

Financial Constraints and Risk-Sharing Practices in Building Project Delivery: Evidence from Bauchi State, Nigeria

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ABSTRACT

Financial constraints and risk-sharing arrangements are closely embedded in construction project delivery, yet state-level evidence from conventional building projects in Nigeria remains limited. This study examined the major financial constraints experienced by building-project stakeholders and assessed prevailing risk-sharing practices in Bauchi State, Nigeria. A quantitative cross-sectional survey was conducted within an accessible population of 200 construction practitioners. Of 132 questionnaires administered purposively to eligible respondents, 84 usable responses were analysed, representing a usable response rate of 63.6%. Twenty-one financial-constraint indicators were measured on a five-point agreement scale and fourteen risk-sharing practices on a five-point frequency scale. Descriptive statistics, Relative Importance Index (RII) and Cronbach's alpha were applied. The financial-constraint and risk-sharing measures demonstrated good internal consistency ($\alpha = 0.845$ and 0.905 , respectively). Commercial-bank interest rates emerged as the leading financial constraint ($M = 4.43$; $RII = 0.89$), followed by political and policy uncertainty ($M = 4.38$; $RII = 0.88$), while delayed client payments and bureaucratic disbursement bottlenecks were also highly rated. Contractual flexibility ranked first among risk-sharing practices ($M = 3.91$; $RII = 0.78$), followed by stakeholder trust and commitment, financial risk-sharing mechanisms and collaborative decision-making. Conversely, transparency of risk clauses and formal contractual allocation ranked comparatively lower. The findings indicate that building-project delivery in Bauchi State combines substantial financial pressure with strong reliance on adaptive and relational risk-governance practices. The results are exploratory and context-specific because the purposive, single-state design does not support population-wide statistical generalisation.

Keywords: Bauchi State; building projects; construction finance; financial constraints; risk allocation; risk sharing

INTRODUCTION

Construction is unusually dependent on the timing and continuity of finance. Unlike many business activities in which revenue and expenditure can be adjusted relatively quickly, building projects require sustained expenditure on labour, materials, plant, subcontractors and professional services long before the full value of completed work is recovered. A contractor may therefore be profitable on paper and still experience serious difficulty if cash is unavailable when project obligations fall due. This makes financial capacity more than an accounting consideration; it is a condition that can shape procurement decisions, contractual behaviour, project continuity and the willingness of different parties to carry project risk (Assaf et al., 2022; Omopariola et al., 2020). The problem is particularly important in developing construction markets where financing difficulties interact with inflation, exchange-rate instability, delayed payments and limited access to affordable credit. Nigerian contractors and other project participants work within an environment in which the cost of construction inputs can change substantially during project implementation, while commercial borrowing may be expensive and client payments uncertain. Osuizugbo (2020) observed that access to appropriate financing instruments remains important to the continuity of Nigerian construction projects. More recently, Ebekozien et al. (2024) demonstrated how inflation can place sustained pressure on construction budgets, while Nwafor et al. (2023) linked macroeconomic conditions to

the cost of building materials in Nigeria. These pressures can weaken cash-flow positions even where initial project budgets appear adequate.

Delayed payment adds another layer to the problem because construction supply chains are financially interdependent. A delay in payment from a client does not end with the main contractor. It may postpone payment to subcontractors and suppliers, increase short-term borrowing requirements and raise the financing cost of ongoing work. Omopariola et al. (2020) found that cash-flow difficulties have important consequences for project delivery, while Chadee et al. (2023) demonstrated that delayed payment can produce a cascading effect on contractor cash flow. Advance-payment arrangements may reduce some of this pressure by providing working capital at project commencement, but their benefits depend on the design and administration of the payment system itself (Omopariola et al., 2021, 2023). These financial conditions intersect with another persistent construction-management question: who should bear project risk? Risk allocation determines which party is expected to manage or absorb the consequences of uncertainty, whereas risk sharing involves arrangements through which responsibility, financial exposure, reward or loss is distributed among project participants. The distinction matters because transferring a risk through a contract does not necessarily transfer the capacity to manage it. Efficient allocation generally requires responsibility to be placed with the party that can control the risk, reduce its consequences or absorb it at reasonable cost (World Bank, n.d.; Zainudin et al., 2022). When risk is transferred mainly according to bargaining power, rather than managerial and financial capability, the apparent protection achieved by one party can reappear elsewhere as higher prices, contingencies, disputes or opportunistic behaviour (Yin et al., 2020).

Construction contracts consequently operate as both legal and economic arrangements. They assign formal responsibilities, but actual risk management also depends on communication, trust, insurance, payment arrangements, dispute resolution, joint decision-making and the capacity of contracts to adapt when circumstances change. Elhag et al. (2020) showed the value of collaborative procurement in reducing claims and disputes, while Finnie et al. (2024) highlighted the contribution of early collaborative involvement to project planning. From this perspective, risk-sharing cannot be understood only by reading liability clauses. The way stakeholders respond to changes during project implementation is equally important.

Nigeria has generated a growing body of research on both construction finance and risk management. Studies have examined contractor cash flow, advance payments, enterprise risk management, project financing, material-cost escalation and public-private partnership risk allocation (Arijeloye, 2025; Omopariola et al., 2020, 2021, 2023; Oke et al., 2023; Oyeyipo & Osuizugbo, 2023). Nevertheless, much of this evidence is concentrated on major infrastructure, PPP arrangements, project performance or general risk-management practices. Conventional building projects in state-level markets receive less attention, even though such projects constitute a substantial part of everyday construction activity and frequently involve organisations with comparatively limited financial buffers. Bauchi State offers a useful context for investigating these issues. Building activity in the state includes public institutional, commercial and residential developments undertaken by organisations of different sizes. Although operating within a local project market, these organisations are exposed to national lending conditions, inflation, exchange-rate movements, taxation and public-sector payment procedures. Their experience therefore provides an opportunity to examine how practitioners perceive financial pressures and how frequently different mechanisms of risk sharing are applied.

Against this background, the study provides an exploratory account of financial pressure and risk-sharing practice within the same state-level building-project environment. Two questions guide the analysis: which financial constraints are most prominent among practitioners, and which risk-sharing practices are most frequently reported? The study therefore sought to (1) identify and rank the major financial constraints experienced by stakeholders in building projects in Bauchi State, Nigeria; and (2) assess and rank prevailing risk-sharing practices among building-project stakeholders. Bringing the two profiles together is useful because finance and risk governance are operationally intertwined even when a descriptive design does not establish a direct statistical effect. The contribution is consequently twofold: it offers a context-specific evidence base for Bauchi State and identifies areas where financial resilience, contractual clarity and collaborative risk governance require coordinated attention.

LITERATURE REVIEW

Financial Constraints in Building Project Delivery

Financial constraints refer to conditions that limit the ability of an organisation or project participant to obtain, deploy or replenish financial resources on acceptable terms when they are required. Their meaning in construction is therefore wider than a simple shortage of capital. Financial constraints can arise from expensive credit, collateral demands, delayed receipts, insufficient working capital, inaccurate budgeting, cost escalation, exchange-rate movement, weak payment administration, insurance limitations and unstable policy conditions. The common thread is that each reduces the financial flexibility available to sustain project obligations. Cash flow is central to this understanding. Construction expenditure occurs continuously, but income is typically received intermittently through valuation and payment cycles. This creates a funding gap that must be bridged using working capital, credit, advance payment or other financing arrangements. Assaf et al. (2022) observed that inadequate liquidity and weaknesses in cash-flow management remain significant construction problems. Atakul (2022) similarly noted that contractors use a range of strategies to maintain liquidity because the timing of project expenditure and receipt rarely coincides perfectly. The cost of borrowing becomes particularly important when internal working capital is insufficient. A contractor experiencing delayed certification or payment may depend on commercial credit to sustain site operations. High interest rates can therefore affect the cost of materials and labour indirectly by increasing the financing cost associated with acquiring them before payment is received. Where lenders also impose demanding collateral requirements, smaller and medium-sized contractors may struggle to access credit despite possessing viable contracts. Osuizugbo (2020) consequently emphasised the importance of understanding financing instruments available to Nigerian construction stakeholders.

Payment behaviour is equally significant. Omopariola et al. (2020) established that cash-flow conditions influence construction operations, while subsequent research showed that advance-payment systems can support project and organisational performance (Omopariola et al., 2021, 2023). Chadee et al. (2023) further demonstrated that delayed payment may create a domino effect because contractors must continue financing project activities while waiting for certified funds. The problem becomes more serious when expensive credit and payment delay occur simultaneously: the contractor not only receives money late but also incurs additional costs while bridging the delay. Macroeconomic instability creates another form of financial constraint. Inflation changes the nominal amount required to purchase materials, hire labour and operate construction plant after a contract has been priced. Exchange-rate depreciation magnifies the problem where building components, equipment or material inputs are imported. Ebekoziem et al. (2024) found that inflation threatens construction cost stability, while Nwafor et al. (2023) reported that macroeconomic indicators influence building-material costs in Nigeria. Ihedigbo et al. (2024) similarly showed that changes in material costs have consequences for property development. Under such conditions, a fixed contract amount may no longer correspond to the economic resources required to complete the agreed scope.

Financial pressure is not exclusively external. Contractors and project organisations also influence their own resilience through estimating, budgeting, cost control, financial literacy, insurance and working-capital management. Oladimeji (2022) emphasised the relationship between bills of quantities, pricing and project cash-flow management. Weak internal controls can therefore amplify market shocks that might otherwise have been absorbed. Conversely, competent cash-flow forecasting and cost monitoring can provide early warning of financing gaps and support better negotiation with clients and financial institutions. These conditions demonstrate why financial constraints should be treated as multidimensional. Interest rates, payment delays and inflation are not interchangeable problems, yet they can interact. A project affected by cost escalation may require additional working capital; if client payment is also delayed, borrowing needs increase; if borrowing is expensive, the cost of maintaining the project rises further. The practical significance lies in recognising the cumulative financial environment within which project actors make contractual and risk-management decisions.

Risk Allocation and Risk Sharing in Construction Projects

Risk is inherent in construction because projects are unique, temporary and dependent on numerous interrelated organisations. Design changes, market conditions, payment behaviour, ground conditions, regulatory requirements and resource availability can all differ from what was expected when a contract was formed. Risk management therefore requires more than identifying possible events; project participants must also determine who is responsible when those events occur. Risk allocation, transfer and sharing are related but distinct. Allocation assigns responsibility for a particular uncertainty. Transfer moves some or all of the responsibility or financial consequence to another party, often through contract or insurance. Risk sharing distributes responsibility, cost, reward or loss across two or more participants. In practice, project governance often combines all three approaches. An enduring principle is that risk should be placed with the party most capable of managing it. World Bank guidance on project risk allocation discourages indiscriminate transfer because a party that cannot control or finance a risk will price the uncertainty or seek protection elsewhere. Zainudin et al. (2022) similarly reported that procurement arrangements influence allocation and that some risks are better shared because no single party can manage them efficiently. Malekshah et al. (2022) reinforce the importance of optimisation in the allocation of risks between clients and contractors.

The consequences of inappropriate allocation are not merely theoretical. Yin et al. (2020) found that risk-allocation arrangements can influence contractors' opportunistic behaviour. Where clients use stronger bargaining power to impose excessive exposure, contractors may respond through higher contingencies, claims or other protective behaviour. Kortenko et al. (2021) similarly warned that fragmented project delivery can encourage risk shifting rather than genuine risk management. The question is therefore not how much risk can be transferred, but how efficiently uncertainty can be governed across the project system. Formal contractual allocation remains fundamental because contracts establish legal responsibility and entitlement. FIDIC's Golden Principles emphasise the importance of fair and balanced allocation in standard construction contracting (Federation Internationale des Ingenieurs-Conseils [FIDIC], 2019). Transparency is especially important where the financial consequences of a risk may be substantial. Ambiguous clauses can produce different interpretations of responsibility, increasing transaction and dispute costs precisely when quick action is required. Nevertheless, the functioning of risk allocation extends beyond written clauses. Trust, communication and collaborative decision-making influence how parties respond when an unforeseen event occurs. Elhag et al. (2020) found that collaborative procurement can help moderate construction claims and disputes. Finnie et al. (2024) showed how earlier engagement can improve planning and permit contractors and other supply-chain participants to contribute before major decisions are fixed. Smith and Wood (2019) likewise associated collaborative contractual arrangements with behaviours that can support value creation.

Insurance offers another mechanism by transferring specified financial consequences to an insurer in return for a premium. Other financial risk-sharing mechanisms may include joint ventures, profit-and-loss sharing, target-cost arrangements, advance payments and negotiated cost-sharing provisions. Such mechanisms can be valuable where risks cannot reasonably be assigned to one party without generating a disproportionate premium. Digital and integrated practices have also broadened the risk-sharing landscape. Building Information Modelling can improve information visibility and coordination, while Integrated Project Delivery seeks earlier collaboration and alignment among project participants. Their relevance to risk management lies not in technology alone but in the ability to improve shared understanding and joint decision-making. Even where full integrated delivery systems are uncommon, elements of information sharing and coordinated decision-making can still support risk governance. Contractual flexibility becomes particularly important under uncertainty. A rigid allocation established at tender stage may become economically unrealistic when inflation, major market disruption or design change alters the underlying conditions. Flexibility does not mean abandoning contractual discipline; rather, it involves specifying legitimate mechanisms through which changes can be evaluated and responsibility adjusted. In this sense, adaptive clauses may reduce the transaction costs associated with renegotiation and dispute.

Financial Pressure and the Practical Context of Risk Sharing

Although this article does not test a causal relationship between financial constraints and risk-sharing practice, the two domains belong to the same project system. Construction risks frequently become financial consequences. Delayed payment creates financing cost; price escalation creates additional expenditure; design change affects cash requirement; disputes can hold back certified funds; and inadequate insurance leaves losses with project participants. The financial capacity of the party carrying a risk is therefore relevant to the sustainability of the allocation. A contractor may possess the technical competence to manage an exposure but lack the liquidity required to absorb its short-term financial consequences. Conversely, a client may have greater financing capacity but less direct control over site-based risks. Allocation decisions that ignore these distinctions can produce legal clarity without economic efficiency. Transaction Cost Economics offers one explanation for why project participants adopt different safeguards under uncertainty. Williamson (1979, 1985) argued that contracts operate within incomplete and uncertain exchanges in which parties incur costs associated with negotiation, monitoring, safeguarding and adaptation. Li et al. (2015) applied transaction-cost reasoning to construction and demonstrated that the way transactions are organised affects project governance costs. Financial constraints can increase the cost of retaining an exposure, while risk-sharing mechanisms can provide safeguards for managing uncertainty.

Empirical studies in Nigeria have addressed many elements of this problem but often from separate perspectives. Cash-flow research concentrates on payment, project performance and contractor finance (Omopariola et al., 2020, 2021, 2023). Risk studies address risk-management practice, enterprise risk management or procurement arrangements (Mohammed & Muhammad, 2024; Oke et al., 2023; Oyeyipo & Osuizugbo, 2023). PPP research has generated more explicit allocation evidence, particularly in housing and infrastructure (Arijeloye, 2025; Arijeloye et al., 2025). Less is known about the combined operating environment of ordinary building projects in state-level markets. The gap is therefore partly contextual and partly descriptive. Before more complex explanatory models are applied, project decision-makers need to know which financial problems practitioners regard as most serious and which mechanisms of shared risk governance are actually being used. This study addresses that requirement in Bauchi State.

RESEARCH METHODOLOGY

Research Design and Study Area

A quantitative cross-sectional survey design was adopted because the study required standardised measurement and comparative ranking of predefined financial constraints and risk-sharing practices. Cross-sectional survey research is appropriate where perceptions and experiences are measured at one period without manipulation of project conditions (Creswell & Creswell, 2023). The investigation was conducted in Bauchi State, north-eastern Nigeria, and focused on conventional public and private building projects, including institutional, commercial and residential developments. Roads, bridges, heavy civil engineering works and industrial-process projects were excluded because their financing arrangements and contractual risk structures may differ materially from those of conventional building projects. The individual construction practitioner constituted the unit of analysis.

Population, Sampling and Questionnaire Administration

The accessible population comprised 200 construction practitioners with relevant exposure to building-project finance, payment administration, cost management, contract administration or project risk. From this population, 132 practitioners were targeted for the survey. Purposive non-probability sampling was used to reach respondents capable of making informed assessments of the technical financial and contractual issues contained in the instrument. Saunders et al. (2019) explain that purposive sampling is appropriate where cases are selected because they possess characteristics directly relevant to the research question. Project managers, contractors, consultants and other eligible project personnel were represented. Of the 132 questionnaires administered, 84 usable responses were available for analysis, giving a usable response rate of 63.6%. Returned instruments were screened for completeness, relevance and internal consistency before

analysis. Because selection was purposive, the achieved sample supports contextual interpretation rather than probability-based generalisation to every construction practitioner in Bauchi State.

Research Instrument, Validity, Reliability and Ethics

Primary data were collected through a structured questionnaire organised into three analytical sections. Section A obtained respondent and organisational characteristics, including role, educational qualification, work experience, organisation type and size, and frequency of encountering project risk. Section B contained twenty-one indicators of financial constraints measured on a five-point agreement scale from 1 = Strongly Disagree to 5 = Strongly Agree. Section C contained fourteen risk-sharing practices measured on a five-point frequency scale from 1 = Never to 5 = Always. The indicators were derived from the conceptual and empirical literature and were reviewed academically for relevance, clarity and alignment with the study objectives before administration. Internal consistency was assessed using Cronbach's alpha. The twenty-one financial-constraint indicators produced $\alpha = 0.845$, while the fourteen risk-sharing indicators produced $\alpha = 0.905$; both exceed the widely used 0.70 benchmark and support interpretation of the scales (Taber, 2018). Participation was voluntary, the questionnaire focused on professional experience, and responses were analysed and reported in aggregate without identifying individual respondents or organisations.

Data Analysis

Respondent characteristics were summarised using frequencies and percentages. Financial constraints and risk-sharing practices were analysed using mean scores, standard deviations and the Relative Importance Index (RII), calculated as $RII = \Sigma W / (A \times N)$, where W is the weight assigned to each response, A is the maximum possible weight of 5 and N is the number of valid responses. Values closer to 1 indicate greater relative importance for financial constraints or more frequent use of risk-sharing practices. For descriptive interpretation, RII values of 0.81–1.00 were treated as very high, 0.61–0.80 as high, 0.41–0.60 as moderate, 0.21–0.40 as low and 0.00–0.20 as very low. Means, standard deviations and RIIs are reported to two decimal places to avoid implying unwarranted numerical precision. Rankings are descriptive ordering devices and should not be interpreted as evidence that adjacent items differ statistically. The paper integrates the two ranking profiles conceptually, but it does not infer a causal effect between the constructs.

RESULTS AND DISCUSSION

Respondent Characteristics and Measurement Reliability

Table 1 summarises the achieved respondent profile. Project managers formed the largest role category, followed by contractors, while consultants and other relevant personnel were also represented. More than half of the respondents had at least five years of work experience, and medium-sized contractor organisations constituted the most prominent organisation category. Most respondents encountered project risk at least occasionally. The profile therefore captures practitioners with relevant exposure to finance and risk decisions, while the purposive selection procedure still requires cautious interpretation beyond the surveyed group.

Table 1. Respondent and Organisational Characteristics

Characteristic	Category	Frequency	Percentage (%)
Highest educational qualification	Bachelor's degree	44	52.4
	Master's degree	36	42.9
	Diploma	4	4.8
Role in organization	Project manager	44	52.4
	Contractor	24	28.6

Characteristic	Category	Frequency	Percentage (%)
	Other relevant roles	12	14.3
	Consultant	4	4.8
Years of work experience	Less than 5 years	32	38.1
	5–10 years	20	23.8
	11–15 years	28	33.3
	Above 15 years	4	4.8
Organisation type	Small contractor	16	19.0
	Medium contractor	52	61.9
	Large contractor	16	19.0
Organisation size	Less than 10 employees	32	38.1
	10–50 employees	28	33.3
	51–100 employees	8	9.5
	Above 100 employees	16	19.0
Frequency of encountering project risk	Rarely	20	23.8
	Occasionally	40	47.6
	Mostly	16	19.0
	Always	8	9.5

Measurement reliability was satisfactory. Cronbach's alpha was 0.845 for financial constraints and 0.905 for risk-sharing practices. The coefficients indicate good to excellent internal consistency and support interpretation of the indicators as coherent broader domains, while item-level differences remain important for practical prioritisation.

Financial Constraints Affecting Building Project Delivery

Table 2 presents the descriptive ranking of the twenty-one financial constraints. The ordering identifies the pressures that respondents considered most prominent, but the relatively close values of several items should be read as a prioritisation pattern rather than evidence of statistically distinct levels.

Table 2. Ranking of Financial Constraints (N = 84)

Rank	Financial constraint	Mean	SD	RII
1	High interest rates from commercial banks	4.43	0.60	0.89
2	Political and policy uncertainty reducing investor confidence	4.38	0.59	0.88
3	Bureaucratic bottlenecks and corruption in fund disbursement	4.19	0.75	0.84
3	Delayed client payments	4.19	0.68	0.84
5	Stringent collateral requirements by lenders	4.14	0.57	0.83
6	Inflation and exchange-rate volatility	4.09	0.89	0.82

Rank	Financial constraint	Mean	SD	RII
6	Inflationary pressures on materials and labour	4.09	0.89	0.82
8	High operational and energy costs	4.05	0.92	0.81
8	Low financial literacy and poor management capacity	4.05	0.74	0.81
10	Limited insurance coverage for project risks	4.00	0.63	0.80
11	Poor access to development finance and credit	3.95	0.92	0.79
12	Disputes and claims leading to withheld payments	3.90	0.77	0.78
13	Weak contract administration and unreliable payment systems	3.86	0.85	0.77
14	Shortage of working capital and liquidity	3.81	1.03	0.76
15	Frequent changes in fiscal and monetary policies	3.76	1.18	0.75
15	Overreliance on government and bank funding sources	3.76	0.83	0.75
17	Inadequate cost control and monitoring mechanisms	3.71	1.01	0.74
18	Poor cost estimation and budgeting practices	3.67	0.97	0.73
19	Unpredictable import tariffs and taxation laws	3.62	0.97	0.72
19	Weak PPP and financial regulatory frameworks	3.62	0.67	0.72
21	Frequent design and scope changes	3.57	0.81	0.71

Note. RII = Relative Importance Index. Means, SDs and RIIs are rounded to two decimal places.

Cost and Accessibility of Project Finance

Commercial-bank interest rates emerged as the leading constraint ($M = 4.43$; $RII = 0.89$), while stringent collateral requirements ranked fifth. Considered together, these findings point to a financing problem that concerns not only the availability of credit but also whether the terms of borrowing are compatible with construction cash-flow cycles. Contractors commonly incur substantial expenditure before progress payments are received; when internal working capital is insufficient, external borrowing becomes a bridge between production and reimbursement. Atakul (2022) similarly shows that contractor cash-flow strategies are shaped by the accessibility and conditions of external finance, while Osuizugbo (2020) emphasises the importance of suitable financing instruments in Nigerian construction. The high position of collateral requirements strengthens this interpretation because technically capable firms may still lack the unencumbered assets required by conventional lenders. Thus, construction-sensitive credit arrangements, guarantee mechanisms and project-finance products linked to credible receivables may be more appropriate than reliance on conventional asset-backed lending alone.

Institutional Uncertainty and Payment Administration

Political and policy uncertainty ranked second, while bureaucratic bottlenecks in fund disbursement and delayed client payments jointly occupied the third position ($M = 4.19$; $RII = 0.84$). This pattern broadens the financial problem beyond lenders by locating part of the pressure within project administration and the wider institutional environment. Omopariola et al. (2020) demonstrate the centrality of cash flow to construction delivery, whereas Chadee et al. (2023) show how delayed payment can create cascading liquidity effects. Perera and Dewagoda (2021) likewise emphasise systematic management of payment delays in building projects. In the Bauchi context, the combination of expensive credit and delayed payment is particularly consequential: when certified funds arrive late, the contractor must continue financing wages, materials, plant and subcontractors, yet bridging finance itself may be costly. Bureaucratic disbursement procedures further reduce predictability. The implication is that project funding adequacy must be

accompanied by efficient valuation, certification, approval and payment systems if liquidity risk is to be contained.

Inflation, Exchange Rates and Operating Costs

Inflation and exchange-rate volatility and inflationary pressures on materials and labour shared sixth place ($M = 4.10$; $RII = 0.82$), while high operational and energy costs followed closely. These findings align with evidence that macroeconomic instability affects construction budgets and material costs in Nigeria (Ebekozen et al., 2024; Nwafor et al., 2023). Ihedigbo et al. (2024) similarly connect changing material costs with property-development outcomes. The practical concern is that contracts are often priced before major input-cost movements become visible. Where price-adjustment mechanisms are weak or absent, contractors may be required to absorb cost increases that were not reasonably foreseeable at tender stage. This can reduce margins, increase claims, slow work or trigger disputes over responsibility for escalation. Exchange-rate instability compounds the problem because imported equipment and materials, as well as locally supplied inputs with foreign-exchange exposure, can become more expensive. Transparent fluctuation clauses and agreed escalation procedures are therefore preferable to forcing contractors to price uncertain macroeconomic risk entirely through speculative contingencies.

Internal Financial-Management Capability

Low financial literacy and poor management capacity ranked jointly eighth, while inadequate cost control and poor cost estimation appeared lower in the ordering but remained important. The pattern indicates that respondents did not attribute financial difficulty solely to external conditions. Organisational competence also shapes the capacity to anticipate, absorb and respond to financial shocks. Oladimeji (2022) highlights the relationship between pricing, bills of quantities and cash-flow management among Nigerian construction firms. Accurate forecasting and cost monitoring can therefore provide early warning of financing gaps and support more informed negotiation with clients and lenders. Importantly, the lower relative position of estimating and cost-control problems should not be interpreted as evidence that they are unimportant; rather, external pressures such as interest rates and delayed payments may be more visible to respondents. Limited insurance coverage, which also ranked within the upper half of the list, further indicates that resilience depends on both financial-management capability and access to appropriate risk-transfer instruments.

Prevailing Risk-Sharing Practices

Table 3 ranks the fourteen risk-sharing practices. The overall pattern indicates comparatively strong use of adaptive and relational mechanisms, while formal transparency and allocation practices occupy lower positions.

Table 3. Ranking of Risk-Sharing Practices (N = 84)

Rank	Risk-sharing practice	Mean	SD	RII
1	Flexibility of contractual arrangements	3.90	0.83	0.78
2	Stakeholder trust and commitment	3.90	1.17	0.78
3	Financial risk-sharing mechanisms	3.86	0.85	0.77
4	Collaborative risk decision-making	3.81	0.93	0.76
5	BIM in risk management	3.76	1.04	0.75
6	Insurance utilisation for risk coverage	3.71	1.10	0.74
6	Integrated Project Delivery practice	3.71	1.01	0.74
6	Profit-and-loss sharing mechanism	3.71	1.06	0.74
9	Joint-venture risk management	3.70	0.92	0.74

Rank	Risk-sharing practice	Mean	SD	RII
10	Effectiveness of dispute-resolution mechanisms	3.67	1.11	0.73
10	Risk communication effectiveness	3.67	1.20	0.73
12	Fairness in risk distribution	3.57	0.93	0.71
13	Contractual risk allocation	3.52	0.98	0.70
14	Transparency of risk clauses	3.48	1.08	0.69

Note. RII = Relative Importance Index. Values are rounded to two decimal places. .

Contractual Flexibility and Adaptive Governance

Contractual flexibility ranked first ($M = 3.91$; $RII = 0.78$), indicating that adaptability is a prominent feature of reported risk governance. This result is plausible in a project environment characterised by cost escalation, policy uncertainty and changing financial conditions. Transaction Cost Economics treats adaptation as central where contracts cannot anticipate every future state (Williamson, 1979, 1985). In practical terms, flexibility may involve agreed procedures for variations, extensions of time, price adjustment, renegotiation triggers or changes in responsibility when circumstances materially alter. Palihakkara and Perera (2022) likewise show that risk management in guaranteed maximum price arrangements depends on how contractual risks are actively managed, while Sheamar et al. (2023) identify alternative procurement approaches as potential responses to persistent cost pressures. The finding therefore favours structured adaptability rather than informality: flexible mechanisms should be sufficiently explicit to permit legitimate adjustment without creating ambiguity over responsibility.

Trust, Financial Sharing and Collaborative Decision-Making

Stakeholder trust and commitment ranked second, financial risk-sharing mechanisms third and collaborative risk decision-making fourth. Together, these results indicate that relational and cooperative mechanisms occupy a prominent position in project practice. Jagtap and Kamble (2019) associate relational contracting with stronger construction supply-chain relationships, while Yin et al. (2020) show that trust can influence behavioural responses to risk allocation. Collaboration is especially valuable where different actors possess different information: consultants may understand design implications, contractors understand buildability and resource consequences, and clients control strategic and funding decisions. Elhag et al. (2020) found that collaborative procurement can moderate claims and disputes, and Finnie et al. (2024) highlight the value of earlier contractor and supply-chain involvement. The present evidence suggests that Bauchi projects make meaningful use of such relational safeguards, although high reliance on trust should complement rather than replace transparent contractual allocation.

BIM, IPD, Insurance and Joint Arrangements

Building Information Modelling ranked fifth, while insurance utilisation, Integrated Project Delivery and profit-and-loss sharing occupied a joint sixth position; joint-venture risk management followed in ninth place. Their middle positions suggest meaningful but uneven use. BIM can strengthen risk governance by improving information visibility, coordination and the traceability of design changes, although the comparatively large standard deviation indicates that experience with BIM-supported risk management varies among respondents. Integrated Project Delivery and profit-and-loss sharing similarly represent deeper forms of integration, but their ranking should not be interpreted as evidence that formal IPD contracts are widespread. Rather, respondents may encounter selected collaborative practices without operating under fully integrated delivery systems. Insurance remains a conventional mechanism for transferring specified financial consequences, yet its use must be considered alongside the finding that limited insurance coverage itself was identified as a financial constraint. Joint ventures can also pool financial and technical capability, but their effectiveness depends on clear governance, contribution rules and decision authority.

The Formal Allocation and Transparency Gap

The most policy-relevant pattern appears at the lower end of the ranking. Fairness in risk distribution ranked twelfth, contractual risk allocation thirteenth and transparency of risk clauses last. Although their means remained above the scale midpoint, their relative weakness is important because formal allocation provides the baseline on which collaborative and adaptive practices operate. FIDIC (2019) emphasises fair and balanced allocation as a core contracting principle, while Zainudin et al. (2022) argue that risks should be assigned to parties capable of managing them. Yin et al. (2020) further show that biased allocation can encourage undesirable contractor behaviour. The Bauchi evidence therefore reveals a governance tension: relational flexibility may be comparatively strong even where formal clarity, transparency and perceived fairness are weaker. A practical response is to identify material risks before award, allocate them according to capability rather than bargaining power, document responsibilities in a project risk-allocation matrix and ensure that associated financial consequences are understood by all parties.

Integrated Interpretation of Financial Pressure and Risk Governance

The two descriptive profiles reveal a coherent project environment. Financial pressure is concentrated around borrowing cost, policy uncertainty, payment administration and macroeconomic volatility, while the most prominent risk-sharing practices emphasise flexibility, trust, financial sharing and collaborative decision-making. These patterns can be interpreted together without claiming that one statistically causes the other. Transaction Cost Economics provides a useful lens: formal contracts establish safeguards, whereas relational and adaptive mechanisms help parties respond to uncertainty that cannot be specified fully in advance (Li et al., 2015; Williamson, 1979, 1985). Table 4 therefore presents an interpretive alignment between the dominant financial pressures and relevant risk-governance responses identified in the study and literature.

Table 4. Interpretive Alignment of Financial Pressures and Risk-Governance Responses

Dominant financial pressure	Relevant risk-governance response	Interpretive implication
High interest rates and collateral requirements	Financial risk-sharing, joint arrangements and insurance	Liquidity and exposure may be more sustainable where financing burdens and insurable losses are not concentrated on one party.
Policy uncertainty, inflation and exchange-rate volatility	Contractual flexibility and collaborative decision-making	Adaptive clauses and joint review provide structured mechanisms for responding to major changes in underlying project conditions.
Delayed client payments and disbursement bottlenecks	Stakeholder trust, financial sharing and dispute-resolution arrangements	Project continuity depends on timely information, coordinated responses and workable remedies when expected cash inflows are disrupted.
Weak payment administration, claims and contractual ambiguity	Transparent risk clauses, explicit allocation and risk communication	The comparatively weaker formal practices represent a governance gap that may undermine otherwise strong relational arrangements.

The central implication is therefore not that financial constraint automatically produces more risk sharing, but that financial resilience and risk governance should be designed together. A project may possess collaborative relationships yet remain vulnerable if payment terms are weak, just as clear contractual allocation may fail where the party carrying a risk lacks the financial capacity to absorb it. The comparatively low ranking of transparency and formal allocation is consequently significant: adaptive

relationships can support project continuity, but they are most robust when grounded in clear baseline responsibilities and financially realistic allocation.

Implications for Construction Practice

The findings support several practical actions. First, project finance should be integrated into risk planning before tender submission. Contractors should prepare realistic cash-flow forecasts that reflect payment periods, retention, advance payment, inflation and financing costs, while clients should examine whether project funding and payment assumptions are credible. Second, payment administration requires tighter controls because delayed client payment and disbursement bottlenecks were among the highest-rated constraints. Clear timelines for valuation, certification and payment, together with escalation procedures for missed deadlines, can reduce avoidable liquidity pressure. Third, financial institutions and public financing agencies should recognise the cash-flow structure of construction projects. Credit products linked to certified receivables, verified performance or project cash flows may support competent firms that are constrained by conventional collateral requirements. Fourth, contracts should contain workable provisions for exceptional inflation and exchange-rate movements so that uncontrollable market risk is not transferred indiscriminately. Finally, existing strengths in contractual flexibility, trust and collaboration should be institutionalised through joint risk reviews, early-warning procedures, documented change protocols and transparent allocation matrices.

Limitations and Future Research

The findings should be interpreted within four boundaries. First, 84 usable responses were obtained from a target sample of 132 within an accessible population of 200 practitioners. Although this provides a substantially stronger empirical base than a small pilot survey, purposive non-probability selection means that sampling probabilities are unknown and population-wide statistical generalisation is not warranted. Second, the study is confined to Bauchi State and conventional building projects; financing conditions, procurement systems and risk cultures may differ across Nigerian states, infrastructure sectors and West African markets. Third, the evidence is cross-sectional and perception-based rather than derived from audited project accounts, payment certificates or coded contract clauses. Fourth, this paper focuses on descriptive prioritisation and interpretive integration; it does not test whether respondent-level financial-constraint scores statistically predict risk-sharing practice. Future studies should employ probability-based or stratified multi-state samples, combine survey evidence with project-level financial and contractual data, and use respondent-level correlation, regression or structural modelling to test the relationship between financial pressure, risk allocation quality and project outcomes.

CONCLUSION AND RECOMMENDATIONS

This study examined financial constraints and risk-sharing practices in building-project delivery in Bauchi State, Nigeria. The evidence shows a demanding financial environment in which expensive commercial credit, political and policy uncertainty, bureaucratic fund-disbursement procedures, delayed client payments, collateral requirements, inflation and exchange-rate volatility occupy the leading positions. These pressures arise from a combination of market, institutional and organisational conditions. In parallel, risk-sharing practice is characterised more strongly by contractual flexibility, stakeholder trust, financial sharing and collaborative decision-making than by transparent formal allocation. The contrast is important because adaptive and relational mechanisms can help projects respond to uncertainty, but their effectiveness is more sustainable when responsibilities, financial consequences and adjustment procedures are clearly documented. Accordingly, clients and consultants should strengthen payment certification and disbursement discipline; contractors should improve cash-flow forecasting, cost monitoring and insurance planning; financial institutions should expand construction-sensitive credit options; and contracting parties should adopt realistic escalation provisions for major inflationary and exchange-rate changes. Project teams should also conduct formal risk-allocation reviews before award, use capability-based rather than bargaining-power-based allocation, and document key responsibilities through transparent risk matrices. At policy level, greater predictability in fiscal, monetary and public-payment procedures would reduce avoidable

uncertainty. These recommendations are most directly applicable to the surveyed Bauchi State context and should be tested further through broader probability-sampled and multi-state research.

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