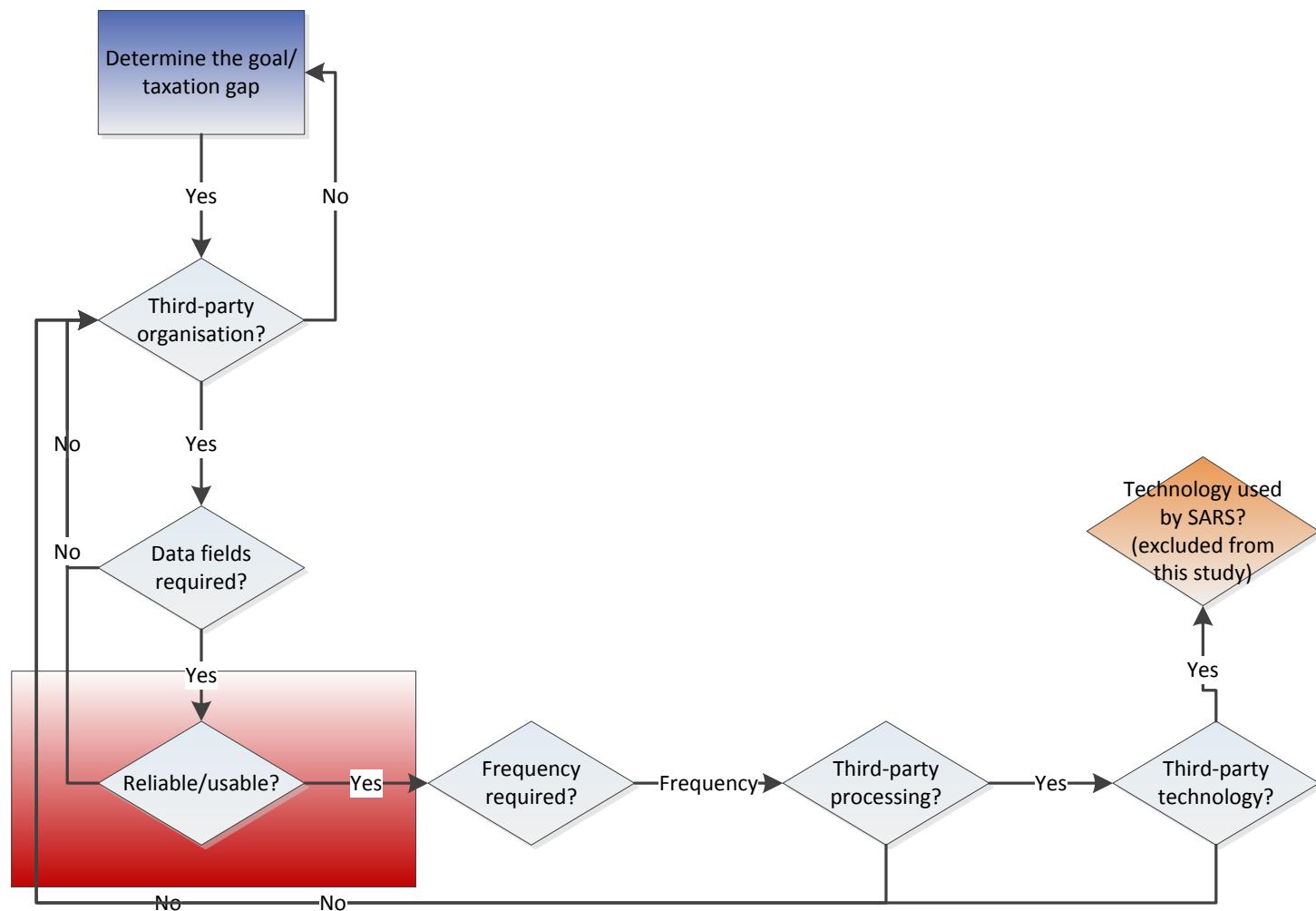


Figure 4.4: Feasibility framework – variety

Source: Author's own compilation

4.5.4 Variability

Variability refers to the inconsistency that is present in the data gathered from a wide range of sources (CIMA 2014b:1; Moorthy et al. 2015:76). As stated by Lederman (2010:1733), the core problem for the enforcement of tax laws is asymmetric information. An example of this would be data received from MTN and Vodacom (mobile phone companies) relating to monthly invoices that would be different, for example in format and content. Vodacom might have data available that is not available from MTN (and vice versa). This can cause some serious problems during the analysis of the data (CIMA 2014b:1; Moorthy et al. 2015:76), but can be dealt with through additional legislation that ensure mandatory data be kept up to date for all required fields as explained earlier.

The above information can be graphically interpreted as indicated in the red section below in order to advance the building of the feasibility framework.

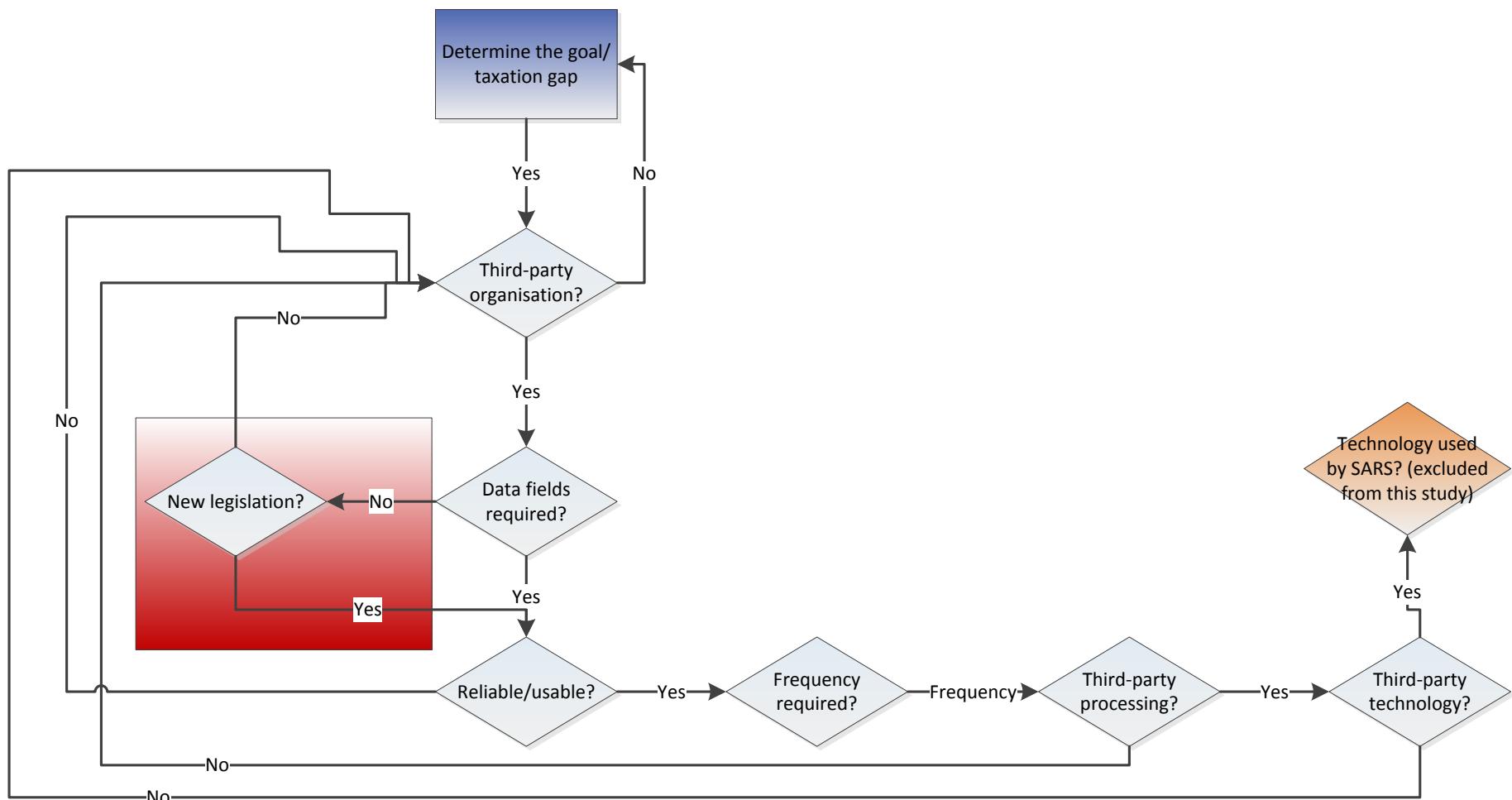


Figure 4.5: Feasibility framework – variability

Source: Author's own compilation

4.5.5 Complexity

The four key characteristics described above (see 4.5.1–4.5.4) makes managing ‘big data’ a highly complex task because the data is generated from numerous sources and in differing formats (Lahiri & Biswas 2015:80). The data needs to be connected and correlated in order for SARS to obtain the maximum benefit from it (CIMA 2014b:1). The new feasibility framework will assist with the connection and correlation of the data in order for SARS to obtain the maximum benefit.

4.5.6 Virtue

Virtue has been added as a new characteristic by Moorthy et al. (2015:77) to the definition of ‘big data’. This characteristic has been added due to issues that form an integral part of the ‘big data’ phenomenon, namely to integrate ethical and piracy concerns consciously into the deployment of ‘big data’ into any use (Moorthy et al. 2015:77). This is of much importance as taxpayers’ personal information, such as banking details, is involved and should be used in accordance with data usage regulation, for example, the Protection of Personal Information (PoPI) Act, No. 4 of 2013.

The Protection of Personal Information Act, No. 4 of 2013 was introduced to ensure that organisations (both public and private) protect the personal information that they process. Thus, the Protection of Personal Information Act, No. 4 of 2013:

- introduces certain conditions in order to establish the minimum requirements that should be adhered to when processing personal information (see sections 8 to 35);
- provides for the creation of an Information Regulator, who operates in alignment of this Act (see section 39) and the Promotion of Access to Information Act, No. 2 of 2000. This Information Regulator is required to exercise certain powers as well as perform certain duties (see section 40);
- provides for the issuing of codes of conduct (see sections 60 to 68);
- provides for the rights of individuals with regard to automated decision-making and unsolicited electronic communications (see sections 69 to 71);
- regulates the movement of personal information across the borders of the South Africa (see section 72); and
- provides for matters connected therewith.

One should also consider the implications of ‘big data’ on regulated industries and what the role of an organisation, for example SARS, would be to ensure compliance with regulations regarding the use of such third-party data (CIMA 2014a:1).

Third parties, as well as SARS, have to ensure that they adhere to the Protection of Personal Information Act, No. 4 of 2013 when processing an individual’s personal information. Thus, in all instances, the feasibility framework have to be applied in such a way that it ensures compliance with all regulations relating to the use of the data, such as the Protection of Personal Information Act, No. 4 of 2013 as mentioned earlier.

However, based on section 26 of the Tax Administration Act, No. 28 of 2011, the Commissioner of SARS may request by means of a public notice any third party to submit information by a specified date (as indicated in the notice) in the prescribed form and manner to SARS. An example of where SARS executed this authority occurred on 29 February 2012, when a notice was issued in Government Gazette No 35090 (Notice No 173), namely that section 69 of the Income Tax Act, No. 58 of 1962, which has been superseded by section 26 of the Tax Administration Act, No. 28 of 2011, requested that all reporting institutions, such as banks, had to provide SARS with interest received information for all relevant customers for the period 1 March 2012 to 28 February 2013.

The above information can be graphically interpreted as indicated in the red section below in order to advance the building of the feasibility framework.

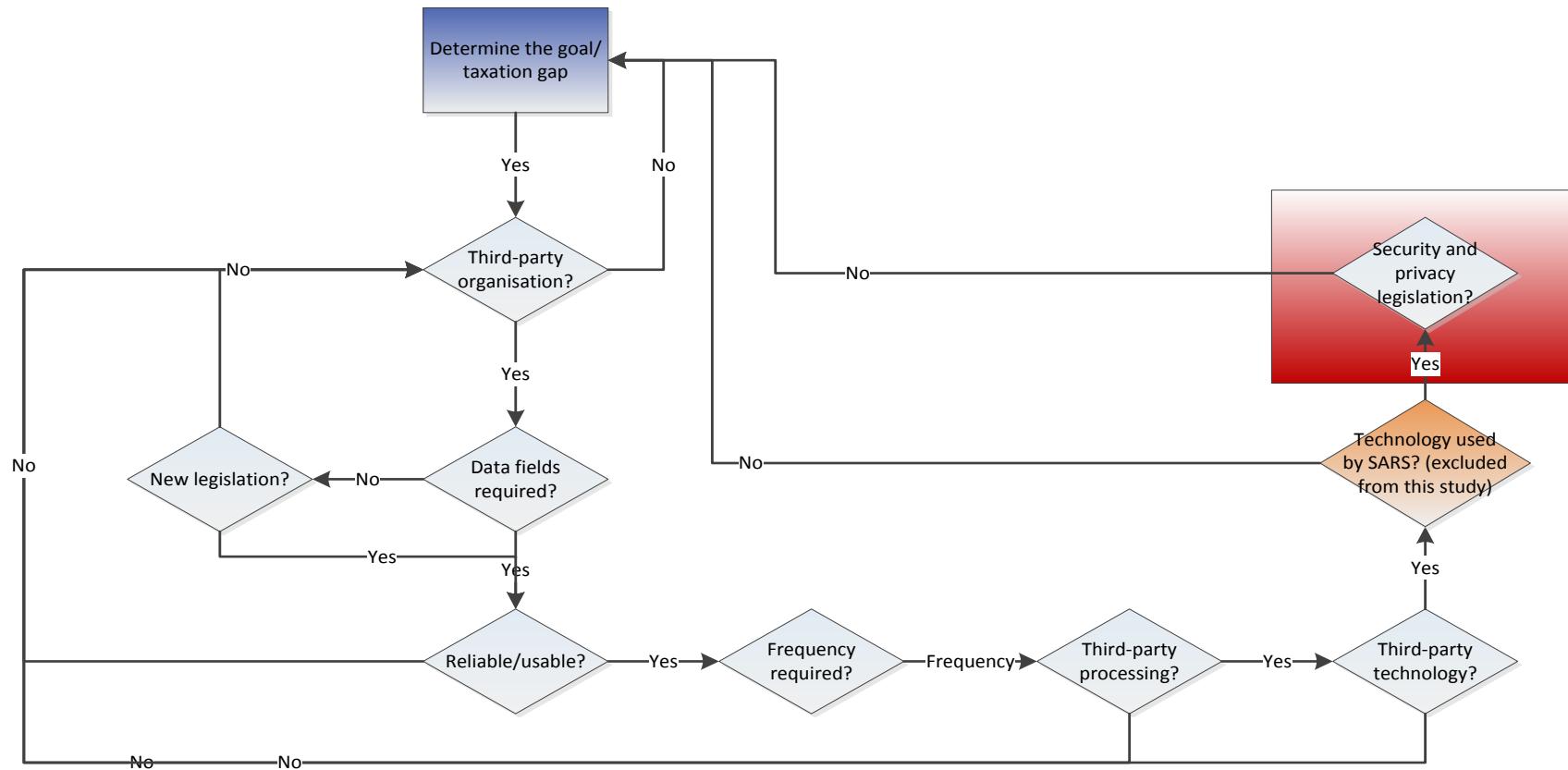


Figure 4.6: Feasibility framework – virtue

Source: Author's own compilation

This concludes the discussion of the building of the new feasibility framework based on the main characteristics of ‘big data’, namely volume, velocity, variety, variability, complexity and virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

Unfortunately, the use of ‘big data’ poses risks. Therefore, before testing the new feasibility framework (see Chapter 5), the key risks associated with ‘big data’ are discussed in the next section.

4.6 RISKS ASSOCIATED WITH BIG DATA

The use of ‘big data’ poses the following five key risks (CIMA 2014b:1):

4.6.1 Loss of agility

Most organisations, including revenue bodies, store their data on multiple platforms, which makes it difficult to locate, analyse and make decisions in a timely fashion if the data is not evaluated, organised and stored properly (CIMA 2014b:1). The feasibility framework could assist in mitigating this risk, by ensuring enough thought is given to the design as well as the technology used for a particular taxation gap solution.

4.6.2 Loss of information security

The shared benefits of ‘big data’ must be compared with increased risks to taxpayers’ privacy (Tene & Polonetsky 2012:s.p.). As stated by Brill (2012:3), the fundamental principles are challenged by the ‘big data’ paradigm as large volumes of identifiable data create more risk when data is breached. As the volumes of data located in an organisation, for example SARS, and the data moving between, for example from multiple third-party organisations to SARS, the risk of getting hacked also increases. This could result in fraud, and as previously mentioned, this could further result in failure to comply with governing security and privacy legislation (for example, the Protection of Personal Information Act, No. 4 of 2013 and the Promotion of Access to Information Act, No. 2 of 2000) and therefore in reputation damages and/or fines for both SARS and its third parties (CIMA 2014b:1).

Thus, SARS, in alignment with its third parties, should use secure channels in order to prevent leakage and robust mechanisms for user authentications such as user-

centric or federated identity management schemes, for example single sign-on capability (Cavoukian 2006).

4.6.3 Growth in regulatory complexity

However, hackers are not the only concern; internal authorised usage is another concern. Ethical data use has been a difficult issue for a while now when considering policy frameworks (Boyd & Crawford 2012:672).

In 2012, the risk of fundamental values that may warrant a review of current policy frameworks, as a result of the social and economic issues related to ‘big data’ analytics, was discussed by the Foresight Forum. The discussion mainly focussed on the policy frameworks targeted at ensuring the protection of intellectual property, competition and privacy even though other areas were also discussed, such as government administration (OECD 2012:s.p.).

The reality is that the complexity of legislation governing the use of data as well as how long organisations, including revenue bodies, need to retain their data and how they must store it, is growing.

For example, the Protection of Personal Information Act, No. 4 of 2013, which regulates the movement of personal information across the borders of the South Africa, should be adhered to together with the Promotion of Access to Information Act, No. 2 of 2000. These are both South African acts, but due to the battle against international tax evasion, multiple initiatives are underway, which might require the sharing of personal information with revenue bodies in other countries in future (Hansen 2013:s.p.). This will complicate the adherence to the Protection of Personal Information Act, No. 4 of 2013 as other countries might have different regulations as to how they process personal information, for example the Foreign Account Tax Compliance Act, which is an American initiative introduced in 2010 (Hansen 2013:s.p.).

Failure to comply with such legislation could result in damage to the reputation of SARS as well as the third party’s reputation and/or a significant penalty (CIMA 2014b:1).

4.6.4 Increase in costs

Data requires storage and management, thus, as the volume of data grows, the investment in storage and data management also grows (CIMA 2014b:1), not to mention costs related to privacy and security (see 4.5.6 and 4.6.2).

4.6.5 Overreliance on data at the expense of experience

In 2014, a global survey by PwC and the Economist Intelligence Unit determined that for the majority of executives, the important decisions and choices about the strategic direction of an organisation are made based on the intuition and experience of the executives of the organisation, as well as on advice by experts, rather than the data. Based on the research report following the survey, the main reason for not making greater use of data in executive's decision-making was found to be a lack of completeness and accuracy (CIMA 2014b:1; PwC 2014a:1; PwC 2014b:7, 27, 29).

Although the intuition and experience of the relevant individuals are important for those instances where the data is insufficient or market conditions are not stable, the data can still aid in decision-making by providing more details (CIMA 2014a:1; PwC 2014a:1–2; PwC 2014b:6, 29). Thus, this risk is not really relevant, because even though only a third of the organisations that participated in the survey considered themselves as data-driven, it has been shown that organisations that rely heavily on data to aid them with their important decisions are far more likely to report a significant improvement (CIMA 2014b:1; PwC 2014a:1; PwC 2014b:5, 24, 26).

4.7 CONCLUSION

Our world, together with human behaviour and physical objects, generates data in such a way that one cannot perceive, capture or hear it in a tangible way. Data is being produced at an increasingly unprecedented rate, through daily operations all around us. To unravel this data, technology is required (Saunders 2014:s.p.). It is therefore clear that analytics is becoming crucial for decision-making (CIMA 2014a:1).

This brings about the need for a feasibility framework that can be used by SARS to ensure large volumes of third-party data can be incorporated by SARS using information technology to derive knowledge and prevent taxation avoidance and evasion and limit the taxation gap.

As reported in this chapter, a generic feasibility framework was developed for purposes of this study, and was based on the characteristics of 'big data', namely volume, velocity, variety, variability, complexity and virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76), as illustrated in Figure 4.6 below.

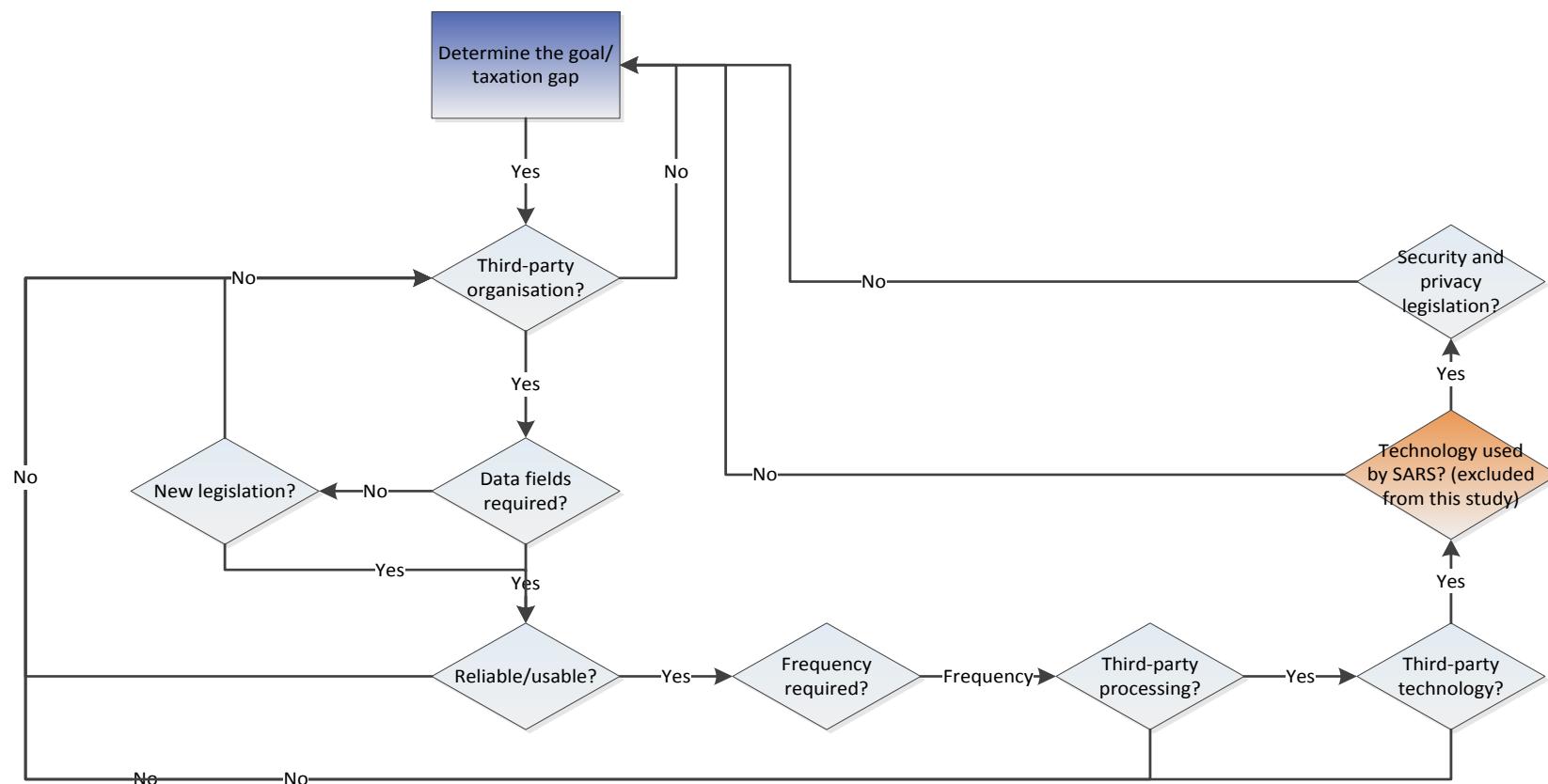


Figure 4.7: Final feasibility framework based on 'big data' characteristics

Source: Author's own compilation

This generic feasibility framework was tested, and in the next chapter, the results of testing it with two case studies to ensure it can be applied and is practical, are reported. In this chapter, it will also be indicated whether any aspect of the feasibility framework needed to be adjusted or elements added.

CHAPTER 5

TESTING OF THE FEASIBILITY FRAMEWORK

5.1 BACKGROUND

In the previous chapter, the basic feasibility framework on which this study is based was developed through an extensive literature review of the main characteristics of ‘big data’, namely:

- volume;
- velocity;
- variety;
- variability;
- complexity; and
- virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

The feasibility framework that was developed can be defined as a conceptual framework as it contains the set of broad areas and principles, mainly taken from the characteristics of ‘big data’, and is used to structure the subsequent presentation (Kobelski & Reichel 1987:3). This feasibility framework should be used as a starting point, as it has the potential to support the investigation and decision-making process in determining whether it is feasible for a specific tax area that has the potential to cause a taxation gap to be automated through the use of third-party data and information technology. The feasibility framework can therefore be seen as a research tool to assist in developing a deeper understanding and awareness (Smyth 2004:168) of the potential cause of the specific taxation area that contributes to the taxation gap and whether there is data and information technology available to support it. The framework, namely the new feasibility framework, itself forms part of the **agenda for negotiation** in order to be examined and verified, reviewed and restructured as a result of the investigation (Guba & Lincoln 1989: 265–269; Smyth 2004:168) to determine whether it is feasible for a specific tax area that has the potential to cause a taxation gap to be automated through the use of third-party data and information technology. The new framework would therefore aid in the feasibility study and ensure that there is third-party data and information technology available to support the automation initiative (Jansen van Rensburg 2012:42). In summary,

this feasibility framework can be seen as a way to mitigate the risk of starting a project without the potential of such project succeeding.

This chapter therefore demonstrates the application of the proposed feasibility framework as reported in Chapter 4 by using two selected case studies.

5.2 OVERVIEW

Why select case studies to evaluate the feasibility framework? Flyvbjerg (2006:219, 221) reports on five of the common misunderstandings about case study research, namely:

- practical knowledge is not as valuable as theoretical knowledge;
- a single-case study cannot contribute to scientific development as one cannot generalise from a single case;
- the case study is most useful for generating theories, whereas other methods are more suitable for testing these theories;
- there is a bias toward verification; and
- specific case studies can often be difficult to summarise.

In this article, Flyvbjerg (2006:222) mentions the importance of the role that cases and theory play in the human learning process. One of the points he makes in the article relating to this role is that research on learning shows that it is necessary to have context-dependent knowledge in order to allow people to develop from rule-based beginners to experts. Case studies provide this context-dependent knowledge. Flyvbjerg (2006:222) continues to explain that well-chosen case studies could help to achieve competence while context-independent facts and theories will only gain novice level.

The third misunderstanding that Flyvbjerg (2006:219, 221, 229) examined (as listed above) was that case studies is most useful for generating theories, but other methods are more suitable for the testing of these theories. He corrected this misunderstanding as follows: “The case study is useful for both generating and testing of hypotheses but is not limited to these research activities alone”.

In his study, Flyvbjerg also quotes Eckstein (1975:80), who states that case studies “are valuable at all stages of the theory-building process, but most valuable at the stage of theory-building where least value is generally attached to them: the stage at

which candidate theories are tested". The authors thus argue that case studies are better at testing theory than generating them. This advantage of a case study means that case studies can 'close in' on real-life situations and test theories directly in relation to scenario as the cases unfold in practice, but this depends on the cases that are selected (Flyvbjerg 2006:229, 235).

Critical cases can be described as cases that have a strategic importance in relation to the general problem (Flyvbjerg 2006:229). Subsequently, the cases that were selected for purposes of this study can be defined as critical cases because they can be seen as having strategic importance in relation to the general problem regarding the use of the new feasibility framework for purposes of diminishing the taxation gap.

Therefore, the focus of each case study is highlighted as well as the reasons for selecting the specific case. The discussion that follows shows how the feasibility framework as illustrated in Figure 5.1 was applied step-by-step to each of these selected cases in order to test whether the feasibility framework was practical in determining areas to automate the detection of tax avoidance and tax evasion for purposes of limiting the taxation gap through the use of third-party data and information technology.

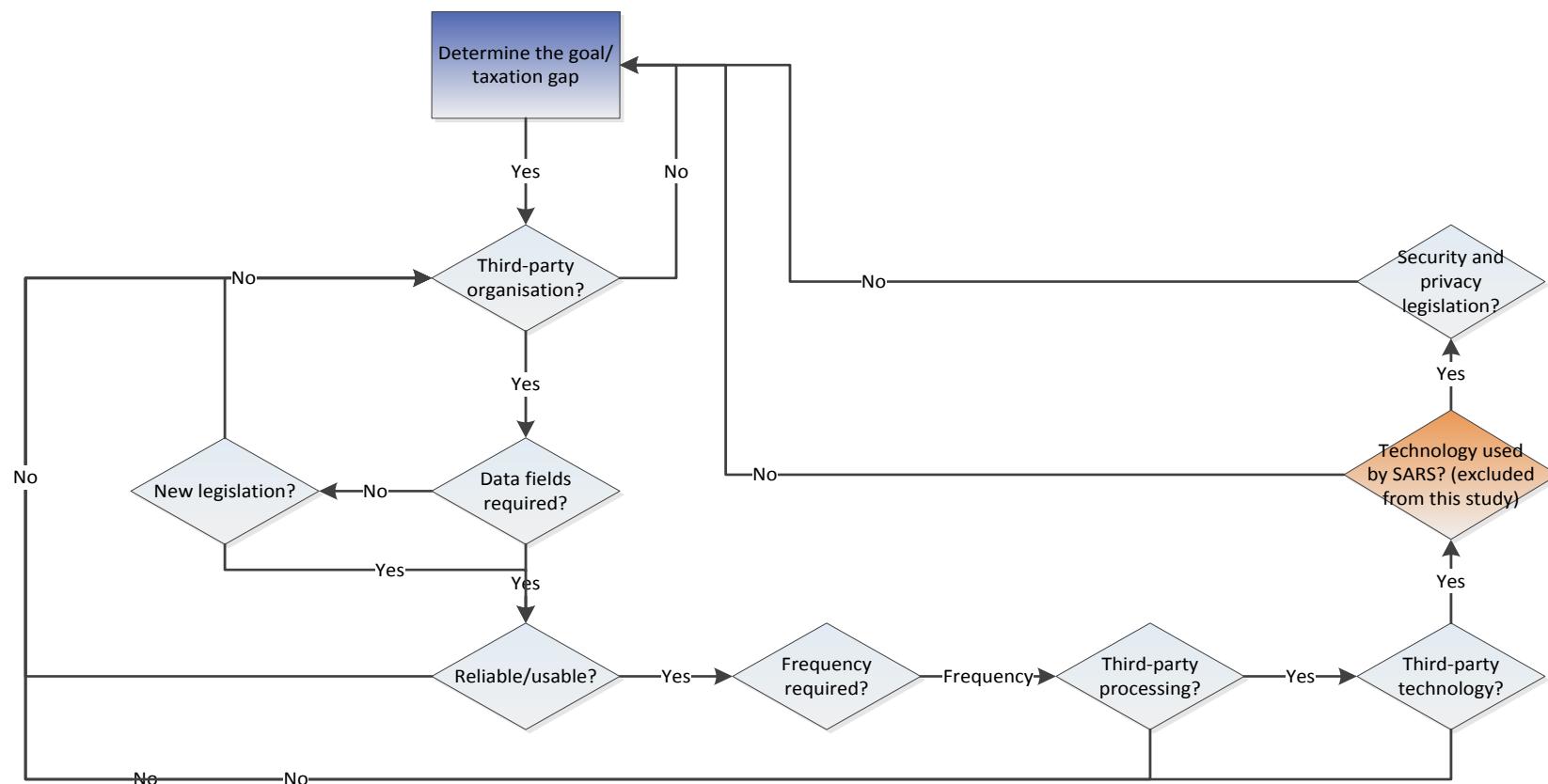


Figure 5.1: Developed feasibility framework

Source: Author's own compilation

The outcomes achieved through the case studies discussed below are purely fictional and intended for explanatory and research purposes only. In the real world, the decisions will be much more complex based on the priority as continuously set and updated by SARS (as per step 2 of the existing Compliance Risk Management Process discussed in Chapter 2). The decisions will also be made by experts at SARS that specialise in the specific area of tax and who have the necessary experience and knowledge.

5.3 CASE STUDY I

The first case study focussed on rental income from residential accommodation, for example:

- holiday homes;
- bed and breakfast (B&B) establishments;
- guesthouses;
- sub-renting part of a house, for example, a room or a granny flat;
- dwelling houses; and
- other similar residential dwellings.

Rental income from residential accommodation (in terms of the Income Tax Act, No. 58 of 1962) is earned when an individual rents out a property (whether personally owned or rented) and receives rental income in return. This rental income is subject to tax and should be added to gross income of the respective taxpayer (in terms of the definition of gross income of the Income Tax Act, No. 58 of 1962). However, the rental amount can be reduced by operational (non-capital) expenses that occurred during the year of assessment, for the period the property was let, for example:

- rates and taxes;
- bond interest;
- advertisements;
- agency fees of rental agents;
- insurance (only homeowners insurance; not household contents);
- garden services;
- repairs in respect of the area let; and
- security and property levies (SARS 2017c:s.p.).

The reasons for the selection of this case study were as follows:

- there are third-party entities, such as rental agencies, which capture information relating to rental income. In addition, the tenant can also be viewed as a third party for verification purposes;
- there is no real available balance control to ensure the value submitted or not submitted by a taxpayer is correct. It is therefore anticipated to still be an area of concern; and
- the data volumes are limited and it contains periodic values.

5.3.1 Problem statement

Pete is renting a dwelling from Sarah, which is held in her personal capacity. The rental income that Pete pays to Sarah is R15 000 per month. Pete pays his own water and electricity, but Sarah pays the rates and taxes as well as the levies. No maintenance, enhancements or developments have been made to the property.

For purposes of this case study, the problem statement above had to be examined from two viewpoints, namely if:

- no rental agency is used; and
- a rental agency is used.

5.3.2 Application of feasibility framework

In order to apply the proposed feasibility framework to the case study to determine whether or not the suggested feasibility framework is viable, the steps as per the feasibility framework were followed and are discussed in detail.

Step 1: Determine the goal/taxation gap

Sarah does not declare her rental income or does not declare her rental income in full. There is therefore a potential for both tax evasion and/or tax avoidance. The goal would therefore be to determine whether there is a way for SARS to automate the detection of Sarah not declaring the income or not declaring the full amount of her rental income by using third-party data and information technology.

Conclusion: Once the goal has been determined, one should move to step 2 as described below in order to determine whether there is any third party that can be used to verify the information submitted by Sarah with regard to rental income. If no goal is determined, there is no need to continue.

Step 2: Third-party organisation

→ **If Pete rents from Sarah directly, without the use of a rental agency**

There is no obvious (centralised) third-party organisation that stores information on the rental income amount received by Sarah. There would also most likely not be one in the future as explained below.

If assumed that the amount is paid to Sarah via a bank transaction, such as an electronic fund transfer (EFT), but the reference that is used by Pete will not necessarily identify the fact that it is rental income. If required, new legislation could force banks to add an additional field for when a tenant, for example Pete, makes a rental payment to an owner, for example Sarah, in order to identify this type of transaction easily and consistently. Pete can however not be forced to use this field and even if he can be forced to do so, there would be no cost-effective way to trace Pete if he does not adhere, as there are many bank transactions on a daily basis and the only other identifier would be the 'reference' field.

The amount could also be paid in cash by Pete to Sarah. This would complicate the matter even further.

Further to this, the deeds office holds information on properties and their owners, for example Sarah, as well as other important information that might be valuable, such as the location and the value of the property. This information could be used to identify individuals, for example Sarah, who have more than one property, but once again there are certain loopholes, such as:

- An owner with more than one property might have a primary residence and a holiday home, which he/she does not rent out.
- A married couple might have two properties, one of which is being rented out, but because the properties are in two separate names, the system would not identify it. There are ways around this, such as checking the combined properties of a married couple, but this would probably still leave loopholes as the couple could be on the verge of a divorce and occupy both homes.
- A property might be held within a trust instead of in an individual(s)'s name. However, SARS now requires:
 - details (for example, identification numbers and demographic information) of all parties (including individuals) who benefitted from a trust during the tax year; and

- capital or assets (for example properties) or revenue (for example rental income) distributed to or vested in beneficiaries (Klein & Beachen 2014:s.p.).

Therefore, the trust (and the relevant capital or assets and revenue) can be linked to the relevant individual taxpayers and used for comparison purposes. However, for purposes of this study, this fell outside the scope of the study as it relates to trusts and was not specific to this particular case study.

The deeds office information can also be used to provide estimates of potential income based on the property value and location, but as mentioned above, this would not be viable if it cannot be determined that the dwelling is in actual fact being rented out to a tenant.

However, there is an option to use Pete as the third party. This would then require Pete to submit a value on his income tax return for individuals (ITR12), which can then be compared to the value submitted by Sarah on her income tax return for individuals (ITR12). In general, these should match, except for possible expenses that have to be proved by Sarah (refer to steps 3 and 4 which explain the data fields and legislation required to link the entries from Pete to Sarah). Unfortunately, this might increase the tax administration for Pete and if Pete is not registered for tax purposes, the above information will not be available.

→ **If Pete rents from Sarah through the use of a rental agency**

The respective rental agency can be used as third party. This would then require the rental agency to submit the relevant details, which could then be compared to the value submitted by Sarah on her income tax return for individuals (ITR12). Unfortunately, this might increase the tax administration on the rental agency.

There might be other options available that have not been discussed.

Conclusion: If there is no feasible way to get some third-party data in order to detect or identify the defined goal as per step 1, the process should be stopped and the next potential goal should be investigated.

For purposes of this case study, an assumption was made that:

- the final option, using Pete as third party, with respect to Pete renting directly from Sarah without the use of a rental agency has been accepted as feasible; and
- using the rental agency as third party in the case where Pete is renting from Sarah through the use of a rental agency has been accepted as feasible.

Step 3: Data fields required

The relevant fields that are required from Pete and/or the rental agency as well as Sarah in order to verify the data that each of them have populated should be determined.

Currently, the income tax return for individuals (ITR12) requires Sarah to complete the following fields to calculate the profitable income based on the e-filing form for 2015/2016:

- description of rental income;
- unique identifier;
- income:
 - rental income
- expenditure:
 - accounting fees;
 - agency fees;
 - bad debts;
 - depreciation;
 - electricity/rates and taxes;
 - insurance;
 - interest/finance charges;
 - levies paid;
 - repairs/maintenance;
 - other; and
 - description of other.

→ If Pete rents from Sarah directly, without the use of a rental agency

In order for Pete to act as a third party and to provide information that is used for comparative purposes, the income tax return for individuals (ITR12) should be updated to include additional fields to be populated by tenants, for example Pete,

who rents directly from an owner, for example Sarah, without the use of a rental agency.

An example of the fields that can be populated by Pete in order to ensure he provides all the relevant information that can be compared to the information that is populated by Sarah, for a particular tax year, is provided in Table 5.1 below.

Table 5.1: Example of fields to be completed by Pete

Field	Type of input	Compared	Comment
Rented from/rent paid to	Pete has to input Sarah's personal income tax number or identification number.	This would be used to identify Sarah.	
Rental income	Pete has to input a value.	This value can be compared to the value that has been entered.	This value is equal to the monthly value that is paid to Sarah based on the contract.
Occupation period	Pete has to indicate the periods, during the tax year, when he occupied the rental property occupied. This can be done by listing all the periods on the income tax return for individuals (ITR12) and Pete populates, for example an 'X', for those periods during which he occupied the rental property.	This can be used to determine the monthly rental income amount as well as whether an additional income tax return for individuals (ITR12) from another tenant (whether through a rental agency or privately) should be taken into account for any discrepancies between the amounts declared by Sarah and Pete respectively.	The periods that do not contain an 'X' mean they were unoccupied by Pete and possibly occupied by another tenant (whether through a rental agency or privately).
Bad debts	Pete has to input a value.	This value can be compared to the value that has been entered.	Pete has to input a value of any outstanding payments by him to Sarah.
Electricity/water/rates and taxes	Pete has to indicate whether each of the following items were paid by him or included in the rental amount given to Sarah: <ul style="list-style-type: none"> • water • electricity • rates and taxes 	This can be used to determine whether Sarah is entitled to populate this field on her income tax return for individuals (ITR12).	
Insurance	Pete has to indicate whether the insurance (excluding content insurance) is paid by him or included in the	This can be used to determine whether Sarah is entitled to populate this field on her income tax return	

	rental amount given to Sarah.	for individuals (ITR12).	
Levies paid	Pete has to indicate whether levies are applicable, and if yes, whether it is paid by him or included in the rental amount paid to Sarah.	This can be used to determine whether Sarah is entitled to populate this field on her income tax return for individuals (ITR12).	
Repairs/maintenance	Pete has to indicate whether any repairs or maintenance have been performed by Sarah on the rental property.	This can be used to determine whether Sarah is entitled to populate this field on her income tax return for individuals (ITR12).	

Source: Author's own compilation

Agency fees would automatically be considered irrelevant as no rental agency was used, unless the dwelling was rented during unoccupied periods using a rental agency. Some information, for example interest/finance charges, can be gathered from other third parties, for example financial institutions. Other information, for example accounting fees, depreciation, interest/finance charges and other, would not be known by Pete and can therefore not be compared. However, this would still provide enough information to determine material differences that could indicate whether Sarah is declaring her rental income or not declaring her rental income in full (through the overstatement of expenses or understatement of income).

→ **If Pete rents from Sarah through the use of a rental agency**

Generally, rental agencies have all the details related to rental income (as currently required by the income tax return for individuals [ITR12]), for example, the:

- owner's identification number (or taxation number);
- description (for example, rental property address);
- income:
 - rental income; and
 - periods of occupation .
- expenditure:
 - agency fees;
 - bad debts;
 - electricity/rates and taxes;
 - insurance;

- levies paid;
- repairs/maintenance;
- other; and
- description of other.

Currently, no process exists for the submission of this type of information by rental agencies and therefore, as an example, in a new process with new submission forms, the rental agency can submit the relevant information to SARS. An example of the required fields to be submitted by the rental agency for a particular tax year and for comparison purposes is provided in Table 5.2 below. This will make it possible to compare the information that is populated by Sarah against the information submitted by the rental agency.

Table 5.2: Example of fields to be completed by the rental agency

Field	Type of input	Compared	Comment
Lessor (for example Sarah)	The rental agency has to input Sarah's personal income tax number or identification number.	This would be used to identify Sarah.	
Rental income	The rental agency has to provide a value.	This value can be compared to the value that has been entered.	This value is equal to the monthly value that is paid to Sarah based on the contract.
Occupation	The rental agency has to indicate the periods, during the tax year, in which Pete has occupied the rental property.	This can be used to determine the monthly rental income amount as well as whether an additional income tax return for individuals (ITR12) from another tenant (whether through a rental agency or privately) should be taken into account for any discrepancies between the amounts declared by Sarah and Pete respectively.	The periods that do not contain an 'X' mean they were unoccupied by Pete and possibly occupied by another tenant (whether through a rental agency or privately).
Bad debts	The rental agency has to provide a value.	This value can be compared to the value that has been entered.	The rental agency has to input a value of any outstanding payments from Pete to Sarah.
Electricity/water/rates and taxes	The rental agency has to indicate whether each of the following items are included in	This can be used to determine whether Sarah is entitled to populate this field on	

	<p>the rental amount paid to Sarah (by Pete) as well as the amount associated by each:</p> <ul style="list-style-type: none"> • water • electricity • property taxes 	<p>her income tax return for individuals (ITR12) as well as whether the amount declared by Sarah is correct.</p>	
Insurance	<p>The rental agency has to indicate whether the insurance (excluding content insurance) is included in the rental amount paid to Sarah (by Pete) as well as the relevant amount.</p>	<p>This can be used to determine if Sarah is entitled to populate this field on her income tax return for individuals (ITR12) as well as whether the amount declared by Sarah is correct.</p>	
Levies paid	<p>The rental agency has to indicate whether levies are applicable, and if yes, whether these are included in the rental amount paid to Sarah (by Pete) as well as the relevant amount.</p>	<p>This can be used to determine if Sarah is entitled to populate this field on her income tax return for individuals (ITR12) as well as whether the amount declared by Sarah is correct.</p>	
Repairs/maintenance	<p>The rental agency has to indicate whether any repairs or maintenance have been performed by Sarah on the rental property as well as the relevant amount.</p>	<p>This can be used to determine if Sarah is entitled to populate this field on her income tax return for individuals (ITR12) as well as whether the amount declared by Sarah is correct.</p>	

Source: Author's own compilation

Some information, for example interest/finance charges, can be gathered from other third parties, for example financial institutions. Other information, for example accounting fees and depreciation would not be known by the rental agency and can therefore not be compared. However, this would still provide enough information to determine material differences that could indicate whether Sarah is not declaring her rental income or not declaring her rental income in full (through the overstatement of expenses or understatement of income).

Conclusion: If the third party (as discussed in step 2) does not contain all the fields required in order to detect or identify the defined goal as per step 1, it should be investigated whether any new legislation is required to obtain all the required fields (in step 4). Otherwise, if all fields are readily available without the need for new

legislation, it should be verified that all third party data is reliable and usable (in step 5).

For purposes of this case study, assuming both these solutions were feasible, i.e. whether Pete rented from Sarah with or without the use of a rental agency, not all fields were readily available from SARS at the time of the research. Thus, this necessitated step 4 (discussed earlier) to be performed in order to investigate whether any new legislation needed to be introduced to obtain all the required fields.

Step 4: New legislation

Based on the possible options discussed in steps 2 and 3, the following changes to current legislation might be required:

- It might be required that both parties' tax numbers or ID numbers be included in the lease contract.
- Further to this, SARS would have to decide on a reasonable margin of discrepancy as well as how this would be introduced and communicated to the general public.
- The Income Tax Act, No. 58 of 1962 would have to be updated to include the requirements for tenants, for example Pete, to capture the relevant details required by SARS before or on a certain date (as discussed in step 3).
- The Income Tax Act, No. 58 of 1962 would have to be updated to include the requirements for rental agencies to make it possible to:
 - deduct the correct amount of tax from owners;
 - pay these amounts over to SARS on a monthly basis;
 - capture and reconcile the deductions and payments (as discussed in step 3) during an annual and/or interim reconciliation process; and
 - issue tax certificates to owners.

Sections 208 to 220 of the Tax Administration Act, No. 28 of 2011 contain numerous provisions that deal with penalties related to different types of non-compliance and misdemeanours.

Conclusion: If these changes are aligned with the strategy, priority list, budget and timeline used by SARS, the process will proceed to step 5 in order to verify that the details obtained from the third party are reliable and usable. If these changes to

legislation are unacceptable, an alternative solution should be investigated as part of step 2.

For purposes of applying the feasibility framework, the legislation changes have been found acceptable and thus the process continued to step 5.

Step 5: Reliable/Useable

Various factors could influence the reliability and usability of the information provided. Lederman (2010:1733) states that the effectiveness and efficiency of information reporting varies in terms of who the third party is, what the third party is reporting about and how much information is required to be included. Further to this, as stated earlier (see 2.4.1), Lederman (2010:1739–1741) proposes a framework of six distinctive factors for assessing information reporting requirements. If these factors had been applied to this case study, the outcome would have been as follows:

→ **If Pete rents from Sarah directly, without the use of a rental agency**

- *Arm's-length parties*: Sarah typically acts at arm's length with Pete, although the possibility of collusion does exist, especially when Sarah is acting directly with Pete, who is the tenant. It is also possible that the Pete is a family member, which will increase the risk of collusion. Further to this, there is no tax benefit for Pete to report the relevant information, but there is a risk of penalties to be imposed.
- *Bookkeeping infrastructure*: The probability is very high that Pete would not have a bookkeeping infrastructure specifically related to the rental agreement.
- *Centralisation of data*: The probability is high that centralisation is low as the relationship would be one owner with one or more tenants, which is the reverse requirement of centralisation.
- *Complete reporting*: Steps 3 and 4 above would ensure that all the relevant information that is necessary for SARS to match Pete's information to the corresponding amounts submitted by Sarah be provided, although something might slip through the cracks because Pete does not have a proper bookkeeping infrastructure.

- *Few alternative arrangements:* This would depend on whether there are ways for Pete to avoid providing the information required by SARS through loopholes that might exist. At the time of this research, none was identified.
- *Contributor to taxation gap:* If Pete declares that he pays a rental income to Sarah, which can be identified with the use of an identification number or taxation number, and Sarah:
 - does not submit an income tax return for individuals (ITR12);
 - does not declare any rental income;
 - overstates her expenses; or
 - understates her income –

this would enable SARS to identify Sarah (as explained in step 3) and possibly enlarge the taxation footprint or reduce the taxation gap. For purposes of this study, it was assumed that Sarah's tax avoidance or tax evasion, as well as others similar to Sarah, could make a substantial contribution to the taxation gap and that this would justify the cost of information return.

→ **If Pete rents from Sarah through the use of a rental agency**

- *Arm's-length parties:* Owners typically act at arm's length with their rental agency. Although the possibility of collusion does exist, it is not likely when the arm's-length party is a rental agency. Further to this, although there is no tax benefit for the rental agency to submit the information to SARS, there is a risk of penalties to be imposed.
- *Bookkeeping infrastructure:* The likelihood of the rental agency having a proper bookkeeping system in place is good.
- *Centralisation of data:* If a rental agency is used, then the likelihood of centralisation is high as the rental agencies would tend to be fewer in number than the tenants as well as owners of the properties which are being rented.
- *Complete reporting:* Steps 3 and 4 above would ensure that all the relevant information that is necessary for SARS to match the rental agency's information to the corresponding amounts submitted by Sarah, is provided.

- *Few alternative arrangements:* This would depend on whether there are ways for the rental agency to avoid providing the information required by SARS through loopholes that might exist. At the time of this research, none was identified.
- *Contributor to taxation gap:* If the rental agency declares that Pete pays a rental income to Sarah, which can be identified with the use of an identification number or taxation number, and Sarah:
 - does not submit an income tax return for individuals (ITR12);
 - does not declare any rental income;
 - overstates her expenses; or
 - understates her income –

this would enable SARS to identify Sarah (as explained in step 3) and possibly enlarge the taxation footprint or reduce the taxation gap. For purposes of this study, it was assumed that the identification of Sarah's tax avoidance or tax evasion, as well as other similar to Sarah, would make a substantial contribution to the taxation gap and that this would justify the cost of information return.

Conclusion: Due to the administration and risks involved in renting properties, a number of owners use rental agencies to manage the rental of their properties. Based on the above analysis, these types of rental incomes would provide more useable and reliable information than rentals directly between tenants and owners. Therefore, based on the analysis in this step, non-formal rentals (for example rentals without the use of a rental agency) will be excluded. In step 6, the focus will therefore only be on formal rentals (for example, rentals with the use of a rental agency).

Step 6: Frequency required

This information would be required on an annual or on a six-monthly basis when Sarah does her income tax return for individuals (ITR12) or return for payment of provisional tax (IRP6).

Thus, in order to ensure the information is available for SARS on an annual or on a six-monthly basis, the rental agency will have to capture and reconcile the deductions and payments (as discussed in step 3) during an annual and/or interim reconciliation process (similar to the pay as you earn process as explained in step

4). This would require a new form to be populated by rental agencies as none was available at the time of this research.

Conclusion: For purposes of this case study, the new process for rental agencies as explained in step 4 and above was considered sufficient, which means the process could continue to step 7 in the feasibility framework.

Step 7: Third-party processing

Third-party processing would not be an issue if a new form – to be populated by rental agencies – be developed by SARS (containing the fields as explained in step 3) and the Income Tax Act, No. 58 of 1962 be updated to include the requirements for rental agencies, making it possible to:

- deduct the correct amount of tax from owners, for example Sarah;
- pay these amounts over to SARS on a monthly basis;
- capture and reconcile the deductions and payments during an annual and/or interim reconciliation process; and
- issue tax certificates to owners.

This further confirms the decision to focus on formal rentals only. Informal rentals would provide SARS only with the information once Pete does his income tax return for individuals (ITR12), or his return for payment of provisional tax (IRP6), which might be at a later date than that on which Sarah does her income tax return for individuals (ITR12) or her return for payment of provisional tax (IRP6).

Conclusion: This might be a significant issue, which requires all other considerations and decisions to become null and void, and therefore allows SARS to back out of the required change before too much effort and resources have been invested.

For purposes of this case study, in order to continue with step 9 in the feasibility framework, this step is considered a non-issue as the new legislation – as per step 4 – has already addressed third-party processing by means of the update in the Income Tax Act, No. 58 of 1962.

Step 8: Third-party technology

No third-party technology has to be considered as both Sarah and the rental agency would use the normal means of capturing their tax return forms. The only time that

SARS might have to consider this if new functionality is introduced on a form that has not been used previously, which might only be available in a certain version of Acrobat.

Conclusion: For purposes of this case study, no additional functionality was required and therefore no additional third-party technology considerations were required. Thus, the process continued to the next step in the feasibility framework.

Step 9: Technology used by SARS

As previously mentioned (see steps 6 and 7), a new form would be required for rental agencies, in order to make provision for the additional information (as per step 3) to be populated and submitted to SARS. This would probably also require an update to the database in order for these new values to be stored.

Other than the new form and the changes to the related database(s), there should not really be any additional technology requirements, as the amount of additional information would probably not have a major effect on system performance. This would unfortunately only be known for certain by SARS. Thus, the amount of effort to make the required adjustments relating to the changes leading to a new form has to be estimated and planned to ensure that SARS is ready for the specific filing system where they would like to introduce this new form.

The implementation of the change should also be managed carefully as it might have an effect on existing filing systems that are used throughout the year for different types of taxes and different types of forms.

Conclusion: Therefore, once all these factors have been considered and it is still found to be a feasible solution to SARS, SARS could continue to put a plan into place in order to ensure all these steps are implemented within the required timeframe before ensuring that all security and privacy legislation is adhered to in the final step.

Step 10: Security and privacy legislation

Certain sections in the Protection of Personal Information Act, No. 4 of 2013 provide SARS with specific exemptions, namely:

- section 12(2)(d)(ii) relating to the collection of data directly from the data subject, for example Sarah;

- section 15(3)(c)(ii) relating to further processing to be compatible with purpose of collection; and
- section 18(4)(c)(ii) relating to the notification of the data subject, for example Sarah, when collecting her personal information.

Thus, SARS does not have to consider any legislation in terms of privacy. However, they do need to consider security legislation, in terms of the Promotion of Access to Information Act (PAIA), 2000, in order to ensure the information submitted by the rental agency to SARS is kept secure.

The rental agency, on the other hand, has to consider both privacy legislation, in terms of the Protection of Personal Information Act, No. 4 of 2013, and security legislation, in terms of the Promotion of Access to Information Act, No. 2 of 2000. For example, based on section 11 of the Protection of Personal Information Act, No. 4 of 2013, Sarah has to give her consent in order to process the information.

5.3.3 Results

Overall, the feasibility framework seems to have fulfilled the required purpose of identifying whether it is possible to automate the detection of tax avoidance and/or tax evasion of Sarah with regard to her rental income using third-party data and information technology.

Many avenues were considered to ensure that the required change is feasible and acceptable by SARS. As can be seen from the case study above, depending on the resources available for SARS (such as time, skills and budget), the outcomes achieved through the application of the new feasibility framework could differ significantly from the outcomes reached by someone else with more skills, knowledge and experience.

Some of the shortfalls of the feasibility framework that were identified were as follows:

- no timelines and implementation plan were considered to ensure that the required change management steps were performed, for example, ensuring taxpayers are aware of new requirements and that the implementation meets the required implementation date with the least interruption to other tax systems and their respective deadlines; and

- no ‘lessons learned’ step was included. This step would have ensured that any positives and negatives during the specific project were identified and that these could be used to enhance the feasibility framework going forward.

The feasibility framework could possibly be enhanced to ensure the above is also taken into consideration when applying the framework. The updated feasibility framework is presented below, highlighting the new steps in red.

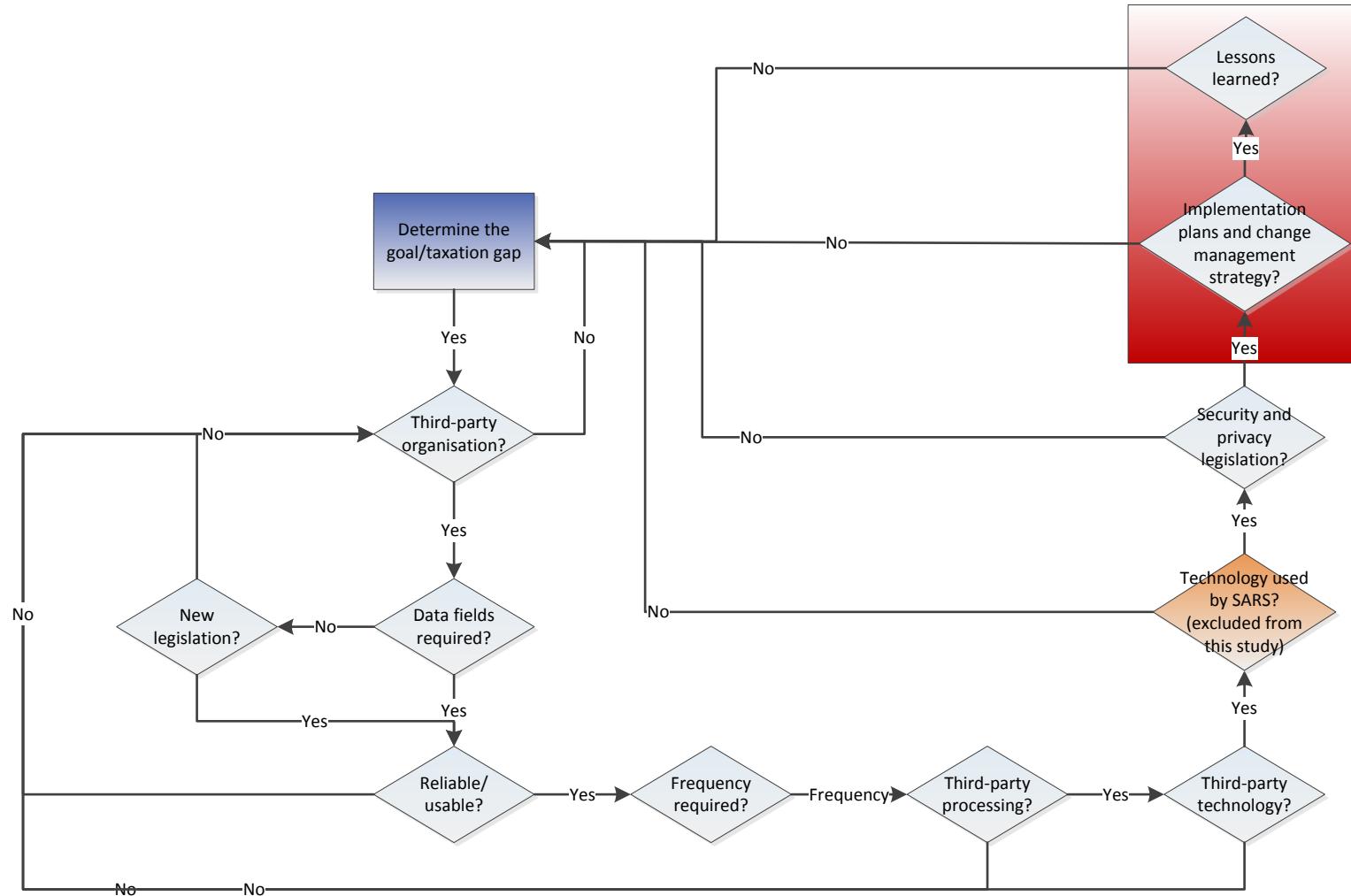


Figure 5.2: Enhanced feasibility framework

Source: Author's own compilation

5.4 CASE STUDY II

The second case study focussed on travel allowance given as reimbursement to an employee based on the actual kilometres travelled. Thus, a travel allowance can be described as any allowance or advance paid to an individual in respect of travelling expenses for purposes of business. It should however be noted that:

- any allowance or advance given to an employee in respect of travelling expenses that was not spent on business travelling is deemed as spent on private travelling; and
- travelling between an employee's place of residence and place of employment is deemed as private travelling (SARS 2017b:s.p.).

The taxable amount related to a reimbursive allowance depends on a set of conditions, namely a non-taxable reimbursive allowance is a reimbursive amount which:

- is consumed on business travelling as deemed to be in terms of the Income Tax Act 58 of 1962; and
- does not exceed the rate per kilometre as set by the Minister of Finance.

Furthermore, it should be noted that –

- the total business kilometres reimbursed for during the year of assessment should not exceed 12 000 kilometres (SARS s.a.:s.p.); and
- no other form of compensation should have been given to the employee (for example a fixed travel allowance) (SARS 2017b:s.p.).

Therefore, the sections of the Income Tax Act, No. 58 of 1962, which are affected by this case study are 8(1)(a), 8(1)(b), 8(1)(c) and paragraph 1 of the Fourth Schedule.

The reason for the selection of this case study was as follows:

- there are third-party companies, such as Tracker and NetStar, which capture information relating to travel as they advertise that they can provide you with a tax compliant logbook if registered;
- SARS has made previous amendments to the travel rules due to tax avoidance schemes that were used by taxpayers, for example, Government Gazette No 27815 (Notice No 743), where the deemed private kilometres were increased from 14 000 kilometres to 16 000 kilometres. This is therefore

anticipated to be an area of concern still, especially when speaking to individuals who regularly submit travel allowance claims. Most spoken to repeatedly (if not every time) get identified by the risk engine for an audit;

- in the 2015/2016 tax year, travel allowance (of R25,3 billion) continues to be the largest of the total allowances accessed for individuals, even though it has steadily decreased (in relative terms) from 31% in 2012/13 to 25,5% in 2015/16 (National Treasury & SARS 2016:31, 52); and
- the volume of data would be relatively high as the data is captured on a daily basis for multiple owners/drivers.

5.4.1 Problem statement

Tom receives a travel allowance and travels regularly for business purposes. He also uses the same car to travel for personal reasons.

5.4.2 Application of feasibility framework

In order to apply the proposed feasibility framework to the case study to determine whether or not the suggested feasibility framework is viable, the steps as per the feasibility framework were followed and are discussed in detail.

Step 1: Determine the goal/taxation gap

Tom overstates the kilometres that he travels for business. There is therefore a potential for both tax evasion and/or tax avoidance. The goal of this case study was therefore to determine whether there is a way for SARS to automate the detection of Tom overstating his business kilometres by using third-party data and information technology.

Conclusion: Since the goal has been determined, the process moved to step 2 as described below in order to determine whether there is any third party that can store information relating to the kilometres travelled by Tom.

Step 2: Third-party organisation

There are third-party companies, such as Tracker and Altech Netstar that capture information relating to travel. These companies advertise that they can provide taxpayers with a tax compliant logbook if registered. This information can be used by SARS to get insight into each taxpayer's travelling habits and link it to those that

claim a travel allowances, for example Tom. Altech NetStar, for example, allows users to mark specific trips as business or private for purposes of the tax logbook component (StarDrive 2016:s.p.).

If supplied by the vehicle tracking organisation to SARS, this information can be linked to Tom by using his identification number or taxation number. SARS can also verify that Tom claims a travel allowance by performing a search on the relevant tax source codes. Although this still allows Tom to overstate his business kilometres by marking specific private trips as business trips. If all the relevant location data is captured and provided to SARS, SARS could use complicated algorithms by using information technology to identify some of these possible overstatements for further investigation. Even though there might still be some taxpayers who would not be picked up by the system, the enhanced process (using third-party data and information technology) will improve voluntary compliance as taxpayers would become aware of the risk of being caught.

Conclusion: Since there are third-party organisations that can capture and store the information required by SARS without the need for any changes as they already provide tax compliant logbooks, the process would continue to step 3. It should be noted, however, that SARS requires the relevant skills to develop and implement the algorithms needed to identify the possible overstatements.

Step 3: Data fields required

SARS requires Tom to complete the following information for purposes of claiming a travel allowance:

- the vehicle's odometer reading on 1 March, for example, on the first day of the tax year;
- a logbook, which is kept throughout the year with the following information per business trip:
 - the date of travel;
 - the kilometres travelled; and
 - business travel details, for example, where the trip was started, where it ended and the reason for the trip.
- the vehicle's closing odometer reading on the last day of February (28/29), for example, on the last day of the tax year (SARS 2016e:s.p.).

The third-party organisations, such as Altech Netstar, could provide all this information as well as additional information, such as speeds, times, dates or locations of all travelling trips.

At the time of the research, no process existed for the submission of this type of information from organisations, such as Altech Netstar, and therefore, as an example, in a new process, these vehicle tracking organisations could submit the relevant information to SARS. An example of the required fields to be submitted by these vehicle tracking organisations for comparison purposes, for a particular tax year, is provided in Table 5.3 below. This would enable the information that is populated by Tom to be compared against the information submitted by the relevant vehicle tracking organisation.

Table 5.3: Example of fields to be completed by the vehicle tracking organisations

Field	Type of input	Compared	Comment
Traveller	The vehicle tracking organisation has to input Tom's personal income tax number or identification number.	This would be used to identify Tom.	
Vehicle registration number	The vehicle tracking organisation has to input Tom's vehicle registration number.	This would be used to ensure travel for the specific vehicle is only claimed once.	This might be complicated if someone else, for example Tom's wife, drove a few times with Tom's car and also claims a travel allowance.
Vehicle's opening odometer reading on 1 March	The vehicle tracking organisation has to input Tom's vehicle's odometer reading on 1 March.	This can be compared to the vehicle's odometer reading on 1 March as submitted by Tom.	
Vehicle's closing odometer reading on the last day of February (28/29)	The vehicle tracking organisation has to input Tom's vehicle's odometer reading on the last day of February (28/29).	This can be compared to the vehicle's odometer reading on the last day of February (28/29) as submitted by Tom.	
Date of travel	The vehicle tracking organisation has to provide a date for each trip.	This can be compared against the dates submitted by Tom with a manual audit.	
Kilometres travelled	The vehicle tracking organisation has to	This can be compared against the kilometres	

	provide the kilometres for each trip.	submitted by Tom.	
Location trip started	The vehicle tracking organisation has to provide the start location for each trip.	This can be used in complicated algorithms (as explained in step 2).	
Time trip started	The vehicle tracking organisation has to provide the start time for each trip.	This can be used in complicated algorithms (as explained in step 2).	
Location trip ended	The vehicle tracking organisation has to provide the end location for each trip.	This can be used in complicated algorithms (as explained in step 2).	
Time trip ended	The vehicle tracking organisation has to provide the end time for each trip.	This can be used in complicated algorithms (as explained in step 2).	
Business/Private	The vehicle tracking organisation has to indicate whether each trip was for business or private purposes.	This can be compared against the kilometres submitted by Tom.	

Source: Author's own compilation

Another requirement from SARS might be to obtain an audit trail of any changes that Tom made to the information. Thus, the information submitted by the third party to SARS can be enhanced as follows:

Table 5.4: Example of additional fields to be completed by the vehicle tracking organisations

Field	Type of input	Compared	Comment
Change indicator	The vehicle tracking organisation provides an indicator on whether the specific travel record has been changed.	This can be used in complicated algorithms (as explained in step 2).	
Change date	The vehicle tracking organisation provides the change date of the specific travel record.	This can be used in complicated algorithms (as explained in step 2).	
Change time	The vehicle tracking organisation provides the change time of the specific travel record.	This can be used in complicated algorithms (as explained in step 2).	

Source: Author's own compilation

However, a concern is whether Tom uses a vehicle tracking organisation and if he does, whether he has activated the logbook service.

Conclusion: There are third-party data available (as per the example fields in Table 5.3 and Table 5.4) that can be submitted to SARS on a regular basis in order to perform the required algorithms. SARS can also enhance the tax compliant logbook to ensure the data in the logbook is captured electronically in the format required by SARS in order to make detailed comparisons (for example, line by line) using the third-party data.

Before moving to step 5, it should be ensured that there is no need to update any legislation in order to enforce the changes required.

Step 4: New legislation

Based on the possible options discussed in step 2 and 3, the following changes to current legislation might be required:

- SARS would have to decide on a reasonable margin of discrepancy as well as how this would be introduced and communicated to the general public;
- the Income Tax Act, No. 58 of 1962 would have to be updated to ensure all vehicle tracking organisations:
 - capture and store all the relevant data as required by SARS; and
 - submit the required data to SARS on a regular basis as determined by SARS and in the format required by SARS.
- Since not all taxpayers claiming a travel allowance currently use vehicle tracking organisations, it might be required to update the Income Tax Act, No. 58 of 1962 in order to make it mandatory for those taxpayers, for example Tom, to use one of these vehicle tracking organisations with the logbook service in order to claim a travel allowance. SARS might also have to restrict the list based on the vehicle tracking organisations that are able to provide them with the relevant information in a timely fashion, as prescribed by SARS.

Sections 208 to 220 of the Tax Administration Act, No. 28 of 2011 contain numerous provisions that deal with penalties related to different types of non-compliance and misdemeanours.

It should however be noted that legislation, which enforces the use of such a vehicle tracking organisation would incur an additional cost to Tom for the specific services rendered. It could also possibly provide a monopoly to the few vehicle tracking organisations that adhere to the requirements of SARS and which are therefore added to the list of third-party organisations to be used. This would allow these vehicle tracking organisations to increase their costs significantly without any cause. Further to this, if Tom has to move his current service (before his contract has ended), there would also be a cost involved and the services provided might not compare well to the previous services received.

Therefore, SARS would have to ensure legislation regulate the cost and service levels of the third-party organisations that are on the list. They can also provide a deduction based on the cost of the basic services required or the cost of movement from one vehicle tracking organisation not on the list to another that is on the list, if reasonable.

Conclusion: If these changes are aligned with the strategy, priority list, budget and timeline used by SARS, the process will continue to step 5. If these changes to legislation are unacceptable, an alternative solution should be investigated as part of step 2.

For purposes of applying the feasibility framework, the legislation changes have been found acceptable and thus the process continued to step 5.

Step 5: Reliable/Useable

If Lederman's (2010:1739–1741) six distinctive factors for assessing information reporting requirements (also see 2.4.1) are applied to this case study, the outcome would be as follows:

- *Arm's-length parties:* Tom typically acts at arm's length with his vehicle tracking organisation(s), such as Altech Netstar. Therefore, the risk is low for collusion. Further to this, although there is no tax benefit for these vehicle tracking organisations to submit the information to SARS, there is a risk of penalties to be imposed as well as a business benefit if SARS restricts the organisations based on the third-party organisations that are able to provide them with the relevant information in a timely fashion, as prescribed by SARS.

- *Bookkeeping infrastructure:* The likelihood of the vehicle tracking organisations having a proper bookkeeping system in place is good.
- *Centralisation of data:* The likelihood of centralisation is high, as the vehicle tracking organisations would tend to be fewer in number than the taxpayers who claim a travel allowance and use their services.
- *Complete reporting:* Steps 3 and 4 above would ensure that all the relevant information necessary for SARS to match the taxpayers' information to the corresponding amounts submitted by the third-party organisations is provided on a regular basis, as prescribed by SARS as well as in the correct format.
- *Few alternative arrangements:* Since it would be legislation and the vehicle tracking organisations would be restricted by a known list, it would be very difficult for these third-party organisations to avoid providing the information required by SARS.
- *Contributor to taxation gap:* The suggested solution (as discussed) would identify the possible overstatement made by Tom and other taxpayers like Tom. However, it would not identify any new taxpayers as all taxpayers who submit a travel claim are registered as taxpayers and they submit a yearly or six-monthly tax return. Thus, the contribution to the taxation gap might not be substantial enough to justify the cost of information return.

Conclusion: Based on the above analysis, the vehicle tracking organisations would provide reliable and useable information, but the contribution to the taxation gap might not be substantial enough to justify the cost of information return (for both SARS and Tom). Therefore, it would not be worth continuing to automate the proposed solution.

However, for purposes of this study and for completeness, it was assumed that the amount that the travel allowance overstatements contribute to the taxation gap is substantial and therefore justifies the cost of information return. The process therefore continued to the next step.

Step 6: Frequency required

This information would be required on an annual or on a six-monthly basis when Tom does his tax return as required. However, due to the volume of data and the

possible requirement to run complex algorithms on the data, it might be necessary to submit the data on a daily basis (although a monthly basis would probably be sufficient).

This would also ensure that any problems with the data, algorithms or transfer of data between the vehicle tracking organisation and SARS would be solved in advance.

Conclusion: For purposes of this case study, this was sufficient and the process could continue to step 7 in the feasibility framework.

Step 7: Third-party processing

Since data would be transferred from the vehicle tracking organisations' system to SARS on a daily basis for purposes of performing algorithms, there would be no problem with the processing of third-party data.

Conclusion: For purposes of this case study, this was sufficient and the process could continue to step 8 in the feasibility framework.

Step 8: Third-party technology

Due to the volume of data that has to be transferred from the vehicle tracking organisation to SARS, a new form or upload would not be sufficient. Therefore, it is recommended that the extract from the respective vehicle tracking organisations to SARS be automated. To enable the extract to be automated, it had to be ensured that the vehicle tracking organisations' systems, the SARS systems and the network are able to handle the volume without interruptions or disruptions to any current processes.

Therefore, depending on the systems that are used by the vehicle tracking organisations, they might be required to make some enhancements to ensure the data is received by SARS as prescribed. These changes can range from small updates, such as changing the format of a field when transferring it to SARS, to intermediate changes, such as adding additional fields for capturing to their databases, to significant investments such as software, hardware and network upgrades to enable them to transfer the required information to SARS. As SARS requires the information, it might be able to aid these vehicle tracking organisations in some way with the changes required.

Further to this, these changes would be different for each vehicle tracking organisation and, as mentioned above, it is recommended that the process be automated, for example, no flat files such as Excel files and .csv files that will have to be uploaded manually into the SARS systems. The process should be scheduled and should preferably have direct interfaces with the SARS systems. This is therefore a very intensive step, which requires a detailed analysis of the current systems used by the third-party organisations and the requirements from SARS.

Conclusion: For purposes of this case study, no major investments were required by the third-party organisations and they were willing to make the required changes in order to link their systems to the SARS systems for data transfer. The process therefore continued to the next step in the feasibility framework.

Step 9: Technology used by SARS

The logbook form would have to be created in order to ensure Tom captures his information electronically in the format required by SARS for purposes of a detailed comparison (for example line by line) with data from the vehicle tracking organisation. This would probably also require an update to the database in order for these values to be stored.

Further to this, as mentioned in the previous step, it should be ensured that the SARS systems and the network are able to handle the volume without interruptions or disruptions to any current processes. SARS would also have to ensure that it is able to receive the information that is transferred from the relevant vehicle tracking organisations.

Since high volumes of data and especially new data that probably does not yet have a storage area in the SARS databases, will be transferred, specific thought would have to be given to the information technology and the structure of the data using relevant information technology in order to maximise the future use of this data. New algorithms will also have to be written in order to use this data for purposes of analysis. As the algorithms will be running on huge volumes of data, the correct technology should be selected to ensure optimum performance and to enable the information to be available in a timely fashion.

Once again, this would unfortunately only be known for certain by SARS. The amount of effort to make the required adjustments relating to the changes as

mentioned above has to be estimated and planned to ensure that the SARS systems are ready for the specific filing system where they would like to introduce this change.

Conclusion: Once all these factors have been considered and this intervention is still found to be feasible, SARS can continue to put a plan into place in order to ensure all these steps are implemented within the required timeframe before ensuring that all security and privacy legislation is adhered to in the next step.

Step 10: Security and privacy legislation

As mentioned in the previous case study, certain sections in the Protection of Personal Information Act, No. 4 of 2013 provide SARS with specific exemptions, namely:

- section 12(2)(d)(ii) relating to the collection of data directly from the data subject, for example Tom;
- section 15(3)(c)(ii) relating to further processing to be compatible with the purpose of collection; and
- section 18(4)(c)(ii) relating to the notification of the data subject, for example Tom, when collecting personal information.

SARS therefore does not have to consider any legislation in terms of privacy. However, they do need to consider security legislation, in terms of the Promotion of Access to Information Act, No. 2 of 2000, in order to ensure the information submitted by organisations, such as Altech Netstar, to SARS is kept secure.

Similar to the rental agency in the first case study, the vehicle tracking organisation has to consider both privacy legislation, in terms of the Protection of Personal Information Act, No. 4 of 2013, and security legislation, in terms of the Promotion of Access to Information Act, No. 2 of 2000. For example, based on section 11 of the Protection of Personal Information Act, No. 4 of 2013, Sarah has to give her consent in order to process the information.

Step 11: Implementation plans and change management strategies

Since all the information is now available based on the analysis above, a detailed cost-benefit analysis should be performed by SARS to ensure the benefits derived from the automation of the vehicle tracking data through the use of information

technology are worth the costs involved. SARS should try to remain in the 1% international benchmark for the “cost of revenue collection” ratio which is a standard measure of efficiency adopted by SARS that compares the annual administrative costs with the total revenue collected over the financial year (OECD 2013:52; SARS 2016c:s.p.). Thus, some of the costs might have to be spread across several projects, for example technology investments, as they would not be used for the current case study only.

Once the cost-benefit analysis has been performed and found successful, an implementation plan can be drafted to ensure all the tasks required for the project are performed within the required timeline and budget. This would also ensure that the system changes are implemented with the least number of disruptions and interferences to tax systems, which might affect other tax processes and deadlines.

Further to this, the plan should include any change management strategies, such as communicating to taxpayers the changes and the deadline they have for adapting to these changes (for example, publishing the relevant notices in the Government Gazette).

Conclusion: The project plan would ensure that the project stays on track and within budget. Once the proposed solution has been implemented, the process can continue to the final step.

Step 12: Lessons learned

This step would normally take place in SARS a few months (for example three months) after the implementation. It should not occur too early, because then some of the critical issues might not yet be known (although there might still be some that only shows themselves later on). It should also not occur too late, as all issues would be forgotten by then and the relevant individuals who participated in the project might not be employed anymore to participate.

Conclusion: This is a very critical step in the process as it would identify any steps that can be performed better as well as any steps that might be missing in the feasibility framework. In the current case study, it might have been that not sufficient security was in place and therefore the information was accessed by unauthorised individuals (see 4.6.2). This would undermine the rights of Tom (see 4.5.6).

5.4.3 Results

Once again, overall, the feasibility framework seems to have fulfilled the required purpose of identifying whether it is possible to automate the detection of tax avoidance and/or tax evasion by Tom with regard to his overstatement of business kilometres through the use of third-party data and information technology.

Again, the outcomes achieved through the application of the new feasibility framework could differ significantly from the outcomes reached by someone else with more skills, knowledge and experience.

No shortfalls were identified as part of the second case study. Thus, the developed feasibility framework is displayed below.

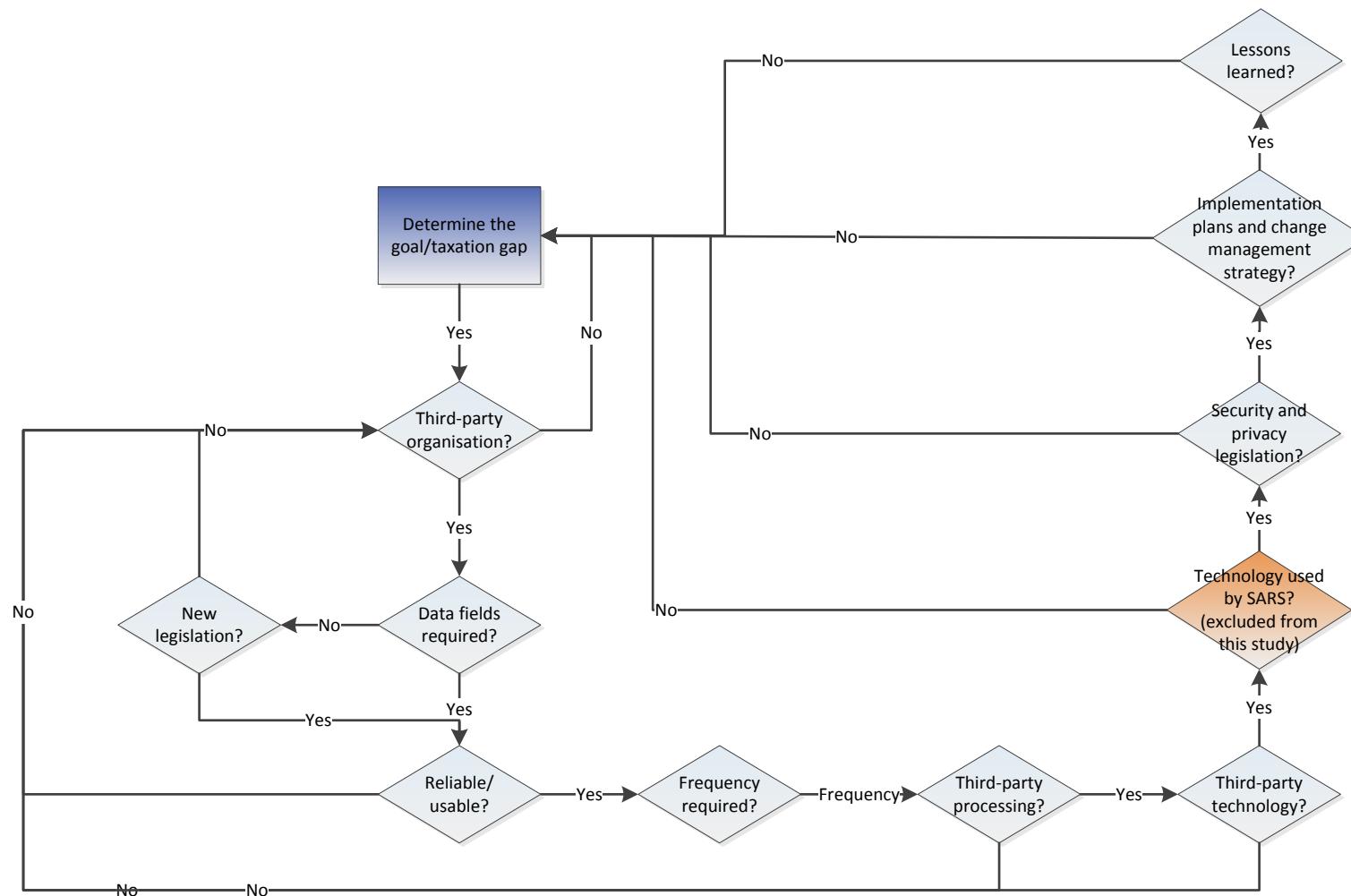


Figure 5.3: Feasibility framework

Source: Author's own compilation

The feasibility framework, however, can still be expanded through lessons learned in future projects as well as future research.

5.5 CONCLUSION

The conceptual framework was the core of this study and ensured that the research stayed on target by:

- providing clear relationships between the literature and the research objectives and questions;
- informing the research design;
- providing reference points to discuss the literature, methodology and analysis of data; and
- contributing to the credibility of the study (Goetz & LeCompte 1984:235–236; Smyth 2004:169).

In order to identify a critical case, that is, a case that has a strategic importance in relation to the general problem, it is a good idea to look for either the most likely or least likely cases. This will be the cases that are likely to either confirm clearly or who falsify propositions and hypotheses irrefutably (Flyvbjerg 2006:229–231). Since the feasibility framework was based on the characteristics of ‘big data’, the two case studies that had been selected were based on the fact that one would use periodic data, namely income from renting a home or from continuous data, such as travel, which happens on a daily basis. Information-oriented selection was therefore used to select the specific two case studies (Flyvbjerg 2006:230).

The successful case studies demonstrated the potential of the feasibility framework to appeal to SARS as a methodological process. This methodological process ensures a structured approach is used to automate the use of third-party data in South Africa. This would involve using information technology to validate taxpayers’ information submitted to SARS and to identify potential non-compliance, tax evasion and tax avoidance.

The outcomes achieved through the application of these case studies based on the new feasibility framework could differ significantly from the outcomes reached in this study, if made by experts at SARS. A few of the reasons for these differences could be:

- The resources available at SARS, such as the information technology and funds for purposes of implementation would be known.
- The priority and financial effect of automating the detection of a taxation gap for a specific tax area would be better known and understood by the experts at SARS who specialise in that specific area as they have much more experience and knowledge.

Therefore, in real life, the decisions will be much more complex and accurate as they will be based on additional information available. This however does not change the fact that the new feasibility framework could still be used by SARS, as well as other revenue collection organisations, for the purposes of identifying whether it is feasible to automate the detection of a taxation gap by using third-party data and information technology.

The new feasibility framework therefore still meets the objectives of this study but the following cautionary remarks should be taken into account when using and applying a conceptual framework (Smyth 2004:169), namely:

- The conceptual framework was developed based on knowledge and experiences of the researcher. Thus, it should not be given a power it does not have (Smyth 2004:169) as the outcome might differ if made by experts at SARS that specialise in the specific area of tax and who have the necessary experience and knowledge.
- The feasibility framework helps to inform thought and practice consciously or unconsciously. This is done by increasing personal sensitivity in order to notice specific occurrences that must be taken into account (Mason & Waywood 1996, in Smyth 2004:169).
- No researcher can expect all data to be analysed using a framework, for example the feasibility framework, without the possibility of restricting the results from the investigation (Miles & Huberman 1994:10–11, 16; Smyth 2004:169).

The next chapter presents a summary of the findings, any problems relating to this study as well as the conclusions of this study. Based on the findings, the implications for existing theories will be discussed and various recommendations for

implementation will be set out. Further to this, a summary of contributions will be provided and possible areas for future research will be identified.

CHAPTER 6

SUMMARY AND CONCLUSION

6.1 SUMMARY OF FINDINGS

A taxation gap exists in South Africa as a result of the non-compliance, tax evasion and tax avoidance by taxpayers. This taxation gap can be described as the difference between what the government should have received (had taxpayers registered for tax and/or did they not overstate their deductions or understate their income) and the amount government actually received during a specific tax year, which results in less income for government due to taxpayers paying less in taxes (Gcabo & Robinson 2007:358).

As part of the present study, a framework was developed to determine whether it would be feasible to reduce the taxation gap by using third-party data as well as information technology. The Governance, Risk and Compliance Framework (see 2.2) was used to acquire a contextual understanding of the areas that should be reviewed in order to ensure that the new feasibility framework developed as part of the present study adheres to all aspects that would make it a suitable and acceptable framework within SARS.

This new feasibility framework could be used to enhance the Compliance Risk Management Process as described by the OECD (2004:9), and was based on the main characteristics of 'big data'.

From a strategic approach, the new feasibility framework was tested using two case studies, and fulfilled the purpose it was designed for, namely to determine whether it is feasible to continue with a project to use third-party data and information technology to automate the detection and prevention of taxation gaps before spending too many resources without any significant effect on diminishing the taxation gap. There is, however, a problem relating to the application of the two case studies in terms of the new feasibility framework, which will be discussed below.

6.2 DISCUSSION OF PROBLEMS

The two case studies selected for testing the new feasibility framework was primarily chosen based on the volume and frequency of data, as well as whether third-party data was freely available for the selected cases.

Therefore:

- The first case study focussed on rental income as there are third-party entities, such as rental agencies, that capture information relating to rental income. However, the tenant can also be viewed as a third party for verification purposes. The data volumes were also limited as it contained periodic values.
- The second case study focussed on travel as there are multiple third-party companies, such as Tracker and NetStar, which capture information relating to travel. Travel also occurs on a daily basis and is used by multiple taxpayers and therefore the volume of data was assumed relatively high.

Unfortunately, the outcomes achieved through the application of these case studies based on the new feasibility framework would have differed significantly from the outcome reached in this study, had it been made by experts at SARS. A few of the reasons for these differences were as follows:

- In real life, the resources available at SARS, such as information technology and funds for purposes of implementation, would have been known. These were unknown at the time of this research.
- In real life, the priority and financial effect of automating the detection of a taxation gap for a specific tax area would have been known and understood better by the experts at SARS who specialise in that specific area as they have much more experience and knowledge to pull from.

Therefore, in reality, the decisions would be much more complex and accurate when additional information is available. This however does not change the fact that the new feasibility framework could still be used by SARS, as well as other revenue collection organisations, for the purposes of identifying whether it is feasible to automate the detection of a financial gap by using third-party data and information technology.

The new feasibility framework therefore still met the objectives as indicated in the next section.

6.3 CONCLUSION

The primary objective of this study was to develop a generic framework that would aid SARS to determine whether it was feasible to incorporate and use third-party

data in conjunction with information technology to validate taxpayers' information as submitted to SARS in order to identify potential non-compliance, tax evasion and tax avoidance. This objective was met through the development of the new feasibility framework reflected in Figure 6.1 below.

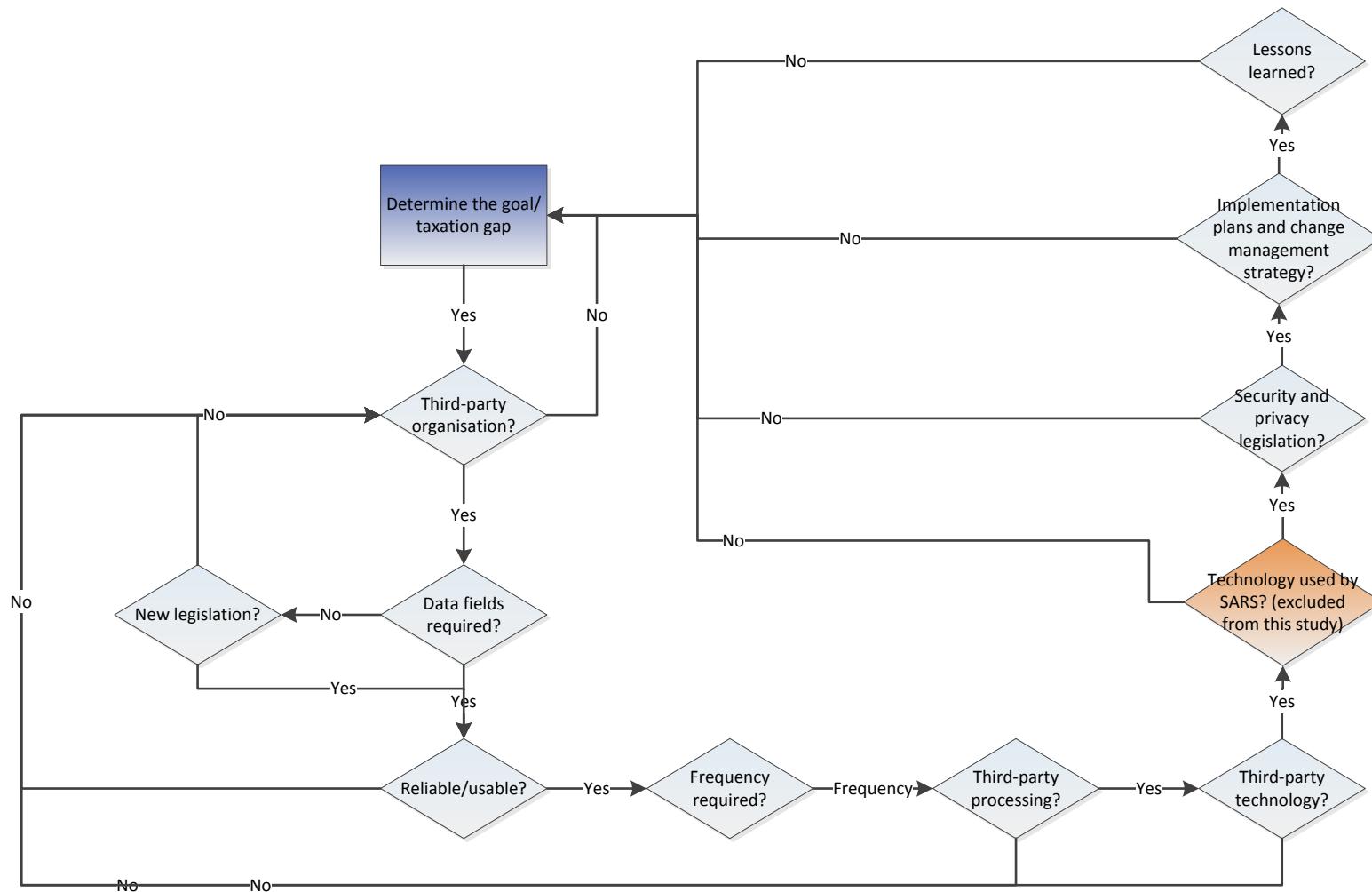


Figure 6.1: New feasibility framework

Source: Author's own compilation

This new feasibility framework identifies the steps and information that are required in order to automate the use of third-party data in South Africa successfully using information technology to validate the taxpayers' information that was submitted to SARS and to identify potential non-compliance, tax evasion and tax avoidance.

The new feasibility framework therefore helps to determine whether third-party data is available, and whether any changes are required both by SARS (for example, forms and technology) as well as by the third parties (for example, capturing additional data or capturing data in a different format) before implementation. If there are no third-party data available or the cost of the changes required is too high, the new feasibility framework would highlight this before the actual project is started so that alternatives can be considered. The new feasibility framework would also ensure that major aspects relating to large volumes of data be considered (beforehand) and prevent some of these aspects to be overlooked. This will ensure the process of project management is eased and multiple steps can continue in parallel as all relevant pre-requisites would be identified before the project is started and mitigations put in place.

In addition to meeting the primary objective, the additional objectives were also met. Firstly, the components that will enable the generic feasibility framework to be successful in assisting SARS in the prevention of non-compliance and tax evasion were identified. The components as identified and discussed were based on the frame of reference for integrated governance, risk and compliance (Racz, Weippl et al. 2010:113) (referred to as the Governance, Risk and Compliance Framework) and are listed below:

- the operations of SARS;
- the three legs, namely governance, risk and compliance;
- strategy;
- processes;
- people; and
- technology.

Secondly, the existing Compliance Risk Management Process (OECD 2004:9) was evaluated (see 6.4) in order to identify how it would be affected by the new feasibility framework.

Thirdly, the six distinct factors as a framework for evaluating information reporting requirements from third parties (Lederman 2010:1733) in order to ensure the third-party data, which SARS receives, is of value, was identified and incorporated into the feasibility framework as illustrated in the case studies:

- arm's-length third parties;
- infrastructure for bookkeeping;
- centralisation of data;
- complete reporting;
- limited alternative arrangements; and
- tax gap contributor (Lederman 2010:1739–1741).

Fourthly, the main characteristics of 'big data' as listed below were identified and applied to SARS in order to build the new feasibility framework:

- volume;
- velocity;
- variety;
- variability;
- complexity; and
- virtue (CIMA 2014b:1; IBM & Said Business School 2012:4–5; Lahiri & Biswas 2015:80; Moorthy et al. 2015:75–76).

Although the use of information technology was taken into account when developing the new feasibility framework, it was only taken into account from a strategic point of view based on the characteristics of 'big data'. Unfortunately, no research was done on the actual information technology that is available for purposes of storing and managing large volumes of data.

Lastly, the way third-party data can be used by SARS, as well as any enhancements or additional information that are required to use the information optimally by linking it to the relevant taxpayers' information was identified and demonstrated with reference to two case studies that were applied to the feasibility framework. Both case studies tested successfully on the new feasibility framework and identified multiple alternatives for enhancements and additional information that might be required in order to link taxpayers' information optimally with third-party data.

6.4 IMPLICATIONS FOR EXISTING THEORY

As mentioned earlier in the study (see 2.3), this new feasibility framework can be used to enhance the existing Compliance Risk Management Process depicted in Figure 6.2 below:

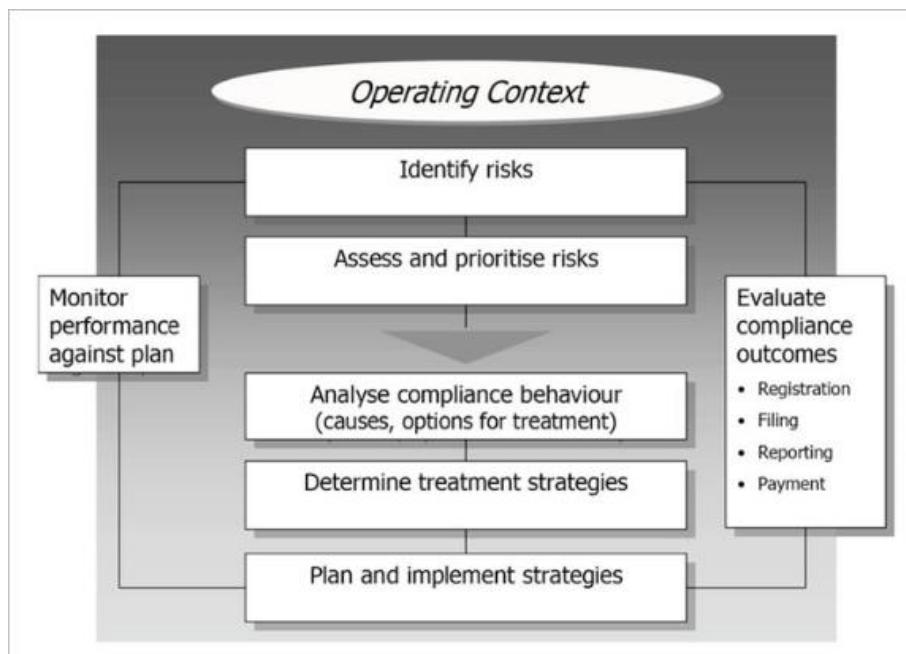


Figure 6.2: The Compliance Risk Management Process

Source: OECD (2004:9)

The new feasibility framework will mostly be used to expand on step 4, namely “Determine the treatment strategies”, although it would also affect step 3, namely “Analyse compliance behaviour (causes and options for treatment)” in order to ensure the treatment strategy selected is a viable solution based on available third-party data and information technology.

Therefore, once the causes and drivers have been identified and are properly understood then the new feasibility framework can be used to determine the possible options for using third-party data in conjunction with information technology to identify these potential risks which take the form of non-compliance, tax evasion and tax avoidance.

6.5 RECOMMENDATIONS FOR IMPLEMENTATION

It is recommended that SARS implement this new feasibility framework as a pre-check in order to determine whether:

- there are third-party data available for a specific type of transaction that would result in the reduction of the taxation gap;
- the third-party data is reliable and usable. If not, which changes are required from the third party in order to ensure that the third-party data can be linked to specific taxpayers (for example, capturing additional data or changing the format of existing data that has been captured in order to ease the extraction process);
- any tax acts or legal aspects should be enhanced to ensure all relevant taxpayers' information is available from a specific third party; and
- both organisations (SARS and the third party) have the relevant information technology to ensure SARS can extract, store and manipulate the data in a timely fashion in order to obtain the maximum effect.

The feasibility framework would also assist to determine whether it is feasible to continue with such an automation project before exhausting too many resources without any significant effect on decreasing the taxation gap.

6.6 SUMMARY OF CONTRIBUTIONS

The objective of SARS, as stated in section 3 of the South African Revenue Service Act, No. 34 of 1997, is the effective and efficient collection of revenue. Non-compliance, tax evasion and tax avoidance by taxpayers prevent SARS from fully achieving their objective. Therefore, in order to assist SARS with the effective and efficient collection of revenue by trying to automate the detection of any non-compliance, tax evasion and tax avoidance by taxpayers, the present study developed a new feasibility framework to determine whether it would be feasible to reduce the taxation gap by using third-party data as well as information technology.

Not only will the new feasibility framework assist in the automatic detection of any non-compliance, tax evasion and tax avoidance by taxpayers, but it will also encourage compliance from taxpayers. Taxpayers are increasingly becoming aware of being caught, and they are therefore more compliant as a result of the application of risk management and enforcement by SARS (Allingham & Sandmo 1972:323–338; Carolissen 2010:13; Manolas et al. 2013:29; Slemrod 2007:35–36; Venter 2011:41). Various studies concluded that tax evasion is negatively correlated with the possibility of being caught and the punishment associated with the offence

(Allingham & Sandmo 1972:323–338; Manolas et al. 2013:29; Slemrod 2007:35–36). Credible, legitimate and strict enforcement of the appropriate sanctions will discourage tax evasion and therefore result in tax compliance (Carolissen 2010:13). Venter (2011:41) also proved this in a study and states that individuals are less likely to evade tax if:

- the likelihood of detection increases;
- harsher penalties are imposed; and
- more sufficient tax administration is administered.

6.7 SUGGESTIONS FOR FUTURE RESEARCH

Many new questions spawned from this study and could be researched further. The best six have are included below as suggestions for future research:

- ‘Big data’ is still an evolving concept and its defining characteristics are growing on a daily basis. In the present study, only the main characteristics have been used to define the new feasibility framework and, therefore, additional characteristics could be investigated in future studies in order to broaden the new feasibility framework.
- ‘Big data’ relates to large volumes of data from different sources which require the relevant information technology to store and manage this data in a timely fashion in order to transform it into information and knowledge. The present study did not include any research on the technologies that are available for purposes of storing and managing this data. This could be addressed in future studies.
- ‘Big data’ can be an expensive concept, as it requires space to store the large volumes of data and technology that is powerful enough to extract and manipulate the information when required. Although technology is becoming cheaper as it evolves, one should still have an understanding of the total cost involved in storing and managing this information, especially in the current economic conditions in South Africa as this might make it more difficult to fund such projects. Therefore, these costs could be explored in detail as part of a future study.

- The present study only investigated the strategic approach to using third-party data and information technology to prevent the taxation gaps caused by non-compliance, tax evasion and tax avoidance. In a future study, it might be interesting to use a practical approach with the collaboration of SARS in order to see the effect that such a development could have on the reduction of the taxation gap using the newly developed feasibility framework.
- As per section 26 of the Tax Administration Act, No. 28 of 2011, the Commissioner of SARS may request any third party by means of a public notice to submit information by a specified date (as indicated in the notice) in the prescribed form and manner to SARS. This gives SARS the right to request information from any organisation at any time without the prior consent of the taxpayer. Thus, future studies could establish how this affects:
 - the taxpayers' right to privacy with regard to this section;
 - compliance by SARS with the new Protection of Personal Information Act, No. 4 of 2013 (for example, section 11 of the Protection of Personal Information Act, No. 4 of 2013 requires consent); and
 - the security procedures followed by SARS with regard to the storing of taxpayers' data.
- The present study only investigated the feasibility framework based on personal income tax. A similar study could be performed on other taxes, such as VAT and corporate income tax.
- The present study did not consider the economic impact of implementation of the proposed framework on the third-parties, thus, this could be explored in detail in a future study.
- The present study only focussed on revenue collection by SARS and the use of local data. In a future study, the framework can be applied to other revenue collection organisations as well as automatic exchanges of information between international organisations in order to establish the usability of the framework and possibly broaden the framework.

6.8 CONCLUSION

As part of this study, a new feasibility framework was developed in order to assist SARS with the reduction of the taxation gap by using third-party data and information technology. The purpose of the new feasibility framework was to identify whether there is third-party data available and whether any changes are required to the data in order to provide SARS with a mechanism to link it to specific taxpayers. This will then provide SARS with guidance in terms of the steps required in order to automate the process of collecting third-party data by using information technology. The feasibility framework will also indicate whether it is feasible to continue with such an automation project before consuming too many resources without any significant effect to reduce the taxation gap.

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