From Quality Assurance Determinants to Perceived Educational Quality: The Mediating Role of Quality Assurance Implementation in Sindh's Secondary and Higher Secondary Schools

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Abstract

Quality assurance (QA) systems often develop via policies and monitoring tools, training programs, data systems and administrative structures but unless these are implemented regularly, they will not contribute to the improvement of school quality. This study aimed to find out if the QA implementation mediates the relationship between the determinants of QA and the perception of educational quality in public secondary and higher secondary schools of Sindh, Pakistan. 300 education managers, QA officers, school heads, principals and senior teachers were selected using cross sectional of an explanatory survey in 6 administrative regions. Measures included QA determinants, QA implementation and perceived educational quality along with contextual indices of data use, feedback, facilitating conditions and implementation problems. Descriptive statistics, Pearson correlations, multiple regression and the bootstrap mediation analysis were the methods used. The ratings indicated that QA determinants ($M = 2.76$, $SD = 0.37$) and QA implementation ($M = 3.08$, $SD = 0.31$) were rated in positive direction while the highest rating was obtained for perceived educational quality ($M = 3.57$, $SD = 0.32$). There was a strong correlation between implementation of QA and perceived educational quality ($r = 0.66$). Feedback and follow-up had the highest standardized effect ($\beta = 0.35$) and QA determinants was a significant predictor ($B = 0.17$, $p < .001$) in the adjusted implementation model. In the quality-outcome model QA implementation continued to be significant ($B = 0.26$, $p < .001$). The indirect effect was 0.26 and the 95% CI (bootstrapped) was 0.20 to 0.32; the direct effect was reduced to 0.02 and the proportion mediated was 0.93. The results suggest that policies and resource and data infrastructures affect perceived quality of education mostly through enacted monitoring, evidence use, feedback and follow-up. The study provides the basis for moving away from a compliance-centred inspection towards an implementation-focused QA cycle, guided by professionally supported middle managers.

Keywords: quality assurance; educational quality; implementation; mediation; middle management; secondary schools; Sindh; Pakistan

Introduction

Increasing access to school will no longer be sufficient evidence of educational progress. Today's education institutions ought to reflect learning, equity and inclusion, and accountable leadership and improvement. As COVID-19 added a layer of disruption to learning on a global scale, it has become increasingly clear that the quality of educational processes has become as relevant if not more than enrolment and completion rates for children (World Bank et al., 2022; OECD, 2023). In this context, quality assurance has emerged as a key governance tool, linking standards and expectations for policy to evidence and oversight, feedback and action at the school level.

In the context of school education, quality assurance is the structured delivery of internal, internal/external or external processes that establish standards and collect evidence of performance, review school function and foster improvements. Internal processes are lesson planning, assessment review, school self-evaluation and professional collaboration; external processes are inspection, monitoring visits, performance reporting, and system level data analysis. Successful systems related these two levels. Such external monitoring, if without the ownership of the school, carries negative connotations that cannot be avoided and if conducted internally, it becomes an inconsistent review or becomes ceremonial (Education Development Trust, 2022; Rahminawati and Supriyadi, 2023). Also in decentralized and administratively layered systems the difference between formal and QA thus practical implementation is more crucial. Policies can be clearly written, data systems can and be open and systematic, monitoring systems can do the counting, but unless officers know how to interpret the evidence; and know how to communicate findings to school leaders; and know how to follow up identified issues; the changes required will not happen. Studies have found that while school-management interventions can impact learning outcomes in LMICs, such interventions rely heavily on the interventions' design and implementation quality, along with continued support (Anand et al., 2023). Likewise, when leadership, planning, shared responsibility, and review is ongoing and got right, school improvement is more sustainable (Koh, Askell-Williams and Barr, 2023).

Sindh is a pertinent context to discuss this implementation gap. The province has a vast and varied system of public schools in a range of settings, both metropolitan and urban, semi-urban, rural, and coastal and remote. There are multiple stages between the School Education and Literacy Department, regional districts, monitors, taluk peripheries, and principal and head teachers in which the policy, information and resources need to be translated into school practice. There is a lot of administrative evidence in the form of the Sindh Education Management Information System (EMIS) and annual school census, but its utility is limited by how it is interpreted and used for field-level decisions (Government of Sindh, 2024). Hence, the focus of the central question is not so much on the existence of monitoring structures, but on how it is done to enhance teaching/learning support, attendance, accountability, and school functioning.

This article zeroes in on one of the theoretically, and practically important aspects of that problem: the mediating role of QA implementation. It examines the idea that these policy clarity, professional preparation, resources, data systems, monitoring tools and leadership support have a primary impact on perceived educational quality when they are turned into concrete practices. There is a double

contribution in three ways. It is the first to offer evidence from a public school system from a province in a context less represented in QA research. Second, it goes beyond the direct-effect models by analysing implementation as a mechanism that is the link between the system inputs and perceived outcomes. Third, it identifies operational levers—namely, the use of data, feedback/correction, and follow-up which might help to bring a change in QA from compliance inspection to developmental school support.

Literature Review and Hypothesis Development

Quality assurance determinants as enabling inputs

QA determinants refer to the structural and organisational conditions that enable implementation. These are clear policies expectations, clear reporting lines, role clarity, competent personnel, training, mobility, budget, monitoring instruments, and reliable data and leadership support. From an input–process–output point of view, these determinants are not outcomes but inputs. They are meant to develop capacity and authority for middle managers and school leaders to diagnose a problem and coordinate improvement. Having inputs is a requirement not a sufficient one as resources and policies may not be utilized or utilized only to comply with administration.

International evidence indicates the need for management capacity and clear implementation arrangements. Sibbernsen et al. (2023) draw the conclusion that intervention can be impactful or unimpactful, depending on the quality of design and the levels of incentives and support in low- and middle-income countries when it happens within schools or through school-management. UNESCO (2024) also notes that leadership happens at various levels; school leadership and middle managers outside the school. They are actors who convert policy into everyday operations, buffer the needs of systems based on the local context and facilitate information exchange between schools and higher levels. Distributed leadership scholarship also finds that leadership effectiveness is not likely to be established through the work of any one principal alone, but rather as a result of the interactions between the principal and colleagues that play a functional and positive leadership role (Mifsud, 2024).

Data infrastructure is a factor. Digital records, be they school census or attendance systems and dashboards, cut down on delays and can help provide more objective monitoring. But the technological availability does not mean the educational value. Only when they support decision processes, information systems improve the quality management processes, if they can identify the bottle necks and make their decisions and take timely action (Logachev et al., 2021). UNESCO (2023) also warns that technology does not necessarily equate to education if it is not grounded in real needs, equal opportunity and institutional capacity. Data need to journey from being collected to interpreted, to feedback given and problems resolved in a QA system.

QA implementation as the conversion mechanism

Implementation means the practices which are put in place and make QA visible at school level. These practices include planned and unplanned visits, classroom observation, attendance and school records checks, analysis of student work evidence, feedback through writing, feedback through oral, giving improvements activities, and follow up. Implementation does not happen once in a while when the monitor is observing; it is a cyclerelated to diagnosis, communication, intervention and review.

Implementation that is just for compliance vs implementation that brings improvement is crucial. Compliance-based QA checks if registers are provided, staff are on duty and reports are turned in. Through improvement-focused QA, inquiry is made of effectiveness of teaching, effectiveness of learning, the existence of a problem, what support is needed and if the previous recommendations were followed. While important, accountability and support can go hand in hand and an overemphasis on procedural verification can result in a disconnection between monitoring and instructional quality. Javed, Akhtar and Hussain (2021) state that monitoring and evaluating in education should be linked to decision-making and the Education Development Trust (2022) emphasize that QA frameworks should have all evidence, accountabilities, feedback and improvement processes made transparent.

Implementation is also part of the explanation, as to why experiences of the same policy inputs can lead to differences in the experience of the policy at the school level. In the same school district, some transport budgets may result in frequent visits to schools, while others may limit such visits to court cases; a given monitoring form may elicit positive discussion in the hands of a competent officer or can be used to provoke defensiveness in a district. Leadership defects that are discovered in recent studies such as inadequate resources, ambiguous roles, political pressure, communication problems and bureaucratic overload can weaken the implementation chain (Karakose, Ozdogru and Malkoc, 2024). This renders implementation as a potential route to a better understanding of variation and thus as a mediator, not just an additional predictor.

Perceived educational quality as a system-level outcome

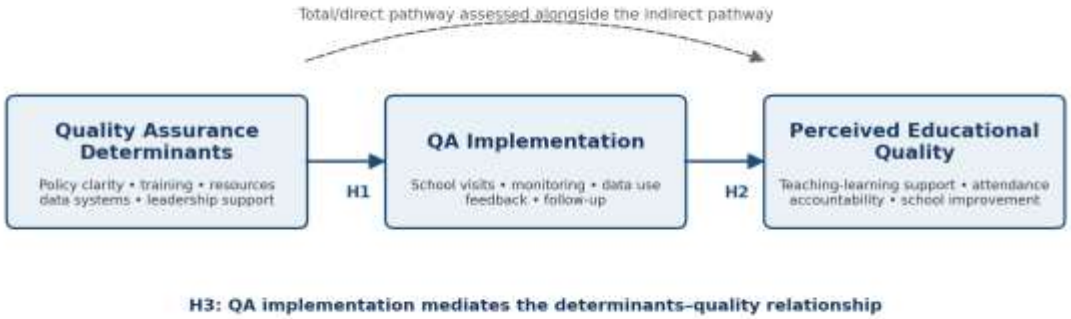
Quality in education is multi dimensional. It involves learning and progression; and is evident in attendance and teaching support, safe and functional schools, the use of assessments, leadership, accountability and institutional capacity. OECD (2023) places performance & equity in a broader school & system context, whereas UNESCO (2021) sees education as a public and common good and thus a responsibility of institutions. Whereas achievement data are similar across contexts, stakeholder perceptions offer a helpful though limited so far measure of whether QA processes are enhancing school functioning.

The perceived educational quality in this study is hence respondents' opinion on improvement in teaching and learning support, teacher and student attendance, feedback mechanisms, problem resolution, school leadership and school performance. It is not intended to replace standard learning outcomes. Rather, it highlights the education management related consequences that QA is intended to impact and that the education managers, the school heads and senior teachers are able to see.

Conceptual model and hypotheses

The model can be summarized as follows: Determinants of QA affect implementation and perceived quality of education, determining quality of education in the model is also determined by influencing the implementation. A residual direct pathway is left to see if determinants still have impact on quality, after implementation is controlled. The model therefore examines if implementation is potentially a factor in determining how policy and organisational inputs are transformed as outcomes perceived at the school level.

Figure 1
Conceptual mediation model



Interpretation. *The model treats policy clarity, training, resources, monitoring tools, data systems and leadership support as enabling inputs. Their expected educational value operates mainly through enacted QA practices, while a direct path is retained to test whether determinants have an effect independent of implementation.*

H1: Quality assurance determinants positively predict the implementation of quality assurance practices.

H2: Quality assurance implementation positively predicts perceived educational quality.

H3: Quality assurance implementation mediates the relationship between quality assurance determinants and perceived educational quality.

Research Methodology

Research design and setting

An explanatory study with quantitative and cross-sectional design was used in analyzing the relationship between two variables namely QA determinants and the implementation of QA to perceived educational quality. The design was suitable as the research question was related to not only strength of association, but also mechanism of association, namely, how the system inputs were related to perceived outcomes. The study was taken in public secondary and higher secondary education in six administrative regions of Sindh namely Karachi, Hyderabad, Mirpurkhas, Shaheed Benazirabad, Larkana and Sukkur.

Participants and sampling

Finally, we got a sample of 300 respondents in the various levels of the QA chain within schools and the school-management. Directors, Education Managers, District (Taluk)/Taluk QA officers, school heads and principals, and senior teachers were included in the sample. Stratified and proportionate sampling with purposive sampling was used of the two sampling methods. Stratification was done based upon region and roles allowing representation throughout the administrative system with key officer categories being purposively selected due to their direct involvement in monitoring and implementation. The number of respondents at school level were spread across secondary and higher secondary schools and between rural, urban and semi-urban areas.

Table 1
Profile of the quantitative sample (N = 300)

Dimension	Category	n	%
Respondent role	Directors/Education managers	60	20.0
	DOE/DEO quality assurance officers	72	24.0
	School heads/principals	78	26.0
	Senior teachers/teachers	90	30.0
School level	Secondary	182	60.7
	Higher secondary	118	39.3
Location	Rural	140	46.7
	Urban	118	39.3
	Semi-urban	42	14.0
Gender	Male	200	66.7
	Female	100	33.3

Note. Each of the six administrative regions contributed 50 respondents (16.7%). Mean respondent age was 44.74 years (SD = 8.91), and mean professional experience was 12.38 years (SD = 6.11).

Interpretation. *The multi-actor sample captures perceptions from both the administrative and school-facing sides of QA. The balanced regional distribution reduces the likelihood that the findings are driven by one division, although the gender and school-level distributions reflect the available composition of the education workforce rather than equal quotas.*

Measures

The data has been gathered from a structured questionnaire having 4 points response scale. Comparative results indicated that mean scores of 1.00-1.75 indicated weak implementation or major weaknesses, 1.76-2.50 indicated limited/inconsistent interventions and 2.51-3.25 indicated that they were doing good work with room to improve, and 3.26-4.00 indicated that they were doing excellent work or major strengths. A higher score for implementation problems indicated a greater barrier to conditions, and not the better ones.

The QA determinants included policy clarity, policy written down, hierarchy of management, definition of roles, professional training, monitoring tools, data systems, budget and transport, and communication and leadership support. QA implementation assessed actual school practices including school visits, review of records, classroom observation, attendance verification, use of evidence, feedback and follow up. Perceived educational quality entailed perceived changes in school functioning, teaching-learning support, attendance performance, school leadership, and accountability performance. Other scales measured performance in the middle level, teacher perceptions, facilitating factors, implementation challenges, school improvement, data utilization, and feedback/follow-up.

The internal consistency (Cronbach's alpha) was acceptable for the master composite instrument at 0.791. There was also acceptable to excellent reliability on role specific instruments: directors/education managers 0.878, QA officers 0.902 and the teacher standards questionnaire 0.794. These values justified considering the composite scores for the purpose of explanatory analysis.

Data Analysis

The analysis was carried out in four phases. Data completeness and distributional shape and descriptive statistics of the counts were first examined. Second, Pearson relations were used to describe the relationships in terms of direction and magnitude. Third, the adjusted predictors of QA implementation and the perceived educational quality were estimated using multiple regression models. Lastly, a bootstrap mediation model was used to examine whether determinants of QA have indirect effects on perceptions of quality of education through the QA implementation. Statistical support was indicated for an indirect effect when the 95% bootstrap confidence interval did not contain the value of zero. Mediation is not 100% temporal causal explanation, but rather a statistical explanatory argument of the cross-sectional design (Hayes, 2022; Field, 2024).

Ethical considerations

All participation was voluntary, informed consent was sought and respondents had the right to answer any question or drop out for any reason without penalty. Analysis and reporting was conducted without individual names. Data were used solely for scientific academic research; results are given in an overall form.

Results

Data quality, reliability and descriptive results

A complete set of data was available for all the 300 cases for the primary composite variables. For the constructs that are planned for parametric analyses, both skewness and kurtosis were within acceptable limits. Reliability evidence and descriptive statistics most relevant to the mediation model are presented in Table 2.

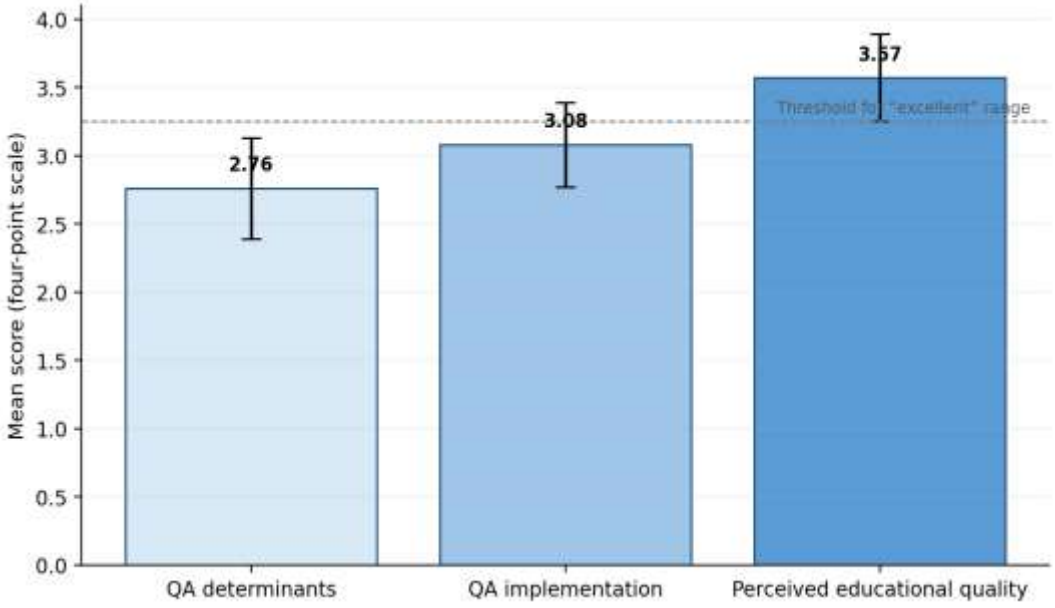
Table 2
Reliability and descriptive statistics for central study constructs

Measure	Items	N	α	Mean	SD	Interpretation
Master composite instrument	10	300	0.791	—	—	Acceptable reliability
QA determinants	—	300	—	2.76	0.37	Good
QA implementation	—	300	—	3.08	0.31	Good
Perceived educational quality	—	300	—	3.57	0.32	Excellent
Data-use index	—	300	—	2.84	0.35	Good
Feedback/follow-up index	—	300	—	2.82	0.34	Good
Implementation problems	—	300	—	2.59	0.37	Barriers present

Note. A dash indicates that a separate construct-level alpha was not reported in the available instrument summary. Higher scores on implementation problems indicate stronger barriers.

Interpretation. The respondents indicated that the QA system is not completely optimized, but operational. The level of implementation was greater than the structural determinants and perceived level of educational quality was in the 'excellent' range. This difference between determinant and outcome is aligned with the idea that although a positive impact on the school level can be seen, enabling structures, data use and feedback systems are uneven.

Figure 2
Mean scores of the three core mediation constructs



Interpretation. *The figure displays a gradual rise: determinants - implementation - perceived quality. Error bars are 1 SD. The visual pattern itself created no mediation per se, but it did underscore that outcome perceptions were stronger compared to the ratings of the structural conditions that were supposed to produce the outcomes.*

Correlations among the core and contextual variables

As anticipated, the correlation pattern was confirmed with the proposed mechanism. QA determinants had moderate capabilities in QA implementation (r = 0.46) and QA educational quality (r = 0.32). The best bivariate correlation was found to be between QA implementation and perceived educational quality (r = 0.66). Feedback/follow-up was strongly associated with implementation (r = 0.58), as implementation problems were negatively associated with implementation (r = -0.28) and perceived quality (r = -0.35).

Table 3
Correlation matrix for central and contextual variables

Variable	1	2	3	4	5	6
1. QA determinants	1.00					
2. QA implementation	0.46	1.00				
3. Perceived educational quality	0.32	0.66	1.00			
4. Data use	0.54	0.48	0.35	1.00		
5. Feedback/follow-up	0.35	0.58	0.42	0.32	1.00	
6. Implementation problems	-0.11	-0.28	-0.35	-0.19	-0.17	1.00

Note. Entries are Pearson correlation coefficients. Inferential conclusions in this article are based on the reported regression and bootstrap mediation tests.

Interpretation. *The key element of the correlation network is implementation. It relates not only to the results, but also to the two mechanisms that are most strongly associated with an improvement-driven QA cycle: data use and feedback/follow-up. The fact that implementation problems' coefficients are negative means that obstacles are not simply minor, administrative ones.*

Predictors of QA implementation

The adjusted implementation model explained 51% of the variance in QA implementation ($R^2 = 0.51$, adjusted $R^2 = 0.51$, $F = 62.13$, $p < .001$). QA determinants, facilitating factors, data use and feedback/follow-up were positive predictors, while implementation problems were negative. The standardized coefficient of feedback/follow-up was the highest.

Table 4

Multiple regression predicting QA implementation

Predictor	B	SE	β	t	p	95% CI
Constant	1.02	0.19	—	5.37	< .001	0.65, 1.40
QA determinants	0.17	0.04	0.21	4.21	< .001	0.09, 0.26
Facilitating factors	0.17	0.03	0.21	4.89	< .001	0.10, 0.24
Implementation problems	-0.11	0.04	-0.13	-3.10	.002	-0.18, -0.04
Data-use index	0.17	0.04	0.20	3.96	< .001	0.09, 0.26
Feedback/follow-up index	0.33	0.04	0.35	7.68	< .001	0.24, 0.41

Note. N = 300. Model $R^2 = 0.51$; adjusted $R^2 = 0.51$; $F = 62.13$; $p < .001$. B values are unstandardized coefficients and β values are standardized coefficients.

Interpretation. *H1 was supported: structural QA determinants remained significant after contextual factors were controlled. However, the largest effect belonged to feedback and follow-up, indicating that implementation is strongest where monitoring produces clear communication, assigned actions and subsequent review. Problems such as limited mobility, role ambiguity, workload and weak authority reduced implementation directly.*

Predictors of perceived educational quality

The second adjusted model explained 59% of the variance in perceived educational quality ($R^2 = 0.59$, adjusted $R^2 = 0.58$, $F = 69.02$, $p < .001$). QA implementation remained a significant predictor after middle-management performance, teachers' perceptions, school improvement, facilitating factors and implementation problems were included.

Table 5

Multiple regression predicting perceived educational quality

Predictor	B	SE	β	t	p	95% CI
Constant	1.16	0.20	—	5.80	< .001	0.77, 1.56
QA implementation	0.26	0.06	0.26	4.57	< .001	0.15, 0.38
Middle-management performance	0.16	0.05	0.17	3.17	.002	0.06, 0.26
Teachers' perceptions	0.18	0.04	0.20	4.08	< .001	0.09, 0.26
School improvement	0.21	0.04	0.23	5.09	< .001	0.13, 0.29
Facilitating factors	0.06	0.03	0.07	1.81	.072	-0.01, 0.13
Implementation problems	-0.13	0.03	-0.15	-3.78	< .001	-0.20, -0.06

Note. N = 300. Model $R^2 = 0.59$; adjusted $R^2 = 0.58$; $F = 69.02$; $p < .001$.

Interpretation. *H2 was supported. Even when other positive organizational conditions were taken into account, QA implementation predicted perceived educational quality. The negative impact of implementation issues was also significant, indicating that implementation can have a negative impact even in the absence of formal facilitation. The facilitating factors failed to become significant, thus showing that support conditions do not have a significant impact on this outcome model but only on the implementation of this condition.*

Mediation analysis

The mediation test was used to directly examine whether QA implementation was able to account for the influence of the QA determinants on the perceived educational quality. The path a (determinants to implementation) was 0.38 and the path b (implementations to quality) was 0.67. The overall path of the determinants to perceived quality was equal to 0.28. Implementing caused the direct effect to fall to 0.02. The estimated indirect effect was 0.26 and the bootstrapped 95% confidence interval for that effect did not include zero [0.20, 0.32].

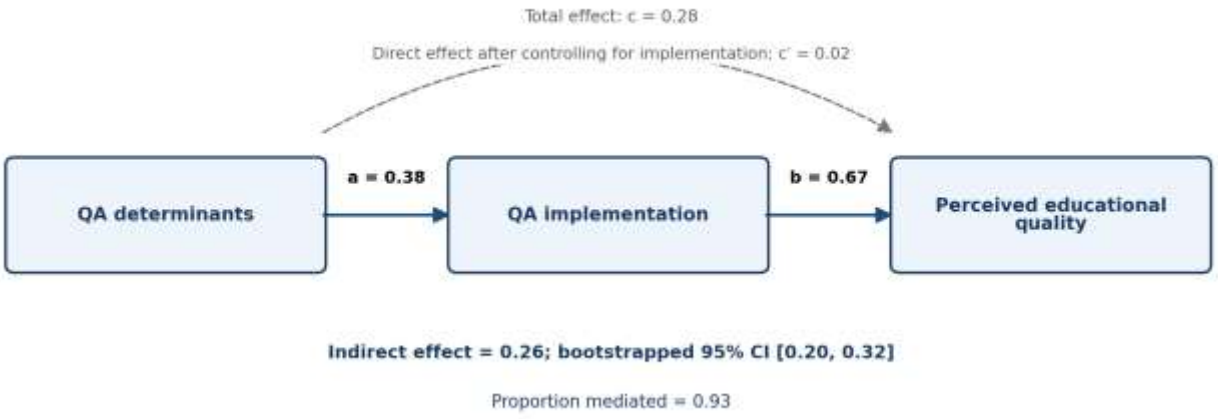
Table 6
Mediation of the determinants–quality relationship by QA implementation

Effect/path	Estimate
a path: QA determinants → QA implementation	0.38
b path: QA implementation → perceived educational quality	0.67
c total effect: determinants → perceived educational quality	0.28
c′ direct effect controlling for implementation	0.02
Indirect effect (a × b)	0.26
Bootstrapped 95% confidence interval	0.20 to 0.32
Proportion mediated	0.93

Note. The indirect effect is statistically supported because the bootstrapped confidence interval does not include zero.

Interpretation. *H3 was supported. Under the model, there was an estimate of total relationship of 93% on transmission via QA implementation. In fact, when practical implementation was considered, the contribution of determinants was small. This is in line with near-complete mediation of statistical natures and lends evidence to the notion that what managers and school leaders do has the greatest impact on perceived quality, which is mediated by the QA inputs.*

Figure 3
Estimated mediation model



Interpretation. *The empirical model allows making the mechanism of implementation explicit. Monitoring, evidence use, feedback and follow-up are important elements in the relationship of policy, resources and data systems to perceived quality. This is a cross-sectional analysis so the arrows are only tested explanatory orderings, not verified temporal causations.*

Hypothesis summary

Table 7

Summary of hypothesis decisions

Hypothesis	Statement	Decision	Evidence
H1	QA determinants positively predict QA implementation.	Supported	B = 0.17, p < .001 in the adjusted model
H2	QA implementation positively predicts perceived educational quality.	Supported	B = 0.26, p < .001 in the adjusted model
H3	QA implementation mediates the determinants–quality relationship.	Supported	Indirect effect = 0.26; 95% bootstrap CI [0.20, 0.32]

Interpretation. *The mediation model centered on the hypotheses presented was supported. The similar results of bivariate regression analyses, adjusted regression analyses and bootstrap analyses give more weight to the finding that implementation is the most important explanatory link between the QA determinants and perceived quality of education.*

Conclusion and Discussion

Discussion

There was a central aspect to the implementation of quality assurance at the heart of which was the question of whether such quality assurance inputs have a direct effect on perceived educational quality or whether they are significant by allowing implementation. The findings are in favour of the second explanation. Implementation was more strongly associated with perceived educational quality and had a near total estimated effect of the total link between determinants and implementation. After implementation, the straight trail was extremely limited.

Determinants are necessary but not self-executing

This finding helps to elucidate the status of policy, training, resources and data systems. These are conditions that enable, not automatic results. A written QA manual is of little value if the officers don't know and/or adhere to it. If anomalies are not interpreted and acted upon, a data platform will not fix/assist with the problem of attendance. Without evidence-based feedback and follow-up during visits, a monitoring position will not strengthen instruction. This connects with systems-oriented QA processes where inputs need to be processed across coordinated processes in order for outputs to materialise (Education Development Trust, 2022; Logachev et al., 2021).

The study's outcomes align with the systematic review completed by Anand et al. (2023), which revealed that the quality of implementation is a factor affecting the impact of school-management interventions. The statistical mechanism responsible for the aforesaid sensitivity is identified by the present evidence in Sindh context. Determinants were emitted positively to implementation but the direct relation with perceived quality was almost none since determinants were modelled on the implementation. It is a policy implication that reform auditing did not end at the number of policies, posts, vehicles and completed training sessions. It should determine if changes in field practice occurred due to these inputs.

Feedback and follow-up are the operational core of implementation

In the adjusted predictors of QA implementation, feedback and follow-up were the biggest standardized effects. This discovery challenges focus from visit frequency to visit usefulness. A monitoring visit only enters into an improvement mechanism when evidence is shared, responsibility is given, support is found and progress is monitored. Monitoring is one-way removal of information unless these steps are taken.

This is in line with findings from sustainable school improvement studies. Koh, Askell-Williams and Barr (2023) highlight continued leadership, planning, collective responsibility and alignment beyond initial intervention. Rahminawati and Supriyadi (2023), also, demonstrate that internal QA takes management commitment, quality aware processes and the res-triplication of data/mapping/data analysis. The QA procedures used in practice in Sindh should therefore have a formal feedback template, an issue-closure register and a fixed follow-up time horizon. Officers' performance should be evaluated based on issues identified and solved in the schools in addition to the number of schools visited.

Data use is valuable when embedded in a decision cycle

Data use was an important predictor and was moderately correlated with determinants and perceived quality. What this means is that information infrastructure is valuable – when it is part of a decision cycle. Attending to annual census, attendance and biometric data and classroom observations and examination evidence, should be combined. Data should help identify the areas of need, direct resourcing of teachers and resources and provide baseline for follow up.

According to Logachev et al. (2021), the information system for quality monitoring should reveal the "bottleneck" processes and linking the resources, processes and results. It also captures the nature of change that UNESCO warned may not be its improvement (2023). Compliance reporting may be expedient through digitisation without altering school practice. So, the management decision or school action that ensued the upload of data is, therefore, the appropriate indicator.

Middle management is the implementation bridge

A key outcome from the mediation is that middle management becomes the central focus when it comes to QA reform. Standards are determined at the provincial level and resources are allocated at that level, with teachers implementing the teaching. From these, the Director, District Officer, Taluk Officer, Monitoring staff, Principals/Head teachers interpret the expectations, coordinate visit and diagnose the local issue and link with the school for support. UNESCO (2024) fully acknowledges that out-of-school leadership, from middle managers onwards, has a significant influence on learning outcomes. The findings support that stance in a province's public school system.

But middle management shouldn't just be a hierarchy. Distributed leadership research means that for educational improvement, this is interaction, having expertise and common responsibility amongst roles (Mifsud, 2024). This is underlined by the negative impact of implementation issues. When the authority is not clear or there are too many officers, the transportation issue or lack of training or political pressures officers may be unable to shift the policy towards focusing on and providing developmental support. Newly developed school-leadership challenges also reveal that the limitation

of resources, bureaucracy, problems in communication and political meddling are some of the common issues that leadership may encounter (Karakose, Ozdogru and Malkoc, 2024). Thus, the act of professionalizing the middle tier has an educational quality element; it's not just about improving the administration.

Perceived quality should not be confused with measured learning

Means for perceived quality of education were high and implementation was a strong predictor. This suggests that the respondents related good QA with improved functioning of the school, support and accountability. However, the result is in terms of perception and management. It does not show evidence of causation of examination grades or of learning apart from context. There is a great need to make this distinction in the literature of the learning crisis: systems can report functioning processes while students can still be low learners (World Bank et al., 2022). The current results should thus be interpreted as evidence concerning the pathway of governance which could lead to quality but not as a substitute for direct measurement of learning.

Implications for Policy, Management and Practice

Policy implications

First, let's look at QA policy using indicators of implementation. Proportions of visits for which written feedback was obtained, number of actions assigned, percent of issues addressed in an agreed timeframe and proportion of school improvement plans revised based on evidence should be included on provincial and district level dashboards. These would be indicators that would render the mediation mechanism visible as routine administration.

Secondly, give clarity about the persons at directorate, district, taluka, monitoring and school levels who diagnose, support, authorize resources and verify follow-up in the job description of various posts. Decisions shall go hand in hand with role clarity. Those officers who are responsible for improvement and have no ability to mobilise resources or coordinate departments will continue to be mere reporters but not implementers.

Third, Resource allocation must be related to implementation needs. Mobility, digital connectivity, manageable workloads and simplified monitoring instruments are not costs on the periphery; they are conditions that enable QA inputs to reach schools. Government planning should take into account that districts accessed at a distance from government do have different levels of capacity for implementing it as well as metropolitan areas.

Management and professional-development implications

Middle managers need to be trained in instructional observation, data interpretation, constructive feedback, conflict management, planning for school improvement, evidence-based problem solving. This should be field based training with actual visit reports, and not just classroom based orientation. The intention is to create professional judgement and administration compliance.

Feedback procedures are to be standardized – but not mechanistic. At the end of each visit, a brief note should be made of strengths, priority problems, actions taken, persons to action, dates for support, dates for follow-up. The report should go to the head teacher and the relevant teachers as soon as possible.

Information from district review meetings should be used to follow up and identify areas that need to be taken to a greater level of intervention.

Theoretical contribution

The empirical findings of the study can help to delineate enabling architecture from enacted quality assurance in the theory of educational QA. The near complete mediation pattern points to a mediation between the system inputs and the perceived outcomes, that is through implementation. This helps to move toward an input–process–output interpretation of the process, in which implementation is not a disengaged "process" step but the chief conversion mechanism. Additionally, it expands the distributed leadership concept by demonstrating how a sequence of managerial levels can either strengthen, obscure, or flow with the QA inputs to school-level outcomes.

Limitations and Directions for Future Research

The conclusions are limited in a number of ways. First, a cross sectional design does not allow for the testing of temporal order or causal mediation. Determinants, changes in implementation, and changes in schools over time should be measured by longitudinal research. Second, constructs were obtained mainly from self-report, possibly because of issues of social desirability or institutional identification or dissatisfaction. Based on the findings, future research should be integrated with the document audit, administrative record and independent classroom observation through questionnaires.

Third, perceived educational quality is not equal to student learning. Need for future research that connects QA implementation to attendance, retention, examination results, and transition rates and standardized learning measures. Fourth, the sample consisted of a variety of categories of respondents, strong for system-level analysis but potentially masking the mechanisms present at the level of each role. Multi-group structural models could be used to determine if the mediation pathway is distinct for officers, school heads and teachers and/or urban and rural regions. Fifth, the four-point scale limits the range of responses: future development of the instrument should report construct specific reliabilities, confirmatory factor analysis and measurement invariance.

Last, a test of generalizability should be conducted on the mediation model in other provinces and on the mediation model in primary education. Experimental or quasi-experimental research on more effective feedback systems (protocols), middle manager training, and/or digital issue-closure systems would give a much more solid understanding of improved and more effective implementation options for improving school functioning and learning.

Conclusion

Self-evident is the central finding: determinants of quality are important because they are necessary in order for the process to implement. QA implementation was positively associated with policy clarity, resources, training and data systems as well as leadership support, and was significantly associated with perceived educational quality. The bootstrap mediation result indicated that the total effect of the determinants on quality was split between enacted QA practices as the primary pathway, with a negligible residual direct effect, suggesting that the determinants–quality relationship was largely mediated by enacted QA practices.

Implication in the case of secondary and higher secondary schools of Sindh is that QA reform ought to be more on improving the implementation cycle as opposed to the mere existence of a monitoring system. Evidence must be produced as a result of school visits and feedback from that evidence must lead to assigned actions, which should be followed up. The whole cycle requires middle managers who are empowered, capable, mobile and accountable for this process. With the institutionalization of these conditions, QA can shift from compliance watchdog to professional assistance and ongoing school improvement.

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