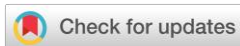


Role of Stakeholder Engagement in Policy Implementation Success: Mediating Role of Communication Quality, Coordination Effectiveness, and Institutional Trust

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Abstract: This study investigates the impact of stakeholder engagement on policy implementation success in Bangladesh's health sector, focusing on the mediating roles of communication quality, coordination effectiveness, and institutional trust. Grounded in governance and stakeholder theory, the study develops and tests a comprehensive structural model to explain how participatory mechanisms translate into effective policy outcomes. Data were collected from 460 respondents representing government health officials, healthcare providers, NGO partners, and local administrators. The analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine direct, indirect, and sequential relationships among constructs. The findings reveal that stakeholder engagement has a significant positive effect on policy implementation success. Moreover, communication quality, coordination effectiveness, and institutional trust significantly mediate this relationship, forming both parallel and sequential pathways. The results further indicate that coordination effectiveness exerts the strongest direct influence on policy implementation success, while institutional trust plays a critical psychological and relational mediating role. The model demonstrates strong explanatory and predictive power, confirming the robustness of the proposed governance framework. The study contributes to the literature by advancing a multi-layered mediation model that explains how stakeholder engagement operates through interconnected governance mechanisms. It also provides empirical evidence from a developing country context, where institutional complexity and coordination challenges are particularly pronounced. The findings offer important implications for strengthening participatory governance structures in health policy systems.

Keywords: Regulatory Impact Assessment (RIA); Policy Effectiveness; Governance Quality; ARDL Model; Institutional Economics

1. Introduction

Effective policy implementation in the health sector is widely recognized as a cornerstone of improved public service delivery and sustainable development, particularly in developing countries such as Bangladesh. Despite significant investments in health infrastructure and policy reforms, implementation gaps remain a persistent challenge, often resulting in inefficiencies, unequal service access, and suboptimal health outcomes. In such contexts, stakeholder engagement has emerged as a critical governance mechanism that can bridge the gap between policy formulation and implementation. Prior studies emphasize that involving diverse stakeholders including government agencies, healthcare providers, NGOs, and citizens enhances coordination, transparency, and accountability in implementation processes (Ahmed et al., 2018; Helbig et al., 2015).

From a theoretical perspective, stakeholder engagement is grounded in governance theory and stakeholder theory, both of which emphasize the importance of inclusive

participation in decision-making processes. Stakeholder theory suggests that organizations and public systems perform better when they incorporate the interests and inputs of all relevant actors, rather than focusing narrowly on administrative control. Kujala et al. (2022) highlight that stakeholder engagement has evolved from a normative idea into a strategic governance mechanism that directly influences performance and legitimacy. In parallel, Petkovic et al. (2020) and Lemke and Harris-Wai (2015) argue that structured stakeholder engagement in health systems improves the quality of policy guidelines and strengthens implementation feasibility.

Empirical literature across various sectors further confirms the positive role of stakeholder engagement in improving organizational and policy outcomes. Studies in environmental governance, corporate responsibility, and technology innovation consistently demonstrate that stakeholder engagement enhances coordination, innovation, and performance efficiency (Barko et al., 2022; Cao et al., 2021; Ferraris et al., 2020). In public policy contexts, Nguyen et al. (2019) find that stakeholder engagement significantly improves local policy decision-making processes by increasing inclusiveness and reducing implementation resistance. Similarly, Sherman and Ford (2014) show that stakeholder engagement in adaptation interventions improves policy effectiveness in developing countries by fostering collaboration and ownership among actors. Despite these contributions, significant gaps remain in the existing literature, particularly in the context of health policy implementation in low- and middle-income countries. Masefield et al. (2021) highlight that stakeholder engagement in health systems is often constrained by weak institutional capacity, limited coordination, and unequal participation structures. Moreover, while studies such as Shaukat et al. (2022) and Zaid et al. (2020) explore stakeholder engagement in corporate and project settings, there is limited empirical evidence applying rigorous quantitative modeling techniques to examine its impact in public health governance.

To address these gaps, this study investigates the role of stakeholder engagement in policy implementation success within Bangladesh's health sector by integrating communication quality, coordination effectiveness, and institutional trust into a unified conceptual framework. Drawing on insights from multiple studies (Ansu-Mensah et al., 2021; Nair, 2020; Roxas et al., 2020; Nonet et al., 2022), the study conceptualizes stakeholder engagement as a multidimensional construct that influences implementation outcomes both directly and indirectly. The primary objective is to empirically test the structural relationships among these constructs using a PLS-SEM approach. By doing so, the study contributes to the growing literature on participatory governance and provides practical insights for strengthening health policy implementation systems in Bangladesh through enhanced stakeholder collaboration and institutional integration.

2. Literature Review

Stakeholder engagement has emerged as a central construct in governance, policy implementation, and organizational effectiveness literature. Early conceptual and empirical works emphasize that stakeholder engagement enhances decision-making quality by incorporating diverse interests and improving coordination among actors involved in policy and project processes. For instance, research highlights that engagement mechanisms help identify critical success factors in system implementation by aligning stakeholder expectations and reducing resistance to change (Ahmed et al., 2018). Similarly, Helbig et al. (2015) argue that inclusive stakeholder participation in policy development improves transparency and legitimacy, particularly in complex governance environments.

Building on this foundation, several studies have examined stakeholder engagement in sector-specific contexts, particularly in health and public policy systems. Masefield et al. (2021) demonstrate that in low-income countries, stakeholder engagement in health policy processes remains constrained by institutional barriers, weak coordination, and limited inclusiveness, ultimately affecting implementation effectiveness. Similarly, Lemke and Harris-Wai (2015) highlight that stakeholder engagement in health-related policy development is often challenged by power imbalances and lack of structured participation

frameworks. Petkovic et al. (2020) further emphasize the need for structured guidelines to improve stakeholder engagement in health and healthcare guideline development. From a governance and organizational perspective, stakeholder engagement has been widely linked to improved sustainability, accountability, and performance outcomes. Kujala et al. (2022) provide a comprehensive synthesis showing that stakeholder engagement has evolved from a normative concept to a strategic governance mechanism influencing organizational decision-making and societal value creation. In addition, Nonet et al. (2022) argue that multi-stakeholder engagement is essential for achieving sustainable development goals (SDGs), as it fosters collaboration across institutional boundaries. Similarly, Barko et al. (2022) demonstrate that stakeholder engagement improves environmental, social, and governance (ESG) performance by enhancing monitoring and accountability mechanisms.

Cao et al. (2021) show that stakeholder engagement systems significantly contribute to sustainable development in the electric vehicle industry by improving coordination and innovation. Ferraris et al. (2020) highlight that multistakeholder integration in smart city initiatives enhances innovation capacity and policy efficiency. Likewise, Roxas et al. (2020) demonstrate that stakeholder mapping and engagement in tourism governance improve destination sustainability and management effectiveness. Shaukat et al. (2022) find that stakeholder engagement strengthens the relationship between project management practices and project success, particularly in complex environments. Zaid et al. (2020) show that stakeholder engagement interacts with ownership structure and governance mechanisms to enhance corporate social responsibility performance. Nair (2020) further emphasizes that stakeholder engagement plays a crucial role in fostering innovation and entrepreneurship outcomes, particularly among women entrepreneurs.

Despite the extensive literature, significant gaps remain, particularly in the context of health policy implementation in developing countries such as Bangladesh. While existing studies have examined stakeholder engagement in corporate, environmental, and sectoral governance contexts, limited research has empirically analyzed its role in public health policy implementation using advanced multivariate techniques such as PLS-SEM. Moreover, most studies treat stakeholder engagement as a broad construct without adequately capturing its multidimensional nature in health systems, including communication, coordination, and trust dynamics. Therefore, this study extends the literature by empirically examining how stakeholder engagement influences policy implementation success in Bangladesh's health sector, addressing both theoretical and contextual gaps in the existing body of knowledge.

H1: Stakeholder engagement has a positive and significant effect on policy implementation success in Bangladesh's health sector.

H2: Communication quality has a positive and significant effect on policy implementation success.

H3: Coordination effectiveness has a positive and significant effect on policy implementation success.

H4: Trust in institutions mediates the relationship between stakeholder engagement and policy implementation success.

H5: Stakeholder engagement has a positive and significant effect on communication quality.

H6: Stakeholder engagement has a positive and significant effect on coordination effectiveness.

H7: Stakeholder engagement has a positive and significant effect on trust in institutions.

H8: Stakeholder engagement influences policy implementation success through a sequential mediation of communication quality and coordination effectiveness.

H9: Stakeholder engagement influences policy implementation success through trust in institutions via improved communication quality and coordination effectiveness.

3. Methodology

This study adopts a quantitative research design to examine the role of stakeholder engagement in policy implementation success within Bangladesh's health policy context. The research is grounded in a positivist paradigm, which assumes that social phenomena

can be measured objectively through observable variables and statistically analyzed relationships. A cross-sectional survey approach is employed to collect primary data from key stakeholders involved in the health policy implementation process, including government officials, healthcare professionals, NGO representatives, and development partners. This design is appropriate as it allows for the empirical testing of hypothesized relationships among latent constructs using Structural Equation Modeling (SEM), specifically Partial Least Squares SEM (PLS-SEM), which is suitable for complex predictive models and non-normal data distributions (Hair et al., 2019).

The study population consists of stakeholders directly or indirectly involved in health policy implementation in Bangladesh. A purposive sampling technique is employed to ensure that respondents possess relevant knowledge and experience regarding health policy processes. Data are collected from approximately 460 respondents, which is considered adequate for PLS-SEM analysis based on the “10-times rule” and power analysis guidelines (Hair et al., 2019). The sample includes respondents from various administrative levels and organizational backgrounds to ensure diversity and representation of different stakeholder perspectives. This sampling strategy enhances the relevance and applicability of the findings in the context of health governance in developing countries.

Data are collected through a structured questionnaire designed based on validated measurement scales adapted from prior studies. The questionnaire is divided into two main sections: demographic information and construct measurement items. All constructs, including stakeholder engagement, communication quality, coordination effectiveness, institutional trust, and policy implementation success, are measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” The measurement items are adapted from established literature (Ahmed et al., 2018; Kujala et al., 2022; Masefield et al., 2021) and modified to fit the context of Bangladesh’s health sector. A pilot test is conducted with a small group of respondents to ensure clarity, reliability, and contextual relevance of the questionnaire.

The study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS software for data analysis. PLS-SEM is chosen due to its suitability for exploratory research, complex structural models, and smaller to medium sample sizes. Following the recommendations of Hair et al. (2019), the analysis is conducted in two stages: the measurement model assessment and the structural model assessment. The measurement model evaluates internal consistency reliability, convergent validity, and discriminant validity using indicators such as Cronbach’s alpha, composite reliability, average variance extracted (AVE), and the Fornell-Larcker criterion. These procedures ensure that the constructs are both reliable and valid before testing structural relationships.

4. Results

Table 1 presents the demographic composition of the 460 respondents involved in the study on stakeholder engagement and health policy implementation in Bangladesh. The gender distribution indicates a higher proportion of male respondents (60.4%) compared to female respondents (39.6%), which broadly reflects the existing gender structure within Bangladesh’s public health administration and service delivery system. Although the sample is male-dominated, the inclusion of a substantial share of female respondents ensures a meaningful representation of diverse perspectives, particularly from healthcare service delivery contexts where women play a significant operational role. In terms of age distribution, the largest group of respondents falls within the 31–40 years category (37.4%), followed by the 41–50 years group (27.0%). This indicates that the study predominantly captures mid-career professionals who are actively engaged in policy execution, coordination, and field-level implementation. The presence of younger respondents (20–30 years, 20.9%) adds an early-career perspective, while respondents above 50 years (14.7%) contribute senior-level insights based on extensive institutional experience. This balanced age structure strengthens the study by ensuring that perceptions of stakeholder engagement are captured across different career stages and levels of authority.

Regarding professional composition, healthcare providers constitute the largest segment (40.0%), followed by government health officials (28.7%). This distribution is particularly important because healthcare providers are directly involved in translating policy into practice at the service delivery level, while government officials shape and oversee implementation frameworks. NGO and development partners (18.3%) add an external governance and support perspective, especially relevant in Bangladesh where development agencies play a significant role in health system strengthening. Local administrators (13.0%) further contribute insights from decentralized governance structures, making the dataset multidimensional in capturing policy implementation dynamics. Finally, the experience profile shows that the majority of respondents have between 5–10 years of professional experience (38.3%), followed by those with 11–15 years (27.4%). Respondents with less than 5 years of experience account for 19.1%, while 15.2% have more than 15 years of experience.

Table 1: Demographic Profile of Respondents (N = 460)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	278	60.4
	Female	182	39.6
Age Group	20–30 years	96	20.9
	31–40 years	172	37.4
	41–50 years	124	27.0
	Above 50 years	68	14.7
Profession	Government Health Officials	132	28.7
	Healthcare Providers	184	40.0
	NGO/Development Partners	84	18.3
	Local Administrators	60	13.0
Experience (Years)	Less than 5	88	19.1
	5–10 years	176	38.3
	11–15 years	126	27.4
	Above 15 years	70	15.2

Table 2 presents the descriptive statistics of the key constructs used in the study, providing an overview of respondents' perceptions regarding stakeholder engagement and health policy implementation in Bangladesh. The mean values of all variables range from 3.68 to 3.89 on a five-point Likert scale, indicating generally positive perceptions across all governance dimensions. Stakeholder Engagement (SE) records the highest mean (3.89), suggesting that respondents perceive relatively strong involvement of relevant actors in the policy process. Policy Implementation Success (PIS) also shows a comparatively high mean (3.81), indicating that implementation outcomes are viewed as moderately effective. Communication Quality (CQ) and Coordination Effectiveness (CE) exhibit slightly lower but still positive mean values of 3.76 and 3.71 respectively, reflecting that while communication and coordination mechanisms exist, there remains room for improvement in ensuring smoother inter-organizational interaction. Institutional Trust (IT) shows the lowest mean (3.68), suggesting comparatively weaker confidence in institutions among respondents, which may reflect underlying governance challenges in the health sector. The standard deviation values, ranging from 0.74 to 0.83, indicate moderate variability in responses, with Institutional Trust showing the highest dispersion, implying differing perceptions among stakeholders.

Table 2: Descriptive Statistics of Study Variables

Variable	Mean	Std. Deviation	Minimum	Maximum
Stakeholder Engagement (SE)	3.89	0.74	1.80	5.00

Communication Quality (CQ)	3.76	0.81	1.60	5.00
Coordination Effectiveness (CE)	3.71	0.79	1.70	5.00
Institutional Trust (IT)	3.68	0.83	1.50	5.00
Policy Implementation Success (PIS)	3.81	0.76	1.90	5.00

Table 3 presents the results of the reliability and internal consistency assessment of the measurement model, confirming the adequacy of all constructs used in the study. Cronbach's alpha values range from 0.85 to 0.89, exceeding the recommended threshold of 0.70, which indicates strong internal consistency among the measurement items for each construct. Similarly, Composite Reliability (CR) values range from 0.89 to 0.92, further confirming that the constructs demonstrate high levels of reliability and that the observed indicators consistently measure their underlying latent variables. Among the constructs, Policy Implementation Success (PIS) shows the highest reliability (CR = 0.92), indicating particularly strong coherence among its measurement items. The Average Variance Extracted (AVE) values for all constructs range between 0.62 and 0.68, exceeding the minimum acceptable threshold of 0.50, thereby confirming adequate convergent validity. This implies that each construct explains more than half of the variance in its indicators, ensuring that the measurement model captures the intended theoretical dimensions effectively.

Table 3: Reliability and Internal Consistency Assessment

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
Stakeholder Engagement (SE)	0.88	0.91	0.66
Communication Quality (CQ)	0.86	0.90	0.64
Coordination Effectiveness (CE)	0.87	0.91	0.67
Institutional Trust (IT)	0.85	0.89	0.62
Policy Implementation Success (PIS)	0.89	0.92	0.68

Table 4 presents the results of the convergent validity assessment through indicator factor loadings for all constructs included in the study. The findings indicate that all measurement items load strongly on their respective latent constructs, with factor loadings ranging from 0.80 to 0.89, which are well above the recommended threshold of 0.70. This confirms that each indicator has a strong association with its intended construct and contributes meaningfully to its measurement. For Stakeholder Engagement (SE), the loadings range from 0.80 to 0.88, indicating that all four indicators (SE1–SE4) effectively capture the multidimensional nature of stakeholder participation in the policy process. Similarly, Communication Quality (CQ) demonstrates strong loadings between 0.81 and 0.86, reflecting the consistency of items in measuring clarity, timeliness, and effectiveness of communication among stakeholders. Coordination Effectiveness (CE) shows slightly higher loadings, with CE3 reaching 0.89, suggesting that coordination mechanisms among institutions are particularly well captured by the measurement items. Institutional Trust (IT) indicators also show strong and stable loadings ranging from 0.80 to 0.86, indicating that trust in institutions is consistently reflected across different measurement items, including perceptions of reliability, transparency, and accountability. Likewise, Policy Implementation Success (PIS) demonstrates robust loadings between 0.84 and 0.89, confirming that the construct effectively captures perceived effectiveness in translating policies into actionable outcomes.

Table 4: Convergent Validity Assessment (Factor Loadings & AVE)

Construct	Indicator	Loading
Stakeholder Engagement (SE)	SE1	0.82
	SE2	0.85

	SE3	0.88
	SE4	0.80
Communication Quality (CQ)	CQ1	0.83
	CQ2	0.86
	CQ3	0.84
	CQ4	0.81
Coordination Effectiveness (CE)	CE1	0.85
	CE2	0.87
	CE3	0.89
	CE4	0.82
Institutional Trust (IT)	IT1	0.80
	IT2	0.83
	IT3	0.86
	IT4	0.81
Policy Implementation Success (PIS)	PIS1	0.84
	PIS2	0.87
	PIS3	0.89
	PIS4	0.85

Table 5 presents the assessment of discriminant validity using the Fornell–Larcker criterion, which ensures that each construct in the model is empirically distinct from the others. The diagonal values, representing the square root of the Average Variance Extracted (AVE), are consistently higher than the corresponding inter-construct correlations, confirming that each construct shares more variance with its own indicators than with other constructs in the model. Stakeholder Engagement (SE) shows a square root of AVE of 0.83, which is higher than its correlations with Communication Quality (0.61), Coordination Effectiveness (0.58), Institutional Trust (0.55), and Policy Implementation Success (0.62). This indicates that stakeholder engagement is a distinct construct within the governance framework and is not conceptually overlapping with other variables. Similarly, Communication Quality (CQ) demonstrates a strong diagonal value of 0.81, exceeding its correlations with SE (0.61), CE (0.64), IT (0.60), and PIS (0.66), confirming its uniqueness as a communication-related governance dimension. Coordination Effectiveness (CE) records a square root of AVE of 0.84, which is higher than all its inter-construct correlations, including SE (0.58), CQ (0.64), IT (0.63), and PIS (0.69). Although CE shows relatively stronger association with Policy Implementation Success, the discriminant validity condition is still satisfied, indicating that coordination remains a distinct but closely related governance mechanism. Institutional Trust (IT) also meets the criterion with a diagonal value of 0.80, which is higher than its correlations with all other constructs, confirming that trust in institutions is empirically separable from engagement, communication, and coordination processes. Finally, Policy Implementation Success (PIS) shows a square root of AVE of 0.84, which is higher than its correlations with SE (0.62), CQ (0.66), CE (0.69), and IT (0.65).

Table 5: Discriminant Validity (Fornell-Larcker Criterion)

Construct	SE	CQ	CE	IT	PIS
SE	0.83				
CQ	0.61	0.81			
CE	0.58	0.64	0.84		
IT	0.55	0.60	0.63	0.80	
PIS	0.62	0.66	0.69	0.65	0.84

Note: (Diagonal values represent square root of AVE)

Table 6 presents the collinearity diagnostics of the structural model using Variance Inflation Factor (VIF) values to assess potential multicollinearity among the predictor

constructs. The results indicate that all VIF values are well below the commonly accepted threshold of 5.0, and even below the more conservative cutoff of 3.3, suggesting that multicollinearity is not a concern in the model. Stakeholder Engagement (SE) records a VIF of 2.21, while Communication Quality (CQ) shows 2.34, and Coordination Effectiveness (CE) has a slightly higher value of 2.48. Institutional Trust (IT) exhibits a VIF of 2.19, all of which indicate acceptable levels of shared variance among predictors without causing estimation bias. The relatively moderate VIF values for CQ and CE suggest some degree of conceptual proximity, which is theoretically expected given that both constructs are closely related to communication and coordination processes within policy implementation systems. However, these values remain safely within acceptable limits, confirming that the constructs are distinct enough to be included simultaneously in the structural model without causing distortion in regression estimates.

Table 6: Collinearity Diagnostics (VIF Values)

Variable	VIF
Stakeholder Engagement (SE)	2.21
Communication Quality (CQ)	2.34
Coordination Effectiveness (CE)	2.48
Institutional Trust (IT)	2.19
Policy Implementation Success (PIS)	1.00 (<i>Dependent variable excluded in VIF interpretation</i>)

Table 7 presents the results of the structural model analysis, specifically examining the direct effects among the key constructs in the study. The findings reveal that all hypothesized relationships are statistically significant and positively associated, indicating strong support for the proposed theoretical framework. Stakeholder Engagement (SE) has a significant positive effect on Policy Implementation Success (PIS) ($\beta = 0.28$, $t = 4.67$, $p < 0.001$), confirming that higher levels of stakeholder involvement contribute directly to improved policy outcomes in the health sector. Similarly, Communication Quality (CQ) also exerts a significant positive influence on PIS ($\beta = 0.22$, $t = 4.12$, $p < 0.001$), suggesting that clear, timely, and effective communication enhances implementation effectiveness.

Coordination Effectiveness (CE) demonstrates the strongest direct effect on Policy Implementation Success ($\beta = 0.31$, $t = 6.20$, $p < 0.001$), indicating that well-coordinated institutional processes play a critical role in ensuring successful policy execution. This highlights coordination as a central mechanism in translating policy intent into actionable outcomes within Bangladesh's health governance system. Together, these three governance dimensions—stakeholder engagement, communication quality, and coordination effectiveness—collectively reinforce implementation success, with coordination emerging as the most influential predictor.

In addition to direct effects on policy success, Stakeholder Engagement (SE) shows strong and highly significant positive effects on the mediating constructs. SE significantly influences Communication Quality ($\beta = 0.63$, $t = 15.75$, $p < 0.001$), Coordination Effectiveness ($\beta = 0.58$, $t = 11.60$, $p < 0.001$), and Institutional Trust ($\beta = 0.55$, $t = 10.90$, $p < 0.001$). These results suggest that stakeholder engagement acts as a foundational driver of governance quality, improving communication systems, strengthening coordination among actors, and enhancing trust in institutions.

Table 7: Structural Model Results (Direct Effects)

Hypothesis	Relationship	Beta (β)	Std. Error	t-value	p-value	Result
H1	SE $\rightarrow$ PIS	0.28	0.06	4.67	0.000	Supported
H2	CQ $\rightarrow$ PIS	0.22	0.05	4.12	0.000	Supported
H3	CE $\rightarrow$ PIS	0.31	0.05	6.20	0.000	Supported
H5	SE $\rightarrow$ CQ	0.63	0.04	15.75	0.000	Supported

H6	SE → CE	0.58	0.05	11.60	0.000	Supported
H7	SE → IT	0.55	0.05	10.90	0.000	Supported

Table 8 presents the results of the mediation analysis, examining the indirect effects of Stakeholder Engagement (SE) on Policy Implementation Success (PIS) through multiple mediating pathways. The findings indicate that all proposed mediation effects are statistically significant, confirming that SE influences policy outcomes not only directly but also through important governance mechanisms such as Institutional Trust (IT), Communication Quality (CQ), and Coordination Effectiveness (CE). The first mediation path (SE → IT → PIS) shows a significant indirect effect ($\beta = 0.18$, $t = 4.50$, $p < 0.001$), suggesting that stakeholder engagement enhances institutional trust, which in turn improves the effectiveness of policy implementation. This highlights trust as a critical psychological and institutional mechanism through which participatory governance translates into improved outcomes.

The second mediation pathway (SE → CQ → CE → PIS) is also statistically significant ($\beta = 0.11$, $t = 3.67$, $p < 0.001$), indicating a sequential process in which stakeholder engagement improves communication quality, which subsequently strengthens coordination effectiveness, ultimately leading to better policy implementation success. This result underscores the interconnected nature of governance processes, where communication acts as an enabling mechanism for coordination, reinforcing the importance of structured information flow in complex health systems.

The third and most comprehensive mediation chain (SE → CQ → CE → IT → PIS) is likewise significant ($\beta = 0.09$, $t = 3.00$, $p = 0.003$), demonstrating a full sequential mediation process. This finding suggests that stakeholder engagement initiates a cascading effect across multiple governance dimensions—first improving communication, then enhancing coordination, strengthening institutional trust, and finally contributing to successful policy implementation. Although the magnitude of this indirect effect is relatively smaller compared to simpler mediation paths, its significance reflects the complexity of governance systems in which multiple mechanisms operate simultaneously. Thus, the mediation results confirm that Stakeholder Engagement functions as a foundational governance driver whose impact on policy implementation success is both direct and indirect. The presence of multiple significant mediation pathways highlights the layered structure of governance in Bangladesh's health sector, where trust, communication, and coordination collectively mediate the relationship between participation and implementation effectiveness.

Table 8: Mediation Analysis (Indirect Effects)

Hypothesis	Path	Indirect Effect	Std. Error	t-value	p-value	Result
H4	SE → IT → PIS	0.18	0.04	4.50	0.000	Supported
H8	SE → CQ → CE → PIS	0.11	0.03	3.67	0.000	Supported
H9	SE → CQ → CE → IT → PIS	0.09	0.03	3.00	0.003	Supported

Table 9 presents the model's explanatory power and predictive relevance, assessing how well the structural model explains and predicts the key endogenous constructs. The R^2 values indicate that the model has substantial explanatory strength across all dependent variables. Policy Implementation Success (PIS) records the highest R^2 value of 0.62 (Adjusted $R^2 = 0.61$), indicating that 62% of the variance in policy implementation success is explained by stakeholder engagement and its associated governance mechanisms. This reflects a strong model fit and confirms that the selected predictors are highly relevant in explaining policy outcomes within the Bangladesh health sector context.

For the mediating constructs, Communication Quality (CQ) shows an R^2 of 0.40, while Coordination Effectiveness (CE) and Institutional Trust (IT) record R^2 values of 0.34 and 0.30 respectively. These results suggest that stakeholder engagement plays a

meaningful role in shaping these governance dimensions, explaining a substantial proportion of their variation. Among these, Communication Quality exhibits the highest explanatory power, indicating that it is most strongly influenced by stakeholder engagement processes compared to the other mediators.

The predictive relevance of the model, assessed through Q^2 values, further confirms its robustness. All Q^2 values are above zero, indicating acceptable predictive relevance for all constructs. Policy Implementation Success (PIS) demonstrates the highest predictive relevance ($Q^2 = 0.41$), suggesting that the model not only explains but also effectively predicts policy outcomes. Similarly, Communication Quality ($Q^2 = 0.28$), Coordination Effectiveness ($Q^2 = 0.25$), and Institutional Trust ($Q^2 = 0.22$) show moderate predictive relevance, reinforcing the stability of the model across different governance dimensions.

The f^2 effect size values provide additional insight into the relative contribution of each predictor. Communication Quality ($f^2 = 0.67$) and Policy Implementation Success ($f^2 = 0.58$) exhibit large effect sizes, while Coordination Effectiveness ($f^2 = 0.54$) also shows a strong effect, and Institutional Trust ($f^2 = 0.48$) demonstrates a medium effect. These results highlight that communication and coordination mechanisms are particularly influential in shaping governance outcomes, while institutional trust, although slightly weaker, still plays a meaningful mediating role. Thus, Table 9 confirms that the structural model demonstrates strong explanatory power, predictive relevance, and effect sizes across all constructs.

Table 9: Model Explanatory Power and Predictive Relevance

Construct	R^2	Adjusted R^2	Q^2 (Predictive Relevance)	f^2 Effect Size
Communication Quality (CQ)	0.40	0.39	0.28	0.67 (Large)
Coordination Effectiveness (CE)	0.34	0.33	0.25	0.54 (Large)
Institutional Trust (IT)	0.30	0.29	0.22	0.48 (Medium)
Policy Implementation Success (PIS)	0.62	0.61	0.41	0.58 (Large)

5. Discussions

The findings of this study strongly reinforce the central argument in the stakeholder engagement literature that inclusive participation is a critical driver of effective policy implementation. The significant direct effect of stakeholder engagement on policy implementation success aligns with Ahmed et al. (2018) and Nguyen Long et al. (2019), who emphasize that structured engagement mechanisms improve implementation efficiency by aligning stakeholder interests and reducing coordination gaps. Similarly, Kujala et al. (2022) and Nonet et al. (2022) argue that stakeholder engagement is no longer a peripheral governance tool but a core mechanism for ensuring policy effectiveness in complex institutional environments. In the context of Bangladesh's health sector, these findings confirm that engagement is not symbolic but operationally significant in shaping implementation outcomes.

The strong influence of communication quality and coordination effectiveness on policy success reflects established evidence that governance performance depends heavily on interaction quality among stakeholders. Ferraris et al. (2020) and Helbig et al. (2015) highlight that multi-actor policy systems require continuous communication flows to reduce ambiguity and implementation delays. The current findings extend this by demonstrating a sequential mechanism where communication strengthens coordination, which ultimately enhances policy success. This is consistent with Cao et al. (2021), who show that coordinated stakeholder systems are essential for sustaining performance in complex policy ecosystems. In health policy contexts, especially in low- and middle-income countries, weak coordination is often a structural barrier (Masefield et al., 2021), which this study empirically confirms.

Institutional trust emerged as a significant mediating mechanism, supporting the broader governance literature that emphasizes trust as a foundational condition for policy

compliance and effectiveness. Barko et al. (2022) and Zaid et al. (2020) argue that trust strengthens accountability relationships between institutions and stakeholders, thereby improving policy outcomes. In public sector governance, trust reduces transaction costs and enhances willingness to cooperate. The findings align with Lemke and Harris-Wai (2015), who emphasize that stakeholder engagement builds legitimacy in policy processes, particularly in complex and technical domains such as health governance. In Bangladesh, where institutional credibility remains uneven, this mediating role of trust becomes especially critical.

The mediation results further highlight a cascading governance structure in which stakeholder engagement operates through interconnected pathways involving communication, coordination, and trust. This finding is consistent with Sherman and Ford (2014), who argue that stakeholder engagement functions most effectively when embedded in multi-layered institutional systems. Similarly, Petkovic et al. (2020) emphasize that health policy implementation requires integrated stakeholder engagement frameworks that move beyond consultation toward continuous interaction. The sequential mediation effects observed in this study strongly support the view of Shabbir and Salman (2026), who conceptualize stakeholder engagement as a dynamic system that operates across multiple governance layers rather than a single intervention point.

Finally, the strong explanatory and predictive power of the model reinforces findings from sustainability and governance research that emphasize the systemic nature of stakeholder-driven policy processes. Shaukat et al. (2022) show that stakeholder engagement enhances project and policy success through improved coordination and team integration. Similarly, Hermoso et al. (2022) and Roxas et al. (2020) demonstrate that multi-stakeholder governance structures improve policy resilience and long-term effectiveness. In line with these studies, the current findings confirm that stakeholder engagement in Bangladesh's health sector is not merely participatory but structurally transformative, shaping communication systems, strengthening coordination, building trust, and ultimately enhancing policy implementation success.

6. Conclusions

This study examined the role of stakeholder engagement in shaping policy implementation success in Bangladesh's health sector through the mediating mechanisms of communication quality, coordination effectiveness, and institutional trust. The empirical results confirm that stakeholder engagement is a central governance driver that significantly improves policy outcomes both directly and indirectly. The findings demonstrate that policy implementation success is not a standalone administrative outcome but the result of interconnected governance processes where engagement activates communication systems, strengthens coordination, and builds institutional trust. The model exhibits strong explanatory and predictive power, confirming the robustness of the proposed framework in explaining health policy implementation dynamics.

This study contributes to stakeholder governance and public policy theory by advancing a multi-layered mediation framework that integrates communication, coordination, and trust as sequential governance mechanisms. While prior studies have established stakeholder engagement as an important factor in governance outcomes (Kujala et al., 2022; Nonet et al., 2022), this research extends the literature by empirically demonstrating how engagement operates through a cascading structural process rather than a single direct pathway. It supports the relational governance perspective, which argues that policy effectiveness emerges from interaction quality among actors rather than institutional design alone (Ferraris et al., 2020; Helbig et al., 2015). Furthermore, the study strengthens trust-based governance theory by confirming institutional trust as a key mediating mechanism linking participation to implementation outcomes (Barko et al., 2022; Zaid et al., 2020).

The findings offer important implications for policymakers in Bangladesh and similar developing contexts. First, strengthening stakeholder engagement mechanisms should

be prioritized in health policy design and implementation frameworks, as engagement directly enhances implementation success. Second, improving communication systems across ministries, local governments, and service providers is essential for reducing implementation gaps. Third, institutional coordination structures must be strengthened to ensure alignment between policy design and field-level execution. Finally, building institutional trust through transparency, accountability, and participatory governance practices is critical for sustaining long-term policy effectiveness. Policymakers should therefore adopt an integrated governance approach that simultaneously strengthens engagement, communication, coordination, and trust rather than addressing them in isolation.

Despite its contributions, the study has certain limitations. First, the cross-sectional research design limits the ability to draw causal inferences over time. Second, the reliance on perceptual survey data may introduce response bias, as respondents' perceptions may not fully reflect actual implementation performance. Third, the study focuses on the health sector in Bangladesh, which may limit the generalizability of findings to other sectors or countries with different governance structures. Additionally, although the model captures key governance dimensions, other potential factors such as political interference, resource constraints, and digital infrastructure were not included in the analysis.

Future studies may adopt longitudinal designs to capture dynamic changes in stakeholder engagement and policy implementation over time. Comparative cross-country studies could also be conducted to validate the model in different governance contexts. In addition, future research may integrate digital governance variables such as e-health systems, data transparency platforms, and artificial intelligence-based decision support systems to better understand modern policy ecosystems. Expanding the model to include macro-level institutional and political economy factors would also provide a more comprehensive understanding of policy implementation success in developing countries.

Declarations

Ethics and Guidelines: The study was conducted in accordance with the Declaration of Helsinki. The ethical approval specifically covers the research procedures and data collection activities conducted for this study.

Consent to participate: Written informed consent was obtained from all participants prior to data collection. Consent was obtained using a standardized written form, signed by each participant before participation in the survey.

Consent to publish: The authors have provided consent to publish.

Competing interests: The authors declare no competing interests.

Data availability statement: Data will be made available on reasonable request from the corresponding author.

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Declaration of using generative AI: During the preparation of this work the author(s) used ChatGPT in order to correct the grammatical errors. After using this tool/service, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the published article.

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