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The development of a scale to measure SMEs tax compliance in Nigeria: An adaptation of Fischer's model

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This study aims to investigate the reliability and validity of a new version of the tax compliance scale. The new scale extended the Fischer's et al model of tax compliance by drawing more constructs and question items from the theoretical literature review, empirical results of the previous studies and similar questionnaires from different countries. There were 39 question items refined through the process of the pilot study (n = 53) for initial reliability. Finally, a complete questionnaire comprising 37 question items classified into seven main constructs (tax system complexity, tax noncompliance opportunity, tax deterrence sanction, tax rate, tax attitude and fairness perception, tax compliance cost, and tax information) were administered to 392 SMEs owners across all six geopolitical zones that make up Nigeria. All seven constructs demonstrated an acceptable level of internal consistency and intra-class reliability. The principal component analysis, correlational analysis and communality showed that the tax compliance scale fits the theoretical expectations and is well aligned with the prior empirical perspectives. The findings provide enough evidence that the new scale is reliable and valid and will be a useful instrument to the tax authority, policymakers and academics willing to gauge tax compliance amongst SMEs in Nigeria and beyond

Key words: Tax compliance scale, principal component analysis, Fischer's model, reliability, validity, SMEs.

INTRODUCTION

McBarnett (2003) defined tax compliance from three dimensions: first is committed compliance which sees tax compliance as ethical duty discharged without complaint, second is capitulating compliance where tax compliance is enforced on reluctant taxpayers while the third is creative compliance which taxpayers carry out by taking advantage of the tax loophole in the system. Tax compliance has a broad determinant base ranging from economic, behavioural, psychological and sociological determinants. Many authors have conducted studies into determinants of tax compliance in sub-Saharan African countries but without an all-encompassing instrument for

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capturing the determinants of tax compliance (Fagbemi et al., 2010; Otusanya, 2011; Atawodi and Ojeka, 2012; Alabede et al., 2011; Mansor and Gurama, 2016; Aladejebi, 2018, Vincent, 2021).

Most of the prior studies on tax compliance relied on the works of Allingham and Sandmo (1972), Yitzhaki (1974), and Fischer et al. (1992). Allingham and Sandmo (1972) and Yitzhaki (1974) models highlighted crucial variables in the measure of tax compliance to include tax audit probability, tax rate, penalty rate and gross income. Fischer et al. (1992) categorised the determinant of tax compliance into four construct-groups, including tax system structure (tax rate, penalty and probability of detection, tax system complexity); noncompliance opportunity (income level, income sources and occupation); attitude and perception (fairness, ethics, and peer influence); and demographic factors (age, gender and education). The focus of this study is to extend Fischer's model by incorporating more items and variables derived from the empirical literature review for creating a more robust scale for measuring the tax compliance behaviour of SMEs entrepreneur in Nigeria.

Many efforts of the government to bring SMEs into the tax net in Nigeria have proved abortive. The SMEs sector is too economically strategic to be left out of the national tax net. SMEs in Nigeria account for 96 per cent of business enterprises and 84 per cent of employment opportunities with a total number of about 17.4 million (IMF, 2019; PwC, 2019). They account for over 50 per cent of the industrial employment, 90 per cent of the manufacturing sector, in terms of the number of enterprises and dominance in agriculture (IMF, 2019). In contrast to the contributions of SMEs to the national GDP, the same SMEs account for the increasing level of tax evasion and non-compliance in Nigeria (Aladejebi, 2018). The problem of tax evasion and poor tax compliance attitude might have contributed to the abysmal tax-to-GDP ratio of 5%, trailing far below 34.1% and 20% in Organization for Economic Cooperation and Development (OECD) and emerging markets respectively (World Bank, 2015; Amaeshi et al, 2020). Therefore, a modification of Fischer's tax compliance model (which is a synthesis of contemporary tax issues and Nigerian tax system idiosyncrasies) has become imperative in addressing the problem of tax noncompliance amongst SMEs entrepreneurs in Nigeria.

LITERATURE REVIEW

Theoretical review

The extant literature establishes the combination of both economic and behavioural variables as factors responsible for tax compliance behaviour. The economic approach has its root in expected utility (EU) theory and deterrence theory. The EU theory of individual tax evasion establishes a positive correlation between underreporting opportunity and the actual act (Allingham and Sandmo, 1972; Yitzaki, 1974). The theory perceives taxpayers as immoral utility maximizers who elect to evade taxes when the estimated gains outweigh the cost of evasion (Allingham and Sandmo, 1972; Sapiei et al., 2014). The deterrence theory focuses on the sanction threat and sanction effect, the punishment or sanction determined by taxpayer compliance behaviour. The more the severity of sanction and probability of detection, the lower the tax noncompliance tendencies is (Musimenta, 2020; Sapiei et al., 2014). The economic approach has been expanded to include all factors that put a taxpayer in a position of economic advantage or disadvantage. For this study, the economic factors are grouped into three: tax system structure, tax non-compliance opportunity and tax compliance cost.

The behavioural components of the behavioural economics theory assume that individuals have their differing opinion about tax compliance according to their attitudes, culture, peer influence, beliefs, values, ethics, demographic characteristics, norms and roles (Sebele-Mpofu, 2020; Onu and Oat, 2018; Elffers et al., 1992; Lewis, 1982; Warneryd and Walerud, 1982). The behavioural aspect of the model considers what Weber et al. (2014) called social effects, which are influenced by the socio-cultural environment of a taxpayer. The socio-cultural factors include prestige, social norms, psychological factors, fairness, and group effect. Beyond the fines, the psychological factors (e.g. shame) associated with tax evasion may discourage a taxpayer from cheating (Weber et al., 2014). The psychological factors arise because people fear being detected or openly shamed (Hashmizade et al., 2012). Hashmizade et al. (2012) opined that tax fairness can be classified into two, fairness towards government and fairness towards other taxpayers. In a situation where government renders poor services and poor quality public goods, the taxpayers might see tax payment as unfair. Conversely, if tax payment is not progressive or of unjustifiable difference from one taxpayer to another;, the high tax-paying party might perceive the system as unfair.

Empirical review

McBarnett (2003) postulated three types of tax compliance behaviour: committed compliance, capitulated compliance and creative compliance. The committed compliance sees tax compliance from an ethical prism, the discharge of tax obligations without complaining. Capitulating compliance is a discharge of tax obligation

with some level of reluctance under the regulatory influence and creative compliance is an act of tax avoidance through legitimate loopholes which ultimately reduces tax liability legitimately.

The tax system structure has been found to have a great influence on tax compliance. The tax system structure could be grouped into tax deterrence sanction, tax system complexity and tax rate structure. Fischer et al. (1992) opined that the tax rate, the probability of detection and the penalty structure are determinants of the monetary cost of tax compliance; these conversely determine tax compliance behaviour (Fischer et al. 1992). Several similar empirical studies in different countries subsequently tested hypotheses based on these factors (Alm, 1999, Chan et al., 2000; Devos, 2008; Sapiei, 2014; Musimenta, 2020) and results confirmed the influences of these factors as significant determinants of tax compliance behaviour. Tran-Nam and Evans (2014) defined tax complexity from different perspectives. To a tax professional it refers to the time it takes to carry out tax planning, give tax advice and prepare tax returns. A lawyer considers complexity as difficulty in reading, interpreting and application while a taxpayer views it from difficulty in understanding. In general, tax complexity may be procedural complexity, computational complexity; low level of readability, compliance complexity, form complexity and rule complexity ((Pau et al., 2007; Saad, 2014; Saw and Sawyer, 2010). The complexity in a tax system primarily arises from a lack of understanding by laypersons that constitute the bulky of the taxpayers (Kirchler, 2007; Musimenta, 2020). A weak tax deterrence sanction breeds corruption. Joulfaian (2009) established a correlation between tax evasion and corruption. Business noncompliance increases with corruption; substituting corruption cost for tax payment might yield positive results because such acts of tax evasion offset expenses or financial loss. Tax noncompliance thrives when inducements or bribes to tax officials is pervasive (Joulfaian, 2009). The previous works that specifically explored the relationship between corrupt tax officials and tax evasion established a positive relationship (Whait et al., 2018; Crequeti and Coppier, 2009; Escobari, 2005; Gupta, 2008; Hindriks et al., 1999; Imam and Jacobs, 2007; Sanyal, 2000). There are divergent opinions on the effect of the tax rate on tax compliance behaviour (Onu and Oats, 2018; Jackson and Milliron, 1986; Clotfelter, 1983). The tax rate is an important variable in determining tax compliance behaviour despite its exact effect remains elusive (Kirchler, 2007). An increase in tax rates may encourage tax evasion (Witte and Woodbury, 1985), while a reduction in tax rate may not certainly improve tax compliance (Kirchler, 2007; Trivedi et al., 2003). Allingham and Sandmo (1972) attempted to consider independent variables such as actual income, tax rates, penalty and audit rates as determinants of tax (non)compliance using statistical modeling. In conclusion, tax rates were statistically insignificant. Porcano (1988) concluded that the tax rate does not affect tax compliance.

Tax noncompliance opportunities are prospects for tax evasion which sometimes may be created by inequality and lack of means of earning a decent living. Witte and Woodbury (1985) found higher tax compliance behaviour in regions that have low unemployment rates and poverty. From the study of tax return data for small companies, Rice (1992) reported that firms that have profit margins below their industry average revealed higher rates of tax noncompliance than firms with above-average returns. The study, however, suggested that certain individuals with limited resources have a higher tendency to evade tax due to their susceptibility to financial strain. Such companies' need for money in the present outweighs the expected future costs of detection and punishment. Personal financial constraints have been found to positively impact tax noncompliance (Alabede et al., 2011; Abdul, 2001). The financial problems confronting a taxpayer might embolden him to focus more on his financial burden rather than tax liability settlement. Abdul (2001) argued that individuals facing financial problems are more likely to evade tax. Sometimes persons without financial burden may also dodge tax and their level of evasion might be higher than those with a financial problem (Vogel, 1974; Warneryd and Walerud, 1982).

Tax compliance costs are expenses incurred by taxpayers arising from their obligations to comply with applicable tax laws. The tax compliance costs refer to the value of resources spent by taxpayers in complying with tax laws (Tran-Nam and Glover, 2002, Sapiei et al, 2014). These costs include external costs (fees paid to external tax professionals), internal costs (value of time spent by staff on tax matters) and incidental costs (telephone and communication, litigation, computer and stationeries). Certain empirical studies found tax compliance costs as a likely determinant of tax compliance behaviour (Slemrod, 2004; Tran-Nam, 2003). The level of tax compliance costs could be one of the factors affecting the compliance decisions of SMEs.

The perception of equity or fairness strongly correlates with tax compliance behaviour (Jackson and Milliron 1986, Sebele-Mpofu, 2020). Spicer and Lundstedt (1976) established a negative correlation between fairness and tax evasion. Spicer and Becker (1980) asserted that tax noncompliance increases when taxpayers perceive fiscal inequity because they feel ill-treated by unfair income redistributions. Etzioni (1986) opined that an unfair tax system has a higher propensity for tax noncompliance than an increased tax rate. The taxpayers are more likely to evade tax anytime they perceive the tax to be unfair,

even when the tax rate remains stable. Hite and Roberts (1992) concluded that fairness is significantly correlated to the perception of an enhanced tax system, thereby discouraging tax noncompliance. Fischer et al. (1992)'s study on detection probability and tax compliance found tax attitude and perception to greatly influence taxpayer compliance behaviour. The tax attitudinal and perception factors include fairness and equity in the distribution of tax proceeds, trustworthiness and accountability for taxes collected by the government, the peer influence of other taxpayers and the moral obligation of the taxpayer to render complete tax returns (Fischer et al., 1992; Sapiei, 2014). Torgler (2012) established an association between trust and tax compliance morale. The extent of tax compliance depends on the trust a taxpayer has for the constituted authority or government. Therefore, relationships between taxpayers and their government are crucial in determining tax compliance. There is empirical evidence that citizenry tax compliance depends on efficient government spending (Ali et al., 2014; Alm et al., 1992b). Individual tax morale is influenced by the magnitude of government spending on public goods, specifically; taxpayers' perception of benefits in return for their tax contribution motivates tax compliance behaviour. Barone and Mocetti (2011) argued that tax compliance improves when there is an efficient allocation of resources by the government. However, if taxpayers notice that the government indulges in wasteful habits; taxpayers might feel disappointed and seek retaliation in the form of tax evasion (Bodea and Lebas, 2016; Nurkholis et al., 2020). This study extended Fischer's view of attitude and perception by adding more factors that depict the peculiarities of Nigeria tax environment.

Tax information has a limited mention in both theoretical and empirical literature (Vincent, 2021). In recent tax practices in Nigeria, the tax officials strongly believe that tax enlightenment and knowledge are necessary for bringing more individuals and businesses into the tax net. As such, a huge amount of resources is now committed to tax campaigns, tax news and tax information. The influence of tax information on tax compliance still lacks clear empirical evidence although Vincent (2021) opined that there is a significant relationship between tax information and tax compliance behaviour

METHODS

The objective of this study is to develop a new tax compliance scale by extending the Fischer (1992)'s model of tax compliance. The research method is a survey design and the tool of analysis is principal component analysis (PCA). The PCA is used extensively by researchers concerned with the development and evaluation of tests and scales (Pallant, 2010; Tabachnick and Fidell, 2001).

Review of the Fischer's model of tax compliance

Fischer's model provided one of the most viable and popular conceptual frameworks for understanding tax compliance behaviour (Chan et al., 2000). Fischer et al. (1992) classified tax compliance determinants into four-group constructs which include tax system structure (tax rate, penalty, probability of detection and complexity of tax system); attitude and perception (fairness, ethics, and peer influence); noncompliance opportunity (income level, income sources, and occupation) and demographic factors (age, gender, and education). Alm (1999) opined that no single model can account for all the factors responsible for tax compliance decision and other factors may as well be relevant in explaining tax compliance behaviour. The factors such as perceived tax service quality, public governance quality, risk preference and personal financial condition have been found to influence tax compliance behaviour (Chan et al., 2000; Chau and Leung, 2009; Manaf, 2004; Mustafa, 1997; Tayib, 1998).

New scale: Constructs definitions and sources

The new tax compliance scale made up of 37 question items (grouped into seven constructs) are products of Fischer's model and empirical reviews of literature on tax compliance behaviour, tax morale and tax evasion. The seven constructs include tax rate, tax system complexity, tax deterrence sanction, tax attitude and perception, tax noncompliance opportunity, tax compliance cost and tax information (Allingham and Sandmo, 1972; Yitzaki, 1974; Fischer et al., 1992; Christensen et al., 1994; Kirchler, 2007; Am and Gomez, 2008; Joulfaian, 2009; Alabede et al., 2011; Alm, 2012; Sapiei, 2014; Musimenta, 2020; Vincent, 2021). Table 1 provides the operational definitions of the new scale constructs.

Sampling procedure

The total population of SMEs in Nigeria is estimated at 17.4million (IMF, 2019; PwC, 2019), constituting 96% of business enterprises in Nigeria. The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) defined a small business as an enterprise that employs 10-49 persons and has capital in the region of N5 to N50million (excluding land and building); while the medium enterprises are those that employ between 50 -199 employees, and have a capital range of N50 million to N500million (excluding land and buildings). For this study, SMEDEN provides the sampling frame from where SMEs that are properly incorporated under Corporate Affairs Commission (CAC) as "Limited Liability" and render tax returns to the Federal Inland Revenue Service (FIRS) are pre-qualified as participants.

The research instrument was administered with the combination of online, electronic mail (email) and face-to-face medium. A total number of 3,568 SMEs were sent questionnaire and a response rate of 11% was recorded, which translates to 392 completed questionnaires from the participating companies. A set of questionnaires was administered to each company from whom the questionnaire was filled by any of business owner, CEOs, finance manager, accountant or tax managers who have knowledge and experience in handling tax matters of their respective companies. Table 2 provides corporate characteristics of the sample:

Pilot survey

The questionnaire was subjected to a pilot survey of 53

Table 1. Description of variables and measurement sources.

	Variable	Full meaning	Definition	Source of measurement
1	TR	Tax rate	It is the applicable rate used to determine tax liability. It is one of the monetary cost of tax compliance.	Sapiei et al., 2014; Christensen et al. 1994; Fischer et al., 1992
2	TSC	Tax system complexity	Difficulty in understanding a tax system.	Musimenta, 2020; Kirchler, 2007; Fischer et al 1992
3	TDS	Tax deterrence sanction	This is the degree of severity of sanctions for tax noncompliance and evasion	Sapiei, 2014; Christensen and Hite, 1997; Fischer et al., 1992
4	TAP	Tax attitude and perception	This is the taxpayer's perception of fairness, equity and accountability in the spending of tax proceeds by the government	Torgler et al. 2010; Joulfaian, 2009; Alm and Gomez, 2008; Christensen et al. 1994; Robert 1994
5	TNO	Tax noncompliance opportunity	These are excuses for tax noncompliance as a result of adverse conditions like underemployment, lack of means of livelihood, and poverty.	Witte and Woodbury, 1985; Rice 1992; Fischer et al. 1993, Abdul, 2001
6	TCC	Tax compliance costs	These are expenses incurred by taxpayers arising from their obligations to comply with applicable tax laws	Sapiei 2014; Tran-Nam and Glover, 2003; Ritchie et al 1997;
7	TI	Tax information	The extent of taxpayer's clarity, enlightenment and knowledge about the tax system	Vincent, 2021
*8	Corporate demo	Corporate demographics	These are corporate characterеistics of the participating SMEs defined in Table 2	Sapiei 2014; Vincent, 2021

*The respondents are companies from whom the questionnaires were filled by any business owner, CEOs, finance manager, accountant or tax manager. The scale will not be subjected to reliability and validity procedure but the current study agrees that socio-demographic (in case of individual taxpayer) or company characteristics influence tax compliance behaviour (Fischer et al., 1992, Sapiei, 2014). Source: Author.

respondents for reliability and validity assurances. The pilot survey showed that two items from the initial 7 items that make up the tax deterrence sanction (TDS) Scale have correlation coefficients below the 0.3 benchmark (Leech et al., 2008). These items were later removed from the scale, and as a consequence, Cronbach's alpha improved to 0.797. Also, one item with a correlation coefficient below 0.3 was removed from the tax attitude and fairness perception (TAP) scale and subsequently Cronbach's alpha statistic improved to 0.837 (Table 3).

Treatment of measuring scales biases

In a study conducted by use of a paper-and-pencil questionnaire for measuring the study constructs, the challenges of common method variance or measuring scale biases are unavoidable (Buchanan and Bryman, 2011). The biases associated with the use of questionnaires do emanate from response styles, social desirability, halo, acquiescence, survey design biases, leniency, negative affectivity, environment, general instructions, mood and so on. They are extraneous variables with abilities to interfere with the reliability and validity of the measuring scales and in the end distort the relationship between focal variables under investigation (Podsakoff et al., 2016).

In addressing the problem posed by the measuring scale bias in this study, certain statistical and procedural designs advocated by Buchanan and Bryman (2011) and Podsakoff f et al. (2016) were conducted. In terms of procedure, the study sub-scales were sampled at different time intervals (but same respondents) by first obtaining respondents' responses on three of the scales, and afterwards the remaining four scales; this was to control the halo effect and response style effect (Okereke et al., 2018). The acquiescence effects and social desirability bias (SDB) were moderated by reverse coding of certain question items in the questionnaire. More importantly, the respondents were kept anonymous by making sure that questions and expressions capable of divulging the identity of a respondent were not stated in the survey instrument. The statistical remedies include reliability test by using Cronbach's alpha statistic to establish the internal consistency of the study questionnaire, validity test by factor analysis and rotation method reported in Table 3 and Table 5.

RESULTS AND DISCUSSION

The descriptive statistics compare the mean standard deviation and skewness of the study constructs as reported in Table 4. The third and fourth rows show mean and standard deviation statistics respectively. The normality of the data, set is measured by skewness on the fifth row and reveals that all the variables have skewness

Table 2. Summary of the sample.

Variable	Value label	Freq. (%)	Total
Respondent designation	CEO	22(6)	392(100%)
	Accountant/finance manager	324(82)	
	Tax manager	46(12)	
Business size	Size 1 = Turnover ≤ N25M	85(22)	392(100%)
	Size 2 = Turnover = N25M-N50M	154(39)	
	Size 3 = Turnover = N50M-N75M	121(31)	
	Size 4 = Turnover = N75M-N100M	32(8)	
	Size 5 = Turnover ≥ N100M	0	
Business age	1-5 years	62(16)	392(100%)
	6-10 years	155(40)	
	11-15 years	100(25)	
	16-20 years	49(12)	
	More than 20 years	26(7)	
Business sector	Oil, gas, mining and metal	11(3)	392(100%)
	Manufacturing	31(8)	
	Agriculture and livestock	63(16)	
	Property and Construction	23(6)	
	Transport, trade and services	102(26)	
	Finance and Banking	21(5)	
	Entertainment and hospitality	38(10)	
	Technology and Telecoms	44(11)	
	Educational services	59(15)	
Tax professional services provider	Internal	289(74)	392(100%)
	External	43(11)	
	Internal and external	60(15)	
companies by the geographical spread	North East	16(4)	392(100%)
	North West	22(6)	
	North Central	32(8)	
	South East	69(18)	
	South-South	52(13)	
	South West	201(51)	
Income tax Liability in 2019	Less than N1M	158(40)	392(100%)
	N1M – N5M	138(35)	
	N6M-N10M	49(13)	
	N11M-N15M	32(8)	
	N15M and above	15(4)	

Source: Author.

below the recognized threshold of 3 (Gujarati, 2006). There are correlations between certain variables but at an acceptable level considering inter-correlation between the variables at less than 0.7 and tolerable statistics close to 1.

The study relies on principal component analysis (PCA) for the new scale development and evaluation. This is in line with the existing tradition in scale development and

Table 3. Scales reliability.

	Section A: Tax deterrence sanctions	**Abbreviation**	**Correlation**	**Cronbach's alpha**
1	If there was a discrepancy in the annual tax return, how likely would that be audited?	TDS1	0.596	
2	If your company was to be chosen for a compulsory audit, how likely would a discrepancy be identified?	TDS2	0.492	
3	If discrepancies were discovered during an audit, how severe are the penalties?	TDS3	0.512	0.797
4	If there was a discrepancy that led to a penalty, it can place criminal charges on the management of the company	TDS4	0.687	
5	Detection of an act of bribery of tax officials can possibly attract the attention of the Economic and Financial Crimes Commission	TDS5	0.758	
	Section B: Tax system complexity			
1	The preparation of the company's income tax return is difficult.	TSC1	0.789	
2	Company's income tax computation is full of ambiguity	TSC2	0.687	
3	Complexity in tax law is necessary so that companies are treated fairly.	TSC3	0.451	0.763
4	Corporate income tax law is relatively simple to understand.	TSC4	0.426	
5	The tax office provides enough guidelines and procedure for seeking clarity	TSC5	0.875	
	Section C: Tax Rate			
1	A 'fair' tax rate should be the same for every company regardless of their size (small, medium or large).	TR1	0.689	
2	A fair tax rate should be made proportional to the level of business performance	TR2	0.528	
3	It is fair that high-profit companies should pay a higher rate of tax than low-profit companies.	TR3	0.824	0.789
4	The company income tax rate is high in comparison to SME profit earnings potentials and activities	TR4	0.789	
5	The current tax rate paid by SME can impede the sector's growth	TR5	0.852	
	Section D. Tax non-compliance opportunity			
1	I believe that if my company's profit reporting is below the industry average I may not likely pay the correct amount of tax liability	TNO1	0.699	0.790
2	If my company has a cash flow crisis, tax obligation may not be a priority in that period	TNO2	0.608	
3	The company's present need for money outweighs the expected future cost of tax non-compliance	TNO3	0.727	
4	I believe that certain small businesses are easily traceable for tax compliance than others (e.g. small businesses like microfinance bank regulated by the Central Bank of Nigeria- CBN)	TNO4	0.545	
5	If the country slides into recession, it is an opportunity to pay a lesser tax than my company should have paid	TNO5	0.607	
	Section E. Tax compliance cost			
1	To successfully render complete tax returns my company requires the services of external consultants	TCC1	0.557	
2	The length of time necessarily spent by the accounts department for tax purposes is material enough to achieve better business performance	TCC2	0.523	0.790

Table 3. Contd.

3	How significant are other additional non-staff costs in meeting requirements of filing tax returns (e.g. travelling, stationeries and courier service)	TCC3	0.545	
Section F. Tax attitude and fairness perception				
1	I believe that each company's officers have a moral obligation to report all of their company's income and pay the correct amount of company income tax	TAP1	0.617	0.837
2	Do you believe that self-assessment made company tax laws more or less fair?	TAP2	0.777	
3	Do you believe that the tax system is fair to small, medium and large businesses in Nigeria?	TAP3	0.812	
4	The government uses revenue generated from tax to provide public goods and services	TAP4	0.825	
5	I believe that judicious use of revenue from taxes implies taxpayer commitment	TAP5	0.811	
6	The taxpayer is encouraged when tax revenue is spent more on the geopolitical zone where the tax is paid	TAP6	0.689	
7	I believe that government renders quality services from various taxes collected from companies	TAP7	0.736	
8	To a large extent, my company believes that the government is trustworthy and accountable for all collections.	TAP8	0.567	
9	We are committed to paying because other small businesses pay	TAP9	0.567	
Section G. Tax information				
1	Do you believe that availability of necessary information and guidelines would necessarily aid the payment of taxes?	TI1	0.799	0.789
2	How easily assessed is tax information for small businesses?	TI2	0.608	
3	How adequate is tax information and guidelines available online?	TI3	0.727	
4	The amount of information available is simple enough to render self-assessment returns without the services of an external consultant.	TI4	0.764	
5	Do you believe that prior tax knowledge does not affect tax compliance?	TI5	0.819	

Source: Sapiei 2014; Ritchie et al 1997; Pope, 1993; Sapiei et al. 2014; Christensen et al. 1994; Fischer et al 1992; Torgler et al. 2010; Joulfaian, 2009; Alm and Gomez, 2008; Christensen et al. 1994; Robert 1994;Vincent, 2021.

validation (Bobek et al., 2011; Bryant et al., 2004; Shukla and Srivastava, 2016). The results in Table 5 show that the Kaiser-Meyer-Olkin (KMO) value of 0.76 exceeds the recommended value of 0.6, suggesting that there are adequate question itemsfor each scale (Pallant, 2010). Bartlett's Test of Sphericity (measuring factor analysis appropriateness) attains statistical significance ($p < 0.05$). The test of scale validity reveals that all question items forming the scale for each of the seven constructs record factor loading greater than 0.6; suggesting that all question items are highly correlated with the seven constructs (Pallant, 2010).

The 37 items of the tax compliance scale are subjected to principal component analysis (PCA) with the aid of SPSS. The PCA reveals the existence of seven factors with eigenvalues greater than 1, explaining 25% (tax system complexity), 19% (tax noncompliance opportunity), 17% (Tax deterrence cost), 11% (tax attitude and fairness perspective), 8% (tax information), 6% (tax rate) and 5% (tax compliance cost) of the variance, respectively. In other words, over 90% of the variance in the tax compliance scale is accounted for by the seven factors that form the scale. Therefore, the new tax compliance scale

Table 4. Mean, standard deviation, and inter-correlations (n = 392).

Variable	TR	TSC	TDS	TNO	TCC	TAP	TI	BSize	BSector	BAge	BTaxLiab
TR	1										
TSC	0.137	1									
TDS	0.346(**)	-0.152	1								
TNO	0.237(*)	0.065	-0.094	1							
TCC	0.072	0.016	-0.153	0.197	1						
TAP	-0.123	0.118	-0.232(*)	0.072	0.072	1					
TI	0.162	0.081	-0.127	-0.123	-0.123	0.086	1				
BSize	0.173	-0.015	0.059	0.192	0.328(**)	-0.063	0.312(**)	1			
BSector	0.124	0.096	0.131	0.162	0.173	0.152	0.221(*)	0.142	1		
BAge	0.093	0.219(*)	0.215(*)	0.104	0.124	0.056	0.036	0.304**	0.041	1	
BTaxLiab	0.149	0..038	0.119	0.093	0.093	-0.115	0.348(**)	0.218(*)	0.333(**)	0.053	1
Mean	3.211	3.731	2.872	3.154	2.302	3.952	4.101	2.775	5	12.5	2.6
Standard deviation	1.263	1.299	1.020	1.534	0.923	0.961	1.267	0.961	2.100	4.511	3.211
Skewness	-0.674	-1.405	0.389	0.593	1.003	0.122	0.865	-1.622	0.940	1.367	2.019

** p < 0.01; *p < 0.05. TR = tax rate; TSC = tax system complexity; TDS = tax deterrence sanction; TAP = tax attitude and perception; TNO = tax noncompliance opportunity, TCC = tax compliance cost, TI = tax information; BSize = business size; BSector = business sector; BAge = business age and BTaxLiab = business tax liabilities

Table 5. Result of principal component analysis for 37 new tax compliance scale with varimax rotation.

Item	Cronbach's alpha	Tax deterrence cost	Tax system complexity	Tax rate	Tax noncompl. opportunity	Tax compliance cost	Tax attitude and fairness perception	Tax info	Communality
		Factor loading	Factor loading	Factor loading	Factor loading	Factor loading	Factor loading	Factor loading	
TDS2	0.797	0.874							0.521
TDS5		0.810							0.658
TDS3		0.785							0.451
TDS1		0.736							0.598
TDS4		0.732							0.529
TSC1	0.763		0.821						0.402
TSC2			0.819						0.569
TSC4			0.786						0.609
TSC5			0.751						0.874

Table 5. Contd.

TSC3			0.708					0.721
TR2	0.789			0.869				0.772
TR5				0.825				0.598
TR1				0.822				0.479
TR4				0.791				0.591
TR3				0.734				0.607
TNO2	0.790				0.878			0.372
TNO5					0.846			0.593
TNO1					0.782			0.382
TNO3					0.745			0.533
TNO4					0.719			0.429
TCC1	0.589					0.701		0.714
TCC2						0.697		0.532
TCC3						0.687		0.499
TAP3	0.837						0.891	0.661
TAP5							0.855	0.543
TAP4							0.827	0.561
TAP8							0.784	0.609
TAP1							0.767	0.523
TAP6							0.765	0.489
TAP9							0.763	0.756
TAP7							0.745	0.484
TAP2							0.734	0.473
TI2	0.789							0.814 0.774
TI4								0.794 0.597
TI3								0.792 0.631
TI1								0.788 0.453
TI5								0.746 0.619
Eigenevalues		2.76	3.02	1.78	2.89	1.57	2.32	1.96
% of variance		17	25	6	19	5	11	8

Extraction Method: Principal Component Analysis, Rotation Method: Oblimin with Kaiser Normalisation.

which benefitted immensely from Fischer's model, contemporary literature and empirical studies in tax compliance is reliable and valid having satisfied the rigor of reliability and validity tests. There is no doubt that the new scale is an extended or modification of Fischer's model.

Conclusion

The purpose of this study was to develop a theoretically valid scale for measuring tax compliance behaviour of SMEs in Nigeria. The development of a new scale by extending Fischer's model would enhance literature in tax evasion, tax morale and tax compliance in Nigeria and SSA countries that currently need a good understanding of how the informal sector and SMEs can effectively be brought into the tax system. The study will be of immense benefits to the tax authorities, fiscal managers and policymakers when formulating strategies for improving tax compliance, tax collection and tax-to-GDP ratio in SSA.

The study has both practical and theoretical implications. There is a practical implication for a country like Nigeria where over 70% of contributors to the national GDP are SMEs whose activities are difficult to bring into the national tax net. As much as SMEs contribute to the national GDP, it is equally the biggest evader of taxes because the economic and behavioural dynamics of the sector players have not been properly dimensioned in tax administration. The new tax compliance scale (that is extension of Fischer's model) is expected to effectively aid in understanding the dynamics of tax compliance and noncompliance in Nigerian SMEs. The scale has the potential to help tax regulators understand the nature of tax compliance beyond SMEs in Nigeria and bring about a new lease of life in tax revenue generation in Nigeria and Sub-Saharan African countries. Theoretically, the reliability and validity of the new scale confirm the relevance of the existing theory and empirical evidence in the literature. All the seven constructs of the new scale are products of the behavioural and economic approach to tax compliance (Allingham and Sandmo, 1972; Yitzhaki, 1974; Fischer et al., 1992; Frey and Torgler, 2007; Alm, 2012; Sapiei, 2014; Musimenta et al., 2017; Nurkholis et al., 2020; Vincent, 2021).

The current study might have suffered biases despite deliberate efforts to minimize social desirability bias (SDB). The tax compliance was measured from individuals' (business owner, accountants, tax managers, CEOs and heads of finance) standpoint. The views of the individuals representing the participating companies might not necessarily represent the behaviours of the companies. In addition to this limitation, the study did not focus on how each construct is related; rather it focused on developing distinctive measure of each construct.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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