

## Mapping Compliance to Organizational Performance in Statistical Work

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### Abstract

The problem explored in this explanatory sequential mixed methods study was the unknown effect of compliance on organizational performance in statistical work. A sample of 94 staff were purposively selected for the study. Both quantitative and qualitative data were collected in a sequential phased way. Quantitative data was collected first through a survey while Qualitative data was collected through face-to-face interviews which sought participants' views on the emerging compliance issues identified from the survey. Multiple linear regression analysis showed significant relationships between compliance levels and organizational performance measured by leadership's role, cost and quality. The implications from this study are: 1) A focused quality compliance training program for staff, 2) Quality compliance becoming more discernible within the organization.

**Keywords:** Quality Compliance, Quality Standards, Organizational Performance, National Statistical System, Statistical Organizations

### INTRODUCTION

During the last couple of decades, studies showed that compliance was central to maximizing productivity and organizational performance, and that cost (Annor, Mensah-Bonsu, & Jatoo, 2016) like leadership was vital to successful implementation of standards. Some theoretical perspectives including proprietary cost, quality, agency theory, stakeholder theory, political cost, signaling theory and legitimacy theory were used to derive research hypotheses and identify potential determinants of risk reporting and compliance (Ekramy, & Mellett, 2013). A study by Solomon, Day, Worrall and Thompson (2015) provided evidence that sustained investment in one quality improvement method raised service compliance against standards. Trends

showed improvement for direct control standards from "good" to "excellent" levels and improvement for no direct control from "poor" to "good". Other studies by Gavrea, Ilieş and Stegorean (2011), Lama (2013), Hassan (2013), Das (2014) and Peterson (2013) provided insight into the relationship between compliance and organizational performance. Without statistics that comply with quality standards, effective socio-economic and environmental policies cannot be researched and formulated, nor can the impact of these policy decisions be adequately measured (Uganda Bureau of Statistics, 2012; Uganda Bureau of Statistics, 2014). According to James (2012), strategic relevance of quality management systems and related standards in driving performance has never been clearer. As a result, organizations look inwards to leverage control of operational systems and processes through compliance to drive outward performance and growth. However, it is not known how compliance influences organizational performance in statistical work. As a focus area for the study, understanding the compliance-performance relationship provides better comprehension of the current state of statistical organization's compliance with quality standards. From a strategic leadership perspective, compliance with quality standards directs the organization towards balanced performance through effective and efficient resource management, productivity and use of quality statistics (James, 2012).

## **LITERATURE AND RELATED WORKS**

In establishing the essential argument for the conformance-performance relationship, Lama's findings (2013) showed a direct link between conformance and the firm's performance measured by cost, quality, return on equity, earning yield and return on assets (p.63). Franceschini (2002) underlined organizations' capabilities to consolidate resources with respect to their regulations and customer requirements as key exponents of the ISO 9000 quality standards. Application of these standards originated from quality awareness, a significant element that required prior planning and management throughout the value-chain network of the organization (Romano & Vinelli, 2001). According to Gozman and Currie (2014), pressure on resources was compounded by tight deadlines for implementation set by regulators. Consequently, many organizations focused on meeting compliance deadlines rather than developing enterprise-wide approaches for compliance to create much needed efficiencies. This led to a higher number of regulatory breaches with possible financial and reputational penalties.

Demir and Bahadir (2014) further explored selected companies' compliance practices with mandatory rules. Their study showed positive relationships between company characteristics and the extent of disclosure. Other comparable studies by Adowa and Okereke (2013), Arasa and Ottichilo (2015), Berisha-Vokshi, Xhelili-Krasniqi and Ujkani (2015), Bokpin (2013), and Juhmani (2012) also showed positive influences of the company size on compliance levels with IFRSs, while studies by Street and Bryant (2000), Glaum and Street (2003) showed insignificant relationships between compliance and company characteristics. Correspondingly, studies by Das (2014), Hassan (2013), Omar (2015) and Peterson (2013) revealed a strong compliance-

performance relationship and also revealed how this relationship impacted the corporate governance structures with mandatory International Financial Reporting Standards (IFRSs) disclosure requirements. Also, Eyre (2006), García, Del Río, Alonso, & Brea (2014) analyzed the relationship between critical quality factors, people's needs, the results-social impact and the level of their influence on the performance results of a company. They argued that leadership was the most important factor in achieving good performance, success and improving their social impact. Leadership indirectly affected the social impact through its influence on alliances and resources, quality policy/planning, personnel management and learning. Leadership's role in compliance determined how successful or unsuccessful compliance would be within the organization (ISO, 2008). ISO (2014) emphasized the broad guidelines for compliance management to assist organizations in implementing specific compliance-related requirements. Lama (2013) and Tan (2015) underscored conformance and performance as two crucial aspects of corporate governance. The conformance aspect entailed the board's responsibility to ensure compliance with relevant governance regulations and timely discharge of various contractual obligations. Other similar studies included (Dickinson, & Sullivan, 2013; Stock, Zacharias, & Schnellbaecher, 2017).

## **METHODOLOGY**

The study used an explanatory sequential mixed methods research design to determine the extent to which compliance influences organizational performance in statistical work. Ethical clearance was sought from the Institutional Review Board (IRB) and Uganda National Council for Science and Technology (UNCST) and approvals issued prior to the research study. This mixed research design involved collecting quantitative data first using a survey and later explaining the quantitative results with in-depth qualitative data collected from follow-up interviews (Creswell, 2015; Creswell, 2014). Purposive random sampling was adopted to determine selection of participants for the quantitative phase, while Key Informant Technique (KIT) was used in both phases of the research study (Kothari, 2004). This ensured that participants in each category had an equal chance of participating in the research study. A total population size (N) of 100 staff engaged in statistical work were the study population. A sample (n) of 94 was derived from the total population using Yamane's (1973) sample size determination formula:  $n = N / [1 + N(e^2)]$ . To identify the 5 participants for the qualitative follow-up sample, the researcher asked for volunteers when collecting quantitative data using the data collection instruments (Creswell, 2015). The first (quantitative) and second (qualitative) phases of the study used the structured questionnaires to collect primary data from the selected sample. Face-to face interviews were conducted during the qualitative phase for the selected 5 participants who volunteered to be part of the study. Minitab 17 software was used to analyze the data collected from both phases 1 and 2. Multiple linear regression analysis was used to predict the strength of linear statistical relationships between the dependent variable (compliance levels) and the independent variables (performance measures of leadership role, quality and cost). To determine validity and reliability,

content validity was used to determine how well the instrumentation and questions measured the purpose they intended to measure through an independent expert review. A reliability test was done using Cronbach Alpha and an average score of (0.7559), greater than the 0.70 alpha coefficient (Cronbach, 1951; Santos, 1999) was achieved.

### Key Findings

The survey and face to face interviews achieved a 100% response rate given that all questionnaires distributed to the 94 survey participants were completed and returned. Similarly, all 5 participants targeted in the qualitative phase responded to the interviews. One way Analysis of Variation (ANOVA) test was done to determine whether the differences between the group means of the coefficients (key performance measures) were statistically significant (incase their p-values were less than the alpha level 0.05) as shown in table 1.

**Table 1. Analysis of Variance (ANOVA)**

Term	DF	Adj SS	Coef	SE Coef	T-Value	P-Values	VIF
Constant			1.8298	0.0187	97.90	0.000	
Leadership role	1	0.6223	0.0907	0.0208	4.35	0.000	1.23
Quality	1	6.4437	0.2957	0.0211	14.01	0.000	1.26
Cost	1	0.3045	0.0594	0.0195	3.05	0.003	1.08

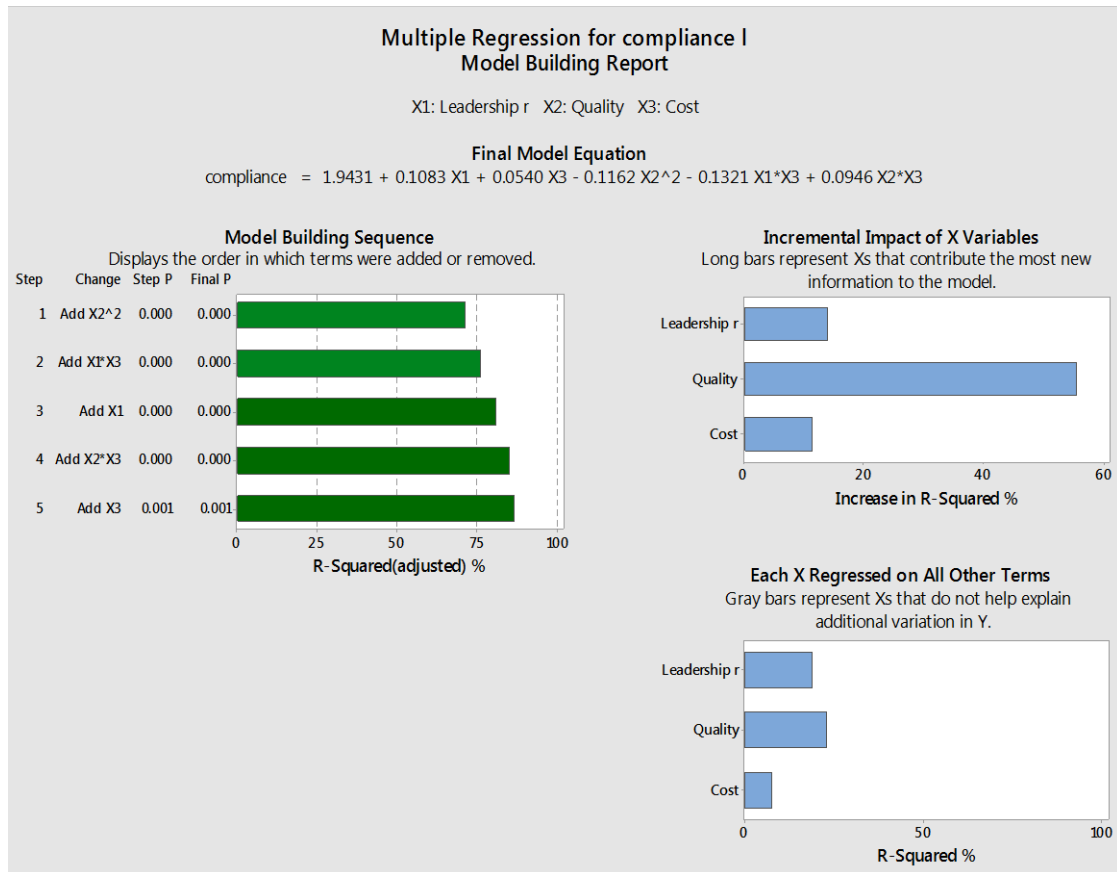
Source: Primary Data (Minitab 17)

Table 1 showed that the Standard Error (SE) for the cost coefficient was slightly smaller than the SEs for leadership and quality, implying that the model would be able to estimate the coefficient for cost with slightly greater precision. Similarly, since all resulting p-values associated with the t statistics of leadership (p-value = 0.000), quality (p-value = 0.000) and cost (p-value = 0.003) were lower than the common alpha level of 0.05, the conclusion was that these coefficients differed from zero and were all included in the general linear regression model for further analysis. The findings are shown in figures 1 and 2 below.

### Regression analysis for compliance levels and the key performance measures

Figure 1 showed the multiple regression model for compliance levels (dependent y-variable) and the three performance measures (independent x-variables) of leadership role, quality, cost in table 8 above. The regression equation from this model was as follows; Compliance levels = 1.9431 + 0.1083 X1 + 0.0540X3 - 0.1162 X2<sup>2</sup> - 0.1321 X1\*X3 + 0.0946 X2\* X3 with X1 as leadership role, X2 as quality and X3 as cost. This implied that an increase in the leadership role towards compliance would likely

increase compliance levels of staff by 0.1083. Similarly, an increase in the quality of statistics with regard to the dimensions of relevance, accuracy, and timeliness would likely result in an increase in the compliance levels by 0.0946. Figure 1 also shows that of the three performance measures, quality had the most incremental impact on compliance levels as reflected by the long bars representing Xs that contributed the most information to the model.



**Figure 1.** Multiple Linear Regression model for compliance and performance

Source: Primary Data (Minitab 17)

In addition, the figure indicates that all three performance measures of leadership role, quality and cost (independent x- variables) have significant statistical relationships with compliance levels (dependent y-variable). Conversely, leadership role and quality (p-values 0.000 and 0.000) are more likely to influence compliance to a greater extent than cost (p-value 0.003).

**CONCLUSION**

Multiple linear regression analysis was done to predict the strength of statistical relationships between key performance measures of a leadership role, quality and cost

on compliance levels in phase 1. Summarily, the analysis revealed that all three measures had significant relationships with compliance levels and therefore any increase or decrease in these measures would likely have a similar effect on compliance levels in the statistical organization. Findings from Phase 1 created opportunities for further discussions on compliance and performance in Phase 11. From the qualitative phase (face-face interviews), participants identified a number of ways in which performance would improve when staff complied more, these included; creating quality work environments, building the right compliance culture from the onset, delegated heads of departments regularly assessing their staff compliance levels to identify winning points and low lying fruits in order to target compliance improvement efforts. Performance as a multi-dimensional construct covers many aspects, however, this research study focused on only three performance measures. It remains to future research to cover more performance measures beyond the three used in statistical work.

### **Practical implications**

As Quality compliance becomes more discernible within the organization, the leadership is more likely to focus on sustainable quality compliance approaches at process and product levels to maintain delivery of high quality statistics across National Statistical Systems.

### **Originality/ Value**

The paper assesses existing research, provides scientific evidence into the compliance-performance relationship in statistical work and provides suggestions for future research.

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