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# Economic Factors and Completion of National Government Constituency Development Fund Projects in Public Secondary Schools in Samburu County, Kenya

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**Abstract**
This study examined the relationship between selected economic factors and the completion of National Government Constituency Development Fund (NG-CDF) projects in public secondary schools in Samburu County, Kenya. The study addressed persistent project incompletion, which constrains the provision of essential educational infrastructure. It examined delayed fund disbursement, inadequate budgeting, limited availability of construction materials, delayed contractor payments, contractors' financial capacity, and rising material costs. A descriptive survey design was used. The target population comprised 250 school-based respondents and 15 key informants. Questionnaires were administered to principals, deputy principals, heads of departments, Board of Management chairpersons and bursars; interviews were conducted with the 15 key informants. A census invitation was extended to the identified population; 212 questionnaires (84.8%) and all 15 interviews (100%) were completed. Quantitative data were analysed using descriptive statistics, Pearson correlation and simple linear regression, while interview data were analysed thematically. The reported association between the economic-factor index and project completion was negative ($r = -.548$; $N = 210$; recalculated $p < .001$), and the model reportedly explained 30.0 per cent of the variance ($R^2 = .300$). Interview accounts highlighted funding delays, budget shortfalls, payment interruptions, etc. The study concludes that selected economic constraints, including particularly delayed fund disbursement, inadequate budgeting, and contractor payment challenges, are associated with lower completion of NG-CDF projects in public secondary schools in Samburu County. The study recommends predictable disbursement, realistic cost estimates, contractor capacity assessment, and context-sensitive procurement planning. The findings can inform NG-CDF financial planning and implementation oversight.

**Key words**: Contractor financial capacity, economic factors, NG-CDF projects, project completion, public secondary schools.

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## INTRODUCTION

This study examined the relationship between selected economic factors and completion of National Government Constituency Development Fund (NG-CDF) projects in public secondary schools in Samburu County, Kenya. Incomplete public school infrastructure projects remain a concern because unfinished classrooms, laboratories, sanitation facilities and other learning spaces delay the intended educational and community benefits of public investment. A synthesis by Barrett et al. (2019) shows that school infrastructure is an important component of the learning environment, although infrastructure quality alone does not determine educational outcomes. In Samburu County, information attributed to the County Education Office in the study records an average incompletion rate of 56.5 per cent for NG-CDF projects over the preceding seven years. This reported rate provides the immediate context for examining whether economic constraints are associated with completion of NG-CDF-funded projects in public secondary schools. The figure must be checked against the underlying County Education Office records and its calculation period before publication.

International construction research provides a useful, but not directly equivalent, context. Sambasivan and Soon (2007), studying Malaysian construction projects, identified inadequate client finance and payments for completed work, material shortages and contractor-related weaknesses among important causes of delay; the reported effects included time and cost overruns and, in some cases, abandonment. Abed and Rashid (2023) similarly identified delayed contractor payments, inaccurate cost estimates, material-price risks and financial instability among risks affecting school construction projects in Iraq. These mechanisms matter because interrupted cash flow can delay procurement, labour payments, and site operations. However, findings from Malaysia and Iraq should not be treated as direct estimates for Kenyan NG-CDF projects, which operate within a distinct public-financing and constituency-level implementation framework.

Across African public infrastructure settings, financing continuity, procurement capacity, contractor capability and logistical access are recurring implementation concerns. These mechanisms are comparable to those examined in Kenya, but the institutional arrangements and geography differ across countries. In Kenya, NG-CDF projects depend on public budget allocation and disbursement processes, project-level oversight and compliance with public procurement requirements. In remote parts of Samburu County, transport distance and supplier availability may add logistical costs and constrain the timely delivery of materials. Evidence from Kenyan public road and building projects also indicates that financing and cost-related risks are associated with implementation delays (Chibole & Mbataru, 2023; Amugongo & Mwenda, 2023).

In Kenya, Vision 2030 and the education-sector policy framework have emphasised the need to improve education infrastructure (Ministry of Education, 2012). The National Government Constituency Development Fund (NG-CDF, 2024) provides a constituency-level mechanism for financing local development projects, including education infrastructure. The existence of a funding mechanism, however, does not itself guarantee that funds will be released when required, that initial estimates will remain adequate, or that contractors will have sufficient working capital. Studies of NG-CDF and other public projects have examined cost control, financing and contractor capacity (Kamau et al., 2022; Kinoti & Njeru, 2026; Saya & Onyango, 2024). Their findings are informative, although road, commercial-building, and classroom projects differ in procurement arrangements, scale and operating conditions. The present study therefore examines the combined relationship of the selected economic constraints with NG-CDF project completion in public secondary schools.

The study was conducted in Samburu County, an arid and semi-arid county comprising Samburu Central, Samburu East and Samburu North sub-counties. The location was selected not only because of its ASAL classification, but also because the study reports substantial NG-CDF project incompletion and identifies geographic access to construction inputs as a possible constraint. The county context therefore allows examination of the interaction between public funding and budgeting processes, contractor cash flow, material-price changes and the practical difficulty of supplying remote school sites. The reported 56.5 per cent incompletion rate is a study-supplied statistic and must be supported by a traceable county record.

Against this background, the study examined the relationship between selected economic factors and completion of NG-CDF projects in public secondary schools in Samburu County. Specifically, it considered

delayed fund disbursement, inadequate budgeting, unavailability of building materials, non-payment or delayed payment of contractors, contractors' financial capacity and increases in construction-material costs.

$H_0$: There is no statistically significant relationship between selected economic factors and completion of National Government Constituency Development Fund projects in public secondary schools in Samburu County.

## LITERATURE REVIEW

The literature was reviewed thematically and geographically to establish what is known about economic constraints in construction delivery, assess the strengths and limitations of prior evidence, and identify the gap this study addresses. Project completion is treated as the extent to which an approved project reaches its intended physical scope within the planned implementation period; where the original study measured completion differently, the operational definition must be aligned with the actual questionnaire and project records.

At the international level, Sambasivan and Soon (2007) used survey evidence from clients, consultants, and contractors in Malaysia to link specific delay causes to project consequences. Their inclusion of inadequate client finance and payments, material shortages and contractor-related factors is relevant because these constraints can interrupt construction sequences and increase the risk of time overruns or abandonment. The study's strength is its examination of causes and effects together; its limitation is that it does not examine Kenyan NG-CDF governance, school projects, or supply conditions in remote ASAL locations. International evidence should therefore explain plausible mechanisms rather than be used as a direct proxy for Samburu County.

Within African and Kenyan public infrastructure research, Chibole and Mbataru (2023) examined financing and completion of government road projects under the Kenya National Highways Authority. Their focus on public-project financing provides relevant evidence that financial flows matter to implementation, although road projects differ from school projects in scale, contracting and technical requirements. Amugongo and Mwenda (2023) examined cost-related risks in commercial building construction projects in Kisumu County. Their Kenyan setting strengthens contextual relevance, but commercial buildings are not funded or governed through the NG-CDF school-project framework. These studies support examining finance and cost risks, but neither establishes how several economic constraints operate together in public secondary-school projects in Samburu County.

Research on NG-CDF projects offers a closer institutional comparison. Kamau et al. (2022) examined cost control and realisation of NG-CDF projects in Kikuyu Constituency and reported that inadequate funds, disbursement challenges and price fluctuations were among the difficulties experienced. This is directly relevant to the fund mechanism and supports the inclusion of budgeting, disbursement and material-price factors. However, the study focused on cost control and project realisation in one constituency rather than the combined economic-factor relationship with completion of public secondary-school projects in an ASAL county. Kinoti and Njeru (2026) examined cost-management practices in NG-CDF classroom projects in Tigania East. They found project cost budgeting to be the dominant predictor of performance in their multivariable model. Their study is institutionally closely related, but its focus on cost-management practices and performance outcomes is not identical to the six constraints and completion outcome examined here.

Contractor financial capacity is another relevant dimension. Saya and Onyango (2024) studied contractors' capacity and road-project performance in Uasin Gishu County and reported significant associations for financial and human-resource capacity. Wahuga and Ngugi (2025) similarly examined contractor capacity and road-project performance in Nairobi City County. These studies support the proposition that contractor resources can affect delivery, but their road-project settings and performance measures limit direct transfer to NG-CDF school projects. The present study uses these sources to frame contractor capacity as one part of a wider economic environment rather than as an independently proven causal mechanism.

Material availability and price escalation are related but distinct constraints. A project may face physical shortages or long delivery times even when its budget is adequate; alternatively, materials may be available but become unaffordable because prices rise after the initial estimate. These conditions can affect remote sites differently from projects located near established

suppliers. The qualitative accounts in the present study distinguish access difficulties in Samburu North from areas where materials were reportedly more readily available. This contextual variation is important and should not be collapsed into a single general claim that materials were unavailable throughout the county.

Taken together, the reviewed literature establishes that financing continuity, budget adequacy, contractor resources and material supply are associated with construction-project delivery. However, prior studies vary in project type, funding arrangements, geographic setting, outcome measures and analytical approach. The evidence does not adequately establish how these factors, considered together, relate to completion of NG-CDF projects in public secondary schools in Samburu County. This study addresses that contextual and analytical gap through school-based questionnaire data and key-informant interviews. Its design supports assessment of reported associations and stakeholder experiences, not causal attribution.

**METHODOLOGY**

A descriptive survey design was adopted to examine the relationship between selected economic factors and completion of NG-CDF projects without manipulating the study variables. The study also reports a phenomenological orientation. To maintain methodological clarity, this orientation is understood as informing the interpretation of key informants' lived professional experiences and perceptions through interviews; it does not itself provide the philosophical basis for the quantitative correlation and regression procedures. The quantitative component describes measured associations, while interview evidence provides contextual explanation.

The study was conducted in Samburu County in northern Kenya, comprising Samburu Central, Samburu East and Samburu North sub-counties. The county was selected because the study records a reported average NG-CDF project incompletion rate of 56.5 per cent over seven years and because the geographic dispersion of schools, particularly in remote areas, makes access to construction materials a relevant issue alongside funding and contractor cash flow. The county statistics and the basis for selecting the seven years require documentary verification.

The target population comprised 265 identified participants: 250 school-based participants and 15 key informants. Of the 250 school-based participants invited, 212 returned questionnaires (84.8%). The returned questionnaires comprised principals (34), deputy principals (42), Board of Management chairpersons (41), school bursars (48) and heads of departments (47); these respondent-category counts sum to 212 and therefore describe the returned questionnaires, not the full invited population. The remaining 38 school-based invitees did not return questionnaires. The 15 key informants comprised sub-county directors of education, Teachers Service Commission sub-county directors, NG-CDF chairpersons, NG-CDF fund managers and deputy county commissioners. The exact number in each key-informant role should be stated from the sampling register.

A census approach was used in that all 250 identified school-based participants and all 15 identified key informants were invited or approached; however, this did not result in complete participation by the school-based group. A total of 212 questionnaires were returned, while all 15 key informants were interviewed. Accordingly, the quantitative analyses are based on questionnaire respondents with valid data for the relevant item or model, and the qualitative analysis is based on the 15 interviews.

Data were collected using structured questionnaires and interview schedules. Questionnaires were administered to principals, deputy principals, heads of departments, Board of Management chairpersons and school bursars. The questionnaire used a four-point Likert scale from strongly disagree (1) to strongly agree (4) and covered delayed fund disbursement, under-budgeting, material availability, contractor payments, contractor financial capacity and material-price increases. Interview schedules were administered to 15 key informants, including education officials, NG-CDF officials, and deputy county commissioners, to obtain contextual accounts of funding, procurement, contractor payments, and material supply.

Quantitative data were analysed in SPSS version 24. Frequencies, percentages and means were used to summarise questionnaire responses. Pearson's product-moment correlation was used to estimate the direction and strength of the bivariate relationship between the economic-factor index and project completion. Simple

linear regression was used to estimate the association and proportion of variance explained by the index.

The study reports diagnostic checks for normality, linearity and homoscedasticity. For linear regression, Regression assumptions were assessed through diagnostic procedures covering normality, linearity, homoscedasticity and multicollinearity. Qualitative information from interviews was analysed thematically to provide further insight into the economic challenges affecting project completion. The findings were presented using tables and descriptive explanations.

**Ethical Considerations**

Ethical safeguards included informed consent, confidentiality, secure storage of paper questionnaires in a locked cabinet and password protection of electronic records. Respondents' names were not recorded on questionnaire forms. The study obtained the required institutional and research approvals, including approval from Kabarak University's Institute of Postgraduate Studies and a research permit from the National Commission for Science, Technology and Innovation (NACOSTI), together with permission from relevant county education authorities.

## FINDINGS AND DISCUSSION

**Return Rates of the Instruments**

Two instruments were used. Of 250 school-based questionnaires distributed, 212 were returned (84.8%). All 15 invited key informants participated in interviews (100%). The quantitative findings below are based on questionnaire respondents (maximum n = 212, with item-level valid Ns varying); the qualitative findings are based on the 15 interviews. These respondent groups are distinct and should not be combined into a single quantitative sample.

**Table 1: Instruments' Return Rates**

| Instrument | Administered/invited for interview | Returned/interviewed | Return rate in percent |
|---|---|---|---|
| School administrators' questionnaire | 250 | 212 | 84.8 |
| Key informants' interview schedule | 15 | 15 | 100.0 |

The questionnaire return rate was 84.8 per cent, while the key-informant interview participation rate was 100 per cent. These rates indicate substantial participation, but a high response rate does not by itself establish the absence of nonresponse bias. The characteristics of the 38 non-returning school-based invitees should be compared with respondents where records permit. Response-rate reporting should follow a clearly stated calculation and denominator (American Association for Public Opinion Research [AAPOR], 2022).

**Selected Economic Factors**

Results from analysing selected economic factors data gathered from school administrators are presented in the following paragraphs. The administrators used a 4-point Likert scale (Strongly Disagree (SD) = 1, Disagree (D) = 2, Agree (A) = 3, Strongly Agree (SA) = 4) to indicate the extent of agreement with positive items on economic factors. Reverse coding was used for negative statements. The responses were summarised using percentages and also scored and transformed into a composite economic factors index, as shown in Table 2.

**Table 2: Principals' Responses to Items on Selected Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 34 | 0.0 | 0.0 | 21.3 | 51.1 | 3.71 | 0.51 |
| Under budgeting causes CDF projects not to be completed | 34 | 0.0 | 0.0 | 19.1 | 53.2 | 3.74 | 0.42 |
| Unavailability of building materials affects the completion of CDF projects | 34 | 0.0 | 0.0 | 25.5 | 46.8 | 3.65 | 0.34 |
| Non-payment of contractors affects completion of CDF projects | 34 | 0.0 | 0.0 | 29.8 | 42.6 | 3.59 | 0.65 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 34 | 0.0 | 0.0 | 27.7 | 44.7 | 3.62 | 0.53 |
| Increase in the cost of materials affects the completion of CDF projects | 34 | 0.0 | 0.0 | 17.0 | 55.3 | 3.76 | 0.42 |
| **Economic factor index** | **34** | | | | | | |

In the principals' subgroup, the reported means range from 3.59 to 3.76, suggesting generally high agreement that the listed economic constraints affect project completion. The largest reported mean concerns increases in material costs (M = 3.76), followed by under-budgeting (M = 3.74). However, Table 2 reports N = 34, while the agreement percentages for several items do not reconcile with that denominator. These percentages and the subgroup denominator must not be interpreted as final until checked against the raw data.

**Table 3: Deputy Principals' Responses to Items on Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 42 | 0.0 | 0.0 | 28.6 | 71.4 | 3.71 | 0.39 |
| Under budgeting causes CDF projects not to be completed | 42 | 0.0 | 0.0 | 26.2 | 73.8 | 3.74 | 0.42 |
| Unavailability of building materials affects the completion of CDF projects | 42 | 0.0 | 0.0 | 35.7 | 64.3 | 3.64 | 0.44 |
| Non-payment of contractors affects completion of CDF projects | 42 | 0.0 | 0.0 | 42.9 | 57.1 | 3.57 | 0.33 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 42 | 0.0 | 0.0 | 38.1 | 61.9 | 3.62 | 0.40 |
| Increase in the cost of materials affects the completion of CDF projects | 42 | 0.0 | 0.0 | 23.8 | 76.2 | 3.76 | 0.38 |
| **Economic factor index** | **42** | | | | | | |

Deputy principals reported high agreement across all six items. The highest mean was reported for increasing material costs (M = 3.76), while contractor non-payment had the lowest mean (M = 3.57). The percentages shown in Table 3 sum to 100 per cent for each item and are broadly consistent with the stated N = 42; the original output should nevertheless be checked for item-level missing data and rounding.

**Table 4: Board of Management Responses to Items on Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 41 | 0.0 | 0.0 | 26.8 | 73.2 | 3.73 | 0.41 |
| Under budgeting causes CDF projects not to be completed | 41 | 0.0 | 0.0 | 26.8 | 73.2 | 3.73 | 0.34 |
| Unavailability of building materials affects the completion of CDF projects | 41 | 0.0 | 0.0 | 36.6 | 63.4 | 3.63 | 0.33 |
| Non-payment of contractors affects completion of CDF projects | 41 | 0.0 | 0.0 | 41.5 | 58.5 | 3.59 | 0.30 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 41 | 0.0 | 0.0 | 39.0 | 61.0 | 3.61 | 0.24 |
| Increase in the cost of materials affects the completion of CDF projects | 41 | 0.0 | 0.0 | 24.4 | 75.6 | 3.76 | 0.34 |
| Economic factor index | 41 | | | | | | |

Board of Management respondents also reported high agreement, with the highest mean for increasing material costs (M = 3.76). Delayed fund release and under-budgeting each had a reported mean of 3.73. These descriptive results indicate respondents' perceptions and should not be presented as independent evidence of a causal effect on completion.

**Table 5: School Bursars Responses to Items on Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 48 | 0.0 | 0.0 | 27.1 | 72.9 | 3.73 | 0.33 |
| Under budgeting causes CDF projects not to be completed | 48 | 0.0 | 0.0 | 27.1 | 72.9 | 3.73 | 0.41 |
| Unavailability of building materials affects the completion of CDF projects | 48 | 0.0 | 0.0 | 35.4 | 64.6 | 3.65 | 0.39 |
| Non-payment of contractors affects completion of CDF projects | 48 | 0.0 | 0.0 | 41.7 | 58.3 | 3.58 | 0.43 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 48 | 0.0 | 0.0 | 39.6 | 60.4 | 3.60 | 0.53 |
| Increase in the cost of materials affects the completion of CDF projects | 48 | 0.0 | 0.0 | 25.0 | 75.0 | 3.75 | 0.38 |
| **Economic factor index** | **48** | | | | | | |

Bursars reported high agreement across the six economic constraints. Increasing material costs had the highest mean (M = 3.75), followed by delayed fund release and under-budgeting (each M = 3.73). These results are perceptions reported by the bursars and should be interpreted alongside the project-level completion measure.

**Table 6: Head of Departments Responses to Items on Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 47 | 0.0 | 0.0 | 27.7 | 72.3 | 3.72 | 0.56 |
| Under budgeting causes CDF projects not to be completed | 47 | 0.0 | 0.0 | 27.7 | 72.3 | 3.72 | 0.47 |
| Unavailability of building materials affects the completion of CDF projects | 47 | 0.0 | 0.0 | 36.2 | 63.8 | 3.64 | 0.55 |
| Non-payment of contractors affects completion of CDF projects | 47 | 0.0 | 0.0 | 42.6 | 57.4 | 3.57 | 0.46 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 47 | 0.0 | 0.0 | 38.3 | 61.7 | 3.62 | 0.55 |
| Increase in the cost of materials affects the completion of CDF projects | 47 | 0.0 | 0.0 | 23.4 | 76.6 | 3.77 | 0.70 |
| **Economic factor index** | **47** | | | | | | |

Heads of departments similarly reported high agreement. Increasing material costs had the highest mean (M = 3.77), followed by delayed fund release and under-budgeting (each M = 3.72). The pattern is consistent with the other respondent categories, although the item-level counts and the subgroup denominator should be confirmed against the source output.

**Table 7: School Administrators' Responses to Items on Selected Economic Factors**

| Economic factor | N | SD | D | A | SA | Mean | SD |
|---|---|---|---|---|---|---|---|
| Delay of funds from the national government kitty affects completion of CDF projects | 212 | - | - | 28 | 72 | 3.72 | 0.45 |
| Under budgeting causes CDF projects not to be completed | 212 | - | - | 27 | 73 | 3.73 | 0.44 |
| Unavailability of building materials affects the completion of CDF projects | 212 | - | - | 36 | 64 | 3.64 | 0.48 |
| Non-payment of contractors affects completion of CDF projects | 212 | - | - | 42 | 58 | 3.58 | 0.5 |
| Inadequate financial capacity of the contractor causes CDF projects not to be completed | 212 | - | - | 39 | 61 | 3.61 | 0.49 |
| Increase in the cost of materials affects the completion of CDF projects | 212 | - | - | 24 | 76 | 3.76 | 0.43 |
| **Economic factor index** | **212** | | | | | **3.67** | **0.25** |

Regarding selected economic factors, 72 per cent of respondents strongly agreed that delays in funds from the national government kitty affected the completion of NG-CDF projects. Additionally, 73 per cent strongly agreed that under-budgeting caused NG-CDF projects not to be completed. Moreover, 64 per cent of the respondents agreed that the unavailability of building materials affected the completion of NG-CDF projects. However, only 58 per cent of respondents strongly agreed that non-payment to contractors affected the completion of NG-CDF projects. Furthermore, 61 per cent of respondents strongly agreed that the contractor's inadequate financial capacity caused NG-CDF projects not to be completed. In comparison, 76 per cent of respondents strongly agreed that increased material costs affected the completion of NG-CDF projects.

In Kenya, the challenge of delayed reimbursement of NG-CDF funds has also been identified by previous research. The results align with Nakhumicha and Macharia (2017), who found that CDF funds are inadequate for school development projects and that differing stakeholder interests and lengthy procedures for releasing funds negatively affected the completion of assigned development projects. Supporting these findings, Oyoo et al. (2020) note that it has become a norm to delay the release of funds from the national exchequer. The lengthy processes and bureaucratic tendencies involved in accessing these funds imply that project progress in secondary schools is slowed. In some instances, projects are abandoned, plans change, and overall project quality is threatened (Oyoo et al., 2020). The results are also supported by Kamau et al. (2022), who found that non-payment of contractors has strained Kenya's construction sector. Non-payment or delayed payment has often strained relationships between school management and contractors and has sometimes attracted legal penalties. Kamau et al. (2022) link non-payment to disputes over payment terms, mismanagement, or lack of funds due to delayed release by the national treasury.

The discussion above demonstrates that unpredictable fund releases can disrupt projected project timelines. Consequently, such delayed government disbursement can cause stoppages that reduce efficiency and extend completion periods. Insufficient initial cost estimates can create funding gaps that stall implementation midstream. Therefore, under-budgeting can lead to incomplete or phased abandonment of NG-CDF projects. Furthermore, supply constraints can interrupt construction continuity, increasing idle time and weakening project execution momentum. The risk of contractor non-payment, in the form of payment delays, can reduce contractor liquidity, slow work progress, and lower commitment to project schedules. In effect, contractors with limited capital struggle to sustain operations during cash-flow gaps, increasing the likelihood of stalled or abandoned works. Finally, inflation in construction inputs erodes budget adequacy and triggers scope reduction, delays or project incompletion unless additional funding is secured.

**Qualitative Data on Selected Economic Factors from Key Informants**

Interview data from 15 key informants were analysed thematically. The main themes were delayed fund disbursement, under-budgeting, availability and cost of building materials, contractor payment, contractor financial capacity, and proposed ways to reduce economic constraints.

All 15 key informants reportedly considered delayed release of funds from the national exchequer a constraint on project implementation. They explained that procurement and project activities depend on the availability of an approved budget and funds in the relevant vote. Delayed disbursement can therefore postpone procurement, interrupt contractor payments and extend project schedules. This account is consistent with Chibole and Mbataru's (2023) analysis of financing in Kenyan government road projects, although the road-project setting differs from school infrastructure.

Key informants described under-budgeting as a source of shortfalls in materials, operating expenses and wages. One participant stated:

> *Often, projects are underbudgeted, meaning the allocated funds are not enough to meet requirements and complete them as scheduled.*

This account is consistent with Amugongo and Mwenda (2023), who examined cost-related risks in commercial building projects in Kisumu County. Their work supports the relevance of cost estimation and risk management, but it does not directly test NG-CDF school projects. The implication is that project estimates should be based on current market prices, realistic quantities and appropriate contingency provisions.

Interview accounts about material availability varied by location. Some participants, particularly those referring to Samburu Central, did not regard material availability as a major constraint, whereas participants referring to remote areas, especially Samburu North, described access difficulties. This variation suggests that geographic accessibility may shape the severity of supply constraints. It is important not to generalise the experience of remote sites to every school in the county.

Key informants reported that delayed or non-payment of contractors constrained their ability to purchase materials, meet administrative costs and pay workers. One participant explained:

> *Some contractors depend entirely on funds disbursed by the NG-CDF to start and complete a project; any delay affects project timelines.*

This account is consistent with the financing mechanisms discussed by Chibole and Mbataru (2023) and with international evidence from Sambasivan and Soon (2007), which identifies inadequate client finance and payment for completed work as delay factors. The comparison supports the plausibility of a cash-flow mechanism, while differences in institutional setting should be acknowledged.

Key informants also considered contractors' financial capacity important. They reported that contractors with limited working capital were particularly vulnerable when NG-CDF disbursements or certificate payments were delayed. Participants also indicated that material-price increases after project budgets were prepared could create additional funding requirements. One participant stated:

> *Project budgets are prepared at inception, which is often at the beginning of a financial year. Cost increases during the year usually delay project completion since additional funds have to be sought.*

Saya and Onyango (2024) found that contractors' financial capacity was significantly associated with road-project performance in Uasin Gishu County. This provides Kenyan evidence for the relevance of contractor capacity, but the road-project context and outcome measure differ from those of the present study.

Participants proposed timely release of funds, including contingency allocations for price increases, and selecting contractors with adequate financial capacity. These suggestions are consistent with the constraints they described. They should be interpreted as stakeholder recommendations rather than interventions to be tested.

Taken together, the interviews indicate that funding interruptions, unrealistic budgets, contractor liquidity constraints and material-supply challenges may reinforce one another. For example, delayed disbursement can increase pressure on a contractor's working capital, while rising material prices can make an already inadequate budget insufficient. These interacting mechanisms help explain why a single-factor approach may not fully capture project implementation challenges.

Wahuga and Ngugi (2025) report an association between contractor capacity and road-project performance in Nairobi City County, supporting the importance of financial and organisational capability. Their evidence does not establish that contractor capacity alone determines school-project completion in Samburu County. Contractor capacity should therefore be considered alongside the reliability of public payments, contract design and the project's logistical environment.

The interview evidence also points to geographic differences in access to construction inputs. Remote school sites may face longer transport distances, fewer suppliers and higher delivery costs. The study's qualitative data suggest that these constraints were more salient in Samburu North than in Samburu Central.

Overall, the 15 interviews reinforce the questionnaire pattern by identifying delayed disbursement, budget shortfalls, contractor payment and capacity, material availability and price increases as perceived constraints. The Resource-Based View helps explain why access to financial, human and material resources can support project execution. However, it is less able, on its own, to explain external institutional constraints such as delayed national disbursement, inflation, and geographic supply conditions. The theory should therefore be used as a partial explanatory lens, supplemented by recognition of public-finance and contextual factors.

**Regression Assumption Tests on Relationship between Selected Economic Factors and Completion of NG-CDF Projects**

Before performing regression analysis, diagnostic tests were conducted to verify that the data met the assumptions underlying linear regression. These tests were essential to ensure that the estimated effects of selected economic factors on completion of NG-CDF projects were statistically valid, reliable, and suitable for hypothesis testing. Normality was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests to determine whether the economic factor index approximated a normal distribution. Linearity was evaluated using analysis of variance for linearity to establish whether the relationship between economic factors and project completion could be represented by a

linear model. Homoscedasticity was assessed by examining a scatterplot of standardised residuals against standardised predicted values to confirm that residual variance remained constant across observations. Satisfying these assumptions increased the robustness of the regression analysis. It ensured that the findings accurately represented the influence of selected economic factors on completion of NG-CDF projects in public secondary schools in Samburu County.

**Normality Test**

Table 8 indicates that the economic factor index is normally distributed. The Kolmogorov-Smirnov test recorded a statistic of 0.208 with p = 0.159, while the Shapiro-Wilk test showed a statistic of 0.908 with p = 0.162 (df = 210). Since both significance values are greater than 0.05, the normality assumption is satisfied, supporting the use of parametric tests in further analysis.

**Table 8: Normality Test on Relationship between Selected Economic Factors and Completion of NG-CDF Projects**

| | **Kolmogorov-Smirnov[a]** | | | **Shapiro-Wilk** | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Economic factor index | .208 | 210 | .159 | .908 | 210 | .162 |
| a. Lilliefors Significance Correction | | | | | | |

**Linearity Test**

The reported linearity test gives F = 89.468, p < .001 for the linear component and F = .753, p = .584 for deviation from linearity. This pattern is consistent with a statistically significant linear component and no detected departure from linearity in this test.

**Table 9: Linearity Test on Relationship between Selected Economic Factors and Completion of NG-CDF Projects**

| | | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
|---|---|---|---|---|---|---|---|
| Completion of NG-CDF Projects * Economic factor index | Between Groups | (Combined) | 11.990 | 6 | 1.998 | 15.539 | <.001 |
| | | Linearity | 11.505 | 1 | 11.505 | 89.468 | <.001 |
| | | Deviation from Linearity | .484 | 5 | .097 | .753 | .584 |
| | Within Groups | | 26.105 | 203 | .129 | | |
| | Total | | 38.095 | 209 | | | |

**Homoscedasticity Test**

As shown in Figure 1 below, the homoscedasticity Test on the relationship between selected economic factors and Completion of NG-CDF projects shows the distribution of regression standardised residuals against regression standardised predicted values. The data points form clear, parallel vertical columns with a consistent vertical spread across all levels of the predicted values, showing no systematic funnelling. This uniform and rectangular dispersion pattern confirms that the assumption of homoscedasticity is fully met for the regression model.

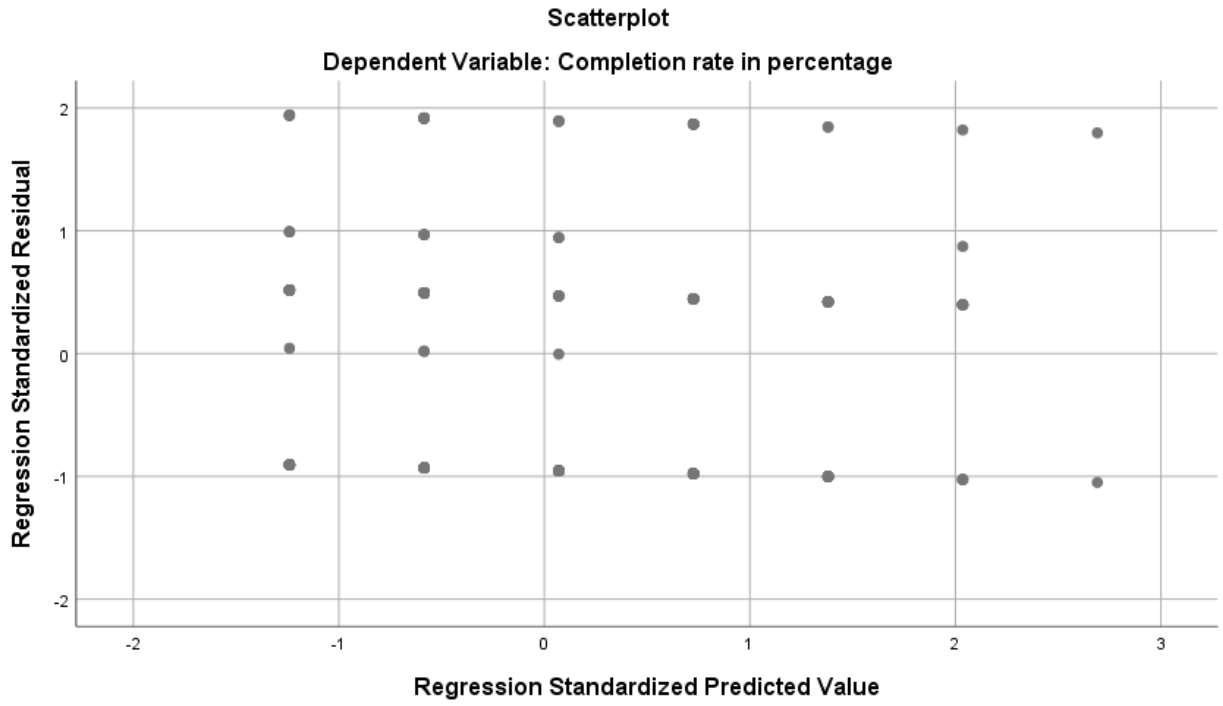



**Figure 1: Homoscedasticity Test on Relationship between Selected Economic Factors and Completion of NG-CDF Projects**

**Pearson Correlation between Selected Economic Factors and Completion of CDF Projects**

According to the results in Table 10, selected economic factors had a statistically significant positive relationship with the completion of CDF projects (r = -0.548, p < 0.01). The findings indicated that declines in selected economic factors were associated with low levels of CDF project completion.

**Table 10: Pearson Correlation between Selected Economic Factors and Completion of CDF Projects**

| | | Economic Factors | Completion of CDF Projects |
|---|---|---|---|
| **Economic Factors** | Pearson Correlation | 1 | −.548** |
| | Sig. (2-tailed) | | <.001 |
| | N | 210 | 210 |
| **Completion of CDF Projects** | Pearson Correlation | −.548** | 1 |
| | Sig. (2-tailed) | <.001 | |
| | N | 210 | 210 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

The reported Pearson coefficient indicated a moderate inverse association between the economic-factor index and project completion. Using r = −.548 and N = 210, the two-tailed significance level is p < .001.

**Hypothesis Test on Relationship between Selected Economic Factors and Completion of NG-CDF Projects**

The study tested the following null hypothesis at the .05 significance level:

$H_0$: There is no statistically significant relationship between selected economic factors and completion of

NG-CDF projects in public secondary schools in Samburu County.

A simple linear regression was fitted with the economic-factor index as the predictor and project completion as the outcome. The model is described as having one predictor. The precise operational definition and scale of the dependent variable, the index-construction procedure and the valid number of cases should be stated to make the analysis reproducible.

**Table 11: Result of Regressing Selected Economic Factors and Completion of NG-CDF Projects**

| Scale | Unstandardised Coefficients | | Standardised Coefficients | t-value | p-value |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| Constant | .554 | .096 | | 5.775 | <.001 |
| Economic factors | -.656 | .069 | -.548 | −9.443 | <.001 |
| $r = -.548$, $R^2 = .300$, $F(1, 208) = 89.176$, $p < .001$ | | | | | |

The regression analysis revealed a statistically significant negative relationship between selected economic factors and completion of NG-CDF projects ($r = -.548$). The coefficient of determination ($R^2 = .300$) indicates that the selected economic factors explained 30.0 per cent of the variation in project completion rates. The regression model was statistically significant, $F(1, 208) = 89.176$, $p < .001$, confirming that the selected economic factors significantly predict the completion of NG-CDF projects.

The negative regression coefficient ($\beta = -.548$, $p < .001$) indicates that increased economic constraints, such as delayed fund disbursement, escalating construction costs, under-budgeting, and contractor financial instability, are associated with lower project completion rates. These findings highlight the importance of timely funding, adequate budgeting, and stable economic conditions in facilitating successful implementation of NG-CDF projects. The results demonstrate that economic factors are important determinants of project completion. Consequently, the third null hypothesis, which stated that there is no statistically significant relationship between selected economic factors and completion of NG-CDF projects, was rejected.

The results revealed moderate explanatory power of the measured economic factors for actual completion outcomes. The results agree with Mburu and Muturi (2016), who observed that the number of times disbursement of funds to projects was delayed could be measured by comparing bank statements (showing when funds were deposited in various project accounts) with the signed disbursement sheets. This would later be compared with the statutory dates that the funds were supposed to be disbursed. In Zambia, The National Assembly of Zambia (2025) opined that irregular and delayed disbursement was among the primary factors that constrained the impact of NG-CDF projects on the community.

**Discussion**

The central finding is a reported inverse association between the composite economic-constraint index and NG-CDF project completion. This direction is substantively plausible: irregular public disbursement can delay procurement and payment; inadequate initial estimates can create resource gaps; and contractors with limited liquidity may be unable to maintain site operations when payments are delayed. The interviews add contextual detail by indicating that material-access constraints varied geographically, with remote locations described as more exposed. This helps explain why the same budget or procurement arrangement may not produce uniform implementation conditions across the county.

The pattern is consistent with Kamau et al. (2022), who identified inadequate funds, disbursement challenges and price fluctuations in NG-CDF projects, and with Kinoti and Njeru (2026), who found budgeting to be an important predictor of classroom-project performance. It also accords with contractor-capacity findings reported

by Saya and Onyango (2024) and Wahuga and Ngugi (2025). These comparisons are not exact replications: the cited studies differ in project type, location, variables and outcome measures. The present study's contribution is the joint examination of several economic constraints in NG-CDF public secondary-school projects in Samburu County. The regression's reported explanatory power is 30 per cent, leaving 70 per cent of variation unexplained by the composite predictor; other project-management, governance, technical, political and environmental factors may also matter. Because the analysis is cross-sectional and relies substantially on stakeholder reports, the results establish association and perceived mechanisms rather than causal effects.

## CONCLUSION AND RECOMMENDATIONS

**Conclusion:** The study concludes that selected economic constraints are associated with the completion of NG-CDF projects in public secondary schools in Samburu County. The reported negative coefficient suggests that higher levels of economic constraints correspond to lower project-completion scores. Interview accounts identify delayed fund disbursement, inadequate budgeting, delayed contractor payments, limited contractor financial capacity, increases in material costs and geographically uneven access to construction materials as important implementation challenges. These conclusions are limited to the study's sample and measures and should not be expressed causally. The final inferential conclusion remains subject to confirmation of the validity of the analytical N and the original SPSS output.

**Recommendations:** The study recommends that NG-CDF committees and relevant public-finance offices strengthen adherence to predictable disbursement schedules and communicate anticipated release dates to project implementers. Project budgets should be based on current market surveys, realistic quantities and documented contingency provisions for price escalation and unforeseen costs. Tender evaluation should assess contractors' financial capacity and ability to sustain labour and procurement obligations, while contract administration should provide transparent certification and payment tracking. Procurement and supply-chain plans should be tailored to remote school locations, including early identification of suppliers, delivery lead times and transport costs. School Boards of Management and project committees should jointly monitor expenditure, physical progress, and emerging cost variations. These recommendations should be evaluated in future longitudinal research using project-level disbursement records, contract-payment dates, procurement records and independently verified completion measures.

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