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Risk Management of Procurement Challenges: The Implication To Construction Firms In Ghana

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ABSTRACT: *It is clear that procurement challenges have been enormous task delving the major stakeholders in construction industry. The construction industry all over the world is fraught with challenges and the case of Ghana is no different. The study set out to examine Risk management of procurement challenges: The implication to construction firms in Ghana. This study which was conducted within the Ashanti Region of Ghana, primarily sought to identify procurement challenges facing firms in Ashanti region and the effective methods used to deal with those challenges. This study adopted a quantitative research approach; the study used convenient (purposive) sampling to select 20 first class construction companies within the Ashanti Region. Four management staff from each firm was used, and thus, the study population for the 20 firms will be 80. Sample for the study consisted of 40 respondents from ten (10) first class construction firms in the Ashanti region. These constitute 50% of the targeted population. Questionnaires were used to solicit data and statistical tools used to analyse the data collected are descriptive tools such as frequency, and percentages and also Chi-square. The study has found that risk assessment approaches used by the firms to identify procurement challenges were based on the past experiences of the firms, quantification of possible losses, and predictions drawn from secondary data. Also the challenges to procurement were the unavailability of indices for bids and costs, unavailability of construction materials, improper inventory management, and risks with working at height. The study has established that the methods for dealing with the challenges included direct imports of construction materials, the use of other substitutes, monitoring inventory and training workers on working at height.*

Keywords: *procurement, risk management, procurement challenges, risk, Ghana.*

I. INTRODUCTION

Risk is typically described as events or conditions that may have an impact on the objectives of production [1]. Risks therefore concern the deviation of one or more results of one or more future events from their expected values. The impacts of risks may be positive or negative, but general usage tends to focus only on potential harm that may arise and/or accrue from incurring a cost or failing to attain some particular benefits [2].According to [3], risk management is a formal process directed at identification and assessment of and response to project risks, with the overall goal of maximising opportunities and minimising the consequences of a risk event. It is therefore a management tool that aims at identifying sources of risks and uncertainties, determining their impacts and developing appropriate management responses [4]. [5], maintains that a systematic process of risk management can be divided into risk classification, risk identification, risk analysis and response, where risk response can further be categorised into avoidance, transfer, reduction and retention. According to [6], the choice of procurement option implies different ranges of responsibilities, opportunities and risks for the various actors, as well as different degrees of stakeholder collaboration [7].

The procurement options therefore determine the risk management options and the extent to which they can reduce the costs, increase profits, maintain brand quality, and avoid business insolvency [8]. According to [9], these can be achieved through risk planning and assessment of project delivery method, form of payment, and use of collaboration or partnering arrangements.However, managing procurement risk is more so complicated by risk allocation within the diverse sub-categories of procurement [10]. In line with the stakeholder theory, [11], explains that an appropriate allocation of risks between actors in a construction project is important because it is impossible to eliminate all potential risks as emphasised by the blocked maxima

theory. However, the construction industry still faces many risks and challenges. In developing countries, [12], notes that contractors have limited access to funding sources, especially contractors in the small-and-medium bracket. One of the biggest consequences of this is that it prevents them from satisfying the financial requirements and the risks it poses to procurement

1.1Statement of the problem

In Ghana, [13], found that contract procurements are challenged by delayed payments to contractors for work completed, poor managerial and technical capacity of contractors, and deliberate refusal to repay loans. Again, [13] also noted that procurement was largely challenged by the disparity between Ghanaian currency and foreign currencies in which cost of equipment and material are costed. However, [13], emphasise that in some cases, poor management of such risks have led to the liquidation of construction and financing firms, such as the Bank for Housing and Construction which according to Badu and [14], was often linked to its involvement with contractors. It is therefore important for these companies to manage procurement challenges and make effective use of appropriate methods to deal with procurement challenges.

1.2 Aim and specific Objectives of the study

The aim of the study is to investigate into the procurement challenges facing firms in Ashanti Region and how they impact on risk management practices of construction firms in Ashanti Religion. In order to achieve the above aim the following specific objectives should be pursued.

1) Examineprocurement challenges facing firms in Ashanti region
2) Examine the effective methods used to deal with procurement challenges

1.3 Research questions

1) What are the procurement challenges facing firms in Ashanti Region
2) What are the effective method used to deal with procurement challenges

1.4 Significance and scope of the study

Since construction work are couple with numerous challenges. The study provides insight into challenges facing construction firms. This can help to identify areas of mismatch, malpractice and error that may be impeding to effectiveness of risk management practices in these firms. The challenges that may be identified may also be known to assist in the proper redress of issues that may contribute to risk creation for the firms. The study is situated in the Ashanti region and covers construction firms there within. Within the firms, contract manager, quantity surveyor, purchasing officer and site engineer included in the study. The conceptual issues of the study ar**e** limited to risk management of procurement challenges**.**

II. LITERATURE REVIEW

2.1 The concept of risk in construction

According to [15], one blind spot in society is people's inability to recognise that definitions of risk are communicative claims that have constitutive force. However [16] and [17], maintain that risk has been conceptualised, defined and managed across industrial and scientific fields, thus the concept of risk has been conceptualised in terms of the probability of uncertain future. For example, [18] establishes that a risk is the probable frequency and probable magnitude of future loss. In this concept, risk is seen as a probability, which refers to the continuum between absolute certainty and impossibility. It is also addressed as both a frequency and a magnitude component, which suggests that the frequency of the risk can have relations to the magnitude and probability of incurring a future loss. Again, [18], further asserts that risk applies equally well regardless of its conceptualisation within investment, market, credit, legal, insurance, information risk, or any of the other risk domains that are commonly dealt with in business, government, and life. Thus, [19], note that the fundamental nature of risk is universal, regardless of context.

Thus, [20], establishes that a risk is generally the probability of an unwanted event or the cause of an unwanted event which may or may not occur. Similarly, [21], also maintains that risk is the potential that a chosen action or activity, including the choice of inaction will lead to a loss or an undesirable outcome. The notion implies that a choice having an influence on the outcome sometimes exists or existed.

2.2 Conceptualising risk management in procurement

According to [4], risk management may be described as a systematic way of looking at areas of risk and consciously determining how each should be treated. Risk management is therefore a formal process directed at identification and assessment of and response to project risks [3]. It is also management tool that aims at identifying sources of risk and uncertainty, determining their impact, and developing appropriate management responses [4]. Following this, [22], maintain that the overall goal of the risk management process

is to maximise the opportunities and minimise the consequences of a risk event. Also [23], maintains that risk management is essentially a six-step process of risk management planning, identification of risk events, qualitative risk analysis, quantitative risk analysis, risk response planning and risk monitoring and control. Gabel explains that risk management planning is the systematic process of deciding how to approach, plan, and execute risk management activities throughout the life of a project. It is intended to maximise the beneficial outcome of the opportunities and minimize or eliminate the consequences of adverse risk events.

Risk identification on the other hand, is characterised by isolating the possible risks through risk breakdown structure and brainstorming the sources and classification of the risk, as well as the effects of the project [24, 25]. According to [26], the main categories of risk identification cover financial, economic, managerial, legal, design, construction, and environmental risks. They emphasise that, during the risk assessment, the identified risks are evaluated and ranked, with the main goal of prioritising risks for management.

2.3 Procurement practices in construction

According to [27], there are no standard definition and classification of procurement approaches have been acceptable, but the terms, contractual arrangement, project delivery system and procurement system are often used to describe the type of process that is adopted to procure a construction project and are often considered to be synonymous, though definitions vary widely. Again, [28], conceptualise procurement in construction as the acquisition of new buildings, or space within buildings, either by directly buying, renting, or leasing from the open market, or by designing and building the facility to meet a specific need. Lenard and. According to [29], the procurement options vary widely, but the most commonly adopted include the design and construct procurement, management procurement and collaborative procurement. Design and construct procurement, also referred to as design and build can be described as using a single contractor to act as the sole point of responsibility to a public sector client for the design, management and delivery of a construction project on time, within budget and in accordance with a pre-defined output specification using reasonable skill and care [30].

With design and construct procurement a contractor accepts responsibility for some or all of the design [31]. However, [32],describe design and construct procurement as one with explicit reference to the extent of design liability. Unless the contract states otherwise, the liability for design is an absolute liability under which the contractor warrants fitness for the purpose intended. On the other hand, some design and construct forms limit the design liability of the contractor to the normal professional duty to exercise reasonable care and skill [33]. In that situation, independent consultants engaged by the contractor are under a liability no greater than normal. However, [34] caution that an indemnity or acceptance of liability is likely to be worthless unless backed by adequate indemnity insurance. Thus, if the contractor uses external consultants, their identity should be established before a tender is accepted.

However, [35], endorse, design and construct methods on the assertion that it offers certainty on the contract sum and brings cost benefits. This is because, the close integration of design and construction methods and the relative freedom of the contractor to use their purchasing power and market knowledge most effectively can provide a client with a competitive price [19]. With a design and construct method, it is possible to ensure a quicker start on site, and the close integration of design and construction can result in more effective programming [36]. One other type of procurement is management procurement, which [37], differentiate as management contracting, construction management and design and manage. In the case of management contracting, the contractor has direct contractual links with all the works contractors and is responsible for all construction work. The client appoints an independent professional team, and also a management contractor to serve as advisors to the team, and during construction, to be responsible for executing the works using direct works contracts [38]. With this type of contract it is possible to make an early start on-site and achieve early completion [39]. Because of its flexibility, it allows the client to change the design during construction because drawings and matters of detail can be adjusted and finalised as the work proceeds In construction management, a contractor is paid a fee to professionally manage, develop a programme and coordinate the design and construction activities, and to facilitate collaboration to improve the project's constructability [40].The basic difference is that works contracts, although arranged and administered by the management contractor, are direct between the client and works contractor. [41], asserts that this approach gives the client a greater measure of control, but it also makes client assumes a considerable amount of risk. The management contractor is thus, simply an agent, and usually cannot guarantee that the project will be finished to time and cost

2.4 Procurement challenges in construction

The research literature identifies several problem areas in risk management in construction. One of the problems is that project actors often focus on the short-term economical results and protect own interest rather than the project overall [40]. Furthermore, [41] emphasises that the actors often have different perceptions

assigning risks to the parties. Usually, contractors indicate that they have to bear the majority of project risks [11]. This leads to an increasing number of disputes between the parties during project execution. Again, [42], on the other hand, found a significant relation between risk allocation and trust. They asserted that trustful relationships between project actors result in a more effective risk allocation process, decrease of contingency funds and, finally, in project cost reduction. Thus, inadequate trust between partners often leads to procurement challenges.

From another perspective, the default of the client from the contractual agreement, especially with funding of the project often stalls the project completion [43]. According to [37], private-public partnerships are often characterised by delayed disbursement of funds. This represents a major problem for procurement and the construction industry since the government is often the major client in construction projects [31]. According to [44], several malfeasance and unethical practices on the part of the contractor that may lead to added construction costs, poor quality of projects, and dissatisfaction of the clients as well as erosion of stakeholder trust. Edelman further asserts that such notions of distrust exists and thus, requires the effective involvement of the client or end-user in the essential parts of the projects. The success of such approach has been found in [45], study which emphasised that the involvement of stakeholders, such as the end users housing scheme from the beginning of the procurement process led to much satisfaction with the end product.

One of the difficulties in procurement relates to monitoring the implementation of construction contracts by contractors and subcontractors that are often outsourced and ensuring that labour and environmental standards are respected [46]. This poses a great challenge to individual clients and for governments, bureaucratic procedures, malfeasance and politicisation may preclude the effective monitoring of procurement [41]. However, [34] account that it is the ultimate responsibility of governments to set and enforce clear public standards for both the main contractor and subcontractors, defining the parties' responsibilities for integrity. The importance of effective monitoring is established that it would enable a comprehensive consideration of the procurement process such as to ensure effective achievement of procurement goals.

However [47] points to inflationary pressures on procurement budgets as a major challenge in the construction industry. They emphasise that inflation has the tendency to increase the cost of construction materials, but it only becomes a problem, when the price increment goes beyond the estimated allocations in the construction budget. This results in added costs for the client, or in other cases, the acquisition of substitute and often lower standard of construction material which lead to lower overall quality of the project [48].

In Ghana, [14] identified major financial challenges to procurement. They emphasised that financial challenges to procurement in Ghana included profit sharing or retention decisions among partners, problems with debt financing as well as challenges related to leasing and hire purchase. [34], on the other hand, established that in the order of importance, the major procurement challenges in Ghana include higher initial associated costs, the absence of government interest in quality control and sustainability issues, low education of stakeholders in construction and low technical and management capacity. Other common challenges identified by studies on procurement in Ghana include high interest rate charges, lack of proper accounting standards, lack of legislation, inadequate tax treatment, unreasonable collateral, and rigid contract conditions [34, 14].

III. MATERIALS AND METHODOLOGY

This study adopted a quantitative research approach, which involves numerical representation and manipulation of observations for the purpose of describing and explaining the phenomenon that those observations reflect [49]. This allowed the collection of quantitative data and also enabled the use of quantitative methods in the analysis of data.

3.1 Study population

The study used convenient (purposive) sampling to selected 20 first class construction companies within the Ashanti Region, while purposive sampling was supported by [40, 33, and 34]. Therefore, within these companies, the construction managers, quantity surveyors, site supervisor, procurement officers and site engineer were purposively included in the study. This is because, these individuals are assumed to have the requisite knowledge about procurement procedures in their field of operation and how those processes contribute to or militates against risks. Four management staff from each firm was used, and thus, the study population for the 20 firms will be 80. Sample for the study consisted of 40 respondents from ten (10) first class construction firms in the Ashanti region. These constitute 50% of the targeted population- in line with the suggestion of [50] that with quantitative study 10-30% of the target population suffices. All the targeted management staff was included in the study

3.2 Instrumentation and Data collection Procedure

Questionnaires were used to solicit data from the general managers, contract managers, quantity surveyors, purchasing officers and site engineers, because the study assumes that these groups of people are

literate and can therefore read, understand and also answer the items on the questionnaire accordingly. Questionnaires were also employed by [34] in their study on procurement challenges in the Ghanaian industry. The instruments for data collection were tested in one purposively selected construction firm in the Ashanti Region. This was done to serve as the preliminary testing of the research questions to provide insights into ideas not yet considered and problems unanticipated, which could challenge the data analysis. Furthermore, it helped to check and try the planned statistical tests of association between variables. Besides these, the pre-test enabled the researcher to revise the contents of the questionnaire, thereby revising the instruments to achieve the reliability and validity standards required in scientific research

The questionnaire was sent to accessible employees in the firms that gave their consent for the study to be conducted. The employees were encouraged to answer all the items in the questionnaire. The researcher paid subsequent visits to the company after the initial delivery of the questionnaire. During these visits, completed questionnaires were collected while discussions were held to help employees with some difficulties to understand issues raised in the questionnaire. This was repeated until all the answered questionnaire was collected from the participants.

3.3 Data analysis

The data were cleaned and checked for reliability using statistical tools in Statistical Product for Service Solutions (SPSS). The study employed descriptive statistical tools to analyse demographic characteristics of respondents. The relative importance indices of the challenges and risks to the procurement in the construction industry were calculated in support of the discussions. This is in line with the methods adopted by [34].

IV. RESULTS AND DISCUSSION

4.1Firms Categories

Ten (10) construction firms of the highest class were investigated; Six (6) local firms and four (4) foreign firms in all. This supports the indication that construction firms in the Ashanti Region are of local and foreign origin as noted by the [51] edition. The study also noted that 60 percent of the respondents were from firms with local origin and 40 percent were employees of construction firms with foreign origin (Table 1). This reflects the higher coverage of local construction firms by the study. All the respondents were unanimously male, across all the firms and across all occupational titles held by the respondents

Table 1: Origin of construction firms in Ashanti region

Firm origin	Frequency	Percent
Local	6	60.0
Foreign	4	40.0
Total	10	100.0
Field survey, 2013		

4.2 Education Background

The study sought to provide academic background information of respondents. [34], on the other hand, established that ‘some procurement challenges in Ghana include low education of stakeholders in construction and low technical and management capacity. Table 2 contains the analysis of the results of the educational background of the respondents.

Table 2: Educational qualification of respondents

	Origin		
Educational level	Local	Foreign	Total
Diploma	2(8.7)	0(0.0)	2(5.4)
Graduate	19(82.9)	12(85.7)	31(83.8)
Post-graduate	2(8.7)	2(14.3)	4(10.8)
Total	23(100.0)	14(100.0)	37(100.0)
Chi-square = 1.479; df = 2; p-value = 0.477			

It was noted all the respondents had formal education and 83.8 percent of them had graduate education, in both local (82.6%) and foreign (85.7%) construction firms (Table 4.2). The study therefore indicated that the targeted employees of the firms were highly educated. This contradicts the assertion that major procurement challenges in Ghana include low education of stakeholders in construction. The study also showed that the differences in the educational qualification of respondents between local and foreign firms were not statistically significant at an alpha of 0.05 (chi-square = 1.479; df = 2; p-value = 0.477). This indicated that, with respects to the employees surveyed by the study, their educational qualification in both local and foreign construction firms were higher

4.3 Risk Assessment and Construction Firms

However [26] assert that, during the risk assessment, the identified risks are evaluated, with the main goal of prioritising risks for management. The risk evaluation practices may however be differentiated among the firms, based on factors including, but not limited to organisational goals, the type of project, the size, experience, origin, as well as the economic and socio-political exposure. In this study, the risk assessment approaches adopted by the local and foreign construction firms were examined. The results are presented in Table 3, as multiple responses.

Table3: Risk assessment approaches used by construction firms

	Firm ownership		
Decisions	Local f(%)	Foreign f(%)	Total f(%)
Quantification of losses	6(26.1)	9(50.0)	15(50.7)
Predictions from empirical data	6(26.1)	4(22.2)	10(24.6)
Intuition and judgement from past experiences	11(47.8)	5(27.8)	16(10.1)
Total	23(100.0)	18(100.0)	41*(100.0)

*Multiple responses; n = 30; Source: Field survey, 2013

According to the results, a higher percentage (47.8%) of the responses from local firms showed that the risk assessment approach for their firms was based on their past experiences. Others (50.0%) also indicated that risk assessment was based on quantification of possible losses, while other responses (24.4%) referred to predictions drawn from secondary data, such as inflation rates, import tariffs, as well as legal and regulatory mandates

4.4Challenges involved in procurement.

The challenges to the procurement were solicited from the respondents. They were asked to identify the challenges of the risk management and also to indicate the responses to those challenges with the effects that the responses had on the state of the challenges. Table 4 shows the identify challenges face by the various firms.

Table 4: Challenges of procurement in construction

	Firm ownership		
Challenges	Local f(%)	Foreign f(%)	Total f(%)
Unavailable indices for bids and costs	14(35.0)	8(30.8)	22(33.3)
Unavailable materials	8(20.0)	13(50.0)	21(31.8)
Spillage/ waste	6(15.0)	3(11.5)	9(13.6)
Improper inventory management	5(12.5)	2(7.7)	7(10.6)
Inadequate skilled labour	5(12.5)	0(0.0)	5(7.6)
Risk with working at height	2(5.0)	0(0.0)	2(3.0)
Total	40(100.0)	26(100.0)	66*(100.0)
Source: Field survey, 2013			

The results from table 4 show that the most stressed challenge was the unavailability of current indices and bid costs (33.3%). This was noted for the reason that unavailable indices obscured the projections of the firms' bidding contracts and the analysis of financial risks associated with tendering. Also, the unavailability of material needed for projects was noted by 31.8 percent of the responses. This added to the task of having to import the needed materials for projects. The problem of spillage and wastage was also mentioned by 13.6 percent of the responses, as one challenging issue for the construction firms. In the disaggregated results, it was found that half of the responses from the foreign firms stressed the unavailability of construction materials in the local market. On the other hand, a higher percentage (35%) of the responses from the local firms indicated that the unavailability of cost and bidding indices was more challenging than any other indicated challenge. In further responses it was noted that the local firms found some challenges with keeping the safety of those who work at high altitudes and also with finding adequate skilled labour for their contracts. However, these were not challenges pertaining to the foreign firms. The literature review points to procurement challenges, such as unethical behaviour [44], financial constraints [14], trust issues, and other economic variables including inflation [47]. The findings of this study moves from these claims, but adds other challenges such unavailability of materials and statistics for costs and bids, as well as improper inventory management. However, the findings confirm [46], notation about the challenges related monitoring within construction.

4.5 Managing procurement Challenges

The approaches to managing these challenges were also explored by the study, and the results are shown in Figure 1.

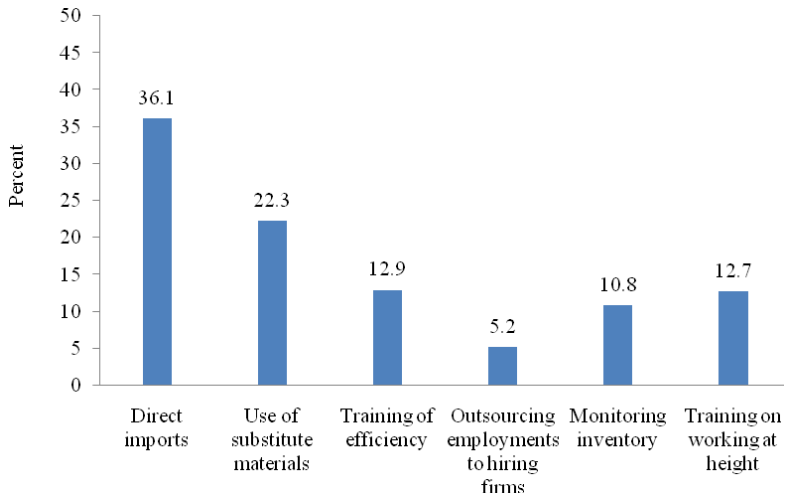

Figure 1: Methods of dealing with challenges of procurement
Source: Field survey, 2013

According to figure 1, 36.1 percent of the responses noted that direct imports of construction materials were made to supplement those available. On the other hand, others chose to use substitutes (22.3%). The spillage and waste problem were dealt with by providing an efficient use of materials for the employees of the firms. Firms that were finding it difficult to locate adequate number and quality of employees outsourced their hiring activities to recruitment agencies. In the literature, the methods of handling procurement challenges vary according to the type of challenge and the severity of the risks posed by those challenges [11, 40]. The results in this study confirm these assertions based on the variations in managing the different types of challenges.

4.6 Effectiveness of procurement methods

The study sort to find effectiveness of the methods used in dealing with procurement challenges, the figure 2 results indicated that majority (64.1%) of the respondents who resorted to direct imports also indicated that the direct imports were effective in controlling the challenge of unavailability of construction materials. Similarly, 82.9 percent of those who resorted to the use of substitute materials also indicated that, they were able to overcome the challenge of the unavailability of the needed materials for construction purposes.

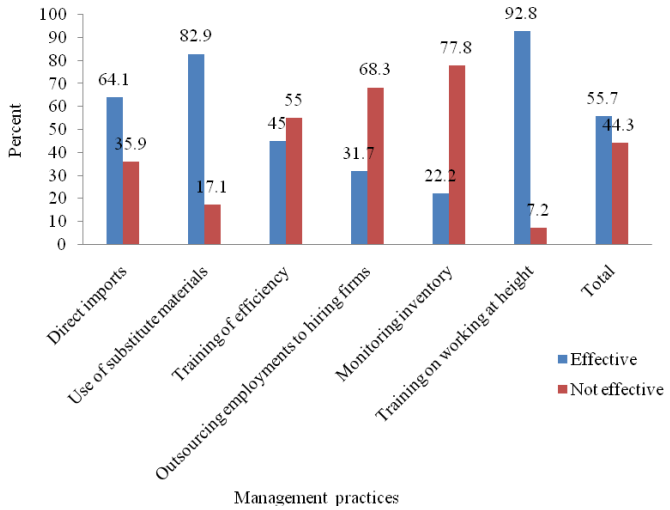

Figure 2: Effectiveness of managing procurement challenges
Source: Field survey, 2013

With the efficiency of usage and controlling spillage and waste, the training of staff on efficient use of material had proven not effective for 55 percent of the respondents. A greater section (77.8%) of those seeking to enforce stringent monitoring of inventory had also failed at controlling improper inventory management

within the firms, but the training of workers on working safely at high altitudes had proven effective for 92.8 percent of the respondents. Moreover, the general notion given by the respondents indicate that on the whole, the management of the challenges were effective.

V. CONCLUSION

Basing on the results above the study has shown that before procurement challenges are identify there is a need of risk assessment approach. Therefore the study found that risk assessment approaches used by the firms were based on their past experiences. Others also were based on quantification of possible losses, and predictions drawn from secondary data, such as inflation rates, import tariffs, as well as legal and regulatory mandates. The challenges to procurement were the unavailability of indices for bids and costs, unavailability of construction materials, spillage and waste, improper inventory management, inadequate skilled labour and risks with working at height. The methods for dealing with the challenges included direct imports or construction materials, the use of other substitutes, training employees on efficient use of materials, outsourcing hiring to recruitment firms, monitoring inventory and training workers on working at height. Generally, the respondents noted that the methods were effective in reducing risks pertaining to the identified challenges.

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