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Public finance regulatory compliance among public secondary schools

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Abstract

Purpose – The purpose of this paper is to investigate the relationship between deterrence measures, leadership support and public finance regulatory compliance among public secondary schools in Uganda.
Design/methodology/approach – A questionnaire survey of 257 Ugandan public secondary schools was undertaken. Ordinary least squares regression was used to determine whether, in addition to deterrence measures, leadership support also explains variances in public finance regulatory compliance.
Findings – Results based on a hierarchical regression analysis indicate that deterrence measures explain 17.4 per cent of variances in public finance regulatory compliance. In addition, leadership support explains a further 18.2 per cent of the variances in public finance regulatory compliance.
Research limitations/implications – The results imply that in addition to deterrence measures, secondary schools in Uganda should also emphasise leadership support in order to improve their public finance regulatory compliance.
Originality/value – Contrary to previous studies, the authors explain regulatory compliance using deterrence measures and leadership support in a single study while also focussing on institutions and not individuals as a unit of analysis. The authors also extend the predominantly financial institutions compliance studies to the education sector. Thus probably for the first time, the authors show that leadership support complements deterrence measures in explaining public finance regulatory compliance in the education sector. Even with strong deterrence measures, the lack of leadership support may lead to inadequate public finance regulatory compliance.

Keywords Deterrence measures, Leadership support, Public finance regulatory compliance, Public secondary schools, Uganda
Paper type Research paper

1. Introduction

When discussing the progress of a country, one essential concept that needs to be considered is economic development. According to Nafziger (2006) economic development encompasses improvements in education and skill levels. Kuklys (2005) traces education in human development theories as one that enhances human welfare. Thus the enthusiasm of nations in promoting citizens' education is rooted in this

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theoretical foundation. This line of thinking suggests that education is a public good. Like any other public good, education is largely financed by resources raised from the public through taxation. Therefore, governments find it essential to be prudent in the management of these public funds through instituting legislation and policies. The prudency demonstrated through compliance to the regulatory framework ensures effective and appropriate management of the assigned mandate. Moreover in financial economics, an appropriate legal and regulatory framework has long been established as a basic requirement for establishing and operating sound financial institutions and markets (Faruq and Kabir, 2009).

To this effect, public education institutions are accountable not only for how much they spend but also for the ways they use the resources entrusted to them. Accordingly, actors in public secondary schools must comply with such regulations. In the case of Uganda, public secondary schools are required to adhere to the public finance and accountability regulatory framework when managing funds from government. The finance and accountability regulations are supported by the Education Act (2008) which requires appropriate management of public funds. Despite the existence of such regulatory framework, there exist inadequate public finance regulatory compliance levels (Auditor General (AG), 2003, 2012).

Regulatory compliance studies have employed a variety of theoretical models such as the basic deterrent model and other models which integrate economic theory of social psychology. The deterrent model focusses on the certainty and severity of penalty as a key determinant of compliance. On the other hand, models that integrate economic theory of social psychology tend to account for such motivations expected to influence one's decision on whether to comply (Ali and Abdullah, 2010). The literature indicates that empirical studies that have examined regulatory compliance in public institutions are scanty and limited to procurement regulations (Ntayi *et al.*, 2012; Sang and Mugambi, 2014). More so, these studies have used other variables such as moral orientation and staff awareness while ignoring the contribution of leadership support. This paper posits that compliance can be jeopardised if collective orientation in goal attainment is overlooked. Our observations are that previous studies largely draw from agency theory (Jensen and Meckling, 1976) which is linked to the rational choice model. The model suggests that individuals or firms will comply with authority rules and decisions when confronted with harsh sanctions and penalties (March and Olsen, 1968; Scott, 2004). Following from this, stewardship theory researchers such as Hernandez (2008) recommend that future studies should explore and empirically test the effects of leadership support on stewards' behaviour which is inferred here as compliance behaviours. In addition to agency theory, we employ the regulative element of the institutional theory in examining the deterrence approach to compliance. Institution theory indicates that through the normative, cognitive and regulative pressures, entities tend to adopt acceptable structures, policies, programmes to achieve a fit with their external environment (DiMaggio and Powell, 1983; Scott, 2008).

The purpose of this paper is to investigate the relationship between deterrence measures, leadership support and public finance regulatory compliance among public secondary schools in Uganda. Thus in this study, we provide an explanation of public finance regulatory compliance among public secondary schools by incorporating deterrence measures with leadership support in a single study. We demonstrate that leadership support can complement deterrence measures in explaining variances in public finance regulatory compliance with a focus on secondary schools.

This paper makes a contribution in a number of ways. First, existing literature explains regulatory compliance using deterrence measures (Ali and Abdullah, 2010; Sang and Mugambi, 2014) and leadership support (Hernandez, 2008) independently. This study, investigates the two variables in a single study. Therefore, our study finds out whether leadership support which is based on stewardship theory complements agency theory based deterrence measures in explaining public finance regulatory compliance in secondary schools. Second, extant research has tended to focus on an individual as the unit of analysis, ignoring the fact that these individuals work in institutional settings that may have an influence on their decisions to either comply or otherwise. This paper examines regulatory compliance at an institutional level in government-owned institutions specifically public secondary schools in Uganda, a Sub-Saharan African setting. This setting is unique because public secondary schools play a crucial role in various operations of government. Such crucial roles include being part of the chain in the supply of social and human capital that drives the different entities in the economy (World Bank, 2005, Report). Secondary schools are recognised for their crucial link between primary schooling, tertiary education and the labour market. As such, we pay attention to the effectiveness of their operations, through adherence to regulations. Third, compliance studies have largely focussed on financial institutions especially in the wake of the global financial crisis (Birindelli and Ferretti, 2013; Gabbi *et al.*, 2011; Sejjaaka, 2005) neglecting other institutions in the same operational environment. Adherence to the public financial regulations enhances society's trust in government and confidence on proper utilisation of the entrusted public resources. Fourth, while researchers (Chalmers *et al.*, 2012; May, 2004; Vicent-Jones, 2002) acknowledge that regulations guard public interest and therefore adequate measures must be instituted to ensure their adherence, there has been consistent inadequate regulatory compliance by Ugandan government entities (Auditor General (AG), 2003, 2012; FINMAP, 2011). Finally, there is a myriad of public finance regulations in Uganda. It is important for stakeholders to understand why government entities comply with such regulations. Inadequate adherence to the regulations greatly affects the planned service delivery to all the citizenry and attainment of value for public funds spent.

The rest of the paper is organised as follows. The next section explains the nature of public finance regulatory framework governing secondary schools in Uganda and their general compliance state. This is followed by a literature review and hypotheses development in Section 3. Section 4 outlines the methodology and is followed by the presentation and discussion of results in Section 5. The final section is the conclusion.

2. Public finance regulatory framework governing secondary schools in Uganda and compliance status

The typology of public finance regulatory framework in Uganda is predominantly from the Constitution of the Republic of Uganda (Uganda, 1995, 2005) and the Public Finance and Accountability Act (PFAA) (Uganda, 2003a). These are supported by the Budget Act (Uganda, 2001), Public Procurement and Disposal Act (Uganda, 2003c), Education Act (Uganda, 2008), Public Finance and Accountability Regulations (PFAR) (Uganda, 2003b, d) and circulars issued from time to time by Ministry of Finance to all government entities. The PFAA (Uganda, 2003a) takes precedent over all other guidelines regarding public finance management (Act 6, Sec 49). The act provides an economic and policy framework to regulate the financial management of the government. It further prescribes responsibilities of persons entrusted with financial management and it covers any other connected matters. The mandate reflected in the PFAA (Uganda, 2003a) which empowers the Ministry of Finance to oversee the function of public finance management is derived from Chapter 8 of the constitution of the Republic of Uganda. The Ministry of Finance plays the afore-mentioned role through other government ministries and agencies of which public secondary schools are part.

The PFAA (Uganda, 2003a) requires all public institution to follow guidelines in the generation and implementation of budgets. The regulatory framework provides detailed controls that are required to be in place including monitoring structures such as audit committees and internal audit. These structures play the oversight and monitoring role of the internal control processes (Uganda, 2003a, PFAA Part VI). The Uganda (2003d) provide further detailed operational guidelines that have to be followed by entities on a day to day basis.

The education sector in Uganda consists of three main subsectors, namely primary, post-primary (secondary level) and post-secondary and advanced level (university and other tertiary education level (Uganda, 2008). Following the success of implementing the universal primary education strategy, the Ugandan government turned its focus on secondary education. The purpose of the secondary education focus was to promote scientific, technical and cultural knowledge – skills and attitudes required for a sustainable economic growth. As such a strategy for universal secondary education was established in 2007. However, as government focusses on the expansion of secondary school education, the financial management of such schools is also of importance. For example, in the last three financial years (2011-2013), public secondary schools have received on average shs 0.325 billion (US$120 million, which is 20 per cent of the education sector budget) per year. As part of the process to ensure accountability for the government funding received, all the public schools have to follow the PFAA (Uganda, 2003a). In addition, the Education Act (Uganda, 2008) section 29(1) and (2) mandates school boards to cause the keeping of proper books of accounts with respect to all sums of money received and expended plus recognition of assets and liabilities of the school.

Despite such documented guidelines, the Auditor General's reports for the period 2005-2012 and FINMAP Report 2011 indicate that more than 50 per cent of the government entities in Uganda do not fully comply with the existing financial regulatory framework. The Auditor General's reports indicate violations of public finance regulations such as excess expenditure without authority, diversion of funds, unaccounted funds, outstanding administrative advances and nugatory expenditures. Similarly, Masuba (2013) reveals high levels of inappropriate financial accounting, bookkeeping, reporting and asset management among public secondary schools in Uganda. This state of affairs suggests that there are problems that may be affecting public finance regulatory compliance in Uganda and specifically public secondary schools. Similar observations of non-compliance have been made by ROSC (2005) which recommends strengthening of the enforcement mechanisms, enhancing capacity of regulatory and professional bodies among others.

3. Literature and hypotheses development

3.1 Theoretical considerations

Theories that have been used in predicting regulatory compliance indicate that compliance should be addressed at two main interfaces; at the entity and its environment and at the interface of the organisation and its employees (Interligi, 2010).

This paper adopts institutional theory and stewardship theory as a relevant framework for understanding regulatory compliance at the entity level. Institutional theory emphasises that organisational survival is dependent on securing legitimacy from stakeholders based on organisational acceptance of normative, regulative and cognitive pressures that compel them to adopt appropriate structures, policies and procedures (DiMaggio and Powell, 1983; Scott, 2004; Silverman, 2008). The normative elements of institutional theory emphasise that institutions are systems underpinned by common norms, regulations, obligations, human networks and shared values. Hence, referring to institutional norms will improve the depth and thoroughness of the decision-making process. The factors that affect compliance in this case are personal morality, social influence and legitimacy. The regulative elements as depicted from the institutional theory stress rule setting, monitoring and sanctioning activities (Scott, 2008). In this regard, the theory considers an entity as a system made up of many individuals with their own interests and preferences (Scott, 2004). Rationally, each participant in the organisation tends to maximise his or her benefits by taking a specific logic of action. The consequences arising out of such actions will make organisations to either comply (or not to comply) with laws. To safeguard against any kind of free will decision in complying, entities institute deterrence measures such as penalties to achieve compliance.

Deterrence measures aside, scholars such as Verschoor (2006) observe that organisational factors and leadership in particular are central to the development of organisational culture, including the culture of compliance. When applied to stewardship theory, this study singles out leadership support as one medium through which collective action and commitment relating to public finance regulatory compliance may be achieved. Through this kind of framework, employees receive the necessary support towards regulatory compliance framework components such as budget adherence, internal controls and accountability through appropriate reporting. Indeed, May (2005) argues that the credibility of an entity will depend on realising commitment to the welfare, growth and wholeness of others which is achieved through stewardship governance. With the attainment of commitment behaviour a culture of involvement and ownership to organisational goals that include regulatory compliance will be realised (Block, 1993). Thus stewardship theory offers a new framing of social contract that aligns the organisational goals with those of fostering human flourishing, caring for people and partnering with other social institutions (Hernandez, 2012). It is argued then that relationally supportive leadership behaviours create stewardship behaviours in an organisation leading to regulatory compliance.

3.2 Prior literature and hypotheses development

3.2.1 Deterrence measures. Extant literature reveals that deterrence is associated with an economic model of compliance, which assumes that rational individuals comply with laws if their expected costs of non-compliance outweigh their expected benefits (Gezelius and Hauck, 2011; Kleiman *et al.*, 2009). This implies that deterrence mechanisms must be instituted to direct behaviours of different actors. Proponents of the rational choice model believe that individuals or firms will comply with an authority's rules and decisions only when confronted with harsh sanctions and penalties (March and Olsen, 1968; Scott, 2004). What this means is that if the opportunity associated with disobeying the law is high whereas the probability of being caught and the anticipated fine are low, then organisations will not comply.

Becker (1968) in his criminal law model asserts that individuals and firms' regulatees are unwilling to take the necessary actions to comply with regulations and therefore they must be compelled to do so. This is echoed by Bandura (1986), Braithwaite (1985) and Gormley (1998) who argue that people in an environment will respond to the behaviour imitated with either enforcement or punishment.

Thus the probability of detection and severity of punishment can be deemed determinants for managing regulatory compliance (Ntayi *et al.*, 2012; Akpalu, 2011; Kleiman *et al.*, 2009). Ntayi *et al.* (2012) observed that the fear of "getting caught, the fear of getting punished and the fear of losing face" significantly affect public procurement regulatory compliance. It is most likely that when people in the same organisation observe others or similar entities not complying they may change their estimation of the probability of being caught. Despite including other factors in his study on compliance with fishing regulations, Akpalu (2011) found that the risk of detection and severity of punishment ranked highest. A similar view had earlier been emphasised by Kleiman *et al.* (2009) indicating that when punishment capacity is constrained and offenders' behaviour responds to changes in the probability of punishment, a dual equilibrium tipping situation can result. Punishment for non-compliance calls for high levels of monitoring to ensure enforcement is realized.

However, May (2004) argues that enforcement is irrelevant and that deterrence has no role in building regulatory compliance. It is observed that in the case of broken contracts, compliance can be attained only by powerful enforcement mechanism. For example, Sutinen and Kuperan (1999) argue that in society there are always chronic violators which call for the presence of enforcement measures. Although the foregoing review reveals mixed views and findings regarding enforcement and deterrence measures to comply with regulations, it is noted that some of these observations were made from a simulation activity and/or the focus was on individuals. It would be important to test their validity through empirical research and making the analysis at the organisation rather than individual levels. We therefore extend this debate to public secondary schools by examining the association of deterrence measures with regulatory compliance. Consequently, we put forward the following hypothesis:

H1. There is a significant positive relationship between deterrence measures and regulatory compliance by Ugandan public secondary schools.

3.2.2 Leadership support. According to Netemeyer *et al.* (1997), leadership support is the degree of consideration and support employees receive from their supervisors. Leaders influence others to accomplish organisational objectives (Yukl, 2006) by giving clarity, regarding organisational strategy and intrinsic motivation, which encourages employees to act in service to the organisations (Davis *et al.*, 1997; Hernandez, 2008). This suggests that public finance regulatory compliance among public secondary schools in Uganda may not be realised if leadership support is lacking. The need for support can be inferred in the study by Carlin and Finch (2010) who found high levels of non-compliance with international financial reporting standard (IFRS) on goodwill accounting due to failure of leadership support. It is the role of the leaders at different levels to effect any compliance levels required in an entity. Indeed extant literature suggests a relationship between leadership support and performance (Davis *et al.*, 1997; Glaser, 2006; Hernandez, 2008, 2012).

According to Bell and Staw (1989) leaders instil self-determination in followers to help them have a sense of choice in their own action towards compliance behaviour. We argue that motivational support enhances compliance levels through creation of intrinsic drive within the employees, leading to an internal and active orientation to an individual's work role with respect to regulatory compliance. For example, leaders/management's clear aligning of strategies such as budget adherence, institution of control structures as well as processes and appropriate financial reporting will guide on higher achievement of compliance levels. The guide is provided through capturing all the relevant information and effectively communicating to the employees in a timely manner to enable them carry out their responsibilities. Optimising continuous controls monitoring by leaders could more likely reduce non-compliance to the regulatory framework. In addition, it is believed that when leaders display relational supportive behaviours, interpersonal trust is enhanced (Hernandez, 2008, 2012).

Glaser (2006) indicated that such relational support boosts work conditions that foster accountability and commitment through the power of closeness and encouragement of positive relationship. Davis *et al.* (1997) confirm that relational support creates mutual trust believed to involve open communication demonstrating the leader's care and respect for all the followers. It can then be assumed that the acquired trust facilitates the followers' ability to accept responsibility for their actions that involve adherence to all provisions of PFAA (Uganda, 2003a). Likewise, Davis *et al.* (1997) and Gibson (2000) argue that the institutional relationship between leaders and followers embedded within the organisational network implies that the leaders will pursue the interests of the many followers, based on a morally established duty owed and fiduciary obligation. Consequently, communicating the broader organisational mission to the employees and creation of coherence implies that leaders convey clarity regarding the organisational context to their followers, thereby creating contextual support. It also means that leaders instil a sense of purpose in their followers by facilitating their ability to influence internal processes and understanding better the implications of organisational actions. In doing so, the employees in the organisation are able to adhere to the regulations in place that guide their activities which in this case is the public finance and accountability regulatory framework. Since World Bank (2005) lists leadership among a number of characteristics for successful schools, it follows that being articulate in the interpretation of regulations, communicating them effectively to all members, coordinating and monitoring all the tasks involved would improve regulatory compliance levels. Accordingly, we put forward the following hypothesis:

H2. There is a positive relationship between leadership support and regulatory compliance by Ugandan public secondary schools.

3.2.3 Control variables. Bartov *et al.* (2000) suggest that failure to control for confounding variables could lead to falsely rejecting the hypothesis when in fact it should be accepted. In this study we controlled for budget size, governing board expertise and accounting and finance qualifications of the staff. For example, Ettredge *et al.* (2011) indicate that an entity's size significantly explains public finance compliance requirements such as disclosure levels. More so, the literature reveals that employees with finance and accounting qualification are more likely to pursue a policy of full regulatory compliance than those with no such qualifications (Karim and Ahmed, 2005). As regards board governance expertise, the Committee of Sponsoring

Organisations of the Treadway Commission (COSO, 2004) reveals that the board of directors for an entity is responsible for monitoring firm risks, and control activities, including reporting efforts and ensuring adherence to all policies and regulations. Indeed research works have established a relationship in financial expertise and other governing board-audit committee characteristics and effectiveness in monitoring financial reporting (Bédard *et al.*, 2004).

4. Methodology

4.1 Design, population and sample

The research design for this study is cross sectional. A list of public secondary schools and written permission were obtained from the Ministry of Education and Sports and a letter accompanied by the questionnaire sent to all the secondary schools requesting for their cooperation. Yamane (1973) formula was used to determine the sample size: $n = N/1 + N\ (e)^2$ where $n =$ the required sample size, $N =$ the total population and $e =$ the tolerable error put at 5 per cent for this study. This formula generated a sample size of 278 $(906/1 + 906(0.05)^2)$ public secondary schools. The population of 906 was categorised into 72 clusters based on districts. The sampling frame was therefore 72 districts. In line with Saunders *et al.*'s (2009) guide, 16 districts were randomly selected from the sampling frame of 72 from which 278 public schools were selected. In total, 258 schools responded, one case was excluded from the analysis due to being an outlier leaving 257 cases that gave a final response rate of 92 per cent. We adopted a survey as the most appropriate method of data collection as previous research supports the reliability and validity of the self-report measures (Lechner *et al.*, 2006). We selected the head teacher and the accountant by virtue of their position, knowledge and information availability (McEvily and Marcus, 2005). Data from each school were aggregated using the name of school as a break variable since the school was the unit of analysis.

4.2 Measures and the questionnaire

The questionnaire comprised three sections. Section A consisted of questions on leadership support and deterrence measures. Section B of the questionnaire covered items relating to public finance regulatory compliance. Section C contained questions about the control variables in order to determine the robustness of our model. These were governing board expertise, budget size and qualified staff in finance and accounting.

In developing measurement items, attention was paid to theories, empirical literature and study context. Past studies that have examined regulatory compliance have derived the measures with reference to the specific standards or regulation in question such as disclosure (Karim and Ahmed, 2005; Sejjaaka, 2005), Swedish Municipal standards (Falkman and Tagesson, 2008), IFRS goodwill and reporting disclosures (Carlin and Finch, 2010), human rights legislation (Harcourt and Harcourt, 2002), Uganda public procurement (Ntayi *et al.*, 2012). Therefore, measurement items for regulatory compliance in this study are extracted from the PFAA (Uganda, 2003a) and its attendant regulations, focussing on budget adherence, internal controls and reporting. Items were anchored on a six-point scale ranging from 1 = this is extremely untrue of this organisation to 6 = this is extremely true of this organisation. The Cronbach'α coefficient results were 0.579.

The major references for deterrence measures items included DiMaggio and Powell (1983), March and Olsen (1968) and Scott (2008) which were anchored on a six-point scale ranging from 1 = completely disagree, without doubt to 6 = agree completely, without any doubt. Cronbach's α coefficient results were 0.842. The measurement item for leadership support were derived from the works of Hernandez (2008) and were anchored on a six-point scale, ranging from 1 = never to less than a quarter of the time ($0 \leqslant 25$ per cent) to 6 = always without fail (100 per cent). The reliability results based on Cronbach's α coefficient was 0.761.

The measurement items in the questionnaire were validated using technical experts and practitioners. The results from the analysis revealed that all the variable items were clear, and relevant with the recommended cut-off point of 0.7 (Nunnally, 1978). To establish convergent validity, the principle components for each variable were extracted by running principle component analysis using varimax rotation method. In addition, factor loadings below 0.5 coefficients were suppressed to avoid extracting factors with weak loadings. According to Hair *et al.* (2006), a value extracted of 0.5 or higher is a good one as a rule of thumb suggesting adequate convergence (see Tables AI-AIII for the factors that were extracted under each study variable). This process enabled us to reduce the data to a manageable level. Likewise, Pallant (2006) indicates that a minimum value of 0.5 for KMO is acceptable. Table I shows the summary results of these tests. Using this *post-hoc* procedure we attempted to detect whether common methods variance (CMV) was present.

The influence of CMV which has been a pervasively cited concern in organisational research (Podsakoff *et al.*, 2003) affects questionnaire-based studies in social sciences. By performing principle component analysis where we suppressed factors with coefficients below 0.5 we aimed to detect whether a single factor would emerge or one "general" factor would account for the majority of the covariance in the independent variable and criterion variables (Podsakoff and Organ, 1986). Results indicate that this study does not materially have the problem of CMV.

The results of reliability determined by Cronbach's α coefficients are as indicated in Table II. The rule of thumb is that reliability estimate is 0.7 or higher. However, a "reliability between 0.6 and 0.7 may be acceptable provided that other indicators of a model's construct validity are good" (Hair *et al.*, 2006, p. 778).

Variables	KMO	Bartlett's test of sphericity approx. χ^2	df	Sig.	No. of items	Variance explained (%)
Public finance regulatory compliance	0.672	246.836	91	0.000	12	55
Deterrence measures	0.902	1,459.459	105	0.000	15	56.1
Leadership support	0.696	3,424.434	300	0.000	21	63.5

Table I.
Validity of the study instrument

Variables	Original no. of items	No. of items deleted	No. of items retained	Cronbach's α
Public finance regulatory compliance	12	1	11	0.579
Deterrence measures	15	2	13	0.842
Leadership support	21	15	6	0.761

Table II.
Reliability

Except for regulatory compliance, the reliability results for all the variables are within the range of 0.6 and 0.7, indicating the existence of internal consistence and therefore implying that all the measures consistently represent the same latent constructs. The results for regulatory compliance variable could be attributed to the new context of public secondary schools in which the instrument is applied.

Past compliance research works have applied regression techniques (Verbruggen *et al.*, 2011) in testing the study hypotheses. Similarly, to test our study hypotheses, regression analysis, specifically, ordinary least squares (OLS), was carried out on the data. This was more so that our data fulfiled the assumptions of OLS. The explanatory power of variables was tested using hierarchical regression analysis that determines the contribution of each predictor variable (Field, 2009). The regression coefficients are used as indicators whether or not the contribution of each variable is significant, which further tests the validity of the hypotheses. The overall contribution of the variables is indicated by the variance explained (R^2), which also shows the predictive power of the variables.

4.3 Model

Three regression equations were generated to define the models used in investigating whether leadership support, in addition to deterrence measures, explains any variances in public finance regulatory compliance. The first regression equation for Model 1 related to the control variables of governing board expertise, budget size and accounting and finance qualifications. Equations 2 and 3 related to the introduction of deterrence measures whereas Model 3, the main model, relates to the introduction of leadership support to all the variables in Model 2. Given below are the regression equations for the models specified (Table III):

$$\text{Model 1}: \text{PFRC} = \beta_0 + \beta_1\ \text{GOBE} + \beta_2\ \text{BUSI} + \beta_3\ \text{AFQU} + \varepsilon_j$$

$$\text{Model 2}: \text{PFRC} = \beta_0 + \beta_1\ \text{GOBE} + \beta_2\ \text{BUSI} + \beta_3\ \text{AFQU} + \beta_4\ \text{DEME} + \varepsilon_j$$

$$\text{Model 3}: \text{PFRC} = \beta_0 + \beta_1\ \text{DEME} + \beta_2\ \text{LESU} + \beta_3\ \text{GOBE} + \beta_4\ \text{BUSI} + \beta_5\ \text{AFQU} + \varepsilon_j$$

5. Results and discussion

5.1 Descriptive statistics

The summary descriptive statistics for public finance regulatory compliance, deterrence measures, leadership support and the control variables (governing board expertise, budget size and staff qualifications) in finance and accounting are presented in Table IV. Regarding public finance regulatory compliance, entities responded that it was very true that their organisations follow the public finance regulatory provisions on budgets, internal controls and reporting (mean = 5.17, SD = 0.248). The results also show that generally all entities agreed that they comply with the public finance regulatory framework most of the time because of the existence of deterrence measures (mean = 4.26, SD = 0.407). In respect of leadership support, respondents indicated that they receive support towards regulatory compliance from their leaders (mean = 5.14, SD = 0.201). In total, 72 per cent of the responding entities had a board membership of nine to ten whereas 28 per cent possessed 11-12 members.

Variable(s)		Definition
Dependent variable		
PFRC	Public finance regulatory compliance	Perceived adherence to the Uganda's Public Finance and Accountability Act (Uganda, 2003a) and its attendant regulations measured on a six-point Likert scale (1 = extremely untrue of this organisation to 6 = extremely true of this organisation) using 11 statements
Independent variables		
GOBE	Governing board expertise	Number of board members who have finance or accounting expertise divided by the number of board members
BUSI	Budget size	The size of annual funds (in Ugandan Shillings) appropriated by parliament to each entity for use in delivering of the mandated services
AFQU	Accounting and finance qualifications	Number of employees with finance or accounting academic qualifications
DEME	Deterrence measures	Perceived importance of deterrence measures (monitoring by oversight organs and severe and certainty of penalties) in ensuring compliance measured on a six-point Likert scale (1 = completely disagree to 6 = completely agree) using 13 statements
LESU	Leadership support	Perceived degree of consideration and support employees receive from their supervisors measured on a six-point Likert scale (1 = never to 6 = always) using six statements
ε_j	Error term	The residual

Table III. Definition of variables included in the regression model

Variable	Obs.	Mean	SD	Min.	Max.
PFRC	257	5.17	0.248	4	6
GOBE	257	1.02	0.138	1	2
BUSI	257	1.71	0.298	2	3
AFQU	257	1.12	0.469	1	2
DEME	257	4.26	0.407	3	6
LESU	257	5.14	0.201	5	6

Table IV. Description statistics for dependent and independent variables

Members of the governing board with expertise in finance and accounting were distributed as: 0.8 (below 2), 47.9 (2 to 3), 36.6 (4 to 5), 14.8 per cent (more than 5) implying that all entities could receive the required guidance on public finance regulatory compliance. The budget sizes were distributed as: Ugandan Shillings in billions; below 1, 1 to 5 and above 5 to 95.7, 3.9 and 0.4 per cent of all the 257 entities, respectively. For academic qualifications, between 1.9 and 98.1 per cent of the entities had employees with diploma and undergraduate degrees, respectively, with a bias in finance and accounting.

5.2 Correlation analysis

Zero-order correlation was used to establish whether or not there were associations (Field, 2009) between the study variables as hypothesised from the literature review. In Table V, we provide the Pearson product-moment correlation matrix among the study variables. The results indicate that there is a positive significant relationship between deterrence measures and public finance regulatory compliance ($r = 0.430$, $p \leqslant 0.01$).

There is also a significant positive relationship between leadership support and public finance regulatory compliance ($r = 0.539$, $p \leqslant 0.01$). Among the independent variables, the highest correlations are between leadership support and deterrence measures (0.287, $p \leqslant 0.01$) followed by that between governing board expertise and leadership support (0.113, $p \geqslant 0.05$). Given the low levels of correlation among the independent variables, multicollinearity is not likely to exist and therefore all the five independent variables can be entered into a single multiple regression model.

5.3 Regression results

We use the hierarchical regression analysis consistent with the guidelines by Aiken and West (1991) and enter variables simultaneously within each hierarchical group. This is useful for evaluating the contributions of predictors above and beyond the previously entered predictors, as a means of statistical control, and for examining incremental validity. Table VI shows the results. Model 1, in Table VI, reports the baseline model with only control variables. Except for finance and accounting qualifications (AFQU), the standardised β coefficients are not significant. When we introduce deterrence measures (DEME) in Model 2 and leadership support (LESU) in

Table V. Pearson correlations between the dependent and independent variables

Variable	PFRC	GOBE	BUSI	AFQU	DEME	LESU
PFRC	1.000					
GOBE	−0.079	1.000				
BUSI	0.040	0.042	1.000			
AFQU	0.129*	0.083	0.002	1.000		
DEME	0.430**	−0.079	−0.038	0.090	1.000	
LESU	0.539**	−0.113	0.038	0.034	0.287**	1.000

Notes: $n = 258$. *,**Correlation significant at the 0.05 and 0.01 level (one-tailed), respectively

Table VI. Multiple regression results

Variables	Model 1	Model 2	Model 3	VIF
GOBE	−0.092 (−1.480)	−0.067 (−1.182)	−0.021 (−0.425)	1.024
BUSI	0.043 (0.699)	0.058 (1.036)	0.035 (0.697)	1.006
AFQU	0.136* (2.187)*	0.096 (1.697)	0.088 (1.769)	1.016
DEME		0.420** (7.409)**	0.294** (5.645)**	1.101
LESU			0.448** (8.587)**	1.105
F	2.297	15.811**	31.049**	
R^2	0.027	0.201	0.382	
Adjusted R^2	0.015	0.188**	0.370**	
R^2 change		0.174	0.182	
Durbin-Watson			2.007	
F change	2.297	54.886**	73.743**	
SE of the estimate	0.236	0.214	0.186	
df				
Regression	3	4	5	
Residual	253	252	251	
Total	257	257	257	

Notes: Dependent variable: PFRC; t-test values in parantheses (). *,**Statistically significant at 1 and 5 per cent, respectively

Model 3, all the control variables become non-significant. This suggests that our results are not confounded by the control variables.

The results in Model 2 in Table VI show that deterrence measures explain 17.4 per cent of the variances in public finance regulatory compliance ($\beta = 0.420$, $p < 0.01$, $t = 7.409$). This finding provides further support for our hypothesis *H1* which states that "there is a positive relationship between deterrence measures and regulatory compliance among the public secondary schools in Uganda". Model 3 in Table VI shows that leadership support explains 18.2 per cent of the variations in public finance regulatory compliance ($\beta = 0.448$, $p < 0.01$, $t = 8.587$). This substantiates further our *H2*, which states that there is a positive relationship between leadership support and public finance regulatory compliance by the public secondary schools in Uganda. The overall model in Table VI explains a total of 37 per cent of the variance in public finance regulatory compliance. The model $F = 31.05$ is significant, 0.01 or better and it is unlikely that the F, this large, could occur by chance. In terms of the relative importance, the results suggest that leadership support is most important in explaining variances in public finance regulatory compliance by public secondary schools in Uganda.

5.4 Discussion

The position of the current paper has been to investigate the relationship between deterrence measures, leadership support and public finance regulatory compliance among public secondary schools in Uganda. These results support the application of stewardship and institutional theories as relevant frameworks for understanding public finance regulatory compliance. Those studies that have ignored leadership support in the explanation of public finance regulatory compliance have missed its explanatory power. The results of this study show that leadership support in the form of coordination, guidance, explanations, encouragement and care augment deterrence measures (e.g. in form of penalties and loss of reputation) in explaining variances in public finance regulatory compliance. The results suggest that a single variable explains less variance in public finance regulatory compliance relative to two variables. For example, as leaders give the relevant support, the institution of deterrence measures as advanced by May (2004) and Adepeju (2013) should not be overlooked.

The significance of deterrence measures in explaining compliance is also consistent with Becker (1968)'s criminal law model which asserts that individuals and firm's regulatees are unwilling to take the necessary actions to comply with regulations and therefore must be compelled to do so, is substantiated. Similarly, the importance of leadership support in explaining public finance regulatory compliance suggests that Hernandez's (2012) advancement of stewardship theory as an alternative theory to align the interests of the principal and those of the agent is also substantiated. The results are particularly significant since existing studies have mostly used agency theory to explain regulatory compliance. The finding that leadership support which is based on stewardship theory complements deterrence measures in explaining regulatory compliance means that agency assumptions-based deterrence measures may not be adequate in realising regulatory compliance. The results of the study therefore support the assumption of Davis *et al.* (1997) that not all actors in entities possess divergent interests and that those other complexities of organisational life have to be considered in terms of leadership support. The results are therefore consistent with the view that stewardship theory should be advanced as a model of governance orienting employees' behaviour for effective compliance with regulations.

In terms of control variables, the baseline model suggests that entities with qualified accounting and finance employees expect more compliance levels with public finance regulations. This finding highlights the importance of controlling for qualifications in regulatory compliance studies. Indeed Karim and Ahmed (2005) found higher disclosure levels among companies with qualified accounting staff. However, the three control variables in the baseline Model 1 explain a negligible 1.5 per cent of the variances in public finance regulatory compliance.

6. Conclusion and implications

The aim of this paper was to report the results of an investigation on whether leadership support, in addition to deterrence measures, explain variances in public finance regulatory compliance, while controlling for governing board expertise, size and accounting and finance qualifications. In our conceptualisation, we indicate that despite the existence of controls such as deterrence measures as advanced by agency theory, non-compliance among public institutions has continued to be a challenge. The results suggest that deterrence measures alone may not provide adequate explanation of the variances in public secondary schools' compliance with public finance regulations. At policy level, the results imply that leadership support in terms of providing relevant resources to the employees would lead to better adherence to the appropriated budgets, control processes and reporting among public secondary schools. Thus practically, public secondary schools should pay attention to supporting their employees in terms of resource provisions, guidance, supervision and care in addition to the deterrence measures in order to achieve compliance. Theoretically, leadership support is an important ingredient once integrated with deterrence measures in realising compliance. We believe that with such a mechanism in place, public secondary schools would spend less effort in achieving the required regulatory compliance. Thus government and development partners can support programmes that promote appropriate stewardship behaviours seeking to enhance compliance with available public finance regulations.

The study has two main limitations. First, the study was cross sectional and therefore did not capture changes in attitudes over time. This may necessitate follow-up studies in a longitudinal design to capture the trend of results. Second, the study is also based on the perceptions which may not represent reality. Nevertheless, the study makes a contribution to compliance studies by documenting evidence of the complementary nature of deterrence and leadership support in explaining public finance regulatory compliance. For purposes of external validity, we recommend that researchers should carry out a similar study in comparable public secondary schools in other countries to determine whether or not similar results may be found. It is also further recommended that future studies use a more robust way of capturing the extent of compliance.

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Appendix 1

	1	2	3	4	5
Adherence to the procurement process in this organisation lead to value for money spent	0.670				
This organisation has a consolidated work plan based on the approved annual budget	0.654				
There are penalties and procedural measures in place for recovery of losses incurred in this organisation	0.599				
This organisation has a strong human resource department that addresses the required manpower in finance management		0.685			
Laid down procedures are followed in opening up bank accounts for this organisation		0.646			
For purposes of effective internal controls, this organisation segregates duties involving finance management		0.603			
Revenues and expenditures in the financial reports for this organisation are stated in accordance with regulations			0.758		
The financial reports for this organisation provide information relating to the organisation's set objectives			0.735		
The financial reports for this organisation demonstrate accountability of all the funds used				0.753	
In order to facilitate proper implementation of the approved budget, communication is made to each organisation unit to generate a work plan				0.718	
This organisation always seeks authority as per procedures to reallocate funds among budget items					0.753
Vote books are maintained to ensure budget discipline in this organisation					0.704
Eigenvalues	1.473	1.361	1.317	1.234	1.217
% age of variance	12.275	11.342	10.974	10.285	10.144
Cumulative % age of variance	12.275	23.618	34.591	44.877	55.021

Notes: 1 = process controls; 2 = structural measures; 3 = disclosure; 4 = accountability; 5 = budget discipline

Table AI. Components for public finance regulatory compliance

Appendix 2

	1	2	3
We comply with regulatory framework that governs public finance management because:			
We first measure the expected benefits	0.814		
We are aware of the potential risks involved	0.768		
We are likely to be found out	0.763		
We fear the inspectors from ministry of finance	0.763		
The expected costs may be higher	0.761		
We are likely to be punished	0.745		
The organisations we deal with expect us to abide	0.686		
We are aware of the penalties involved	0.631		
We fear to face the Public Accounts Committee of parliament	0.599		
Its procedures are fair to all organisations		0.716	
It improves our organisational procedures		0.685	
We want to get continuous financial support from government		0.553	
The reputation of our organisation is important		0.511	
It is our belief to do so			0.817
We fear to attract the attention of the press			0.782
Eigenvalues	5.043	1.947	1.426
% age of variance	33.618	12.977	9.506
Cumulative % age of variance	33.618	46.595	56.101

Notes: 1 = enforcement; 2 = fairness; 3 = reputation

Table AII. Components for deterrence measures

Appendix 3

	1	2	3	4	5	6	7	8	9
We are always persuaded by our supervisors' enthusiasm to achieve the objective s of this organisation	0.980								
We are always provided with relevant resources to effectively implement the approved budget	0.979								
Recommendations made in our reports for authority to reallocate funds within the approved budget are always supported by our supervisors	0.979								
We receive care about our individual priorities		0.970							
Our interests are always taken care of by our supervisors		0.967							
Our supervisors help to coordinate actions of the unit/organisation			0.761						
It is ensured by this organisation that the items we spend on are provided for in the budget			0.661						
It is ensured by our supervisors that we adequately understand the purpose of our organisation to the public			0.619						
Our supervisors ensure that we state the purpose of each item in the budget				0.678					
We receive guidance not to exceed the approved budget				0.619					
We are given details on difficult problems regarding decisions on funds management				0.556					
This organisation ensures that we follow the public procurement procedures in place					0.742				
The basis of the division of each one's tasks and responsibilities is explained to us					0.501				
Guidance is provided in the inter-allocation of funds within the approved budget						0.690			
We are provided with security measures to safeguard public funds						0.688			
Our supervisors encourage us to follow the approved organisation budget							0.736		
This organisation has confidence in us to ensure adequate internal controls							0.726		
In this organisation we easily access the financial policies and procedures to guide our work								0.783	
We are shown procedures regarding accounting and bookkeeping requirements								0.693	
Our supervisors effectively communicate to us on matters concerning accountability for funds advanced									0.647
This organisation encourages us to generate work plans in accordance with the approved budget									0.634
Eigenvalues	3.259	2.066	1.87	1.564	1.496	1.461	1.458	1.375	1.322
% age of variance	13.035	8.265	7.481	6.255	5.986	5.844	5.832	5.499	5.288
Cumulative % age of variance	13.035	21.3	28.781	35.036	41.022	46.866	52.698	58.197	63.486

Notes: 1 = persuasion; 2 = care; 3 = coordination; 4 = guidance; 5 = explanations; 6 = precaution; 7 = encouragement; 8 = accessibility; 9 = communication

Table AIII. Components for leadership support