




Factors informing tax compliance: A meta-analytical study



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Background: Taxpayer compliance significantly impacts a nation's ability to generate revenue for socioeconomic development. A need exists for a comprehensive analysis of emergent factors influencing compliance behaviour, as current research on tax noncompliance is limited.

Aim: This study seeks to determine the primary factors influencing taxpayer compliance behaviour through a critical examination of existing primary empirical studies.

Setting: The analysis draws from 45 primary international studies conducted between 2015 and 2020.

Method: Employing a quantitative approach, the study utilises a meta-analysis, guided by the PRISMA method, to systematically assess relationships within relevant literature related to tax noncompliance.

Results: Findings emphasise the importance of robust tax administration systems and public trust in governmental institutions as key drivers of taxpayer compliance. Conversely, weak government accountability contributes to tax noncompliance behaviours.

Conclusion: The study concludes that fostering both effective tax administration and public trust in the country's governance is critical in promoting voluntary tax compliance.

Contribution: This research provides policymakers with evidence-based insights to enhance tax compliance, bolster revenue generation and support national development initiatives.

Keywords: tax compliance factors; meta-analysis; tax gap; theory of planned behaviour; taxpayer behaviour.

Introduction

Noncompliant taxpayer behaviour remains a phenomenon that concerns many governments around the world (Horodnic 2018:1; Newman & Nokhu 2018:1; Raczkowski 2015:59) and is generally considered one of the main contributors to the shortfalls in government revenues (Durán-Cabré et al. 2019:220; Murphy 2019:5). Moreover, despite the introduction of tax reforms such as taxing capital gains on the sale or disposal of assets and the introduction of taxes on the transfer of wealth by governments globally and especially in emerging market economies, tax revenues remain insufficient to satisfy socioeconomic demands (Murphy 2019:3–6). Consequently, the Organisation for Economic Co-operation and Development (OECD 2013) and the Group of 20 Countries (G20) emphasised that the effective collection of taxes in all countries, but with greater emphasis on emerging market economies, is necessary to meet socioeconomic demands by addressing national priorities (Marandu, Mbekomize & Ifezue 2015:207). A study by Marandu et al. (2015:207–218) provides a modern meta-analytical approach to synthesising tax compliance studies. However, the study was limited in that it explored the determinants of tax compliance from a social marketing perspective. The study is also outdated, having focussed on the period between 1985 and 2012.

This current study, however, analysed the factors influencing taxpayer compliance with tax laws and obligations that influenced entrenched tax gaps. The study identified four applied contributions that, if implemented by tax authorities, will influence taxpayer compliance positively, thereby contributing to reducing the entrenched tax gaps. The four contributions relate to: (1) improving the quality of tax administration systems; (2) reforms to improve public morale; (3) strategies to increase public trust in the government and (4) tax policy reforms, and are discussed as following recommendations. Thus the study contributes to the existing body of knowledge on taxation by identifying the factors and providing recommendations to tax authorities, which when implemented will contribute to reducing the existing tax gaps.

Note: Additional supporting information may be found in the online version of this article as Online Appendix 1.

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This article aims to interrogate primary studies undertaken on taxpayer behaviour to identify and analyse reasons for noncompliant behaviour. Thus, the article integrates the results of sociodemographic studies conducted on tax noncompliance with other categories of empirical studies related to tax noncompliance, following the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) model. This article contributes to emerging literature by:

- Identifying significant factors influencing taxpayer compliant behaviour, the results of which may assist tax authorities in developing tax policies that will improve tax compliance.
- Identifying the variations within these factors to further assist tax authorities in developing tax policy targeted at taxpayer compliance.

Literature review

Multiple studies have been conducted, internationally, into the behavioural aspects of taxpayers relative to compliance with tax prescripts and tax obligations, focussing mainly on the resulting tax gap. The tax gap represents the difference between the taxes that taxpayers are legally obliged to pay and the amounts that they actually pay (Alm & Soled 2017:522). The tax gap for direct taxes, for instance, has been researched extensively worldwide by different researchers adopting varied theoretical lenses and methodologies (Le et al. 2020:209). Studies found that noncompliant taxpayer behaviour includes, *inter alia*, tax evasion, which is illegal (Gangl & Torgler 2020:108; Hofmann et al. 2017:1).

In addition, three fundamental problems arose from the interpretation of the results of global empirical studies. Firstly, the results of empirical studies tend to be inconsistent and indicate that tax compliance varies across sociodemographic categories (Hofmann et al. 2017:1; Le et al. 2020:210; Musimenta et al. 2019:15). Secondly, the sources of tax noncompliance behaviour are varied and there are still variables that remain unknown (Alm & Soled 2017:564). Thirdly, the majority of the studies conducted examine new variables without considering the relevance and influence of those variables considered in previously reported empirical findings, thus resulting in the emergence of disjointed and partitioned information (Khlif & Achek 2015:95). Hofmann et al. (2017:2) argue that to develop a clearer understanding of taxpayer behaviour, it is essential to integrate sociodemographic research with other research on tax compliance, such as the attitudinal aspects of compliance behaviour, as the complexities of sociodemographic interactions with the attitudinal aspects of compliance behaviour remain largely unknown.

Ideally, taxpayers should voluntarily comply with taxation prescripts and not avoid their tax obligations (Yucedogru & Hasseldine 2016:533). However, in reality, taxpayer noncompliance is a phenomenon impacting all countries globally (Horodnic 2018:1; Newman & Nokhu 2018:1; Raczkowski 2015:59). Globally, numerous primary studies

have been conducted that confirm the causal relationship between taxpayer noncompliant behaviour and the entrenchment of the tax gap. Consequently, because of taxpayer noncompliance, countries that derive their income mainly from tax revenues are unable to drive national priorities and provide the necessary public goods and services (Marandu et al. 2015:207).

Although substantial empirical studies have been conducted into taxpayer compliance, the results of these empirical studies indicate that factors impacting taxpayer compliance vary across sociodemographic categories and tend to be inconsistent (Hofmann et al. 2017:63; Le et al. 2020:210; Musimenta et al. 2019:15). Alm and Soled (2017:564) also suggested that despite these studies, there remain factors impacting taxpayer compliance that remain unknown. Khlif and Achek (2015:95) further highlight a methodological limitation in taxpayer compliance research; many studies adopt an exploratory approach, investigating novel factors in isolation from previously established empirical findings. This siloed approach, where each study operates independently, could lead to the accumulation of disjointed and potentially meaningless information. However, by incorporating insights from existing research and comparing them with newly identified factors, researchers could potentially uncover significantly different and valuable results concerning taxpayer compliance. Hofmann et al. (2017:63), however, acknowledged that the complexities of sociodemographic interactions are broad and that their interactions are largely unknown, thus emphasising the need to collate the results of all previous empirical studies. The acknowledgement by Hofmann et al. (2017:63) supports the notion that it is essential to integrate sociodemographic research with other research on tax compliance to develop a clearer understanding of these sociodemographic factors and their influence on taxpayer compliance behaviour, emphasising the need for conducting this study.

Theoretical framework

This study is located within the framework of the theory of planned behaviour (TPB). Marandu et al. (2015:207–218) successfully employed the TPB in their study that focussed on interpreting the results of several previous empirical studies on taxpayer compliance, by employing meta-analysis as the analytical approach. Authors (Hamid 2014:53; Saad 2010:32; Smart 2012:80; Taing & Chang 2021:63) argued that the TPB is an appropriate theory to explore taxpayer behaviour. According to TPB, taxpayers' behaviour towards taxation compliance is influenced by their: (1) attitude, (2) subjective norms and/or (3) perceived behaviour control (Ajzen 2011:1115). Taing and Chang (2021:63) cited studies such as those by Bobek, Hatfield and Wentzel (2007) and Ramayah et al. (2009), which found that the three dimensions of TPB have a positive influence on taxpayer compliance. Smart (2012:80) argued further that TPB may be used by researchers and tax authorities to predict and consider taxpayers' behaviour to develop appropriate taxation policies.

Taing and Chang (2021:63) explained TPB as an evolution of the earlier theory of reasoned action. According to the Theory of Reasoned Action, people are more likely to adopt a specific behaviour if they believe that the behaviour will have a generally positive outcome for the benefit of the individuals (attitude), and if they believe that their peers would also want them to adopt that specific behaviour (subjective norm). To improve the predictive nature of people's behaviour, Ajzen (1985) postulated that considering perceived behavioural control, which is the impact of social and personal factors on a person's behaviour, is necessary (Marandu et al. 2015:213; Ravis & Sheeran 2003:218). Thus, Ajzen (2011:1115) argued that taxpayers' attitudes towards taxation compliance, the influence of subjective norms on compliance behaviour and taxpayers' perceived behavioural control regarding nonvolition factors (impact of social and personal factors beyond the taxpayers' control) contributed, collectively, towards taxpayer compliance.

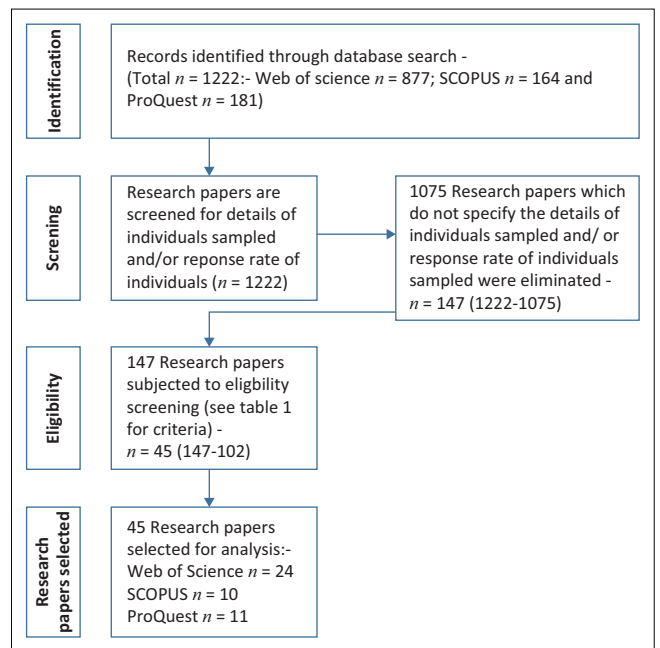
Methodology

The study undertook a meta-analysis of selected primary studies conducted between 2015 and 2020. Meta-analysis does not rely on the results of a single study to draw inferences and conclusions but requires a thorough search, review and analysis of existing data to answer specific research questions, thereby improving the validity of the conclusions reached (Rosenthal & DiMatteo 2002:61). The research methodology of this study followed PRISMA, a research protocol utilised to select primary studies systematically, identify eligible studies, code the primary studies chosen for analysis and categorise the data for analytical review. PRISMA focusses on ensuring that systematic reviews are conducted transparently and completely (Liberati et al. 2009:66). A meta-analysis (MA) was conducted of 45 primary studies. The MA was followed by a systematic analysis of these studies (see Figure 1). To arrive at the final 45 primary studies selected for analysis, initially 1222 articles, relating to tax compliance studies, were identified, from database searches conducted on the: (1) Web of Science; (2) SCOPUS and (3) PROQUEST. The search was limited to studies that were released between 2015 and 2020, being the latest available data at the time of conducting this study.

Studies selected

The initial search of the three journal databases resulted in the identification of 1222 studies relating to taxpayer compliance. Figure 1 describes the PRISMA approach for the identification of research papers for further analysis in this study.

Each of the 1222 eligible research papers was reviewed and subjected to further eligibility considerations that included the details of the number of individuals who were sampled in the primary studies and details on the response rate of sampled individuals. The adoption of the eligibility criteria resulted in the identification of 147 research papers. These 147 research papers were then subjected to a third and final round of



Source: Adapted from Olugbara, C.T., Letseka, M., Ogunsakin, R.E. & Olugbara, O.O., 2021, 'Meta-analysis of factors influencing student acceptance of massive open online courses for open distance learning', *The African Journal of Information Systems* 13(3), Article 5, viewed 08 August 2021, from <https://digitalcommons.kennesaw.edu/ajis/vol13/iss3/5>

FIGURE 1: Application of PRISMA protocol to select studies.

TABLE 1: Eligibility criteria: Round 3 (final round).

Element number	Eligibility criteria, applied to select primary studies
1	Author(s) of the primary study
2	Theoretical approach adopted in the study
3	The year that study was published
4	The statistical method adopted in the primary study
5	The sample size of taxpayers selected
6	Country where the study was conducted
7	The sample size of taxpayers selected or population size
8	Independent variable
9	Underlying determinant of the tax system affecting independent variable
10	Positive association with tax compliance
11	Negative association with tax compliance
12	No association with tax compliance

eligibility determination to ascertain whether each of the papers contained the 12 elements of data included in Table 1.

The third round of eligibility determination resulted in the exclusion of 102 papers from any further consideration. Thus, the resulting 45 eligible primary studies (Online Appendix 1 [Table 1-OA1]) formed the data set for the MA and systematic analysis processes of this study.

Data analysis and coding

The purpose of this study necessitated identifying and analysing factors entrenching tax gaps.

Thirteen categories of data (Table 2) from each of the 45 primary studies were identified using the aforementioned eligibility criteria. The PRISMA model adopted required the summarisation of the collected data into a logical format. This format facilitated the analysis of factors contributing to

taxpayer compliance and the entrenching of the tax gap. The approach followed in analysing the data included: (1) the basis for identifying individual factors in each study that influenced taxpayer behaviour positively, negatively or those that had no impact and (2) the overall subgroup of factors that influenced the taxpayer compliance identified in (1). Thirteen categories of data from each of the primary studies were identified. The data were summarised using Microsoft Excel. The data categories arising from the analysis are summarised in Table 2.

Effect sizes and publication bias

To facilitate this study's purpose and to answer the research questions, an MA was initially conducted to ascertain statistical results on effect sizes and publication bias. The results are discussed in the following sections.

Effect sizes

Random-effects MA was carried out using the 45 primary studies selected and the response rate (effect size, standard error of effect size) to estimate the factors influencing tax compliance. Between-study variability was high ($\tau^2 = 0.04$; heterogeneity $I^2 = 99.3\%$, with heterogeneity chi-square = 6670.90, a degree of freedom = 44 and $P \leq 0.001$; see Table 3). These findings generally imply that the proportion of total variance among pooled studies can be attributed to the heterogeneity of true effect sizes. A random-effects model assumes a different underlying effect size for each included study (Ioannidis 2008:951). Effect size, standard error, confidence interval (CI) and weight of effect size were calculated for each study. The standard error of effect size reflects the amount of statistical information available in a study. The amount that each study has contributed is indicated by the percentage weight. The effect size estimate of each study is represented in the forest plot as a square box. A forest plot (Figure 2) is a traditional device used to visualise how the estimate of the effect size of each study is distributed around zero or pooled effect estimate. The area of each box represents the weight of each study contributing to the pooled estimate, while the centre of the diamond equals the pooled effect estimate. The ends of the diamond indicate the limits of a 95% CI. The global estimate is the diamond whose width is the associated 95% CI. Figure 2 presents the forest plot derived from the MA. The overall random pooled estimate was obtained as 35% (95% CI: 30% – 41%). Studies were weighted approximately equally with weights on individual studies ranging from 0.08% to 0.90%.

The results of the random-effects MA suggest that a large portion of the variation in the effect sizes observed across studies cannot be explained by chance alone. This implies that there are probable, true underlying differences in the impact of tax compliance factors, depending on the specific context of each study. This analysis, together with the observations identified in the forest plot, suggests that various factors influence tax compliance with an average effect of 35%.

TABLE 2: Categories of data.

Category number	Details required	Explanation
1	Author	Author(s) of the primary study
2	Theory of model	Theoretical approach adopted in the study
3	Year of publication	The year that study was published
4	Statistical method	The statistical method adopted in the primary study
5	Sample size	The sample size of taxpayers selected
6	Country	Country where the study was conducted
7	Response rate	Sample size of taxpayers who responded or population size
8	Factor	Independent variable
9	Subgroup	Determinant in tax system affecting independent variable
10	Theoretical category associated with factor	Theory of planned behaviour category with which factors were associated
11	Positive association with tax compliance	Association with tax compliance that factor has on taxpayer behaviour
12	Negative association with tax compliance	Association with tax compliance that factor has on taxpayer behaviour
13	No association with tax compliance	Association with tax compliance that factor has on taxpayer behaviour

TABLE 3: Subgroup analysis for comparison of tax compliance category.

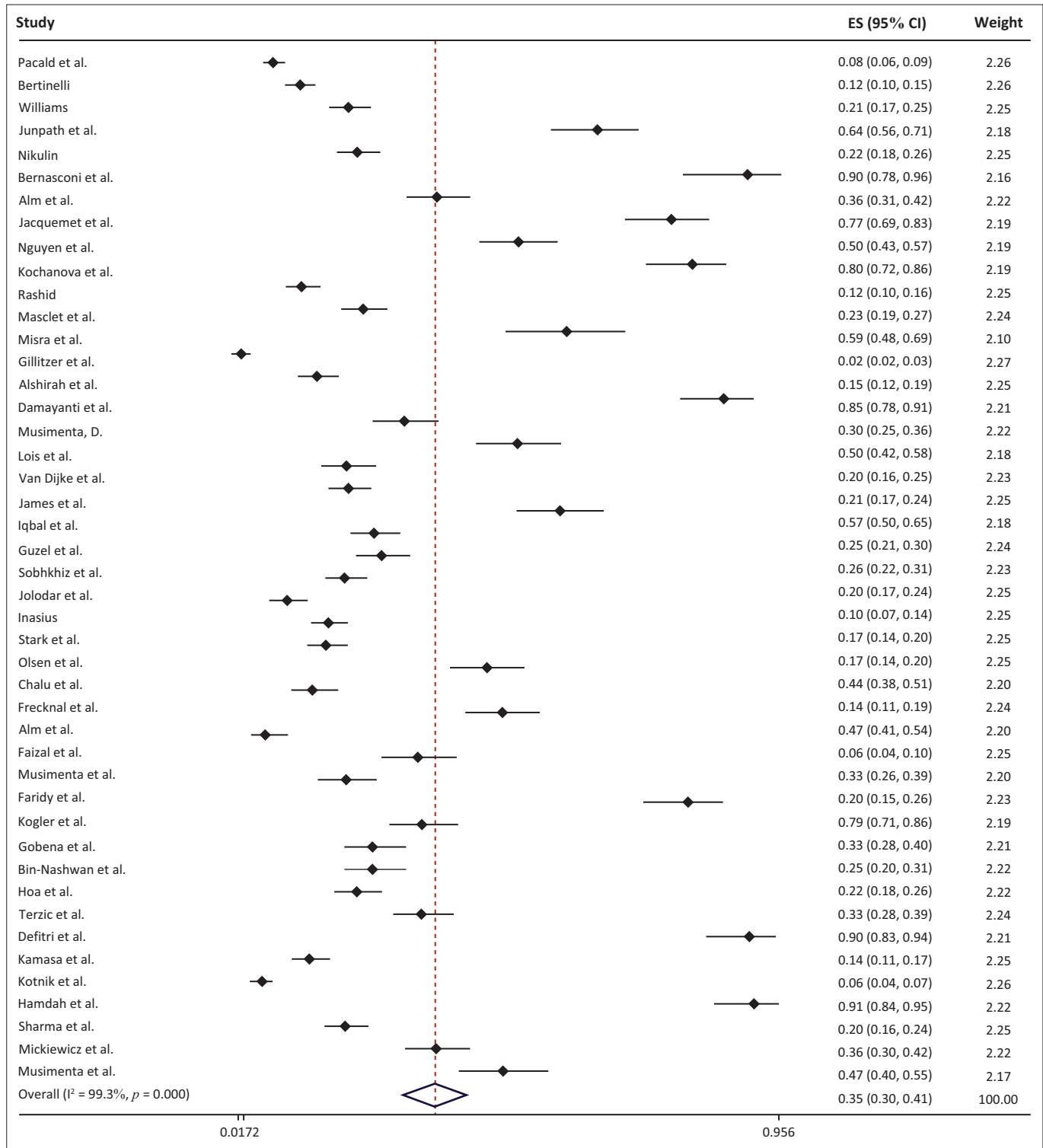
Category	Number of studies	I^2 (%)	Q	Heterogeneity test	
				df	p
Tax administration	19	99.55	4030.73	18	< 0.001
Behaviour	8	99.17	843.37	7	< 0.001
Institutional governance	6	97.86	233.80	5	< 0.001
Tax policy	6	96.85	158.56	5	< 0.001
Compliance costs	2	-	-	1	-
Tax morale	1	-	-	0	-
Business characteristics	1	-	-	0	-
Fiscal administration	1	-	-	0	-
Economy	1	-	-	0	-
Overall	45	99.31	6670.90	44	< 0.001

I^2 , study variability; Q , Chi square; df , degrees of freedom.

However, the high variability highlights that the specific impact of these factors on tax compliance may differ significantly depending on the context of each study and indicates that subgroup analysis of the individual factors influencing tax compliance should be performed to understand the factors in greater detail. Consequently, a comprehensive systematic analysis was also undertaken of the 45 primary studies identified.

Publication bias

In MA, the studies selected to be included in the analyses are vital to the inferential conclusion (Walker, Hernandez & Kattan 2008:433). Publication bias could arise when only positive studies (that is, those that demonstrate statistical significance or if not statistically significant do not reflect qualitative interaction) of a study are published. Publication bias was used to assess the degree to which bias influences the study outcome to determine the validity of core findings (Borenstein et al. 2010:107). The funnel plot (Figure 3) is a standard visual method for identifying publication bias. It is a scatterplot of standard errors of log odd ratio against the study effects size (ES) computed by log odd ratio. The central idea is that studies should be symmetrically spread to the left and right of a vertical line marking the pooled ES if no relevant findings are missing.



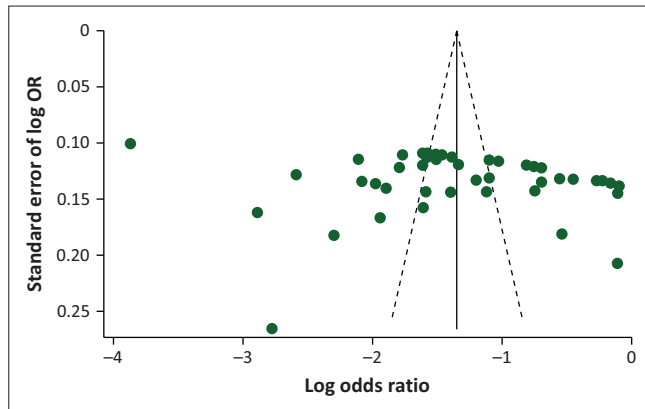
Note: The publications presented are from 2015-2020. The detailed date of each publication is included in the Online Appendix 1 of the article, Reddy, D., Moodley, A. & Olugbara, O., 2024, 'Factors informing tax compliance: A meta-analytical study', *South African Journal of Economic and Management Sciences* 27(1), a5738. <https://doi.org/10.4102/sajems.v27i1.5738>.
ES, effect size.

FIGURE 2: Forest plot.

The vertical and diagonal dashed lines represent pooled effect mean estimate and 95% CI, respectively, and each point in the plot represents a separate study. The vertical axis represents the standard error, the horizontal axis represents the logit transformed of estimates and the asymmetric of the plot signifies the presence of publication bias (Van Aert, Whicherts & Van Assen 2019:2).

Figure 3 shows the funnel plot, which has revealed an asymmetrical distribution. The result of effect estimates against its standard error showed that there was a publication bias (see Figure 3).

The earlier analysis suggests that several factors influence tax compliance, with an average effect of 35%. However, the true



OR, odds ratio.

FIGURE 3: Funnel plot that assesses publication bias.

effect of each factor cannot be assessed as publication bias might be present. This means studies with strong results (showing a clear influence of factors on tax compliance) might be more likely to get published, while studies with weaker or nonexistent effects might be missing from the analysis. To address the concern relating to potential publication bias, studies were divided into subgroups, and a systematic analysis was undertaken to analyse and understand the source of the variation in the study results.

Subgroup analysis

Sources of variations of factors influencing taxpayer compliance were then explored systematically to identify the main factor in each study that influenced taxpayer behaviour: (1) positively, (2) negatively or (3) where factors were found to have had no significant impact. The TPB was employed to contextualise the sources of variations that emerged from the factors influencing taxpayers' behaviour. These findings are presented in the following section.

Findings

Several findings emerged from the MA and systematic analysis conducted. The findings of this study are presented as follows: (1) the main factors that influence taxpayer compliance, (2) the sources of variations among studies and (3) the extent to which emerging factors contribute to the tax gap.

Main factors influencing taxpayer compliance

Subgroup analysis was performed on the studies selected and necessitated the splitting of participant data into subgroups to establish comparisons between sub-data (Lin & Chu 2018:792). The interpretation of subgroup MA can lead to informative insights into the proper implication of sub-data within a subgroup, which would not be obtained from the non-subgroup analysis. Subgroup analysis was done for selected categories (see Table 3). Accordingly, the result of subgroup analysis by tax administration indicated large variability in studies reporting factors of tax compliance (the Higgins I^2 statistic = 99.55%, with heterogeneity

TABLE 4: Subgroup and individual tax compliance factors according to the theory of planned behaviour.

Dimension	Subgroup	Votes (%)	Number of individual factors or votes	Positive	Negative	None
CO	Tax Administration	26.60	25	17	3	5
	Tax Policy	7.45	7	3	4	-
	Compliance costs	3.19	3	1	2	-
	Fiscal Administration	2.13	2	-	2	-
	Total	39.36	37	21	11	5
SI	Tax Administration	24.47	23	22	-	1
	Institutional governance	5.32	5	-	5	-
	Economy	2.13	2	-	2	-
	Total	31.91	30	22	7	1
BI	Behaviour	12.77	12	9	3	-
	Business characteristics	7.45	7	1	5	1
	Institutional governance	6.38	6	-	6	-
	Tax morale	1.06	1	1	-	-
	Tax Administration	1.06	1	1	-	-
	Total	28.72	27	12	14	1
Grand total	-	100.00	94	55	32	7

CO, Constraints; SI, Societal Influence; BI, Taxpayer Behavioural Intent.

chi-square = 4030.73, a degree of freedom = 18 and $P \leq 0.001$) and the lowest by tax policy (the Higgins I^2 statistic = 99.85%, with heterogeneity chi-square = 158.56, a degree of freedom = 5 and $P \leq 0.001$). The overall statistics are presented in Table 3.

Table 3 shows that of the 9 subgroup factors that influence taxpayer compliance, 19 studies related to tax administration, 8 studies related to behavioural characteristics, 6 studies each related to institutional government and tax policy, respectively, 2 studies related to compliance costs and 1 study each related to tax morale, business characteristics, fiscal administration and the economy. The sources of variation for each of the nine subgroups were further systematically analysed and are discussed as follows.

Sources of variations among studies of the main or significant factors influencing taxpayer compliance

Coding of data for systematic analysis

The methods followed in identifying each factor have been explained in the preceding discussion (see Table 2). The systematic analysis of data used in the 45 primary studies identified 94 individual factors influencing taxpayer compliance (Online Appendix 1 [Table 2-OA1]). The 94 individual factors were categorised according to the influence that each factor had on tax compliance – positive, negative or no influence. Simple vote counting was applied to determine the relevant significance of factors on taxpayer compliance with one vote being allocated to each factor. The results of the vote count (see Table 4) found that 55 factors had a positive influence on tax compliance; 32 factors had a negative influence while 7 factors had no influence (a total of 94 votes). Online Appendix 1 (Table 1-OA2) also indicates the individual factors that were grouped together in categories, resulted in the emergence of 46 categories of factors. Dominant factors per category were identified based on the number of

votes per factor. Thus, the analysis regarding factors that influence taxpayer compliance in the sections that follow will therefore be based on the number of votes (individual factors) within a category of factors, at a subgroup level.

The results of the vote count, however, required theoretical conceptualisation of the individual factors to explain the reasons for taxpayers being influenced: (1) positively and complied with the tax prescripts, (2) negatively and evaded paying taxes or (3) having no effect on taxpayer compliance. For this study, the dimensions of TPB were renamed to correctly reflect each factor's alignment with its underlying behavioural characteristic. Thus, the dimension of 'Attitude' was renamed 'Taxpayer Behavioural Intent' (BI) reflecting taxpayers' intention towards compliance with tax laws and obligations. The taxpayer's intent towards tax compliance can further be described as the taxpayers' tax morale. Table 4 shows that five subgroups (behaviour, business characteristics, institutional governance, tax morale and tax administration), from the nine subgroups of factors identified in Table 3, influence the TPB dimension of BI.

The TPB dimension of 'Perceived Behavioural Control' was renamed 'Constraints' (CO). Constraints refer to the influence exerted on the taxpayer over which he or she does not have any control. These constraints are related to the influence of time and the influence of financial constraints on taxpayer behaviour. Table 4 indicates that there are four subgroups (tax administration, tax policy, compliance costs and fiscal administration) of factors influencing taxpayer compliance that are related to CO.

The final dimension of TPB, 'Subjective Norms', was renamed 'Societal Influence' (SI) to identify the social pressure exerted on taxpayers to conform to specific societal behaviours. These SIs reflect the influence of societal peer behaviour on the taxpayers' perceptions of the fairness of the tax system and also their trust in the government. Table 4 indicates that there are three subcategories (tax administration, institutional governance and economy) of factors influencing SI.

Table 4 summarises the results of the systematic analysis and shows that, in total, 94 individual factors have been identified using the BI, CO and SI approaches to the theoretical conceptualisation of the underlying rationale for the taxpayers' compliance. The study, following the approach of Van Aert et al. (2019:4) and Lin and Chu (2018:790), considered a 10% vote as being statistically significant because all primary studies identified through the PRISMA were included in this study. Following this approach, a vote count of between 7.5% and 10% is considered as exerting a moderate influence with a vote count of less than 7.5% being considered as a low influence. However, it is noted that no factor fell below the expected average of 10% in all three TPB dimensions, implying that each dimension has a significant influence on taxpayer compliance. Each factor represents one vote in the simple vote counting analysis conducted, thus suggesting a possible total of 94 votes.

The largest dimension, CO, accounts for 39.36% of votes or 37 individual factors that influence taxpayer compliance. The second-largest dimension of SI identifies 31.91% of votes or 30 individual factors influencing the fairness and trust perceptions of the taxpayer in the government. The smallest dimension, BI, identifies 28.72% of votes or 27 individual factors relating to the influence of taxpayer morale on taxpayer compliance.

As discussed earlier, the MA is discussed at a subgroup level, whereas the systematic review is analysed at an individual factor level. To ensure comparability between the MA and systematic review, the data in Table 4 were re-arranged and presented in Table 5 to reflect the individual factors or votes influencing taxpayer compliance at a subgroup level.

Table 5 shows the results of the systematic review at a subgroup level, as discussed earlier. Table 5 indicates that for each subgroup, a behavioural dimension from TPB exerts an influence on an individual factor in the subgroup. The dominant factor within each subgroup can therefore be identified from the percentage of individual factors or votes in each subcategory. Additionally, the last three columns in Table 5 reflect the type of influence – positive, negative or neutral – that each factor has on taxpayer compliance behaviour.

Tax administration emerges as the dominant subgroup factor influencing taxpayer compliance, with 52.13% of all votes. Behaviour is the next largest factor with 12.77% of the votes, followed by institutional governance gaining 11.70% of the votes. These subgroup factors thus exert a significant influence on taxpayer compliance. Business characteristics and tax policy obtained 7.45% each of the total votes

TABLE 5: Individual votes according to the nine subgroup factors.

Subgroup	Dimension	Votes (%)	Number of individual factors or votes	Positive	Negative	None
Tax Administration	BI	1.06	1	1	-	-
	CO	26.60	25	17	3	5
	SI	24.47	23	22	-	1
	Total	52.13	49	40	3	6
Behaviour	BI	12.77	12	9	3	-
	Total	12.77	12	9	3	-
Institutional governance	BI	6.38	6	-	6	-
	SI	5.32	5	-	5	-
	Total	11.70	11	-	11	-
Business characteristics	BI	7.45	7	1	5	1
	Total	7.45	7	1	5	1
Tax Policy	CO	7.45	7	3	4	-
	Total	7.45	7	3	4	-
Compliance costs	CO	3.19	3	1	2	-
	Total	3.19	3	1	2	-
Economy	SI	2.13	2	-	2	-
	Total	2.13	2	-	2	-
Fiscal Administration	CO	2.13	2	-	2	-
	Total	2.13	2	-	2	-
Tax morale	BI	1.06	1	1	-	-
	Total	1.06	1	1	-	-
Grand total		-	100.00	94	55	32
				7		

CO, Constraints; SI, Societal Influence; BI, Taxpayer Behavioural Intent.

indicating a moderate influence on taxpayer compliance and thus by extension, a moderate influence on the entrenched tax gaps.

The summarised results in Table 5 are consistent with the results of the subgroup MA in Table 3, which shows that the dominant subgroup factors are Tax Administration (19 studies) and Behaviour (8 studies). However, there are differences between the results of the MA and the systematic review for nondominant subgroup factors. The systematic review in Table 5 ranks institutional governance higher than business characteristics and tax policy, whereas in Table 2, the MA ranks Institutional Governance and Tax Policy equal at six studies each, while Business Characteristics are identified in only one study in the MA conducted. These differences arise because of the coding of the individual factors and because of the systematic review being performed at an individual factor/vote level. The differences, however, have a minimal influence on the dominant factors that emerge from both the MA and systematic review. Thus, the differences identified have minimal influence on determining taxpayer compliance and the entrenchment of the tax gap.

The extent to which emerging factors contribute to the tax gap

Table 6 summarises the results of the simple vote count of the systematic review from the perspective of subgroups to correlate the results of the systematic review with the MA. Table 6 indicates the factors in each subgroup that influence taxpayer behaviour and indicates those that have a negative compliance association that entrench the tax gaps.

The simple vote count indicated that the most significant factor influencing tax compliance is the fairness in the administration of the tax system, with 11.70% of all votes. Although fairness of the tax system is the dominant factor influencing tax behaviour, it has a positive influence on taxpayer compliance. Table 6, however, also indicates the factors that entrench tax gaps, reflected in the 'negative association' column. These factors include the 'accountability mechanisms of the government' with 15.63% of votes, indicating that this is the dominant factor that entrenches tax gaps. Although 'tax audits' represented only 8.51% of the votes and were below the significance level of 10%, it is ranked moderately influential, as the second-largest factor that influences tax compliance positively. However, governmental interventions of implementing a fair tax administration system, providing greater accountability and implementing regular, effective tax audits may result in increased taxpayer compliance and a narrowing of the entrenched tax gap.

This study found that the robustness and quality of tax administration had a positive influence on taxpayer compliance. By reviewing and synthesising the various findings of 45 primary studies, this study produced a further robust conclusion that improving government services and inculcating public trust in government correlate positively with taxpayer compliance.

The results of the heterogeneity analysis conducted showed that individual factors relating to the tax administration subgroup factor played an essential role in the influence of other factors affecting taxpayer compliance. This therefore improved government services and exerted a positive influence on compliance across all subgroup factors. Of the nine subgroup factors influencing the relationship between the various tax compliance factors, only tax administration, institutional governance and behaviour have the potential to influence other subgroups. In other words, the study found that the role of public trust in influencing taxes was universal to all countries.

The findings derived from the systematic analysis of data are discussed in five categories, namely, tax administration, behaviour, institutional governance, business characteristics and tax policy. These five categories of findings are discussed as follows.

Tax administration

The study found that the quality of the tax administration system is a significant positive factor influencing taxpayer compliance. A positive influence means that taxpayers will comply with tax laws and obligations resulting in a reduction of the tax gap. The study found that the most significant factor that influenced the quality of tax administration is the fairness of the tax administration system implemented by governments. The study found further that procedural fairness in tax administration comprised a significant element of a good tax administration system. Taxpayers recognise procedural fairness when all taxpayers are treated equally, the tax burdens among taxpayers are equitable and objective procedures are in place to address taxpayer disputes with the tax authorities.

Other factors that contributed to the dominance of the quality of tax administration were the conduct of regular tax audits by the tax authorities and the robustness of taxpayer compliance enforcement activities undertaken. The study found that taxpayers responded positively to being audited fairly. Taxpayers also responded positively to the existence of a reasonable probability of being audited. Frequent, rather than once-off tax audits encouraged taxpayers to comply with tax laws and their tax obligations.

Enforcement activities implemented by the tax authorities resulted in a positive influence on taxpayer compliance and contributed to a reduction in the tax gaps. The study found that taxpayers favoured a balanced approach to tax enforcement, where the tax administration system placed trust in the representations made by the taxpayer, as opposed to treating taxpayers as individuals who wanted to defraud the system. Taxpayers also indicated that balanced enforcement would include an approach where tax enforcement was not excessively regulated. Taxpayers indicated that such a system would place high trust in the taxpayer to comply with his or her tax obligations, thus reducing the need for the tax authorities to regulate every aspect of the taxpayer's compliance obligations.

TABLE 6: Factors entrenching tax gaps.

Subgroups	Factor	Votes (%)	Negative association (%)
Tax administration	Fairness of tax system	11.70	0.00
	Tax audits	8.51	0.00
	Approach to tax enforcement	5.32	0.00
	Monitoring	4.26	0.00
	Satisfaction with the tax office	3.19	0.00
	Tax rate	3.19	0.00
	Knowledge of tax	3.19	0.00
	E-filing	2.13	0.00
	Complexity of tax system	2.13	6.25
	Penalty framework	2.13	0.00
	Improper administration	1.06	3.13
	Whistleblowing	1.06	0.00
	Social consciousness	1.06	0.00
	Synergistic and antagonistic tax	1.06	0.00
	Social norms	1.06	0.00
	Tax amnesties	1.06	0.00
	Total	52.13	9.38
Behaviour	Personality traits	1.06	0.00
	Vat vendors - other tax laws	1.06	0.00
	Social norms on tax consultants	1.06	3.13
	Corporate reputation	1.06	0.00
	Peer effects on compliance	1.06	0.00
	Female gender	1.06	0.00
	Seriousness of tax evasion	1.06	3.13
	High tax morale	1.06	0.00
	Tax evasion	1.06	0.00
	National pride	1.06	0.00
	Clients instructions	1.06	3.13
	Patriotism and national pride	1.06	0.00
	Total	12.77	9.38
Institutional governance	Accountability mechanism of government	5.32	15.63
	Corruption	2.13	6.25
	Public despair	1.06	3.13
	Discrimination	1.06	3.13
	Concerns relating to legitimacy and identity-feelings of belongings	1.06	3.13
	Detachment with democratic institutions	1.06	3.13
	Total	11.70	34.38
Business characteristics	Sector morale	2.13	3.13
	Structure of business ownership	1.06	0.00
	Sole traders	1.06	3.13
	Firm size	1.06	3.13
	Entrepreneurs	1.06	3.13
	Newly formed Firms	1.06	3.13
	Total	7.45	15.63
Tax policy	Penalty framework	2.13	0.00
	Policy development	2.13	3.13
	Tax amnesties	1.06	3.13
	Tax rate	1.06	3.13
	Regulatory burden	1.06	3.13
	Total	7.45	12.50
Compliance costs	Cost of tax compliance	3.19	6.25
	Total	3.19	6.25
Economy	Perception of government spending	2.13	6.25
	Total	2.13	6.25
Fiscal administration	Regulatory burden	1.06	3.13
	Business constraints	1.06	3.13
	Total	2.13	6.25
Tax morale	Socio demographic influences on compliance	1.06	0.00
	Total	1.06	0.00
Grand total	-	100.00	100.00

Monitoring taxpayer compliance, an element of enforcement, exerted a positive influence on taxpayer compliance, thus contributing to a reduced tax gap. The study found that ongoing monitoring procedures such as tax inspections implemented by tax authorities increased taxpayer compliance behaviour as taxpayers understood that limited opportunities existed to practise noncompliant behaviour because all taxpayers' tax affairs were under continuous scrutiny by the tax authorities.

A conclusion can therefore be drawn that taxpayers respond positively to: (1) procedurally fair tax administration systems, (2) subjecting all taxpayers to a frequent audit, (3) approaching tax enforcement in a balanced manner and (4) practising ongoing taxpayer inspections. Good tax administration systems, therefore, increase taxpayer compliance and result in a reduction in the tax gaps. However, should taxpayers experience the tax administration system as being unfair, they would resort to tax-evasive behaviour.

Behaviour

Taxpayers' responses to tax laws and prescripts refer to those factors that influence the behavioural subgroup identified in the MA and systematic reviews conducted. No individual dominant factor was identified in this subgroup; rather, each of the individual factors identified was assessed to be of equal significance. The study found that individual factors that influenced the behavioural intent of the taxpayer represented most individual factors that had a positive influence on tax compliance. These factors related to maintaining the positive reputation of business entities, taxpayers who had high moral standards, taxpayers objecting to tax evasion, compliance with other tax laws, peer effects on taxpayer compliance, females exhibiting greater moralistic behaviour, patriotism and national pride, and high taxpayer morale (Hoa, Lien & Tuan 2019:7). The study found that taxpayer's behavioural intent towards taxation is influenced positively, primarily, by their social circles, moralistic behaviour and the sense of national pride that taxpayers have for their countries. A conclusion can therefore be drawn that taxpayer compliance is influenced positively by the moralistic behaviour of taxpayers, the national pride that taxpayers associate with their country and the general beliefs and conduct of their social circles. Although these factors influence tax compliance positively and do not indicate factors that entrench the widening of the tax gaps, the argument is put forward that a change in taxpayers' moral perceptions may have a negative influence resulting in taxpayers engaging in tax-evasive practices.

Institutional governance

The findings of the study suggest that taxpayers have legitimate expectations that the government will manage the laws and the tax resources of the country effectively to achieve the country's socioeconomic development priorities. Taxpayers, therefore, trust that the government will design and implement the necessary policies and procedures to

manage the country's socioeconomic development agenda effectively and efficiently. The study found that taxpayers hold the government accountable for their performance, hence the dominant factor influencing taxpayer trust in governments was the transparency and integrity of governmental accountability to the public. Politically, taxpayers expect transparent behaviour and good governance from the organs of the state. Taxpayers base their trust on the reported levels of corruption and maleficence in the government. Socially, taxpayers hold governments accountable for the quality and ease of access to public goods and services.

The negative association found by this study in various factors of institutional governance is evident in society's response to political and social accountability, which can be violent and disruptive, increasing distrust in government. The study found that taxpayer dissatisfaction and distrust in governments result in tax evasion which contributes to further entrenchment of the tax gaps. It can therefore be concluded that taxpayer compliance with tax laws and obligations is influenced by their trust in the government. Taxpayer trust is influenced by the level and integrity of accountability provided by the government to its public. The study also found that negative trust in government entrenches tax gaps.

Business characteristics

The findings of the study suggest that the public demanded accountability from state-owned companies on the utilisation of resources. Accountability in the form of audited annual reports and annual financial statements resulted in a positive behavioural response to taxpayer compliance. Small business owners, sole traders and startups commonly held the belief that government economic support initiatives were lacking. Consequently, the low tax morale negatively influenced compliance with taxation obligations supporting the behavioural intent approach to taxpayer compliance.

Tax policy

The study found that taxpayers respond positively to well-designed tax policies that do not place excessive tax burdens on them and that are easy to understand. The dominant positive factor in this subgroup was therefore policy development. Poor policy development influenced taxpayer compliance negatively. Tax policies that did not consider how taxpayers wanted to be treated resulted in negative taxpayer compliance and further entrenchment of the tax gaps. It can therefore be concluded that well-designed tax policies that are easy to understand and unambiguous, that promote equitable tax burdens, and that allow for taxpayer engagement with the government on tax policy, influence taxpayer compliance positively.

Recommendations

Several recommendations resulted from the key findings of this study. These recommendations, if implemented by tax authorities, may well assist governments, globally, in

reducing the existing tax gaps in their countries and may also assist in inhibiting the further entrenchment of existing tax gaps. The four main recommendations offered, arising from the study's findings are discussed next.

Tax authorities should focus on improving the quality of their tax administration

Governments and tax authorities should monitor the quality of their tax administration systems and focus on the fairness of tax administration as it is a dominant factor in taxpayer compliance. The study found that the quality of the tax administration system could be improved by focussing on four key aspects of tax administration. These four key aspects are procedural fairness, equitable distribution of tax burdens, frequent tax audits and balanced approaches to enforcement.

Improve public morale

Governments should prioritise reforms that foster positive public morale. While 12 factors influence taxpayer behaviour, focussing on social cohesion initiatives and policies aimed at building national pride could significantly impact public sentiment and encourage responsible citizenship.

Increase public trust in the government

The systematic review highlighted that governments should implement strategies and reforms to promote positive public trust in government. Reforms that promote positive public trust in government should focus on timely production and availability of audited reports and financial statements, educational and communication strategies that increase governments' transparency and accountability to the public. Management strategies that promote service delivery should also be implemented.

Implement tax policy reforms

Governments should implement reforms to ensure that tax policy is well-designed. Well-designed tax policies should include the following: (1) the tax policies should be complete, relevant and unambiguous; and (2) the tax policies should be easy to understand by all taxpayers.

Conclusion

Opportunities exist for governments, globally, to create platforms and measures that influence taxpayers to voluntarily comply with tax laws and their taxation obligations, thereby increasing tax revenues and reducing the tax gaps. Increasing tax revenues that result from increased voluntary taxpayer compliance contributes effectively to a country's socioeconomic development programme and the implementation of national priorities.

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Authors' contributions

D.R wrote the article, O.O. Supervised and A.M. acted as the co. supervisor.

Ethical considerations

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Data availability

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