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Performance of Construction Projects: Examining the role of School Infrastructure Policy Governance and Project Management Practices

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Abstract: The study examined how school infrastructure policy governance influences the performance of construction projects and whether project management practices mediated that relationship. The study was a correlational design cross-sectional survey. The target population was 920 head teachers and 86 District Education Officers (DEOs) in the 13 regions of Somaliland.Purposive sampling and proportionate stratified random sampling with replacement were used to sample 272 schools while simple random sampling was used to sample 20 DEOs. Data collection was done through self-administered questionnaires for head teachers and semi-structured interviews for DEOs. Questionnaire pilot testing was done on 28 head teachers. The survey response rate was 90.8% (247 head teachers) for questionnaires and 100% (20 DEOs) for interviews. Path analysis was used to analyze the variable relationships. Relationships among the variables were tested using t-tests at 5% level of significance. School infrastructure policy governance exert a significant direct effect (b = -0.3283, t = -8.2143, $p< 0.001$, $R^2 = 0.5250$) and a significant indirect effect (0.2755, CI [0.2283, 0.4645])on performance of construction projects. A direct negative linear relationship exists between school infrastructure policy governance and performance of construction projects. Policy governance exerts its influence on performance of construction projects through project management practices which mediate the relationship. The study was limited to construction projects in public primary schools in seven sampled regions in post-conflict Somaliland.

Keywords: Policy Governance, Project Management Practices, Performance, Construction Projects, Mediation.

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I. INTRODUCTION

Continued global development has persistently increased demand for educated and skilled citizens making education more and more a basic requirement in modern society. In realization of this, the international community has made primary education both free and compulsory for all worldwide. For schools to realize their education service delivery goals, school infrastructure is needed. The infrastructure should not only be fit-for-purpose but also adequate and of quality. Governments establish school infrastructure regulatory policy to set standards for infrastructure facilities for schools to comply with. Schools mount construction projects and other projects in order to establish more physical facilities, maintain existing ones and rehabilitate others in a bid to comply with the infrastructure policy requirements set in the school infrastructure regulatory policy.School construction projects refer to the built environment in the school and include physical facilities such as structures and the associated amenities[1].

Once construction projects are mounted, it is necessary to measure their performance. This can be done using project performance indicators [2]. The criteria for measuring construction project performance should be developed at the project planning stage so that implementers are aware of the output, deliverables and outcome requirements that will be used to measure the performance of the projects and return the verdict of success or failure. A blend of subjective and subjective indicators can be used to measure project performance among them: realization of output,variations from the initial project plans, completion within schedule, completing within budget, meeting standards, realizing scope, achieving functionality; satisfaction of client, users, implementers, designers, and management with the project [3]. The study sought to measure the performance of construction projects undertaken in Somaliland's public primary schools within a period of five years (2014-2018).

Policy governance refers to how a regulatory policy or other policy is implemented by the policy users and enforced by the regulator. It is how the policy functions and who and how decisions relating to the policy implementation process are made in order to realize the policy goals[4].Policygovernance is, therefore, the design of the regulatory system and how it is established and built to function[4].Policy governance is often

regarded as synonymousto policy administration. For school infrastructure policy, policy governance can be indicated by: the policy administration structure, inspections, predictability of the policy, accountability of the regulator, independence of the regulator, transparency of the regulator, ease or difficulty of implementing the policy by users, stability of the policy, remedial and punitive measures against violations, effectiveness and efficiency of the policy administration structure and, consistency of policy enforcement, monitoring and evaluation.

The effectiveness and efficiency of the established policy administration system significantly determine the realization of policy objectives. Where the policy administration structure is devolved and different bodies are involved in policy enforcement, differences in methods, strictness and, practices manifest. Where policy enforcement officers are designated areas of jurisdiction, the policy implementation and enforcement vary among areas depending on the jurisdiction officer's personal commitment, work efficiency, determination, loyalty, moral and ethical values. Policy administration requires resources. The regulator needs funds and capital resources to sensitize policy users, train them, undertake inspections, carry out policy reviews and, monitor and evaluate policy results [4][5]. Where the regulator is short of resources or lacks the power to undertake remedial and punitive measures againstnon-implementation and other policy violations by policy users, then policy implementation is left to the will of the policy users as the policy administration system is toothless and can only depend on such tactics as persuasion. The latter is the case in Somaliland. The Ministry of Education and Higher Studies (MOEHS), short of financing and capacity is unable to significantly enforce the school infrastructure policy and other education policies [6]. The state's policy administration system is devolved with national, regional and district education officers enforcing policies at their level and geographical jurisdictions. Consequently, school infrastructure policy administration varies from region to region and district to district [7]. Regional and district officers differin their methods and styles of administration and leadership due to differences in experience, education, personality, cultural background, personal culture, policy know-how, policy training, motivation, diligence and commitment to duty; which culminate in policy administration differences.

Policy realizes its results by changing the practices. In an industry, new policies will target to restrict or eliminate certain management practices by outlawing them and prescribing punitive measures against them while at the sametime promoting other practices by giving incentives or setting them as requirements in the policy. Differences in policies then result in differences in practices and eventually differences in results [8]. School infrastructure policy sets standards and requirements for school infrastructure projects which resultsin school administrations changing their project management approaches and practices in order to comply with the policy. Just like policy enforcement has costs implications to the regulator, policy implementation creates new costs to the policy users. This is the costs of compliance which eventually often increase the costs of the projects to the schools thus affecting project performance.

The study was done in the state of Somaliland and aimed to establish theeffects of school infrastructure policy administration on the performance of construction projects in public primary schools.

II. LITERATURE REVIEW

When a new school infrastructure policy is instituted that abolishes the old policy, schools vacate from the old policy and its requisite management practices to the new policy and seek to institute management practices that match the new policy's requirements. In the short term performance of school projects are negatively affected as the policy administration system adjust to the new policy. This was the case with many countries' free primary education policies (FPE). In South Africa, performance of school projects declined when FPE was introduced because it switched project financing source from fees charged to parents to government capitation which was much less [9].

Policy administration influences performance of projects but only to the extent of the policy's implementation. Policies that are sparingly enforced have little effect on performance of projects and in turn, fail to significantly realize the policy [10]. Construction projects policies' tend to be costly to comply with, resulting in implementers resistance necessitating policy enforcement. Stricter enforcement results in higher compliance and better realization of policy goals. Policies, therefore, have to be administered for their objectives to be realized [11].Policy administration, however, requires resources in terms of capacity, equipment, materials, and funding to develop inspection tools and system, undertake inspections, audits, consultative forums, policy reviews, certifications, and other policy administration activities.

At the primary school level, new policies that distress the status quo are perceived by school management as threatening and onerous [12] resulting in policy resistance and reduced projects' performance. Sensitization, persuasion, participation, and stakeholder education are interventions that can ease the situation. Policy administration work can become increasingly difficult if the policy implementers and users are facing challenges in implementing the policy in their institutions and situations. Such challenges in primary schools include inadequate funding and lack of financial, accounting and project management skills among school managers[13].

The study sought to test the following models:

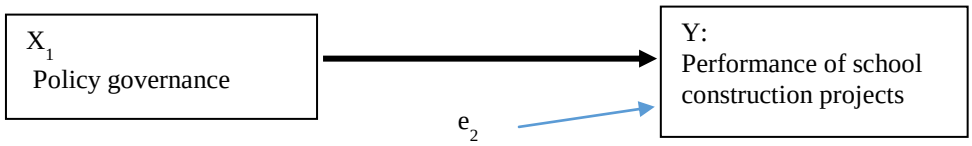

Figure 1: Total effect model

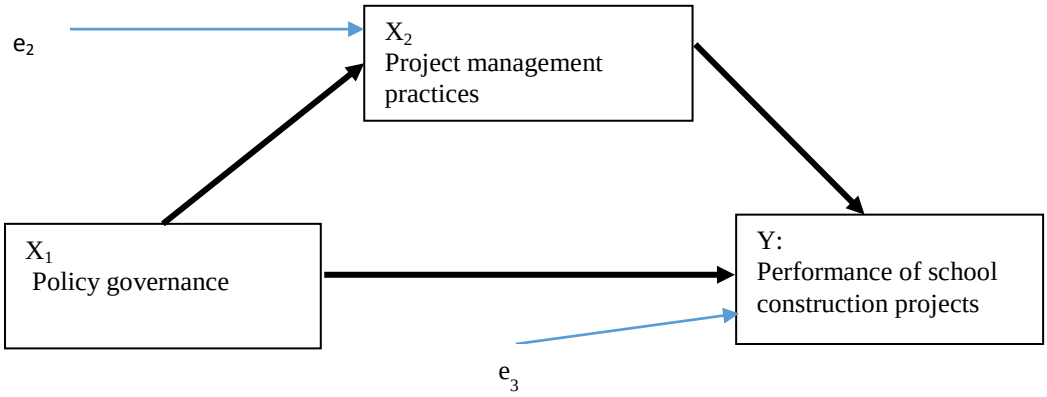

Figure 2: A Mediation model

III. RESEARCH METHODOLOGY

The study used mixed methods,cross-sectional study design where data was collected using questionnaires and interviews. The target population of the study comprised 920 head teachers in 920 public primary schools in Somaliland. Eighty-two District Education Officers (DEOs) in the 13 regions in the state were also targeted. The units of observation were head teachers and DEOs. The unit of analysis was the school. In the State's policy administration structure, the MoEHS head offices oversee Regional Education Officers, who oversee DEOs, who exercise oversight authority over the head teachers.

To determine an appropriate sample, the study used the large population sample size formula ($n=z^2(P)(Q)/\alpha^2$) then applied the Cochran finite population correction at 5% level of significance resulting to a sample of 272 schools. The sampled units of observation were 272 head teachers and 20 DEO's. To draw the sample, multistage sampling was used. Purposive sampling was used to sample 7 from 13 regions, resulting in a sample of 735 primary schools and 56 districts. Next proportionate stratified random sampling with replacement was used to draw a sample of 272 schools from the 735 schools. The head teachers of these 272 school were participated in the study by filling questionnaires. From the 56 districts, 20 DEOs were randomly selected and participated in the study through semi-structured interviews. The questionnaire had 11 items for each variable, 10 of which were 5-point Likert scale items. It was piloted on 52 respondents. The Cronbach alpha coefficient of internal consistency was $\alpha = .878$ for X_1, $\alpha = .754$ for X_2 and $\alpha = .826$ for Y; indicating the research tool was reliable. Peer review, empirical literature review, and piloting were used to ensure the validity of the instruments. Quantitative data collection was done by a drop-and-pick later method.

Data analysis was done using path analysis technique to compute the direct and indirect effects of X_1 on Y. The Andrew Hayes *Process* tool (model 1) was used to compute the path coefficients, indirect effect and the bootstrap confidence intervals which were used to test the following hypotheses:

HOa: Policy governance (X_1) has no total effect on performance of construction projects (Y).
HOb: Policy governance (X_1) has no direct effect on performance of construction projects (Y).
HOc: Policy governance (X_1) has no indirect effect on performance of construction projects (Y).

IV. FINDINGS AND DISCUSSIONS

The study's response was 247 (90.8%) head teachers' questionnaires completed and returned and 20 (100%) DEOs interviewed.To test whether the data was suitable for the application of parametric tests; normality, multicollinearity, homogeneity of variance and independence of error term test were conducted. The Kolmogorov- Smirnov test for normality returned D (247) = 0.057, P= 0.052 for policy governance; D (247) = 0 .048P= 0.2 for project management practices; and D (247) = 0.046, P= 0.2 for performance of construction projects. This shows that data for the three variables of the study were each drawn from a normally distributed

population.The tolerance value (TV) and its related inverse VIF were used to test for multicollinearity.The results were: policygovernance,*TV* = 0.782, VIF=1.279; project management practices,*TV*= 0.574, VIF =1.741; which were indicative of absence of multicollinearity. Levene statistic was computed: policy governance, *F* (29, 212) = 0.907, *P* = 0.608; project management practices *F* (29,212) = 0.890, *P* = 0.633,showing the variances in Y were constant at different points of the exogenous variables.The Durbin Watson statistic returned *D*= 2.070, indicating the error terms were independent.The data was, therefore, appropriate for the application of parametric tests.

The head teachers' responses for the 10, 5-point Likert items per variable were totaled for each variable per school on a scale of 10-50 and binned into three groups: disagree, not sure and agree. The results are shown in Table 1 below.

Table 1: Binned Dataon the Study Variables

Variable	Response category	Frequency	Percent	Mean	Standard Deviation
Performance of construction projects	Disagree/low (10<26)	68	27.5	29.60	7.12
	Not sure (26<34)	109	44.2		
	Agree/high (34≤50)	70	28.3		
	Total	**247**	**100.0**		
School infrastructure policy governance	Disagree/low (10<26)	54	21.9	32.41	8.85
	Not sure (26<34)	85	34.4		
	Agree/high (34≤50)	108	43.7		
	Total	**247**	**100.0**		
Project management practices	Disagree/low (10<26)	40	16.2	30.88	5.33
	Not sure (26<34)	133	53.8		
	Agree/high (34≤50)	74	30.0		
	Total	**247**	**100.0**		

These findings indicate that the respondents were divided as to whether performance of construction projects was high or low with 68 (27.5%) of respondents indicating that it was low, 70 (28.3%) indicating that it was high and 109 (44.2%) of respondents taking a lukewarm position. The mean score was 29.60 and falls in the "not sure" category indicating the respondents were indifferentas to whether performance of construction projects was low or high. This shows that there were schools that had had good performance of construction projects that they had undertaken, other schools had poor performance while others had a mixture of both: some projects performing well with others realize dismal results.

On policy governance, the respondents took a slightly favorable position with a mean of 32.41 and standard deviation of 8.85. Of the schools surveyed,108 (43.7%) expressed a favorable opinion on how school infrastructure policy was administered by MoEHS, 54 (21.9%) thought that the policy governance was wanting while 85 (34.4%) schools were lukewarm over the issue. This shows that more schools were of the opinion that school infrastructure policy governance influenced performance of their construction projects.

Of the 247 schools, 74 (30%) of the respondents believed the project management practices in their schools were adequate to give a good performance of their schools' construction projects as compared to 40 (16.2%) who believed their schools' project management practices could yield low-performance levels for their school construction projects. The majority (133, 53.8%) of the respondents were unsure whether their schools project management practices were adequate or inadequate to yield good performance of their school's construction projects. With an overall mean of 30.88and a standard deviation of 5.33, it can be inferred that the respondents had an overall slightly positive perspective of the project management practices used in construction projects in primary schools and believed that the fairly good practices resulted in good performance of the school's construction projects.

The study findings for individual Likert scale items on policy governance indicated that of the schools surveyed, the respondents felt that the policy administrative structure was ineffective, implementation of the school infrastructure policy was ineffective, the school infrastructure policy was stable, the inspection criteria for school construction projects was unclear in some schools, some school inspectors were biased, MoEHS approved school construction projects before their commencement - though not all the time and, MoEHS approved newly completed construction projects before they are commissioned for use. Further, policy governance at MoEHS was negatively affected by a shortage of funding which caused the ministry to choose policy administration activities that they could manage to undertake given their resource limitations. Given such a choice, policy administration activities got done at only low levels and in some cases remained undone.

On project management practices, the findings on the Likert scale items indicate that school infrastructure construction projects were identified and selected largely without stakeholder involvement and

experts were largely not involved in project design. However, schools involved stakeholders in project planning, involved the community in project financing and engaged external parties in the implementation of school construction projects. The findings further indicate that completed construction projects were put into use before they were inspected for compliance with the school infrastructure policy, head teachers oversee project implementation and ensure project clean-up is done. The findings also indicate that MoEHS had not financed most of the construction projects in the primary schools. These findings show the active role that head teachers in Somaliland primary schools have to play for school construction projects to become a reality which includes project identification, selection, design, and planning, resource mobilization, overseeing project implementation and ensuring site clean-up on project completion.

4.1 Total Effect

To establish the relationship that exists between policy governance and performance of construction projects the total effect was analyzed using linear regression analysis. The output for the path coefficients and other statistics is shown in Table 2 and Figure 3.

Table 2: Regression Coefficients for Total Effect of Policy Governance on Performance of Construction Projects.

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for b		Correlations		
Model	b	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
Constant	30.636	1.726		17.748	0.000	27.236	34.036			
PG	-0.032	0.051	-0.040	-0.620	0.536	-0.133	0.069	-0.040	-0.040	-0.040

Note: Dependent Variable: Performance of Construction Projects. PG-Policy Governance.
n =247, α = 0.05.

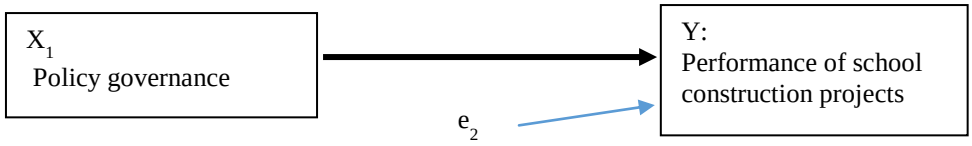

Figure 3: Total effect model

In the model, R2 = 0.002, indicating an insignificant 0.2% explanatory power of policy governance on of the variations in performance of construction projects. The influence (-0.032) exerted by policy governance on performance of construction project (in the absence of project management practices) was too small and insignificant (P= 0.536).

4.2 Direct and Indirect Effects

The relationship between policy governance and project management practices was tested in the first stage of the mediation analysis ($X_1 \rightarrow X_2$). Path analysis technique was used with the aid of Andrew Hayes *Process* tool. The output is shown in Table 3.

Table 3. Regression Coefficients for Indirect Effect of Policy Governance on Project Management Practices

					Confidence interval	
Model	Coefficient.	se	t value	P (sig)	LLCI	ULCI
Constant	21.8422	1.1454	19.0699	0.0000	19.5862	24.0983
Policy Governance	0.2788	0.0341	8.1771	0.0000	0.117	0.3460

Note:Predictor: Policy governance
n =247, α = 0.05

Policy governance (X_1) was found to be a significant predictor of project management practices (X_2), (b = 0.2788, t=8.1771, p< .001). The value of R^2 was 0.2144, indicating that 21.44% of the variations in project management practices could be explained by variations in policy governance. This shows that policy governance,

whose implementation process was found to be ineffective, does not significantly determine performance of construction projects directly but influences indirectly by influencing the project management practices that the schools apply.

At the second stage of the mediation analysis, the relationship between policy governance and performance of construction projects was analyzed in the presence of the mediator ($X_1 | X_2 \rightarrow Y$). The output is shown in Table 4.

Table 4. Regression Coefficients for Direct Effect of Policy Governance and Indirect Effect of Project Management Practices on Performance of Construction Projects.

					Confidence interval	
Model	Coefficient	se	t value	P (sig)	LLCI	ULCI
Constant	9.0530	2.0585	4.3979	0.0000	4.9984	13.1077
Policy Governance	-0.3074	0.0439	-7.0072	0.0000	-0.3938	-0.2210
Project management practices	0.9881	0.0728	13.5643	0.0000	0.8446	1.1316

Note: Predictors: Policy governance, Project management practices
n =247, $\alpha = 0.05$

Policy governance (X_1) was found to significantly predict the performance of construction projects (Y) when project management practices is in the model, (b= -0.3283, t= -8.2143, p< 0.001). R^2 was 0.5250 indicating that 52.5% of the variations in Y could be explained by the variations occurring in both policy governance and project management practices.

Projects management practices had a significant positive influence on performance of construction projects (b= 0.9881, p<0.001) indicating that it is a significant predictor of performance of construction projects in schools.The direct effect of policy governance on performance of construction projects (p_{31}) was -0.3074, (p<0.001) indicating that; controlling for project management practices, policy governance exerted a negative influence on performance of construction projects. This is in line with empirical literature that project regulatory policy restricts project management practices and increases the costs of mounting projects due to the extra costs of policy compliance [10]. Besides, the costs of policy administration and governance are often passed on to policy users through such methods as inspection fees, clearance and approval certifications, among others; increasing the project costs and reducing the number of projects mounted by making it more difficult, bureaucratic and strenuous to mount projects.

The indirect effect ($P_{21} * P_{32}$) was 0.2755 which when fully standardized was 0.3432, CI [0.2283, 0.4645]. This shows that policy governance exerts a moderate positive influence on performance of construction projects through project management practices. This finding is line with the theory of policy that: policy administration and enforcement practices focus on changing existing practices to bring them in line with the policy requirements in order to realize certain policy goals [4]. Policy governance thus works through changing management practices on the ground to bring about changes in performance. R^2 was 0.4308 (p<0.001) indicating that 43.08% of the variations in performance of construction projects are explained by variations in policy governance and project management practices.

The resulting models for direct and indirect effects were:

$Y = 30.636 - 0.032X_{1+} e$; $e=0.051$ …….. (1)

$M = 21.8422 + 0.2788X_{1+} e_2$. $e_2 = 0.341$ ……... (2)

$Y = 9.0530 - 0.3074X_1 + 0.9881M + e_3$. $e_3 = 0.1167$ …….. (3)

Where:

X_1 – Policy governance (independent variable)

M - Project management practices (mediator)

Y - Performance of construction projects (dependent variable)

e- The disturbance term

When the standardized path coefficients are deployed in the model, the results are shown in Figure 4.

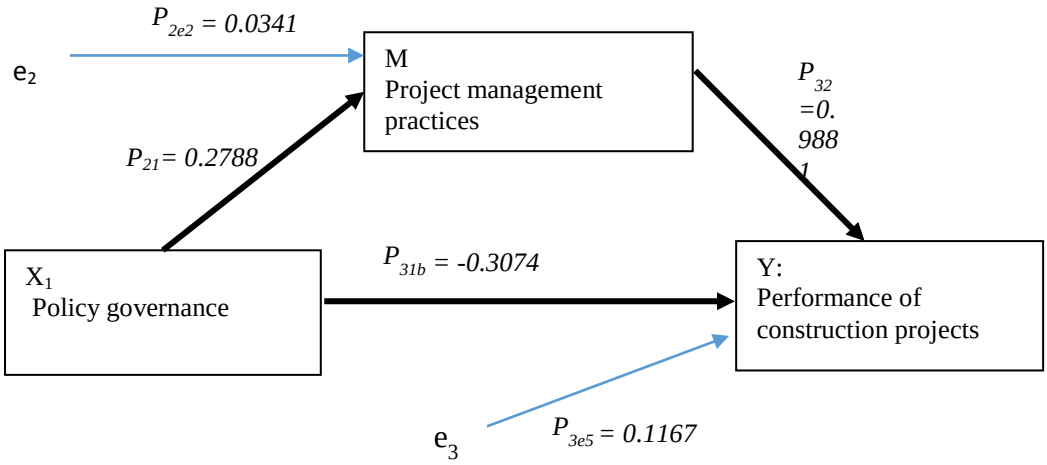

Figure 4. Path analysis model for policy governance.

In Figure 4, the standardized path coefficients for the relationship between policy governance and performance of construction projects with project management practices in the model are depicted. This summarises the direct and indirect effects of X_1 on Y.

4.3 Testing of Hypothesis

The following hypothesis was tested.

HOa: Policy governance (X_1) has no total effect on performance of construction projects (Y). H_O: $b = 0$

HA: Policy governance (X_1) has a significant total effect on performance of construction projects (Y).H_A: $b \neq 0$

The value of *b* of *-0.032* in the total effect model is not significant at 5% level of significance with *P*=0.536. We accept the null hypothesis that policy governance has no significant total effect on performance of construction projects.

HOb: Policy governance (X_1) has no direct effect on performance of construction projects (Y). H_O: $p_{31} = 0$

HA: Policy governance (X_1) has a significant direct effect on performance of construction projects (Y). H_A: $p_{31} \neq 0$

Since P_{31} = -0.3074, P<0.001, we reject the null hypothesis that P_{31} is not significant and accept the alternative hypothesis that policy governance has a significant direct effect on performance of construction projects.

HOc: Policy governance (X_1) has no indirect effect on performance of construction projects (Y).H_O: $P_{21} * P_{32} = 0$

HA: Policy governance (X_1) has a significant indirect effect on performance of construction projects (Y).H_A: $P_{21} * P_{32} \neq 0$

The indirect effect ($P_{21} * P_{32}$) is 0.2755 which when fully standardized is 0.3432, CI [0.2283, 0.4645]. Since the confidence interval does not include zero, we reject the null hypothesis and infer that policy governance has a significant indirect effect of performance of construction projects. This leads to the conclusion that project management practices mediate the relationship between policy governance and performance of construction projects.

V. CONCLUSIONS

The findings indicate that policy governance has both a direct effect (- 0.3074) and an indirect effect (0.3423) on performance of construction projects when project management practices is in the model. Policy compliance and enforcement has costs. In the case of school infrastructure policy, the policy compliance costs increase the project costs thereby reducing the number of projects mounted and completed in the short-term and even medium-term hence the negative direct effect of policy governance on project performance. When policy is developed and policy users are not sensitized on the policy and how to apply it, a lull results where some users try to adopt the policy, others resist it while others take a wait-and-see stance. When project management practices is not in the model, policy governance exerts no significant total effect on project performance indicating that the existence and administration of a policy on its own do not affect performance of projects.Project management practices mediate the relationship between policy governance and performance of construction projects. Policy works by influencing management practices to realize its intended goals. When policy is not adequately enforced, the regulated apply the policy on goodwill basis which results to some

applying the policy fully, others partially and others not at all, which in turn result in disparities in quality and performance. Policy is effective in realizing its results to the extent to which it is implemented.

In the case of MoEHS policy governanceis largely suppressed by the shortage of budgetary allocation at MoEHS level and the school infrastructure policy was not being actively enforced. The MoEHS school infrastructure policy administrative structure is ineffective and the school inspection criteria are unclear at the school level. Lack of active enforcement of the policy resulted in schools customizing the policy requirements and complying to the extent that they could manage.

The paper adds knowledge on how policy administration affects performance of projects in the post-conflict setting. The findings will be of use to policymakers especially Somaliland's MoEHS as they formulate policies and review the school infrastructure policy. Other stakeholders and development agencies engaged in education restoration and development may find this paper of use. The study was limited to school infrastructure policy and construction projects in Somaliland's public primary schools.

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Appendix

Data Collected from the Field

This section presents the data that was collected from the field

1. Performance of Construction Projects

The following indicators were used to measure performance of construction projects: realization of set standards, realization of planned deliverables, completed projects' variance from the initial plans, functionality of completed projects, end-user satisfaction and, construction team satisfaction with the completed projects. Quantitative data on the variable was collected by questionnaires administered on head teachers. To collect quantitative data, the questionnaire used 10, 5-point Likert type items to measure performance of construction projects at an interval scale with Strongly Agree (SA)=5, Agree (A)=4, Not sure (NS)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. Quantitative data was analyzed into frequency distributions. The mean, the standard deviation, and the composite mean were computed. An open-ended question was also used. The data is presented in Table 1.

Table 1. Performance of Construction Projects

	Statements	**SA**	**A**	**NS**	**D**	**SD**	**MEAN**	**STDV**
1	All of the school construction projects completed in my school have realized their planned standards (+)	78 (31.6%)	105 (42.5%)	41 (16.6%)	4 (1.6%)	19 (7.7%)	3.89	1.110
2	The school construction projects completed in my school have realized their planned deliverables (+)	56 (22.7%)	57 (23.1%)	57 (23.1%)	47 (19.0%)	30 (12.1%)	3.25	1.326
3	Most of the construction projects in the school are completed with minimal variance from the initial plan (+)	2 (0.8%)	42 (17.0%)	12 (4.9%)	134 (54.2%)	57 (23.1%)	2.18	1.002
4	All completed infrastructural projects have attained the intended functionality (+)	30 (12.1%)	97 (39.3%)	57 (23.1%)	3 (1.2%)	60 (24.3%)	3.14	1.360
5	In some cases, teachers were not satisfied with the projects' outcome (-)	4 (1.6%)	45 (18.2%)	33 (13.4%)	105 (42.5%)	60 (24.3%)	3.70	1.079
6	School management has expressed satisfaction with the project outcome of construction projects in the school (+)	30 (12.1%)	151 (61.2%)	44 (17.8%)	19 (7.7%)	3 (1.2%)	3.75	0.811
7	There have been some cases where the project design team has expressed dissatisfaction with the project outcome of some school construction projects (-)	75 (30.4%)	153 (61.9%)	1 (0.4%)	18 (7.3%)	0 (0%)	1.85	0.760
8	There have been some cases where contractors have expressed dissatisfaction with the project outcome of the school construction projects they were implementing (-)	76 (30.8%)	153 (61.9%)	0 (0%)	16 (6.5%)	2 (0.8%)	1.85	0.786
9	Some school construction projects undertaken by the school have received negative MoEHS inspection reports (-)	77 (31.2%)	151 (61.1%)	1 (0.4%)	16 (6.5%)	2 (0.8%)	1.85	0.792
10	We have not had cases where projects being implemented were discontinued for failure to comply with standards (+)	81 (32.8%)	143 (57.9%)	7 (2.8%)	13 (5.3%)	3 (1.2%)	4.16	0.809
	Composite mean and standard deviation						**2.96**	**0.983**

Notes:n =247. Negative items are reverse scored.

2. Policy Governance

In this study policy governance was measured using the following indicators: policy administration structure, school infrastructure inspections practices, policy, effectiveness, policy predictability and level of regulator independence. Data on the variable were collected through 10 Likert type questionnaire items administered on head teachers using the scale: Strongly Agree (SA)=5, Agree (A)=4, Not sure (NS)=3, Disagree (D)=2 and Strongly Disagree (SD)=1; and semi-structured interviews with DEOs. One open-ended question was also used. The data is presented in Table 2.

Table 2. Policy Governance

	Statements	SA	A	NS	D	SD	MEAN	STDV
1	The MoEHS policy administration structure is ineffective. (-)	15 (6.1%)	99 (40.1%)	125 (50.6%)	4 (1.6%)	4 (1.6%)	2.53	0.709
2	MoEHS periodically inspects schools' infrastructure facilities in my school (+)	36 (14.5%)	46 (18.6%)	55 (22.3%)	56 (22.7%)	54 (21.9%)	2.81	1.358
3	MoEHS inspects newly completed school construction projects before they are commissioned for use. (+)	7 (2.8%)	163 (66.0%)	60 (24.3%)	6 (2.4%)	11 (4.5%)	3.60	0.784
4	MoEHS does not have to approve school construction projects before their commencement (-)	5 (2.0%)	5 (2.0%)	6 (2.4%)	71 (28.8%)	160 (64.8%)	4.52	0.816
5	MoEHS implementation of the school infrastructure policy is ineffective. (-)	50 (20.2%)	58 (23.5%)	57 (23.1%)	46 (18.6%)	36 (14.6%)	2.84	1.340
6	The school infrastructure policy is stable and does not change often. (+)	85 (34.4%)	134 (54.3%)	20 (8.1%)	0 (0%)	8 (3.2%)	4.17	0.832
7	MoEHS is accountable to GoS with regard to how they implement policies (+)	35 (14.2%)	47 (19.0%)	55 (22.3%)	66 (26.7%)	44 (17.8%)	2.85	1.312
8	Infrastructure facilities inspectors from MoEHS are usually independent of undue influence. (+)	36 (14.6%)	46 (18.5%)	55 (22.3%)	56 (22.7%)	54 (21.9%)	2.81	1.358
9	Infrastructure project inspectors are usually biased. (-)	24 (9.7%)	99 (40.1%)	23 (9.3%)	52 (21.1%)	49 (19.8%)	3.01	1.342
10	It is unclear to me what the MoEHS inspectors look for when inspecting school construction projects. (-)	32 (13.0%)	51 (20.7%)	50 (20.2%)	48 (19.4%)	66 (26.7%)	3.26	1.388
	Composite mean and standard deviation						**3.24**	**1.124**

Notes:n =247. Negative items are reverse scored.

3. Project Management Practices

Project management practices were indicated by stakeholder involvement in project identification, stakeholder participation in design and planning, project financing sources and, close-out practices after completion. It was measured using 10 Likert-type items on the following scale: Strongly Agree (SA)=5, Agree (A)=4, Not sure (NS)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. Data was collected from head teachers and DEOs in the sampled districts. Responses for the individual items were analyzed into a frequency distribution and the mean, standard deviation, and composite mean calculated. The results are shown in Table 3.

Table 3. Project Management Practices

	Statements	SA	A	NS	D	SD	MEAN	STDV
1	Most of the projects we undertake are identified by our stakeholders (+)	0 (0%)	0 (0%)	2 (0.8%)	119 (48.2%)	126 (51.0%)	1.50	0.517
2	We do not consult with stakeholders when selecting projects (-)	7 (2.8%)	161 (65.2%)	0 (0%)	78 (31.6%)	1 (0.4%)	2.62	0.976
3	We do not engage experts to design the projects (-)	7 (2.8%)	169 (68.5%)	0 (0%)	70 (28.3%)	1 (0.4%)	2.55	0.948

	Statements	SA	A	NS	D	SD	MEAN	STDV
4	We always involve our stakeholders in project planning (+)	57 (23.1%)	123 (49.8%)	13 (5.3%)	9 (3.6%)	45 (18.2%)	3.56	1.372
5	We engage the community to finance school construction projects (+)	75 (30.3%)	115 (46.6%)	37 (15.0%)	20 (8.1%)	0 (0%)	3.99	0.883
6	MoEHS has financed most of the school construction projects in my school in the last five years. (+)	0 (0%)	0 (0%)	7 (2.8%)	119 (48.2%)	121 (49.0%)	1.54	0.554
7	As the Head Teacher, I oversee all project implementation activities for school construction projects in the school (+)	75 (30.3%)	135 (54.7%)	37 (15.0%)	0 (0%)	0 (0%)	4.15	0.657
8	We do not engage external parties to implement school construction projects in the school (-)	6 (2.4%)	4 (1.6%)	50 (20.2%)	73 (29.6%)	114 (46.2%)	4.15	0.963
9	As the Head Teacher, I ensure that the work site has been fully cleaned up before accepting the project as completed (+)	102 (41.3%)	115 (46.6%)	28 (11.3%)	2 (0.8%)	0 (0%)	4.28	0.693
10	School construction projects completed are not inspected against the school infrastructure policy requirements for compliance before being accepted (-)	10 (4.1%)	166 (67.2%)	0 (0%)	70 (28.3%)	1 (0.4%)	2.54	0.961
	Composite mean and standard deviation						**3.09**	**0.852**

Notes:n =247. Negative items are reverse scored.

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