Received 8 February 2018
Revised 24 July 2018
2 November 2018
2 January 2019
Accepted 22 January 2019

Management mechanisms, deterrence measures and public finance regulatory compliance in Uganda

Stephen Korutaro Nkundabanyanga and
Gorettie Kyeyune Nakyeyune
Department of Accounting, Makerere University Business School, Makerere University, Kampala, Uganda, and
Moses Muhwezi
Department of Management, Makerere University Business School, Makerere University, Kampala, Uganda

Abstract

Purpose – Despite the advancement of the assumptions of agency and institutional theories whereby monitoring structures and controls form the basis of management, inadequate public finance regulatory compliance among public entities has continued to be a challenge. The purpose of this paper is to examine how to break out of the apparent cycle of failures to comply with public finance regulations.
Design/methodology/approach – A cross-sectional study that integrates two approaches (cooperative and coercive models) drawing from the view that in central government agencies, there may be stewards and also agents motivated by self-interest, suggesting that the most promising framework is that which renders the traditional ways of achieving regulatory compliance to be supplemented with the stewardship model. Thus, the authors focus on four variables: management mechanisms, ethical climate, deterrence measures and public finance regulatory compliance all drawn from agency, institutional and stewardship theories. The authors collect data from 67 central government agencies in Uganda using a structured questionnaire.
Findings – The authors find that management mechanisms dimensions of leadership support and organisational commitment significantly associate with public finance regulatory compliance and so too are deterrence measures particularly oversight organs, penalties and procedural justices.
Research limitations/implications – Public finance regulatory compliance can be improved through management mechanisms and deterrence measures.
Originality/value – The study generates empirical evidence on the applicability of stewardship theory in the management of public entities for regulatory compliance

Keywords Public finance, Ethics, Deterrence measures, Management mechanisms

Paper type Research paper

> An Act to provide for fiscal and macroeconomic management; to provide for the: Charter for Fiscal Responsibility; […] Budget Framework Paper; […] Roles of the Minister and the Secretary to the Treasury in the budgeting process; […] Virements, multiyear expenditures, supplementary budgets and excess expenditure; […] Consolidated Fund and commitments against the Consolidated Fund; […] Bank account management, management of expenditure commitments; […] Roles of Accounting Officers; Preparation of annual accounts […]; […] Offences; and connected matters. (Public Finance Management Act, 2015, pp. 5-6)

Journal of Public Budgeting, Accounting & Financial Management
Vol. 31 No. 2, 2019
pp. 178-196

1096-3367
DOI 10.1108/JPBAFM-02-2018-0008

Introduction

Regulations such as mentioned above guard public interest (May, 2004; Vicent-Jones, 2002), yet such regulations are often not complied with. This makes realisation of the broad aims of public finance regulations elusive. The aspiration of this paper is to examine how to break out of apparent cycle of failures to comply with public finance regulations (see contextual background below). Contrary to existing research, in this paper, the impact of deterrence measures, ethical climate and management mechanisms of leadership support and commitment are explored by integrating two approaches (cooperative and coercive models) in explaining public finance regulatory compliance drawing from the views that: if entities are willing to comply (as when stewardship exists), coercive approaches may be counterproductive by engendering intransigence and ill will (Burby and Paterson, 1993; Kagan *et al.*, 2003) and the traditional ways of achieving regulatory compliance (through deterrence, for example) should give way to experimentation with a variety of innovations (May, 2007) such as the stewardship model to specifically achieve regulatory compliance (e.g. Segal and Lehrer, 2012; Van Slyke, 2007).

Academia suggests that deterrence measures can be effective in curbing non-compliance. If we consider that central government agencies act on behalf of government as the agents entrusted with management of public funds by the citizenry, it means that due to the divergent interests between the actors in central government agencies (agents) and government (principal), structural and process control mechanisms should be put in place to reduce the associated costs. Researchers advocating this tradition commonly invoke agency and institutional theories largely focussing on the imposition of enforcement sanctions (Earnhart and Glicksman, 2015) as the most effective ways to induce compliance with regulatory obligations – conceptualising compliance as mechanisms of controlling, directing or governing according to rule and modifying behaviours of actors at the individual and organisational levels for the good of the citizenry (Frank and Lombness, 1988; Vicent-Jones, 2002; Sapiei *et al.,* 2014). These and related findings have led to a consensus that deterrence measures to enforce and institute sanctions for violation helps in the achievement of regulatory compliance (May, 2004).

In our view, in less democratic settings like Uganda, control mechanisms-based agency assumptions (Jensen and Meckling, 1976) and the regulative element of institutional theory (DiMaggio and Powell, 1983; Scott, 2004) are inadequate to explain public finance regulatory compliance. This study addresses this inadequacy. Institutional theory highlights the importance of influences on organisational practices, but it ignores the features of the organisation such as leadership support and commitment (Zorn *et al.*, 2011; Granovetter, 1985; Martinez and Dacin, 1999) thought to be also relevant in Uganda's compliance environment. Indeed, leadership support and commitment have been considered important in the implementation of structural and control systems in addition to creating a conducive compliance environment (Hernandez, 2008, 2012). One such conducive environment is ethical climate which leaders (stewards) should create. Ethical climate being part of the organisational climate is perceived as organisational practices and procedures that have ethical content (Belak and Mulej, 2009). It is such acceptable behaviours that will influence appropriate moral conduct (Victor and Cullen, 1988) thus leading to public finance regulatory compliance. While control mechanisms-based agency assumptions and institutional theory's regulative element may still be important, this study shows that these should be enhanced by commitment and support of leaders consistent with stewardship theory.

The rest of the paper proceeds as follows: the next section is a contextual background. The third section is theoretical foundation. Hypotheses development then follows. The fifth section is the methodology adapted in this study. The penultimate section is results and discussion. The final section is concluding remarks.

Contextual background

Uganda, a developing country, provides an ideal setting for this study. The Uganda's auditor general's reports for the period 2005–2013 and FINMAP's (2011) report 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 for funds, outstanding administrative advances and nugatory expenditures. The extent of compliance revealed through the audited financial statements and the corresponding opinion thereon reveal that central government entities that had qualified[1] reports were: 58, 57, 39.81 and 48 per cent for the years June 2009–June 2012 (Auditor General, 2012). The reports reveal that a number of budget entities mischarged expenditure amounting to Uganda shs256,976,089,113 ($103m), shs67, 085,008,004 (approximately $26m) was paid on personal bank accounts to carry out official work rather than to the final beneficiaries as required by the treasury accounting instructions (Uganda, 2003b; sec227–229) and unaccounted for advances stood at shs.25, 934,774,910 ($10.4m). Entities continued to commit government and domestic arrears accumulated to shs429, 079,791,021 ($172m) with shs20, 532,472,938 ($8.2m) excess expenditure above the appropriated budget without following the set procedures. Even with the then existence of Public Finance and Accountability Act of 2003, similar observations of non-compliance were made by ROSC (2005) and FINMAP (2011), Nkundabanyanga *et al.* (2013). This state of affairs suggests that there are problems that may be affecting public finance regulatory compliance by central government entities in Uganda.

Elsewhere in developing countries, Cahyono (2017), notes Lesotho, Ghana, Myanmar, the Philippines and Vietnam, as having experienced a significant level of non-compliance in their public finance management operational practices. A study commissioned by the World Bank in 2000 found government accounting in Sub-Saharan Africa "precariously weak" (Schacter, 2000; Lienert and Sarraf, 2001). There are also examples of accounting reforms that failed or had limited success; Durevall and Erlandsson (2005) for Malawi, Global Integrity (2009) for Uganda and Roberts and Andrews (2005) and Betley *et al.* (2012) for Ghana. Again we argue that in environments such as these, it is difficult to see how public finance regulatory compliance would be achieved without leadership support and the commitment. To illustrate, the GAO (2017) reports major impediments continuing to prevent it from rendering an opinion on the federal government's accrual-based consolidated financial statements: serious financial management problems at the Department of Defence (DOD) preventing its financial statements from being auditable, the federal government's inability to adequately account for and reconcile intra-governmental activity and balances between federal entities and the federal government's ineffective process for preparing the consolidated financial statements. In the light of these regulatory compliance problems, GAO (2017) has recommended strong and sustained commitment by DOD and other federal entities, as well as continued leadership by the Department of the Treasury and the Office of Management and Budget in order to implement needed improvements.

The yearning for management mechanisms of leadership support and commitment (GAO, 2017) may be strengthened by the direct and mediating role of deterrence measures and hence reduce any kind of selective and perfunctory compliance. Furthermore, academia shows that among the compliance management initiative, ethics is an equally important factor (Bajo *et al.*, 2009; Silverman, 2008). Even though there are worldwide scandals such as Enron, Tyco and WorldCom (Mayer *et al.*, 2009), we argue that less-developed countries have limited spheres of trust and higher tolerance of corruption than developed counterparts (Harrison and Huntington (2000). Given the Uganda local scandals such as GAVI fund (Olupot, 2007), office of the prime minister, the pension fund under the Ministry of Public Service, we include ethical issues in relation to regulatory compliance. Accordingly, this study empirically tests the role of management mechanisms such as leadership support, organisational commitment and employee engagement; deterrence measures of oversight organisations, penalties and procedural justice; ethical climate (law and regulation, care and independence) on public finance regulatory compliance (process controls, structural controls and revenue management controls) in government entities.

Theoretical foundations

In this study stewardship, agency and institutional theories provide a framework for understanding public finance regulatory compliance. One of the proponents of stewardship theory (Hernandez, 2008, 2012) suggests that relational and motivational leadership behaviours may promote stewardship in organisations. Hernandez (2008) builds upon the themes in extant stewardship literature – identification and intrinsic motivation – and also includes factors such as interpersonal and institutional trust and moral courage, to argue that leaders foster stewardship in their followers through various relational, motivational and contextually supportive leadership behaviours. Consistent with this theory we argue that relationally supportive leadership behaviours that foster mutual trust between leader and follower, and contextually supportive leadership behaviours that create a sense of belonging within followers form the foundation for creating stewardship behaviours in public entities/agencies thus leading to public finance regulatory compliance. Indeed a sense of organisational belonging by employees was found to important (Allen and Meyer, 1990) organisational commitment model. This model proposes that organisational commitment is experienced by the employee as a mindset encompassing affective, normative and continuance organisational commitment. Because affective commitment reflects commitment based on emotional ties the employee develops with the organisation primarily via positive work experiences (Jaros, 2007), this study employs organisational commitment at employee affective mindset as an important ingredient for public finance regulatory compliance.

Whereas stewardship theory assumes convergence because of shared collective interests with the contracted steward, agency theory assumes goal divergence on the part of the contracted agent. Agency theory provides an expedient framework for analysis of the economic incentives and management choices with respect to real-valued and accounting decisions (Blankley and Forgione, 1996). It posits, among others, that due to the opportunistic nature of man, associated agency costs could be reduced through imposing internal controls like close monitoring, incentives and sanctions (Jensen and Meckling, 1976; Davis *et al.*, 1997) and introduction of monitoring structures such as audit committees can mitigate managerial opportunism (Allegrini and Greco, 2013). In the context of agency theory, the government of Uganda has instituted a public finance regulatory framework which all government entities must follow. Such regulatory framework seeks to reduce the agency costs by improving transparency in the funds management and at the same time, providing accountability as well as providing penalties where there is divergence. In the same spirit, the regulative element of institutional theory stresses rule setting, monitoring and sanctioning activities (Scott, 2008). According to this theory the Uganda central government agencies are governed by a number of regulations to restrict the free will in managing public funds.

Therefore, for the examination of public finance regulatory compliance in Uganda, we differ from extant studies. We invoke stewardship theory in addition to agency and institutional theory framework. Because of the different players in the management of public funds, a combination of the theories is a necessary framework for understanding public finance regulatory compliance of in Uganda; knowing too well that agency theory works well in environments with strong institutions. This is consistent with the recommendation made by Abdullah and Valentine (2009). These authors recommend a multi-theoretic approach for studies of this nature.

Hypotheses development

Leadership contextual support is created through institutional relationship between the leader and the followers. Gibson (2000) contends that institutional relationship between leaders and followers embedded within the organisational network implies that the leaders will pursue the interests of the many followers, based upon a morally established duty owed and fiduciary obligation (Davis *et al.*, 1997). Through communication of broader organisational mission and creation of coherence, leaders convey clarity regarding the organisational context to their followers, thereby creating contextual support. Leaders instil a sense of purpose in their followers facilitating their ability to influence internal processes and understand better the implications of organisational actions. In so doing, employees in the organisation are able to adhere to the regulations in place that guide their activities which in this case are the public finance and accountability regulatory framework.

Regulatory compliance depends on securing support from top leadership in adhering to all the policies and regulations in place. The link between support from the leaders and commitment relates to the resources and strategies to use to achieve regulatory compliance. The resources will be more easily available if the major persons responsible for the resources support the plans. In addition to the commitment of leaders at the top-, low-level management and employee involvement are important in the successful implementation of the public finance regulations which ultimately results in higher compliance levels. One of the most productive ways to achieve commitment to regulatory compliance is through strategies such as trust (Murphy, 2004). For example, Scholz and Lubell (1998) have concluded that trust in government and trust in other citizens significantly influenced levels of self-reported non-compliance with tax obligations. It is inferred from such studies that trust is key in the process of achieving commitment to compliance. The foregoing discourse suggests that the following hypothesis is stated:

H1. There is a positive relationship between management mechanisms of leadership support and organisational commitment, and public finance regulatory compliance.

Sanders *et al.* (1994) in their study on municipal government financial reporting conclude that cities/entities that have a climate based on openness and trust provide more disclosure. Moreover, the promotion of a climate of openness and responsiveness is expected to be associated with ethical conduct and will lead regulatory compliance (Silverman, 2008). Correspondingly, among the compliance management initiative, ethics is critical as it is deemed to create ethical climates (Bajo *et al.*, 2009). Similarly, Webber (2007) and Taylor (2007) contend that the ethical climate necessary for the organisation's ethical behaviour emerge from the positive attitude towards ethical core values. Indeed Ernest and Young contend that among the four steps to limit the amount of compliance risks is cultivating an ethical environment. Contemporaneously, Mathenge (2012), in his study on ethical dimensions in responsible professionalism and accounting procedures in Kenya, confirms that ethical considerations could revamp the accounting procedures other than the emphasis on coercive measures. Accounting procedures are part of the regulatory framework that entities have to comply within public finance management. The foregoing review provides support for the observation that ethical considerations are important in achieving compliance. But, Shacklock *et al.* (2013) observed that there are limited empirical studies that have examined the aspects of ethical climate in addressing organisational out comes (such as public finance regulatory compliance). This leads us to hypothesise as follows:

H2. There is a positive relationship between the presence of ethical climate and public finance regulatory compliance.

Deterrence mechanisms must be put in place to direct behaviours of the different actors/entities (Xepapadeas, 2005), because: an increase in the severity of punishment leads to more effective compliance (Friesen, 2012), compliance can never be entirely voluntary (May, 2004) and firms' regulatees are unwilling to take the necessary actions to comply with regulations so must be compelled to do so (Becker, 1968; Gormley, 1998; Kuperan and Sutinen, 1998). Therefore enforcement is considered to be a governance pre-condition for the compliance motivation of deterrence. Falkman and Tagesson (2008) found that among the reasons from respondents on poor compliance was the absence of sanctions. The probability of detection and severity of punishment are considered reasons for regulatory compliance (see, e.g. Kleiman *et al.*, 2009; Akpalu, 2011). Sutinen and Kuperan (1999) indicate that in society there are always chronic violators which call for the presence of enforcement measures. As some of these observations were made from simulation activities focussing on individuals, it is worthwhile to test their validity through empirical research and to make the analysis at the organisation other than at individual levels. It is therefore hypothesised that:

H3. There is a positive relationship between the presence of deterrence measures and public finance regulatory compliance.

The position of this paper is that the integration of two approaches (cooperative and coercive models) in explaining public finance regulatory compliance drawing from the view that in central government agencies there may be stewards as well as agents motivated by self-interest; suggesting that the most promising framework is that which renders the traditional ways of achieving regulatory compliance lend themselves to be supplemented with the stewardship model. The study therefore focuses on four variables namely, management mechanisms, ethical climate, deterrence measures and public finance regulatory compliance all drawn from agency, institutional and stewardship theories. According to Rosenberg (1968), a relationship study (with multiple variables) that does not address the mediating mechanism ends up with facts but does not lead to a complete understanding. More so, Bennett (2000) argues that the study failing to consider the possibility of a mediator effect in the data may miss further explanations for an outcome. We contend that though management mechanisms of leadership support and organisational commitment may directly influence public finance regulatory compliance, the presence of an ethical climate may partially or fully mediate in the relationship in explaining the variance caused in public finance regulatory compliance. Equally, the presence of deterrence measures may have partial or full mediating effect in the relationship between management mechanisms and public finance regulatory compliance. With that background, the following hypotheses will be stated:

H4. There is a mediating effect of ethical climate in the relationship between management mechanisms and public finance regulatory compliance.

H5. There is a mediating effect of deterrence measures in the relationship between management mechanisms and public finance regulatory compliance.

Bartov *et al.* (2000) suggest that for any study, failure to control for confounding variables could lead to misleadingly rejecting the hypothesis when it should be accepted. Previous studies have found significant associations between compliance with organisational size (Ettredge *et al.*, 2011). In this paper, we control for size in testing for mediation.

Methodology

Design, population and sample

This study is cross-sectional and follows a positivistic view of following pre-specified hypotheses. We study central government agencies with financial votes for the financial year 2011/2012 and audited by the auditor general who is mandated by Article 163 (3) of the constitution of the republic of Uganda and section 13 and 19 of the National Audit Act 2008 to audit and report on the accounts of all public offices including agencies established the Act of Parliament. To access funds from the consolidated funds, public entities must be assigned expenditure votes according to their line of services. According to the approved estimates records for revenue and expenditure for the financial year 2011/2012 Volume 1 from the Ministry of Finance, central government entities with expenditure votes[2] were 88 including 33 Ugandan Embassies abroad which we exclude from this study on account of resource constraints. Such entities receive financial support from the consolidated fund account of the republic of Uganda and are mandated to execute the role of public finance management and accountability function on behalf of government (World Bank, 2008). We obtain a sample of 72 agencies using Yamane (1973)'s formula for sample size determination and analyse responses to the questionnaire from 67 agencies (about 93 per cent response rate to the questionnaire). The agencies are: 3 (works and transport), 5 (agriculture), 8 (education), 15 (health), 3 (water and environment), 7 (justice, law and order), 6 (accountability), 1 (energy and mineral development), 3 (tourism, trade and industry), 2 (land, housing and urban development), 1 (social development), 1 (security), 1 (ICT), 6 (public sector management), 4 (public administration) and 1 (legislature).

The respondents (397) included: 12 (accounting officers), 66 (heads of internal audit), 61(heads of procurement units), 62 (heads of finance), 52 (programme heads) and 144 (general accounts staff) from four departments follows: 57 (administration), 215 (finance and accounting), 61 (procurement) and 64 (internal audit). The education level distribution indicates that the majority (49.1 per cent) were holders of postgraduate degrees, bachelor's degree holders were 39 per cent, diploma holders represented 10.65 per cent and a minority 1.3 per cent with certificates. In terms of organisational roles played by the respondents, the majority (40.3 per cent) of the respondents were at the middle management level, followed by those at the supervisory level at 20.2 per cent. The distribution at the top management and lower-level category was almost equal at 19.6 and 19.9 per cent, respectively.

Measurement of variables

For public finance regulatory compliance, we generated questions from the Uganda (2003a) (now PFMA, 2015) and anchored them on a six point scale ranging from 1 = this is extremely untrue of this organisation to 6 = this is extremely true of this organisation. Management mechanisms in this study refer to the methods that may be used by entities in achieving public finance regulatory compliance and include leadership support and organisational commitment. We measured these: leadership support according to Hernandez (2008) and according to Allen and Meyer's (1990) organisational commitment model. We adopt Victor and Cullen's (1988) ethical climate typology and questionnaire. Deterrence measures are derived from the regulative elements of the institutional theory and were operationalised in terms of enforcement measures, penalties, monitoring and oversight corrective measures (Parboteeah and Kapp, 2008; Scott, 2004, 2008).

Bartov *et al.* (2000) suggest that for any study, failure to control for confounding variables could lead to falsely rejecting the hypothesis when in fact it should be accepted. Previous studies have found significant associations between compliance with organisational size (Ettredge *et al.*, 2011), entity's age, academic qualifications of employees (Karim and Ahmed, 2005) and governing board expertise (Ettredge *et al.*, 2011). In this study, the researchers control for these mentioned variables. We measured size in terms of how much the entity was allocated in the particular fiscal year which is similar to Chattopadhyay's (2001) measurement of size in terms of the capitalisation of the organisation.

Tests of factorability, validity and reliability

We used factor analysis based on (principal components) and Cronbach's (1951) α to examine the validity and reliability of the scales as measures of the study constructs. All the

Keiser–Meyer–Olkin (KMO) results for management mechanisms, ethical climate, deterrence measures and public finance regulatory compliance were adequate, and the Bartlett's test of sphericity reached statistical significance ($p < 0.05$). The standardized Cronbach's α coefficients for the study variables and all are found to be above 0.7. The results of these tests are provided in Tables AI–AIV.

We conducted for confirmatory factor analysis focusing on: first, individual item loadings of measures with their respective construct; second, the composite reliability measure for internal consistence of items; and finally, the discriminant and convergent validity. The results of these tests which were found appropriate are also provided in Table AV.

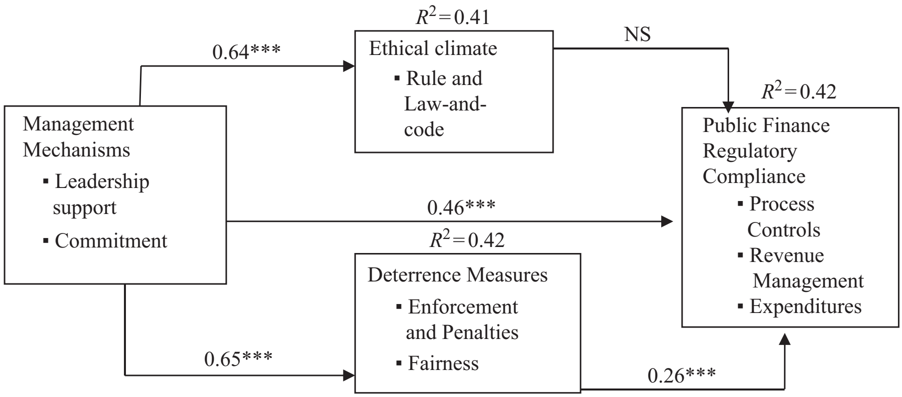
Results and discussion

Descriptive results

The descriptive results reveal that on the scale of 1–6, most entities agreed (Mean = 4.32, SD = 0.56) to the perception that they complied with the public finance regulations reflected in the existence of internal controls, appropriate reporting and revenue management controls. As for management mechanisms namely, leadership support and organisation commitment, the mean scores (Mean = 4.91) under leadership support reveal that the entities agreed on the existence of support from their supervisors at different levels. They further agreed on some level of organisational commitment (Mean = 4.0). The two components making up the management mechanism had a mean of 4.47 (SD = 0.44). Regarding deterrence measures (mean = 4.25, SD = 0.49). For ethical climate (Mean = 4.72, SD = 0.43) characterised by law and regulation, care and independence dimensions. The results for skewness and kurtosis for all the variables were within the acceptable ranges (Field, 2009).

Hypotheses' tests results

Figure 1 shows the results of testing the hypotheses. According to the results, there is a significant positive relationship between management mechanisms and public finance regulatory compliance, substantiating *H1*. Contemporaneously, *H3* which states that "there is a positive relationship between deterrence measures and public finance regulatory compliance by central government agencies" is also substantiated. There is no significant relationship between ethical climate and public finance regulatory compliance suggesting that *H2* which states that "there is a positive relationship between the presence of deterrence measures and public finance regulatory compliance" is not supported. Consistent with the



Note: ***Significant at 0.001 level

Figure 1.
Model results

criterion in Baron and Kenny (1986) where the mediator variable carries the effect of the predictor variable onto the criterion variable, *H4* which states that "there is a mediating effect of ethical climate in the relationship between management mechanisms and public finance regulatory compliance" is not supported. We find this result surprising especially that literature (Bajo *et al.*, 2009; Silverman, 2008; Treviño *et al.*, 2006) indicates that effective public sector management requires sound judgement well-grounded in ethics to uphold the rule of law and preserve public interest. This means that Silverman (2008) and Bajo *et al.* (2009)'s arguments on the importance of ethical climate as one of the pre-condition for appropriate compliance does not exist in Uganda central government agencies. This may further mean that it could be the reason why there has continued to be inadequate public finance regulatory compliance in the Uganda central government agencies. This seems to suggest that those actors in central government agencies have not built a public ethical culture that can culminate into the expected compliance. However, Figure 2 results suggest that deterrence measures mediate the relationship between management mechanism and public finance regulatory compliance. *H5* is therefore supported by the results of this study.

Overall the structural model in Figure 1 reveals the variance explained ($R^2 = 0.42$, $F = 22.11$, $p < 0.05$) in public finance regulatory compliance. The goodness of fit results for the outer and inner model results were also within the acceptable ranges (0.963 and 0.92, respectively; outputs not reported for space constraints).

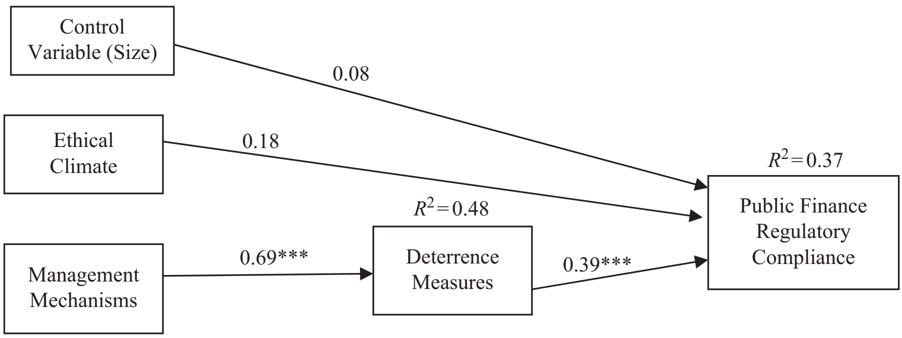
Overall, results suggest that:

(1) positive changes in management mechanisms of leadership support and organisational commitment are positively associated with public finance regulatory compliance;

(2) positive changes in deterrence measures are positively associated with public finance regulatory compliance; and

(3) deterrence measures partially mediate the relationship between management mechanisms and public finance regulatory compliance.

These results confirm advocacy for leaders' support, trust and commitment to the organisation's mandate of appropriate public funds management through adherence to the set regulations. In comparison with previous studies that have examined alternative approaches to achieve compliance (Kirchler *et al.*, 2008; Kuperan and Sutinen, 1998), the results show that management mechanisms approach can be used to achieve compliance. The results reveal a combination of motivation towards public finance regulatory compliance such as, the presence of oversight organs as enforcement medium, penalties and procedural justice. However, the indication from the results that entities comply with the



Note: ***Significant at 0.001 level

Figure 2.
Mediation test

public finance regulations due to fear and enforcement measures, contradict the views of May (2004), who argues that enforcement is irrelevant and that deterrence has no role in building regulatory compliance. We assume that the conflicting results may be attributed to the different research setting which in May's case was in USA, a developed country, compared to Uganda, in a developing sub-Saharan country. Different research settings normally experience different behaviours. To the contrary, the revelation of the importance of enforcement, procedural justice and reputation towards public finance regulatory compliance in this study, support previous research (Akpalu, 2011; Kleiman *et al.*, 2009; Zubcic and Sims, 2011) consistent with the March and Olsen (1998), Scott (2004) regarding instituting sanctions and penalties to make entities comply with regulations. The current results show that oversight organs such as Public Accounts Committee (PAC) of parliament play a bigger role in the central government agencies' compliance behaviour. For example, results show that a number of entities detest the feeling of appearing before PAC and the associated unpleasant press coverage of the proceedings. Bad publicity to the entity and its participants becomes a form of punishment which intimate society's moral condemnation of such un-compliant behaviours once funds have not been managed and accounted for within the laid down procedures. Thus consistent with institutional logics (March and Olsen, 1998), our study reveals that deterrence measures are linked to regulatory compliance. This view is backed by the agency theory and the institutional theory which suggest instituting controls to prevent non-compliance to the regulations and also consistent with Becker (1968) who asserts that the expected punishment and the likelihood of being caught are central determinants of compliant behaviour. The case of Uganda (An anti-corruption billboard in Uganda, 2013) suggests that the absence of deterrent sanctions does not promote regulatory compliant behaviour.

The entire effect on public finance regulatory compliance does not only go through the main predictor variable (management mechanisms) but also deterrence measures. This signifies that the connection between management mechanisms and public finance regulatory compliance is weakened by the presence of deterrence measures in the model. The foregoing discussion confirms that the presence of deterrence measures partly acts as a conduit in the association between management mechanisms and public finance regulatory compliance by Uganda central government agencies. Thus, management mechanisms and deterrence measures are true drivers of public finance regulatory compliance among central government agencies. This finding links well with the conclusions made by Sutinen and Kuperan (1999) who argue that in compliance, there is need for both a management approach and an enforcement approach. Our results suggest that though it is the responsibility of entity leadership to support and commit themselves to regulatory compliance by putting in place robust systems, in most cases if the entities are not closely monitored they may fail on this part and need to be forced by the monitoring organs. Thus much as some entities are willing to support the subordinates to carry out their assigned tasks, sometimes laxity sets in, calling for enforcement.

Concluding remarks

The purpose of this study is to examine the relationship between management mechanisms, ethical climate, deterrence measures and public finance regulatory compliance by Uganda central government agencies. We find that the true drivers of public finance regulatory compliance by central government agencies are management mechanisms and deterrence measures. Leadership support and organisational commitment dimensions of management mechanisms are linked to improvement in public finance regulatory compliance. Deterrence measures through oversight organs, penalties and procedural. The specific mechanism or pathway by which a relationship occurs between management mechanisms and public finance regulatory compliance is direct, although deterrence measures partially mediate the connection between the two. These conclusions mean that though deterrence measures can be applied in central government agencies to achieve regulatory compliance, management mechanisms aspects of leadership support and organisational commitment assume a prominent role.

Findings have important implications. They provide empirical evidence that contextual support by leaders (such as supervisors guiding employees on the management of the payment procedures) in influencing public finance regulatory compliance in terms of empowerment, close supervision and sensitisation. Central government agencies need to pay attention to acceptable stewardship behaviours of their leaders more especially in public finance management. Such behaviours include demonstration of normatively appropriate conduct through personal actions with regard to adherence to structural and process controls, value for money and accountability; and promotion of such conduct among followers, to reinforce compliance decisions. The results imply that contextual leadership support in terms of interpreting procedural and structural controls, providing extrinsic and intrinsic motivation, recruiting the required employees and providing relevant resources to the employees would lead to better adherence to the public finance regulatory framework.

The results also imply that commitment in terms of feeling a strong sense of belonging to the entity and a strong feeling as if the entity's problems are employees' own, hence getting committed to resolving compliance challenges. This study implies that developing psychological conditions of a stewardship behaviour approach, promotes public finance regulatory compliance which should involve instituting documented support and commitment by all entity actors. Government may consider instituting mindset change programme among its entity leaders who should in turn drive the stewardship cultural behaviour among all entity employees. All entity leaders could sign off terms and conditions that entail behaviours linked to attainment of long term and widely beneficial gains through adherence to the regulatory framework, hence meeting the needs of the present without compromising the future.

Regarding theory, this study confirms that leadership support and organisational commitment are important ingredients once integrated with deterrence measures in improving compliance. Besides, the integration of management mechanisms based on the stewardship theory with the deterrence measures based on the regulative element of institutional theory and agency theory makes a significant difference in explaining regulatory compliance. This paper also addresses concerns by Rosenberg (1968) and Friedrich (1982) that a relationship study that does not address the mediating mechanism ends up with facts but with incomplete understanding.

With regard to deterrence measures, support and commitment from leaders at different levels in government and at the entity level to institute penalties for those who do not comply is required. Central government agencies need to pay attention to acceptable stewardship behaviours of their leaders more especially in public finance management.

Similar to most research studies, the current study has limitations that are methodological and conceptual. First, the study is cross-sectional and therefore does not capture changes in attitudes over time. However, our conclusions are supported with theoretical arguments. This may necessitate follow-up studies in a longitudinal design to capture the trend of results. Furthermore, given Uganda as the context of this study, the results may not be applicable to other countries due to cultural differences. For purposes of external validity, we recommend that researchers carry out a similar study in comparable government institutions in other countries to determine whether or not similar results may be found. Moreover, we have already been made aware by Harrison and Huntington (2000) that culture matters. More research is need to examine whether the Ugandan culture supports appropriate (or lack of) public finance regulatory compliance. As the agencies may not have control over what budget is allocated to them, future research may examine those other entity characteristics that the government entities have control over; in the explanation of public finance regulatory compliance.

Notes

1. When an auditor issues a qualified opinion, it means that an entity has not complied with all the regulatory requirements in terms of controls and accountability, and any such omissions or errors are of a material/significant nature, greatly affecting the reliability of the financial report.
2. A vote is a head or subhead of estimates. Expenditure vote means a group of estimates for which an appropriation is made by an appropriation Act or supplementary Act (PF&M Act, 2015).

References

Abdullah, H. and Valentine, B. (2009), "Fundamental and ethics theories of corporate governance", *Middle Eastern Finance and Economics*, Vol. 4 No. 4, pp. 88-96.

Akpalu, W. (2011), "Fisher skills and compliance with effort – limiting fishing regulations in a developing country: the case of Ghana", *International Journal of Social Economics*, Vol. 38 No. 8, pp. 666-675.

Allegrini, M. and Greco, G. (2013), "Corporate boards, audit committees and voluntary disclosure: evidence from Italian listed companies", *Journal of Management & Governance*, Vol. 17 No. 1, pp. 187-216.

Allen, N.J. and Meyer, J.P. (1990), "The measurement and antecedents of affective, continuance and normative commitment to the organization", *Journal of Occupational Psychology*, Vol. 63 No. 1, pp. 1-18.

An anti-corruption billboard in Uganda (2013), "Letting the Big Fish swim", *Failures to Prosecute High-Level Corruption in Uganda*, available at: www.hrw.org/report/2013/10/21/letting-big-fish-swim/failures-prosecute-high-level-corruption-uganda (accessed 24 July 2018).

Auditor General (AG) (2012), *The Report and the Opinion of the Auditor General*, Vol. 2, Kampala.

Bajo, E., Bigelli, M., Hilliar, D. and Petracci, B. (2009), "The determinants of regulatory compliance: an analysis of insider trading disclosures in Italy", *Journal of Business Ethics*, Vol. 90 No. 3, pp. 331-343.

Baron, R.M. and Kenny, D.A. (1986), "The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality & Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Bartov, E., Gul, F.A. and Tsui, J.S.L. (2000), "Discretionary-accruals models and audit qualifications", *Journal of Accounting and Economics*, Vol. 30 No. 3, pp. 421-452.

Becker, G.S. (1968), "Crime and punishment: an economic approach", *Journal of Political Economy*, Vol. 76 No. 2, pp. 169-217.

Belak, J. and Mulej, M. (2009), "Enterprise ethical climate changes over life cycle stages", *Kybernetes*, Vol. 38 Nos 7/8, pp. 1377-1398.

Bennett, J.A. (2000), "Mediator and moderator variables in nursing research: conceptual and statistical differences", *Research in Nursing & Health*, Vol. 23 No. 5, pp. 415-420.

Betley, M., Bird, A. and Ghartey, A. (2012), "Evaluation of public financial management reform in Ghana, 2001-2010", final country case study report, Sida, Stockholm.

Blankley, A. and Forgione, D. (1996), "Ethical issues facing private, not-for-profit hospitals in the US: the case of the Methodist hospital system", *Journal of Public Budgeting, Accounting & Financial Management*, Vol. 8 No. 3, pp. 334-353.

Burby, R. and Paterson, R. (1993), "Improving compliance with state environmental regulations", *Journal of Policy Analysis and Management*, Vol. 12 No. 4, pp. 753-756.

Cahyono, B. (2017), "Non-compliance in public financial management: a case study of a local government in Indonesia", PhD thesis, Graduate School of Business Curtin Business School, Perth, available at: https://espace.curtin.edu.au/bitstream/handle/20.500.11937/68412/Cahyono%20B%202017.pdf?sequence=1 (accessed 31 October 2018).

Chattopadhyay, S.P. (2001), "Improving the speed of ISO 14000 implementation: a framework for increasing productivity", *Managerial Auditing Journal*, Vol. 16 No. 1, pp. 36-40.

Cronbach, L.J. (1951), "Coefficient alpha and the internal structure of tests", *Psychometrika*, Vol. 16 No. 3, pp. 297-334.

Davis, J.H., Schoorman, D. and Donaldson, L. (1997), "Towards a stewardship theory of management", *Academy of Management Review*, Vol. 22 No. 1, pp. 20-47.

DiMaggio, P.I. and Powell, W.W. (1983), "The iron cage revisited: institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147-160.

Durevall, D. and Erlandsson, M. (2005), "Public finance management reform in Malawi", SIDA country economic management report No. 1, Sida, Gothenburg.

Earnhart, D.H. and Glicksman, R.L. (2015), "Coercive vs. cooperative enforcement: effect of enforcement approach on environmental management", *International Review of Law and Economics*, Vol. 42, pp. 135-146.

Ettredge, M., Johnstone, K., Stone, M. and Wang, Q. (2011), "The effects of firm size, corporate governance quality, and bad news on disclosure compliance", *Review of Accounting Studies*, Vol. 16 No. 4, pp. 866-889.

Falkman, P. and Tagesson, T. (2008), "Accrual accounting does not necessarily mean accrual accounting: factors that counteract compliance with accounting standards in Swedish municipal accounting", *Scandinavian Journal of Management*, Vol. 24 No. 3, pp. 271-283.

Field, A. (2009), *Discovering Statistics Using SPSS*, 3rd ed., Sage Publications, London.

FINMAP (2011), *Study on Non-Compliance in Public Financial Management in Uganda*, Ministry of Finance, Planning and Economic Development, Kampala.

Frank, N. and Lombness, M. (1988), "Gaining regulatory compliance law enforcement and power in an interactionist perspective", *Administration & Society*, Vol. 20 No. 1, pp. 71-91.

Friedrich, R.J. (1982), "In defense of multiplicative terms in multiple regression equations", *American Journal of Political Science*, Vol. 26 No. 4, pp. 797-833.

Friesen, L. (2012), "Certainty of punishment versus severity of punishment: an experimental investigation", *Southern Economic Journal*, Vol. 79 No. 2, pp. 399-421.

GAO (2017), "GAO-17-283R US Government's 2016 and 2015 consolidated financial statements", available at: www.gao.gov (accessed 23 September 2017).

Gibson, K. (2000), "The moral basis of stakeholder theory", *Journal of Business Ethics*, Vol. 26 No. 3, pp. 245-257.

Global Integrity (2009), "Global Integrity Uganda country report", Global Integrity, Washington, DC.

Gormley, W.T. (1998), "Regulatory enforcement styles", *Political Research Quarterly*, Vol. 51 No. 2, pp. 263-383.

Granovetter, M.S. (1985), "Economic structure: the problem of embeddedness", *American Journal of Sociology*, Vol. 91, pp. 1360-1380.

Harrison, E.L. and Huntington, P.S. (2000), *Culture Matters: How Values Shape Human Progress*, Basic books, New York, NY.

Hernandez, M. (2008), "Promoting stewardship behavior in organizations: a leadership model", *Journal of Business Ethics*, Vol. 80 No. 1, pp. 121-128.

Hernandez, M. (2012), "Toward an understanding of the psychology of stewardship", *Academy of Management Review*, Vol. 37 No. 2, pp. 172-193.

Jaros, S. (2007), "Meyer and Allen model of organizational commitment: measurement issues", *The Icfai Journal of Organizational Behavior*, Vol. VI No. 4, pp. 7-25.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behaviour, agency costs, and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Kagan, R., Gunningham, N. and Thornton, D. (2003), "Explaining corporate environmental performance: how does regulation matter?", *Law & Society Review*, Vol. 37 No. 1, pp. 51-90.

Karim, A.K.M.W. and Ahmed, J.U. (2005), "Determinants of IAS disclosure compliance in emerging economy: evidence from exchange-listed companies in Bangladesh", Working Paper Series No. 21, pp. 1-23.

Kirchler, E., Hoelzl, E. and Wahl, I. (2008), "Enforced versus voluntary tax compliance: the 'slippery slope' framework", *Journal of Economic Psychology*, Vol. 29 No. 2, pp. 210-225.

Kleiman, M., Kilmer, B. and Schelling, T.C. (2009), "The dynamics of deterrence", *Proceedings of the National Academy of Sciences*, Vol. 106 No. 34, pp. 14230-14235.

Kuperan, K. and Sutinen, J.G. (1998), "Blue water crime: deterrence, legitimacy, and compliance in fisheries", *Law and Society Review*, Vol. 32 No. 2, pp. 309-338.

Lienert, I. and Sarraf, F. (2001), *Systemic Weaknesses of Budget Management in Anglophone Africa*, IMF, Washington, DC.

March, J.G. and Olsen, J.P. (1998), "The institutional dynamics of international political orders", *International Organisation*, Vol. 52 No. 4, pp. 943-969.

Martinez, R.J. and Dacin, M.T. (1999), "Efficiency motives and normative forces: combining transactions costs and institutional logic", *Journal of Management*, Vol. 25 No. 1, pp. 75-96.

Mathenge, G.D. (2012), "Ethical dimensions in responsible professionalism and accounting procedures in Kenya: a critical analysis of theory and Practice", *Research Journal of Finance and Accounting*, Vol. 3 No. 2, pp. 58-68.

May, J.P. (2007), "Regulatory regimes and accountability", *Regulation & Governance*, Vol. 1 No. 1, pp. 8-26.

May, P.J. (2004), "Compliance motivations: affirmative and negative bases", *Law and Society Review*, Vol. 38 No. 1, pp. 41-68.

Mayer, D.M., Kuenzi, M. and Greenbaum, R.L. (2009), "Making ethical climate a mainstream management topic; a review, critique and prescription for empirical research on ethical climate", in De Cremer, D. (Ed.), *Psychological Perspective on Ethical Behavior and Decision Making*, Information Age Publishing, Greenwich, CT, pp. 181-213.

Murphy, E. (2004), "Recognising and promoting collaboration in an online asynchronous discussion", *British Journal of Educational Technology*, Vol. 35 No. 4, pp. 421-431.

Nkundabanyanga, K.S., Tauringana, V., Balunywa, W. and Emitu, S. (2013), "The association between accounting standards, legal framework and the quality of financial reporting by a government ministry in Uganda", *Journal of Accounting in Emerging Economies*, Vol. 3 No. 1, pp. 65-81.

Olupot, M. (2007), *How did the GAVI Funds Disappear?*, New Vision Publication, Kampala, May 22.

Parboteeah, K.P. and Kapp, E.A. (2008), "Ethical climates and workplace safety behaviours: an empirical investigation", *Journal of Business Ethics*, Vol. 80 No. 3, pp. 515-529.

PFMA (2015), *The Public Finance Management Act of Uganda*, Government Printers, Entebbe.

Roberts, J. and Andrews, M. (2005), "Something funny happened on the way to reform success: the case of budget reform implementation in Ghana", *International Journal of Public Administration*, Vol. 28 No. 3, pp. 291-311.

ROSC (2005), "Report on the observance of standards and codes – Republic of Uganda –accounting and auditing", available at: www.worldbank.org/ifa/rosc_aa_uga.pdf (accessed 21 November 2011).

Rosenberg, M. (1968), *The Logic of Survey Analysis*, Basic Books, New York, NY.

Sanders, G., Berman, E.M. and West, J.P. (1994), "Municipal government financial reporting: administrative and ethical climate", *Public Budgeting & Finance*, Vol. 14 No. 2, pp. 65-78.

Sapiei, N.S., Kasipillai, J. and Eze, U.C. (2014), "Determinants of tax compliance behaviour of corporate taxpayers in Malaysia", *eJournal of Tax Research*, Vol. 12 No. 2, pp. 383-409.

Schacter, M. (2000), "When accountability fails: a framework for diagnosis and action", Policy Brief No. 9, Institute on Governance, Ottawa.

Scholz, J.T. and Lubell, M. (1998), "Trust and taxpaying: testing the heuristic approach to collective action", *American Journal of Political Science*, Vol. 42 No. 2, pp. 398-417.

Scott, R. (2008), "Approaching adulthood: the maturing of institutional theory", *Theory and Society*, Vol. 37 No. 5, pp. 427-442.

Scott, W.R. (2004), "Institutional theory", in George, R. (Ed.), *P408-14 in Encyclopedia of Social Theory*, Sage, Thousand Oaks, CA.

Segal, L. and Lehrer, M. (2012), "The institutionalization of stewardship: theory, propositions, and insights from change in the Edmonton public schools", *Organization Studies*, Vol. 33 No. 2, pp. 169-201.

Shacklock, A., Manning, M. and Hort, L. (2013), "Self-efficacy as an intervening variable between ethical work climate and decision making", *e-Journal of Social & Behavioural Research in Business*, Vol. 4 No. 2, pp. 1-13.

Silverman, M.G. (2008), *Compliance Management for Public, Private, or Non Profit Organizations*, The McGraw-Hill Books, New York, NY.

Sutinen, J.G. and Kuperan, K. (1999), "A social-economic theory of regulatory compliance", *International Journal of Social Economics*, Vol. 26 Nos 1/2/3, pp. 174-193.

Taylor, H.A. (2007), "Moving beyond compliance: measuring ethical quality to enhance the oversight of human subjects' research", *IRB: Ethics and Human Research*, Vol. 29 No. 5, pp. 9-14.

Treviño, L.K., Weaver, G.R. and Reynolds, S.J. (2006), "Behavioral ethics in organizations: a review", *Journal of Management*, Vol. 32 No. 6, pp. 951-990.

Uganda (2003a), "The Public Finance and Accountability Act", Entebbe Government Printers.

Uganda (2003b), "Treasury accounting instructions", Entebbe Government Printers.

Van Slyke, D.M. (2007), "Agents or stewards: using theory to understand the government-nonprofit social service contracting relationship", *Journal of Public Administration Research and Theory*, Vol. 17 No. 2, pp. 157-187.

Vicent-Jones, P. (2002), "Values and purpose in government: central local relations in regulatory perspective", *Journal of Law and Society*, Vol. 29 No. 1, pp. 27-55.

Victor, B. and Cullen, J.B. (1988), "The organizational bases of ethical work climates", *Administrative Science Quarterly*, Vol. 33 No. 1, pp. 101-125.

Webber, J.A. (2007), "Business ethics training: insights from learning theory", *Journal of Business Ethics*, Vol. 70 No. 1, pp. 61-85.

World Bank (2008), "World development indicators", World Bank (CD-ROM), Washington, DC.

Xepapadeas, A. (2005), "Economic modelling for groundwater resources management", *Water Science and Technology: Water Supply*, Vol. 5 No. 6, pp. 41-52.

Yamane, T. (1973), *Statistics: An Introduction Analysis*, Harper and Row, New York, NY.

Zorn, T.E., Flanagin, A.J. and Shoham, M.D. (2011), "Institutional and noninstitutional influences on information and communication technology adoption and use among non-profit organizations", *Human Communication Research*, Vol. 37 No. 3, pp. 1-33.

Zubcic, J. and Sims, R. (2011), "Examining the link between enforcement activity and corporate compliance by Australian companies and the implications for regulators", *International Journal of Law and Management*, Vol. 53 No. 4, pp. 299-308.

Further reading

Chelli, M., Jacques, R. and Durocher, S. (2014), "France's new economic regulations: insights from institutional legitimacy theory", *Accounting, Auditing & Accountability Journal*, Vol. 27 No. 2, pp. 283-316.

Tyran, J.R. and Feld, L.P. (2006), "Achieving compliance when legal sanctions are non-deterrent", *The Scandinavian Journal of Economics*, Vol. 108 No. 1, pp. 135-156.

Appendix 1

Table AI. Management mechanisms

Item scale	Component: Leadership support	Component: Organisational commitment
In this organisation we easily access the financial policies and procedures to guide our work	0.87	
We are guided to incur expenditure after funds have been released	0.83	
This organisation ensures that we follow the public procurement procedures in place	0.83	
Our supervisors guide us on the management of the payment procedures	0.81	
We are shown procedures regarding accounting and book keeping requirements	0.81	
Our supervisors guide us on the management of salaries and wages	0.77	
It is ensured by this organisation that the items we spend on are provided for in the budget	0.74	
We feel as if this organisation's problems are our own		0.89
We enjoy discussing about our organisation performance with outside people		0.87
We do not feel a strong sense of belonging to our organisation		0.32
Eigen value	4.65	1.75
% of variance	46.54	17.49
Cumulative %	46.54	64.03

Notes: KMO $= 0.813$; Cronbach $\alpha = 0.839$; Bartlett's test sig. $= 0.000$
Source: Primary data

Appendix 2

	Component		
	Law and regulation	Care	Independence
In this organisation, people are expected to strictly follow legal or professional standards	0.86		
It is very important to follow the organisation's rules and procedures here	0.80		
People are expected to comply with the law and professional standards over and above other considerations	0.79		
In this organisation, everyone is expected to abide by organisational rules and procedures	0.79		
In this organisation, the law or ethical code of one's profession is a major consideration	0.79		
People are expected to comply with the law and professional standards over and above other considerations	0.78		
Our major consideration is what is best for everyone in the organisation		0.90	
In this organisation, our major concern is always what is best for the other person		0.88	
In this organisation, our most important concern is the good of all people in the organisation		0.86	
In this organisation, people look out for each other's good		0.72	
In this organisation, people are guided by their own personal ethics			0.93
Eigen values	3.89	2.90	1.14
% of variance	35.36	26.39	10.40
Cumulative %	35.36	61.74	72.14

Notes: KMO = 0.776; Cronbach α = 0.779; Bartlett's test sig. = 0.000
Source: Primary data

Table AII.
Ethical climate

Appendix 3

	Component		
Items scales	Oversight organs	Penalties	Procedural justice
We fear to face the public accounts committee of parliament	0.90		
We fear to attract the attention of the press	0.85		
We are forced to do so	0.82		
We fear the inspectors from Ministry Of Finance	0.80		
We are likely to be punished	0.80		
The expected costs may be higher	0.73		
We are aware of the potential risks involved		0.90	
We are aware of the penalties involved		0.85	
The organisations we deal with expect us to abide		0.83	
Its procedures are fair to all organisations			0.91
It is an appropriate and effective law			0.85
It is fairly applied to all institutions			0.80
Eigen value	4.06	2.41	2.34
% of variance	33.81	20.05	19.53
Cumulative %	33.81	53.86	73.39

Notes: KMO = 0.764; Cronbach α = 0.838; Bartlett's test sig. = 0.000
Source: Primary data

Table AIII.
Deterrence measures

Appendix 4

Item scales	Component Process controls	Structural controls	Revenue management controls
Internal audit assists in the implementation of recommendations made by their reports and those of the external auditors or auditor general	0.92		
All organisation members work with internal audit to prevent, detect and investigate fraud	0.84		
This organisation does not advance more funds to a staff who has not accounted for previous advances	0.77		
The soundness and application of accounting, financial and operational controls are regularly checked	0.76		
The audit committee always oversees compliance with laws and regulations in this institution		0.95	
The audit committee periodically reviews and report on the overall quality of internal audit services		0.94	
In this organisation there is an established audit committee		0.91	
There is a proper system for the safe custody of all revenue documents			0.95
All revenues received in this organisation is acknowledged			0.93
This organisation considers it important to separate duties of those handling revenues			0.92
Eigen value	2.790	2.69	2.68
% of variance	27.90	26.92	26.82
Cumulative %	27.90	54.82	81.633

Notes: KMO $=0.739$; Cronbach $\alpha = 0.768$; Bartlett's test Sig. $= 0.000$

Table AIV. Public finance regulatory compliance-factorability results

Appendix 5

Table AV.
Discriminant and convergent validity

Variables	1	2	3	4	5	6	7	8
Leadership support (1)	*0.85*							
Commitment (2)	0.18	*0.74*						
Law and regulations (3)	0.67	0.09	*0.82*					
Penalties (4)	0.67	0.11	0.50	*0.88*				
Fairness (5)	0.48	−0.05	0.41	0.43	*0.88*			
Revenue controls (6)	0.20	0.36	0.21	0.27	0.17	*0.94*		
Process controls (7)	0.61	0.22	0.44	0.37	0.56	0.18	*0.87*	
Structural controls (8)	0.21	0.37	0.13	0.31	0.09	0.66	0.21	*0.94*

Source: Primary data

Corresponding author
Stephen Korutaro Nkundabanyanga can be contacted at: snkundabanyanga@mubs.ac.ug