Why information technology is constrained in tackling tax noncompliance in developing countries

Nigerian tax administrators' perspectives

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Abstract

Purpose – This study aims to investigate the reasons for the large scale tax noncompliance prevalent in underdeveloped countries despite many years of information technology (IT)-led tax administration reforms.

Design/methodology/approach – The study is based on in-depth interviews with 18 senior tax administration officials. Their experiences were used to construct a grounded theory to explain the constraint of IT in tackling the prevalent tax noncompliance in underdeveloped countries.

Findings – First, IT is not immune to the systemic corruption prevalent in many developing countries; hence, it is quickly compromised. Second, IT can be efficient in dealing with registered taxpayers but cannot deal with the overwhelming large numbers of operators in the informal sector. Third, E-tax administration, which is a hallmark of IT-led tax administrations in advanced countries, is very slow to catch up in developing countries. A computerized tax administration alone, as currently obtainable in developing countries, is not enough to engender large usage of e-filing. Businesses, especially small and medium-sized enterprises (SMEs), need IT infrastructure as well to align with tax administration. Unfortunately, basic IT infrastructure is yet to be available to a large section of SMEs in developing countries.

Research limitations/implications – Underdeveloped countries are diverse. This study is from a single country and there may be need to take note of other countries' peculiarities. However, Nigeria constitutes a good case study.

Practical implications – There is need to reform the people and systems along with IT originality/value.

Originality/value – To the authors' knowledge, this study is the first to explore this very important question and among the first to explore tax administrators' perspectives.

Keywords Tax noncompliance, Information technology, Corruption, Developing countries, Tax administration reform

Paper type Research paper

1. Introduction

Tax noncompliance has been perpetrated since the beginning of taxation, and it is also a worldwide phenomenon. However, developing countries are the worst affected. Tax noncompliance leads to inadequate tax revenues so much that it is threatening the existence of many developing countries. Some of these countries have been classified as fragile states because of inadequate tax revenue (OECD, 2014a). The problem of low tax revenue generation in developing countries has been a global concern for many decades. International organizations [World Bank, International Monetary Fund (IMF), United Nations (UN), United States Agency for International Development (USAID), Organization for Economic Cooperation and Development (OECD) and others] have been making efforts

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to increase tax revenues in these countries. One of the key instruments adopted by these international organizations is tax administration reforms, and a key component of these reforms is installation of modern information technology (IT) equipment (Di John, 2006). Tax administration reforms, underpinned by IT, has been going on in developing countries for over 30 years, yet, attaining the goal of tax revenue adequacy remains a substantial challenge (IMF, 2015).

One of the oft-cited causes of low tax revenue in underdeveloped nations is tax noncompliance (IMF, 2015). This assertion is supported by statistics from some studies, which indicate an overwhelming level of tax noncompliance by eligible taxpayers in underdeveloped countries. To cite some examples, Kangave *et al.* (2016) investigated 60 top lawyers (commercial law firms) in Uganda to determine their level of tax compliance. They discovered that only about 12 paid income tax in 2012 and only 13 paid in 2013. This figure constitutes only about 21 per cent compliance level. This means about 79 per cent of the law firms were noncompliant. In a related scenario, Nigeria's immediate Past Minister of Finance, Okonjo-Iweala, declared that 75 per cent of registered companies in Nigeria are not captured in the tax system. Surprisingly, she stated that even from the 25 per cent that are registered, 65 per cent failed to file tax returns for two years as at the time of the report (Okonjo-Iweala, 2014). In another surprising revelation, McCluskey (2016) asserted that in Kenya, only 100 high-net-worth business owners are registered with the tax revenue agency out of a possible 40,000. The author added that about 114, 000 high profile business owners in South Africa are not registered with the tax agency making the government to lose about $10.9bn in potential tax revenue. Earlier, Fjeldstad and Heggstad (2011) discovered that in Tanzania, out of the country's population of 45 million people, only 400,000 are in the official taxpayer register. Not surprisingly, they stated that in 2010, only 400 large taxpayers generated 80 per cent of the total tax revenue of the country while the majority of eligible taxpayers evaded their tax obligations.

The above statistics of tax noncompliance are from African countries but underdeveloped countries in other continents are also affected by the large scale noncompliance problem. For example, Everest-Phillips (2010) observed that only 1 per cent of the Bangladeshi population pay tax and this is in sharp contrast to over 50 per cent in advanced countries. Sabaini and Jimenez (2012) noted that tax evasion for individuals and firms in Guatemala are about 64 per cent while the average for Latin America is about 50 per cent. Keen (2012) observed that tax non-filers could constitute almost 50 per cent in Cameroon and Uganda but only about 7 per cent in USA. Bird and Zolt (2005) observed that the proportion of taxpayers to total population in advanced countries ranges from 28 to 78 per cent but in underdeveloped countries, it ranges from 0.14 to 12 per cent. IMF (2013) revealed that the richer population of self-employed business owners in Greece is mostly outside the tax net. One may argue that the large scale tax noncompliance in these countries is because of poverty and lower incomes compared to advanced countries, but research findings indicate a deliberate noncompliance by the richer population (Keen, 2012; Kangave *et al.*, 2016; McCluskey, 2016). Further evidence that there is a deliberate noncompliance is the OECD (2013) tax effort index for 65 developing countries, which shows that about 53 of the countries, representing 82 per cent, are below their tax revenue potential. This means they are not able to collect their potential tax revenue even after controlling for their peculiar circumstances. There could be other reasons apart from noncompliance, but as noted by IMF (2015), tax noncompliance is currently the biggest challenge to tax revenue generation in developing countries. It is important to clarify that tax noncompliance is a complex issue and manifests in different forms. Perpetrators also have different motivations behind their actions (Langham *et al.*, 2012). This study focuses on the broad problem of deliberate noncompliance by registered taxpayers and complete failure to register incomes for tax purpose which is also considered as tax evasion. The study particularly investigates why IT appears to be helpless in addressing the problem.

The question this study seeks to answer is:

Q1. Why has IT not significantly improved tax revenue generation in developing countries and why is tax noncompliance still very high despite decades of IT-led reforms?

There is limited academic research on this subject. Current studies on IT and taxation in developing countries are mostly technical reports by IMF, USAID, UN, World Bank and other international organizations. This study approaches the subject through in-depth qualitative interviews with 18 senior tax administration officials in Nigeria – a developing country well-known for very low tax revenue generation. Cobham (2014) and Nigerian government authorities (Okonjo-Iweala, 2014) have described the country's tax to gross domestic product (GDP) ratio as one of the lowest in the world. The perspective of tax administrators is important but largely ignored by previous studies. Tax administrators are the end users of IT who directly apply it to extract tax revenues. Their narratives and feedbacks are thus crucial in determining why the adoption of IT is yet to make a significant impact on tax revenue generation in developing countries.

The study proceeds as follows. Section 2 presents an overview of IT and how it is being used to enhance tax administration. The section discusses the role of IT to situate it in the context of this study. Section 3 narrates the research methodology adopted for the study justifying some of the choices made. Section 4 presents the results and discusses them in relation to current literature while pointing out their significance. Section 5 concludes the study.

2. Information technology and tax administration – an overview

Former UK Minister for Information, Kenneth Baker (quoted in Nixon, 1986, p. 1) aptly describes the influence of IT on contemporary society: "its markets are huge, its application multitudinous, and its potential for increasing efficiency immense. It will be the engine for growth for at least the end of the century." As predicted by Baker, IT appears to be the shaper of the twenty-first century economy. Its influence is increasing at a pace, at times, difficult to cope with. Tax administration is no less affected by the IT revolution. According to ICAEW (2019), tax administrations are involved in the race to harness the benefits of IT because of the complex nature of activities involved in tax collection. Similarly, Miyahira (2008) asserted that taxation and revenue mobilization are functions performed with the support of financial data of individuals and business organizations. Therefore, tax administrations are among the major beneficiaries of the upsurge in IT. The authors further stated that activities of the American Inland Revenue Service are almost entirely driven by IT. Similarly, ICAEW (2019) noted that over 90 per cent of personal tax returns in the UK are now e-filed. IT is increasingly becoming crucial in tax administration. For instance, Jimenez *et al.* (2013) state that, in 2008, OECD estimated the proportion of tax administrations' budgets spent on IT at 15 per cent.

To situate the role of IT in tax administration, it is important to understand the functions of tax administrations. They perform a flow of activities as explained below:

- *Taxpayer registration*: According to Jimenez *et al.* (2013), taxpayer registration "is the process, by which the tax administration collects basic taxpayer identifying information such as names, addresses and legal entity types." The authors further note that this information enables the tax authority to understand those it is dealing with, in terms of location, whether they are active or inactive, the nature and scale of their operations. A common feature of contemporary taxpayer registration is the issuance of a unique taxpayer identification number. This enables all registered taxpayers to have their own unique identity. The centralized database of taxpayers is crucial in modern tax administration because it enables the storage and retrieval of crucial taxpayer data with minimal effort. It also facilitates planning because tax administrations have a bird's eye view of all taxpayers registered in the system. Planning could be in the area of staff or resource allocation, tax revenue forecast and other activities that would be difficult without a centralized taxpayer database enabled by IT. It would be a herculean task for all these activities to be performed efficiently using a manual system.

- *Filing/returns*: Modern tax systems require taxpayers to file their returns at the end of the tax period. IT allows tax administrations to receive returns filed by taxpayers electronically from remote places. These returns and those received manually are processed with the aid of IT. IT features enable checks for consistency and completeness of information (ITC and KWF, 2015). Additionally, non-filers are easily detected and follow-up actions carried out.
- *Payment/collection*: IT also plays an important role in the payment/collection of tax revenues. Though cash may be paid through the banks, records are updated electronically by the IT platforms of tax administrations. Automated systems ensure that amount due, late payments and penalties are easily determined at the click of a button. In addition to the process flow discussed above, IT enables tax administrations to perform other ancillary services such as taxpayer accounting, taxpayer audit, tax revenue accounting and taxpayer services. These ancillary services are briefly explained below:
- *Taxpayer accounting*: It enables tax administrations to host the accounts of millions of taxpayers in their database. The financial relationships between the tax authorities and individuals are easily determined through the taxpayer accounting features of IT. For instance, at any point in time, the liability of taxpayers could be determined in terms of tax due, penalty, etc. Conversely, the tax authority may be indebted to the taxpayer by way of tax credits claimed, refunds, etc. These complex financial relationships between taxpayers and tax administrators could be cumbersome and prone to errors if undertaken manually.
- *Taxpayer audit*: IT assists in the tax audit process by flagging up risky accounts. This is possible because all aspects of taxpayers' financial dealings with tax authorities are accessible from the IT platform. The histories of taxpayers' income and tax payments are available and unexplained deviations can be queried. Overall, the audit process is faster using the IT platform.
- *Tax revenue accounting*: There are numerous types of taxes, for instance, personal income tax, company income tax, value added tax, capital gain tax and others. Contemporary tax revenue accounting does not just give a total figure of tax revenue; how the revenues fall into different categories of taxes are equally important for the purpose of planning and control. This function is made easy by IT. Accounts are also produced in terms of collection by period and by regions. All these facilities of modern IT go a long way to make tax revenue planning and collection more effective and efficient.

- *Taxpayer services*: Taxpayer services are becoming the preferred tool to engender voluntary compliance (OECD, 2010). There are increasing calls to treat taxpayers as customers/clients in line with the trend in private sector businesses. Mutual antagonism between taxpayers and tax authorities has been consistently found to cause tax noncompliance (Feld and Frey, 2007, 2010). One of the common taxpayer services involves making information available on all aspects of the tax system. The IT channel can be used to segregate taxpayers in terms of their information requirements. The channel can also be used to pass the required information through automated e-mails and other forms of electronic messages. IT channels also facilitate taxpayers and tax authorities' interactions through interactive websites.

Through the different uses of IT discussed in the preceding paragraphs, tax administrations have benefited immensely. IT has enhanced efficiency in tax administration and contributed to cost reduction for both the tax administrations and taxpayers. For tax administrations, cumbersome administrative functions are performed faster with minimal cost. For taxpayers, IT platforms enable them to interface with tax administrations without the need to expend time and resources in making long trips – they can simply operate from home. Additionally, tax administration is more transparent under IT platforms as all transactions are visible and historical records are made available at the click of a button. This engenders more trust in tax administration and reduces tax evasion. Moreover, IT enables tax administrations to gain insight into business activities in the entire economy leading to effective planning. It is important to add that IT is one of the many tools of tax administration and does not on its own guarantee cost efficiency and effectiveness. There are numerous factors at play, including trust in government, tax awareness and structure of the economy. However, this study focuses on the narrow aspect of IT and its role in tax administration, especially its inability to tackle noncompliance in the developing countries context.

3. Research methodology

3.1 Research design

The design of the present study is informed by its key objective, which is to seek explanations for the inability of IT to make a significant impact on tax revenue generation in developing countries after about 30 years of deployment. While the endemic challenges of tax revenue generation in developing countries has been on the front burner of international development discourse for a long time and has been extensively discussed (Kaldor, 1963; Burgess and Stern, 1993; Besley and Persson, 2014; OECD, 2014a; IMF, 2015) and while experts have asserted that IT is yet to significantly tackle the problem, there is a conspicuous absence of studies that investigate "why and how" IT is constrained in this task. Therefore, this study essentially seeks to investigate how and why IT is handicapped in tackling tax noncompliance in developing countries. While a variety of designs could be feasible in answering this question, the present study opts for the qualitative design. One of the reasons for adopting this design is the need for in-depth understanding of the issues involved (Creswell, 2013). In-depth understanding can come from qualitative interviews in which probing questions are asked and participants' experiences are shared.

While the qualitative design is preferred for this study, the approach used is the grounded theory. According to Creswell (2013, p. 83):

> [...] grounded theory is a qualitative research design in which the inquirer generates a general explanation (a theory) of a process, an action, or an interaction, shaped by the views of a large number of participants.

This quotation essentially informs the design of this study. The study seeks to derive explanation on "how and why" IT is yet to make a significant impact on tax revenue generation in developing countries through the views of experienced participants selected for this study.

3.2 Research context, population and participants

The qualitative design is limited in terms of coverage because it involves interviews with individuals who have experienced the phenomenon under investigation. It is often difficult for a research of this nature to be conducted in extensive areas. Therefore, this study was limited to Nigeria even though the topic is of interest to numerous developing countries. Moreover, Nigeria constitutes a good case study for the challenges of tax revenue generation among developing countries. The country has one of the largest populations among developing countries [185 million according to United Nations Economic Commission for Africa (UNECA, 2016)]. With this population, the country is about a quarter of the entire sub-Saharan Africa's population of 800 million people (IMF, 2015). In addition to its large population, the country constitutes an ironic case of a growing economy alongside a stagnated tax revenue generation. Up to 2014, the country witnessed one of the highest growth rates in the world (OECD, 2014b) but had one of the lowest tax to GDP ratios worldwide (Cobham, 2014).

The investigation of the challenges faced by IT in tax revenue generation in developing countries could possibly be conducted using different populations and samples – taxpayers, IT experts, tax professionals and tax administrators. However, this study settled for tax administrators. The study chose tax administrators because that they are the people who actually use IT to administer the entire tax system – from filing to collection and other services. The tax administrators are the most users of the IT platforms. The taxpayers may use it only for filing and checking their accounts. The IT experts may have the technical knowledge of the workings of the hardware and software, but they do not deal directly with the taxpayers. Tax professionals were not considered for this study because they are consultants to taxpayers and do not administer taxes even though they may possess IT knowledge. Tax administrators directly apply IT in interacting with the taxpayers. Because the objective of the study is to investigate the challenges faced by IT in tax revenue generation, tax administrators constitute the best population.

The next consideration is the choice of participants or sample for the investigation. There are thousands of staff employed by the Nigerian tax authority (Federal Inland Revenue Service [FIRS]). The study deliberately targets those staff with some predetermined criteria: first, staff that has worked 15 years and above in the revenue authority. These categories are considered experienced and would have worked in both the period of manual operations and also the last 10 years when IT implementation intensified, hence they can tell the difference. The second criterion is that participants should be in a department that uses IT to interface with taxpayers directly. Third, selected participants were those that occupy junior, middle to top management positions. The choice of these categories is obviously because they would have had experience in taking some initiatives and executed some IT-related assignments for which they were responsible. This would give them adequate stock of experience to respond to the interview questions. These selection criteria were followed rigorously to ensure that those selected were able to contribute meaningfully to the discussion.

The next step was the participants' recruitment process. Introductory letters were sent to about 60 officials of the tax revenue authority. The officials were randomly selected with guidance from the human resource department of the tax authority. The letters introduced the researchers and explained the purpose of the study, stressing that it was solely for academic purpose and completely devoid of any political or administrative undertone. This was to gain the confidence of potential participants. Additionally, it was stressed that interviews will be kept confidential and would not be linked to their persons after the process. To further boost their confidence on the anonymity of the process, they were informed that there was no need to fill in their real names on the data forms attached to the introductory letters. However, research assistants made personal notes on their research diaries from which they could identify and trace participants' offices. Out of about 60 introductory letters and data forms sent out, 39 responses were obtained. From examination of the data forms attached to the letters, 7 respondents were disqualified on the basis of length of service and experience, leaving out 32 potential participants. Out of these, 18 were eventually interviewed. The interviews were called off after the 18th participant for two reasons. First, it was obvious that saturation point had been reached after additional interviews were no longer yielding new information. This is in line with recommended practices in qualitative research (Creswell, 2013). Moreover, the 18 interviews should be considered adequate by the standard of the grounded theory approach (Creswell, 2013). Table I gives a profile of the 18 tax administration officials interviewed.

3.3 Interview and data analysis procedure

The interviews were semi-structured. A standard question was used to begin discussion with all participants – *Based on your experience, what are the challenges facing IT in tax administration?* Follow-up questions were not structured and depended on the responses of the participants. The interviews were in-depth and participants were allowed to do most of the talking as recommended by Charmaz (2006). This is more so that the researchers'

Participant	Position	Years of tax administration experience	Education level
Participant 1	Senior-level manager	22	Masters
Participant 2	Senior-level manager	28	Masters
Participant 3	Junior-level manager	15	BSc
Participant 4	Senior-level manager	20	Masters
Participant 5	Junior-level manager	16	BSc
Participant 6	Junior-level manager	18	BSc
Participant 7	Senior-level manager	25	Masters
Participant 8	Middle-level manager	16	BSc/ professional qualification
Participant 9	Middle-level manager	15	Masters
Participant 10	Middle-level manager	17	BSc
Participant 11	Senior-level manager	17	Masters
Participant 12	Senior-level manager	22	Masters
Participant 13	Junior-level manager	17	BSc/ professional qualification
Participant 14	Junior-level manager	15	BSc
Participant 15	Middle-level manager	19	BSc
Participant 16	Senior-level manager	21	Masters
Participant 17	Senior-level manager	20	Masters
Participant 18	Senior-level manager	26	BSc/ professional qualification

Table I. Profiles of respondents

objective is to obtain a grounded theory. The theory has to be extracted from the participants' narratives (textual data), hence the need to allow them do most of the talking. Though the interviews were participants-driven, there were follow-up questions and periodic interruptions from the lead researcher (who was part of the interview crew) and the two research assistants. These interruptions were made to seek clarifications on statements that appeared ambiguous. The interview proceedings were tape-recorded with the consent of the participants (three participants objected and theirs were recorded through note-taking).

Data analysis was performed after the interviews. The first step was transcribing of the recorded data. Interview notes taken initially with pen were also neatly typed to enable comparison with those transcribed from tape-recorders. Thematic analysis was used in line with Attride-Stirling (2001). First, data were coded through identifying similar words (in terms of meaning) across each participant's transcripts. Second, coded words were selected from each participant's transcript and grouped into themes conveying distinct meaning across the interviews. For instance, all statements relating to corruption were selected from all participants' transcripts and merged under the corruption theme. Coding and thematic analysis were performed by research assistants and crosschecked by the researchers to ensure a rigorous process.

4. Results and discussion

This section presents the results from the interviews under three themes produced from the thematic analysis. Implications of the results were discussed thereafter.

4.1 Information technology is not immune to corruption

Participants outlined numerous problems associated with the tax system and link most of them to systemic corruption. As some of the participants observed, IT enhances efficiency of tax administration, but it is not immune from the entrenched corruption that has affected all aspects of governance. As Participant 7 noted:

> We have fully computerized our operations since 2012. I believe it has improved service delivery and the effectiveness of our operations. However, tax evasion is still a big problem. Emm [. . .] you see [. . .] there is a big problem of corruption in the entire system, I mean, even the system outside tax administration. Tax administration is not about the tax authority alone, it is about all citizens and government working together to build the society. When the entire system is dysfunctional, computers and IT in the tax administration's office cannot perform any magic.

Participant 7 was reminded that he did not mention specific instances of how corruption affects IT or prevent IT from playing a significant role in tax revenue generation. He responded:

> Wellc [. . .] there is a misconception in some quarters or among policy-makers that when state-of-the-art computers and sophisticated software is deployed, problems would just disappear. I have had the privilege of working in the tax authority for the past 25 years. I am aware of the problems when our operations were not IT-driven and I am aware of the benefits we have had over the last 15 years when we began to computerize. Our efficiency has been enhanced, no doubt, but the criminal tendencies among the business people and the tax officials still remain. I do not see how IT affects that. Don't forget that the computers do not have legs to chase criminals; neither do they have hands to apprehend the criminals (general laughter). They are mere equipment with no power of their own and only subject to manipulation by users. I hope you are not leading me to talk too much – laughs.

Further attempts to extract more information on this theme from Participant 7 did not yield much. However, Participant 12 was more explicit. In his words:

> Tax evasion is a big problem in this country, no doubt. We are doing our best, especially with the current reforms in which IT is playing a major role. Just that IT itself constitutes its own problem. It is what I can call a double-edged sword. While it facilitates our own operations as tax administrators, it also facilitates the operations of the criminals (general laughter). Yes [. . .] it is a fact! With the widespread usage of IT as we are currently experiencing, the scale of financial frauds is also increasing. My staff have been auditing a large supermarket for the past three years and everything appears okay until a disgruntled staff member blew the whistle on some ingenious sharp practices being perpetrated in the organization. They configured their accounting software such that they had two accounts for all transactions. They used one to deal with customers, showing accurate value of transactions. However, the system was also configured to generate a second account applying 30 per cent lower values across the board and printing dummy invoices accordingly. This is the account presented to my auditors. This was a large scale tax fraud made possible by IT. This fraud would have been more difficult during the manual era but was enabled by IT. I am not saying the manual system is better, neither am I belittling the contribution of IT to tax administration. What I am saying in essence is that IT does not stop tax evasion and it may even facilitate it. To benefit from IT, there must be a commitment to fight corruption generally and offenders must be made to see that it does not pay, otherwise, IT will be helpless and may even become a tool in the hands of corrupt people.

Participant 15 alleged that corruption is endemic in the tax administration and it is not peculiar to the agency; rather, it is a national problem. He lamented that even when IT could facilitate transparency, it is sabotaged by unscrupulous staff who benefits from the chaos associated with the manual system:

> You know during the manual era, when frauds are committed on some accounts, files hosing information on such accounts could go missing but with IT, it is easy to retrieve needed information. But then, what they do now is to sabotage the IT platform. The hardware is sabotaged and are not allowed to function optimally. This is done to continue to frustrate IT adoption. I mean, this is perpetrated by staff of tax administration. Tax evasion is not only about the taxpayers, from our experience in this part of the world, a lot of active collusion between taxpayers and tax officials are perpetrated. The implication is that if IT equipment is deployed to improve the system, it is sabotaged by the same people that it is supposed to help. In some cases, the cost of maintaining the equipment for one year would exceed the purchase cost. This is because of deliberate sabotage to frustrate management and to make them abandon the IT projects.

Participant 16's views corroborate those of Participant 15. She added an interesting dimension to the discussion:

> In the course of my career, I have visited the developed countries on official assignments and private visits. Everything works and they function in an organized system where rules and responsibilities are defined and enforced transparently from the highest level of government. In the absence of this type of situation, you do not expect computers to perform miracles. Remember the computer can only process what it is fed with; remember [. . .] emm [. . .] GIGA (Garbage In Garbage Out). In a nutshell, what do you think will happen if the computer is fed with the wrong data or falsified data? It will process and return false data of course. We are doing our best as tax administrators but we need help from the highest level of political authority. Everyone needs to be involved in solving the problem of tax evasion. I do not believe some few people (tax administrators) should be given computers and told to turn sinners into saints overnight (general laughter). Seriously! It goes beyond IT. It is a problem that should be solved collectively, especially at the highest level. Okay [. . .] for instance, you may detect some evaders who could

> threaten to use their political connections to sack you from your duties. So, what do you do? Your IT is more or less useless unless the rule of law prevails.

Some other participants (Participants 3, 7, 15 and 16) narrated similar experiences. The dominant point in this theme is that given the entrenched corruption in the country (and within the tax administration), IT cannot be effective because it derives its efficiency from how it is deployed by its users. If the users are determined to suppress its efficacy, IT becomes helpless.

4.2 Information technology cannot capture informal/unregistered transactions

Many of the participants pointed out the limitations of IT in terms of capturing the huge volume of business transactions that go unrecorded. As noted by Participant 2, one of the biggest challenges of tax administration in this part of the world is dealing with transactions conducted informally. In his words:

> IT has assisted wonderfully in dealing with formal businesses. We are now able to collect taxes due from formal businesses more effectively than we used to do 15 years ago. But then, don't forget that [. . .] emm [. . .] so much underground businesses are carried out. This is currently one of our biggest challenges. Even though we are doing our best in this regard but it needs a complete change of mindset and a new regime of enforcement. This particular problem is beyond IT. IT is not witchcraft (laughter) so we do not expect it to go after ghost operations. What we are doing to solve the problem of businesses doing unreported transactions is continuous awareness creation on the need to be tax compliant. That is the much we can do. We also try to investigate and detect some cases of unreported transactions but it is not possible nor feasible to cover the entire economy. How much human resources do we need to do so? The best thing is to encourage voluntary compliance. IT cannot help in this regard.

Participant 8 agrees with the position of Participant 2. She lamented that they often try to use IT for simulation where data are not available and bill business people based on presumption but this method is prone to controversy:

> I have asked my staff to stop presumptive billings based on IT simulation because they (business people) must raise objection and we are not able to prove anything in court. Taxation is based on actual incomes and if taxpayers refuse to declare their incomes or hide such incomes, then there is a big problem for tax administration. IT may help but it is really problematic. It can't be a substitute for cooperative compliance.

Participant 13 laughed at the idea of using IT to tackle informal operations. In his words:

> Computers are not detectives (laughs). They are information processing tools and when you do not have the information, what are they going to process? The solution is addressing the issues that make business owners want to hide their incomes in the first place. Take a simple case of an unmarried salaried worker who declares four children to enjoy children allowance. What do you expect tax administration to do? Follow him to check his house? Of course when you reach the house, he tells you the non-existent family has travelled to their hometown. So what do you do next? Travel to the hometown? The computer will accept and process this wrong information and the salary earner will enjoy the family allowance even though he has none.

The participant was asked about supporting documents to claim a family allowance in such instance. "Well, in this part of the world, supporting claims with documents does not pose any problems. The documents could be procured from the marriage registration and other agencies (laughter)." Other participants' views were in line with participant 2, 8 and 13. They were unanimous on the view that informal unregistered activities are extensively carried out in the country and IT is constrained in handling the situation.

4.3 Most small and medium-sized enterprises lack information technology infrastructure to embrace E-taxation

Participants explained that e-taxation, which is one of the defining features of IT, is yet to be successful in the country's tax administration. Participant 1 explained that, while the tax authority is battling to maintain its own IT systems, a large majority of SMEs, which constitute the bulk of the country's businesses, operate without internet and computers. As such, they do not share the enthusiasm on e-filing:

> Despite e-filing opportunities that come with IT in the developed countries, unfortunately, we still have busy offices here. Taxpayers troop to our offices on a daily basis to carry out their transactions.

The participant was asked about the possible reasons that make taxpayers troop to the tax offices rather than engage in e-filing.

> I think most of them do not have the IT facility. You know internet is still a luxury in this part of the world. SMEs are not willing to incur such costs. Additionally, basic IT knowledge may be taken for granted in the advanced world, but here, you will be shocked to discover that many people are still struggling to differentiate a mouse from keyboard (laughter). I think these are the reasons e-filing is yet to catch up here.

Participant 6 throws more light on the issue of IT infrastructure among SMEs:

> In the tax office, our IT system has improved tremendously in the last 5 years. But to me, a well-equipped tax authority dealing with businesses that are still operating manually poses a lot of problem. The tax agency cannot move as fast as it wants because it is always held back by the large number of businesses that are not IT-compliant.

The three themes from the interview data are represented in an abridged thematic network following Attride-Stirling (2001) as shown in Figure 1.

5. Discussion of findings and their policy implications

The objective of the paper is to investigate the reasons IT has not significantly improved tax revenue generation in underdeveloped countries despite decades of IT-led tax administration reforms. As stated from the beginning, there is no denying some random improvements in tax revenue generation and some areas that IT has made impact. However, overall, large scale tax noncompliance remains a big problem (Gill, 2003; IMF, 2015; Umar *et al.*, 2017). In attaining the objective of the study, the grounded theory approach was used – theory development grounded in the narratives of experienced participants. It is obvious that this objective was largely attained. The 18 participants selected through rigorous criteria of years of experience in tax administration, managerial level and education level, gave useful insights as presented in the preceding section. These insights fall into three themes:

(1) effect of corruption;

(2) informal business not captured by IT; and

(3) a general lack of IT infrastructure among SMEs. In one way, the present study could be said to be exploratory.

This is because, to the best of the researchers' knowledge, previous studies did not investigate why IT is handicapped in tackling the large-scale tax noncompliance in developing countries. However, there are a lot of studies related to the findings of the present paper. The themes that constitute the findings of this study, some related studies and their policy implication are discussed below.

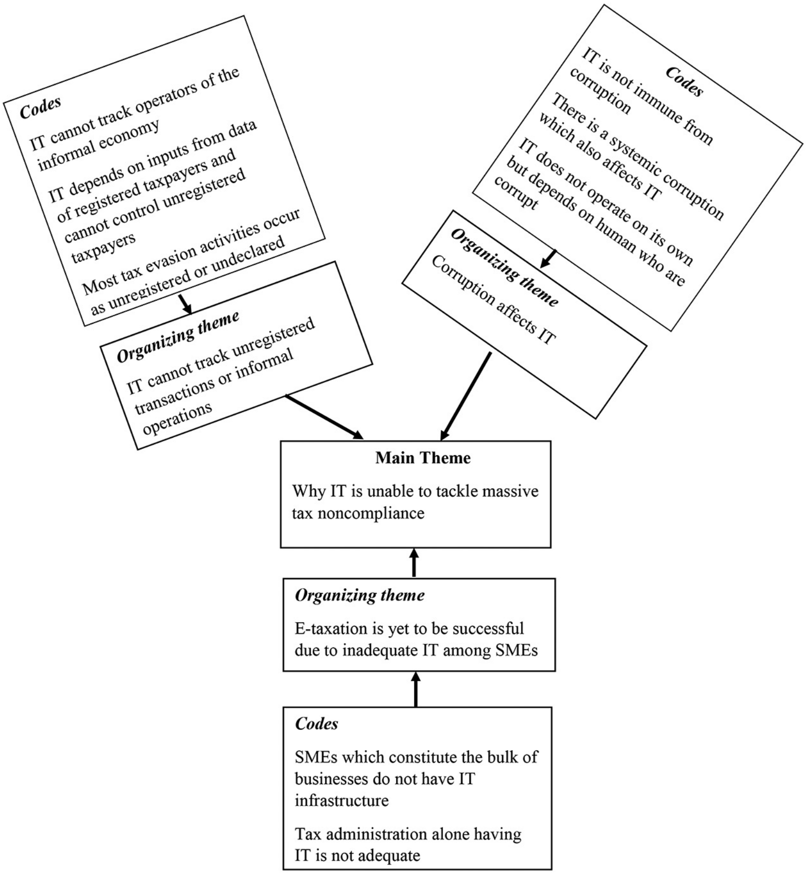

Figure 1.
Abridged thematic network of interview data

The first theme from the analysis of interview data is that corruption not only has adverse effect on the efficacy of IT in tax administration but that IT itself can be infected with the corruption virus. In other words, IT itself can be used to facilitate corruption in tax administration. Taxpayers also leverage on IT to evade taxes in some cases. This finding is an important addition to the literature in the area of IT and tax reform.

Not surprisingly, there is a growing literature on the effect of corruption on taxation. In 2017, two separate academic symposia were held in Australia and South Africa to explore the relationship between corruption and taxation. Articles from the symposia constitute a special issue on the subject, published by the eJournal of Tax Research (see editorial by Evans, 2017). In the special issue, renowned tax scholars explored the topic and the general consensus is that corruption is negatively associated with tax revenue generation (Tanzi, 2017; Alm and Liu, 2017; Baum *et al.*, 2017; Tjen and Evans, 2017; Nguyen *et al.*, 2017). Alm and Liu, and Baum *et al.* particularly deployed convincing empirical data to drive home the proposition that tax revenue generation is adversely affected wherever corruption thrives. Before the international symposia and special journal issue discussed above, there have been intermittent attempts by scholars to link corruption with low tax revenue generation (Khlif *et al.*, 2016; Picur and Riahi-Belkaoui, 2006; Richardson, 2006). While previous studies have generally linked corruption to low tax revenue generation, this study is more specific in two ways:

(1) First, it specifically found out how corruption compromises IT which is the contemporary platform for tax administration.

(2) Second, this study's findings are generated from strategic actors in the tax system – the tax administrators, who were surprisingly ignored by previous studies.

The second theme from the interview data is the inability of IT to tackle informal/unregistered business activities. This theme is evident. As one of the participants noted, the computer can only process the data it is fed with. Similar to the first theme, there has been a handful of previous research on the effect of the informal economy in taxation (Joshi *et al.*, 2014; Schneider and Enste, 2000; Torgler and Schneider, 2007; La Porta and Shleifer, 2008; OECD, 2012). This study has deepened understanding by pointing out the limitations of IT in dealing with the informal economy. The third theme arising from the interview data is the lack of IT facility among a majority of the SMEs that tax administration has to deal with. According to the tax administrators interviewed, it is not enough to equip the tax agency with modern IT equipment. If the businesses are not enabled, then it becomes difficult for them to interact with tax administration through e-filing. This important discovery has been ignored previously.

It is important to note that there are studies pointing out successes in improving tax revenue generation with IT in some countries (for instance, the study of Ali *et al.*, 2017, on Ethiopia). This study's findings do not contradict such reports. Rather, the findings of this study point out the challenges that should be tackled to significantly improve the performance of IT in tax revenue generation in developing countries. The findings from this study have weighty policy implications. First, on the issue of corruption, political leaders of developing countries and international tax reform advocates should realize that IT is a mere administrative tool and cannot substitute for the political will to eradicate corruption. When political leaders tackle corruption through incentivizing honesty (carrots) and firmly punishing offenders (stick), the work of IT becomes easier. But when corruption is allowed unfettered, IT becomes useless. As Ali *et al.* (2017, p. 2) noted, "machines do not enforce tax rules by themselves." This assertion is very true; machines can only facilitate. Whether tax laws or the rule of law generally in the society is enforced or not is left for the political leaders. The political leaders also have the responsibility to tackle the informal operators. With the appropriate incentive/sanctions, they will formalize operations, thus making it easy for IT to track them. On the issue of inadequate IT facility among SMEs, governments can also intervene through training subsidy and, perhaps, providing other assistance that could enable SMEs acquire IT equipment at reasonable cost. Such short-term sacrifice may yield long-term returns in terms of improved tax revenue generation.

6. Conclusion

With the continued large-scale tax noncompliance in many developing countries (IMF, 2015; Umar *et al.*, 2017) and the obvious inability of IT to transform the numerous tax evaders into compliant taxpayers, it becomes necessary to investigate the challenges IT faces in a typical developing country. This study has addressed this important issue. The study has come up with explanations (grounded theory from participants' textual data) on why IT is not a magic bullet in tackling tax noncompliance in developing countries. The issue of endemic corruption which compromises IT's effectiveness was consistently highlighted by the study's participants. The prevalence of the informal economy which cannot be captured by IT was also pointed out by participants. Additionally, the problem of limited IT infrastructure among businesses was pointed out. These issues must be addressed along with IT deployment to ensure meaningful impact. Despite the significant findings of this study, there is need for some caution in interpreting them. The findings come from tax administrators in a single country – Nigeria. Developing countries are numerous and differ a lot in their characteristics. Additionally, their levels of development also differ. Therefore, the challenges highlighted in this study may not affect every country in the same proportion. But overall, the findings represent a good case study for other countries. Moreover, the methodology was narrated explicitly such that researchers in other countries may want to replicate the study with their own tax administrators. This should reveal country-specific problems if they exist.

At no other time is the issue of tax revenue generation in developing country more crucial than now (McKerchar and Evans, 2009). Developing countries are witnessing population explosions while foreign aids and revenues from primary commodities exports, on which they depend, keep dwindling. The problem should not be seen as that of developing countries alone. The advanced countries also share in the problem because, when socioeconomic crises erupt in developing countries, refugees massively flee to advanced countries causing disruptions to the later countries. Therefore, the current efforts by multilateral organizations and donor countries to help developing countries reform their tax system is in the right direction. However, there appears to be an excessive focus on tax administration reforms which, more often than none, is implemented through IT. While IT is indispensable in contemporary tax administration and governance generally, the findings of this study calls for reordering of priority. Deploying IT before sanitizing the system appears to be putting the cart before the horse. Political leaders of developing countries should be advised to reform the people and the system first before deploying IT to assist. Otherwise, IT may not perform optimally in raising the urgently needed tax revenues.

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