



Materials Management Practices on Public Projects in the Upper West Region

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Abstract: In project construction, materials constitute a major cost item of the project, making material management a key component of project success and profit maximization. Using a cross-sectional survey design, this study explored materials management practices on construction sites and the emerging challenges in material management in the Upper West Region of Ghana. A total of 129 respondents of project site managers, project consultants and the Districts/Municipals Engineers were involved in the study. The study found that organizations use buying strategies, material planning methods, transportation methods, material handling, and inventory management. Among the difficulties include theft and vandalism of materials, a lack of technical expertise on the contractor's part, and a shortage of storage space on site. Given the existing materials management practices, the paper argues for the adoption of technology-based material planning and handling methods. This requires capacity building on the adoption and use of technology in material management.

Keywords: Materials management, public project, materials handling, materials planning, materials management practices

1. Introduction

In many construction projects, materials may account for 60 per cent or more of the entire cost. A crucial element of a building project's success is an efficient approach to managing construction supplies. Materials management has been described as the management system for ensuring the proper quality and quantity of materials and equipment are specified in a timely way, procured at a fair cost, and available when required [1].

Dobler and Burt [2] stated that material management is intended to enhance the processes involved in material flow. They continue by saying that material management should coordinate procurement, inventory management, receiving, warehousing, material handling, planning, and transportation. Delays, budget overruns, and claims plague several building projects [2]. The timely delivery of supplies and equipment to the construction project site, enhanced work face planning, higher labour efficiency, better timetables, and reduced project costs may all be achieved with a well-designed materials management system. Today's construction sector is far more complicated than it was in the past because of technological advancements, globalization, unpredictable economic situations, societal pressures, political unrest, and other factors [3].

Despite how important materials are, relatively little study has been done on how to manage materials from order to production; the majority of research has been done on how to manage the design and procurement process as well as labour site productivity. According to Omotosho [4], material management is crucial to the economic health of the building sector. Material is a crucial input in construction, especially in building. As stated by Olubodun [5], shortages and faults in construction supplies are a primary cause of machine downtime and labour productivity loss on building sites, resulting in exorbitant increases in construction costs. The goal of material management is to guarantee that projects are completed on schedule, within budget, and in accordance with other project goals. The current state of

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Ghana's construction projects reflects several issues, including delays in project execution or delivery, poor work, disputes, cost and time overruns due to material shortages and wastages on sites, theft and displacement of materials on sites, and inadequate accounting and security systems of the concerned sites/firms [6].

Inyang-Udoh [7] further revealed that materials ordered by construction firms, most of the time are not in compliance with the bill of quantities and schedule of materials; additionally, materials are ordered often times outside the specified. The objective of material management is to guarantee that resources are accessible at their point of use when required; hence, effective procurement of materials is crucial to the successful completion of the project. Organizations must comprehend the impact of good materials management approaches on project execution efficiency [8]. There is an increasing realization that material waste and shortages diminish contractors' profits more than any other factor. According to Thomas *et al.* [9], contractors incur production losses as a consequence of inadequate material management. Improper management of materials during site operations is a significant element that negatively impacts the performance of construction projects. As a result of inefficient management of materials and inadequate application of the many techniques for managing materials on construction sites [4], building projects in Ghana are often characterized by cost and schedule overruns, substandard work, disagreements, and abandonment. One department being in charge of the movement of materials from supplier to producer to consumer is a relatively new idea. Despite the fact that many businesses have embraced this structure, others still haven't. Organizations will go in this route if they want to reduce overall expenses and provide better customer service. The control of material flow may now be aided by technology, which benefits customers and contractors by lowering costs and enhancing project execution. Construction materials management is a functional area that adversely affects the performance of most projects [10]. Construction industry relies solely on traditional methods such as paper documentation, face-to-meetings, and manual processes thus contributing to inefficiencies in materials management on construction sites [11]. Study on the adoption of ICT in materials management fails to explore materials management practices of construction companies in Ghana [12]. To date, there is a lack of concerted research effort aimed at addressing materials management on construction projects. In particular, assessing materials management practices with the view to identifying challenges and opportunities in the implementation of best practices has largely been under-discussed in extant literature. Also, anecdotal evidence suggests most organizations in Ghana relegate materials management to the background without proper control measures. Arguably, this means that most Ghanaian construction companies are investing more heavily in materials than they need to. Therefore, this study sought to explore materials management practices on construction project sites in the Upper West Region of Ghana. The rest of the paper presents literature on material management, the study methodology, the results and the conclusion.

2. Literature Review

2.1 Concept of Construction Materials Management

Although materials account for a significant portion of building expenses, their management seems to be improvised rather than rigorous [13]. Materials are defined as the physical materials that are bought and employed to generate the end product; materials are not the ultimate product [14]. In other words, materials are the components used in the production of the ultimate product. Meanwhile, materials are defined as the objects used to manufacture a product, including raw materials, components, suppliers, and equipment [15]. The word "materials" in the context of construction refers to the resources that are used in one form or another in the creation and development of infrastructures. Materials are a combination of processed or unprocessed minerals or compounds used in the engineering building, such as cement, sand, gravel, granite, etc., according to [16].

Furthermore, materials are the things acquired from outside the organisation that are utilised to manufacture completed products [17]. Building materials may be divided into many groups based on their manufacture and their manageability on-site [18], and they include:

- Bulk materials: These are materials that are delivered in mass and are deposited in a container.
- Bagged materials: These are materials delivered in bags for easy handling and controlled use.
- Palletted material: These are bagged materials that are placed in pallets for delivery.
- Packaged material: These are materials that are packaged together to prevent damage during transportation and deterioration when they are stored.
- Loose materials: These are materials that are partially fabricated and that should be handled individually.

The building materials sector is a significant contributor to our national economy, as its production determines both the pace and quality of construction activity. Building materials play an essential part in the contemporary era of technology, even if their primary usage is in construction activities.

Materials for construction are purchased in conventional lengths or lot amounts. They are more difficult to plan due to the unpredictability of required amounts. Engineered materials are either custom-made for a specific project or produced off-site in accordance with industry standards. These materials have a special function. This contains materials that need comprehensive technical data, while manufactured materials are materials that are combined into a

completed product or a more complex product. Included in this category are steel beams with holes and beam seats. Other materials include cement, bricks, reinforcing bars, and glass [19].

Materials are essential to the operations of any sector, since their scarcity may halt production. In addition, the absence of necessary resources may have a negative impact on production, create delays, and even result in the cessation of operations until the necessary materials become available. Even with basic supplies, there may be a substantial gap between the date the item was requested or the date the purchase order was placed and the date the material is delivered. These delays may arise if the required quantities are significant and the supplier is unable to provide the necessary materials at that time, or due to any other external causes. Availability of resources is not the only factor that might lead to complications. Managing excessive amounts of materials might potentially provide significant challenges. Material storage may raise production costs and the ultimate cost of a project. When there are few storage spaces available, managers must discover alternate means to keep things until they are required. Some of these choices may need the rehandling of materials, which may raise their prices. When the supplies are obtained, provisions must be made for their proper storage and handling. The flow of materials should be given special consideration after they have been acquired from suppliers. To save money for the firm, it is evident that resources should be acquired at the lowest feasible price [20].

2.2 Material Management Practices

Management of materials is a crucial aspect of the building business. Therefore, firms must comprehend how efficient materials management procedures affect the efficiency of project execution. Material management is the practice of providing the necessary materials at the right time and location to sustain a targeted level of output at the lowest possible cost [21]. The objective of material management is to properly regulate the flow of materials. Therefore, material management involves the planning, identification, procurement, storage, receipt, and distribution of materials. Material management's primary role is to ensure the smooth flow of materials from the moment they are purchased, received, and kept until they are utilized. Materials are a significant price in construction, therefore limiting procurement costs increases the likelihood of lowering the final project cost [8].

Profits may be substantially increased via materials management. Materials Management is a function that tries to provide an integrated approach to the management of materials within an industrial enterprise. Its primary objective is cost reduction and effective material management across all phases and parts of the endeavour. Materials Management encompasses a variety of material-related responsibilities, including buying, storage, inventory management, materials handling, standardization, etc. Therefore, this topic has become quite vital and is acquiring increasing significance. Even three decades ago the term 'materials management' was little known and understood in the sense in which it is used today. Many terms, like purchasing, store-keeping, material handling etc. were used to denote more or less the same meaning as that of materials management, but these terms were unable to give a complete idea of materials management.

Materials management is a vast topic that deals with the cost, supply, usage, and handling of materials. It is concerned with the planning and programming of materials and equipment, market research for purchase, procurement of materials (capital goods, raw materials, components, and semi-finished items), packaging, storage and inventory control, transportation of materials, salvage, material handling, scrap and surplus disposal, etc. Material procurement and management play a crucial part in the effective completion of the project. The contractor must constantly consider material acquisition as a possible source of delay. Materials management is the logistics of the materials components of a supply chain, including the design, implementation, and control of the transportation and storage of raw materials, work-in-process inventories, and completed commodities from the point of origin to the site of consumption [22]. The management of materials should be addressed throughout the stages and duration of construction. Building supplies are often cumbersome, costly, and delivered in huge quantities to construction sites. Therefore, a superior management system for material handling is required. The materials management techniques of a construction project are grouped into five processes: planning, buying, transportation, handling, and waste control [23]. Furthermore, Ocheoha and Moselhi [24] identifies just-in-time, Economic order quantity, and warehouse management as materials management strategies that must be considered seriously. Various strategies are used to handle materials management problems. These include the appropriate planning of materials logistics, the adoption of Just-In-Time (JIT) ideas to address space restrictions, and the use of Information and Communication Technologies (ICT) such as barcoding for the automated tracking of supplies.

There are several benefits to using ICT in materials management since ICT has the ability to greatly enhance on-site materials management. Griffith *et al.* [25] identifies a variety of possibilities for construction companies to invest in new information technology and telecommunications systems. The majority of the existing procedures for monitoring materials on building projects are manual and paper-intensive. The previous study has proved the effectiveness of automated tracking systems such as bar-coding in enhancing the tracking of building supplies. This involves the examination of the use of bar-coding to offer immediate and up-to-date information on the amounts of materials exchanged between the storekeeper and the group leaders for the purpose of measuring materials wastage [26].

By merging bar-coding and Geographic Information System, Cheng and Chen [27] has created an automated schedule monitoring system to aid managers in controlling the erection process for prefabricated building construction

(GIS). Despite the utility of bar-coding in material tracking systems, it presents obstacles. It is susceptible to damage, cannot be read in bright sunlight, and cannot resist extreme environments [28].

3. Methodology

3.1 Research Design

A structured questionnaire investigating materials management practices on public projects in the Upper West Region was administered to all 137 respondents. The respondents comprise 122 site managers, 11 District/Municipal Engineers and four consultants. Out of 137 target respondents, 129 actually responded to the questionnaires, representing a 94.2% response rate. Using a structured questionnaire, existing material management practices were assessed using a five-point Likert scale: not frequent; less frequent; frequent; very frequent; and always. With regards to the data analysis, the data were coded and inputted as nominal or ordinal data into the statistical Package for the Social Sciences (SPSS version 21.0).

3.2 Population and Sampling

The target population comprised all contractors on site and consultants within the Districts and Municipal who are in practice. The study focused on the Upper West Region because all similar studies have focused mainly on the other regions. The Region was purposively chosen because the researcher is from the region and as such knows the terrain to facilitate visits to project sites. However, due to the apparent lack of an updated list of construction firms by the Association of Building and Civil Engineering Contractors of Ghana (ABCCG) at the time of the study, the researcher relied on the Consortiums, Districts and Municipal Assemblies to get the registered list of construction companies. In the context of this study all contractors on site in all the Districts and Municipals, Consultants and District engineers were considered. Therefore, the accessible population was made of all the contractors actively engaged on-site in all the Districts and Municipals. This is based on the objective of the study, to examine material management practice on site.

A purposive sampling technique was adopted in selecting the region. However, the census sampling technique was adopted in selecting the survey respondents. The study further selected all contractors on site located within the Districts and Municipal Assemblies. Purposive sampling was used to choose the study population from among the Consulting and Contracting Firms that registered with the Ministry of Works and Housing.

3.3 Data Collection and Analysis

The data was collected through self-administered. The questionnaires were field pre-tested in 15 construction sites that were randomly picked. The rationale for pre-testing the study questions was to identify and address difficulties that were likely to be encountered during the main study. This facilitated the data collection process in the actual study.

Data were analyzed using computer programs such as Microsoft Excel and the use of statements, phrases, narratives and quotations. Also, descriptive statistics such as percentages and frequencies were used to summarize information from respondents and presented in tables. The use of descriptive gave a proper and better understanding of the numbers/figures while the explanatory aspect also gave a clear picture and explanations for the qualitative ideas/findings and the inferences were therefore drawn and generalized to the whole target population.

4. Results and Discussion

4.1 Gender of Respondents

Table 1 represents the gender of respondents in the survey questionnaire. From the Table 1, 124 males representing 96.1% of questionnaires respondents took part in answering while their female counterparts were 5 representing 3.9%.

Table 1 - Gender of respondents

Gender	Frequency	Percentage (%)
Male	124	96.1
Female	5	3.9
Total	129	100.0

4.2 Professional Qualification in Relation to the Job Title of the Respondents

Table 2 shows the results of professional qualification in relation to the job title of the respondents. From Table 1, 36% of all work superintendents are construction technicians II, and 32% of all work superintendents are HND holders with and Bachelor's Degree each. Also, 29.2% of all Project/ Site managers are HND holders of and Master's Degree. 41.7% of all Project/ Site managers are Bachelor of Science degree holders. Again, 38.7% of all quantity surveyors are Master's Degree and Bachelor's Degree. 16.1% of all quantity surveyors are HND holders. Other (PhD, Advanced

Cert., and Certificate II) represented 6.5% are quantity surveyors. Furthermore, 60% of all Contracts managers are master's degrees, and 40% are represented by Contracts managers who are Bachelor's degree holders.

From Table 1, 100% of all architects are Master's Degree. 5.4% of all Others (Lecturer, Technician engineer, Planner, Clerk of Work, Foremen, Tradesmen structural engineers, district engineers and services engineers) are construction technician part III and Master's Degree. 27% of all Others (Lecturer, Technician engineer, Planner, Clerk of Work, Foremen, Tradesmen, structural engineers, district engineers and services engineers) are HND holders. Again, 16.2% of all Others (Lecturer, Technician engineer, Planner, Clerk of Work, Foremen, Tradesmen, structural engineers, district engineers and services engineers) are Bachelor's Degree. While, 45.9% of all others (Lecturer, Technician engineer, Planner, Clerk of Work, Foremen, Tradesmen, structural engineers, district engineers and services engineers) are Others (PhD, Advanced Cert., and Certificate II).

Table 2 - Professional qualification in relation to job title

Job title	Academic or Professional qualification					Total
	Construction technician part III	Master's Degree	HND	Bachelor's Degree	Other (PhD, Advanced Cert., and Certificate II)	
Work Superintendent	9 36.0%	0 0.0%	8 32.0%	8 32.0%	0 0.0%	25 100.0%
Project / Site Manager	0 0.0%	7 29.2%	7 29.2%	10 41.7%	0 0.0%	24 100.0%
Quantity Surveyor	0 0.0%	12 38.7%	5 16.1%	12 38.7%	2 6.5%	31 100.0%
Contracts Manager	0 0.0%	3 60.0%	0 0.0%	2 40.0%	0 0.0%	5 100.0%
Architect	0 0.0%	7 100.0%	0 0.0%	0 0.0%	0 0.0%	7 100.0%
Other (Lecturer, Technician Engineer, Planner, Clerk of Work, Foremen, Tradesmen, Structural Engineers, District Engineer, and Services Engineer)	2 5.4%	2 5.4%	10 27.0%	6 16.2%	17 45.9%	37 100.0%
Total	11 8.5%	31 24.0%	30 23.3%	38 29.5%	19 14.7%	129 100.0%

4.3 Material Management Practices in Construction Projects

Table 3 displays the result of questionnaire responses obtained from construction professionals in the upper west region. Ten material management practices in construction projects were used in building the questionnaires. The practices included material procurement, material planning techniques, material transportation, material handling, inventory management, warehouse management, material waste control, economic order quantity, the just-in-time approach, and material recovery and recycling. Responses were rated as not frequent, less frequent, frequent, very frequent and always.

Table 3 presents respondents' views on how frequent they use material management practices in construction projects. 32 respondents representing 24.8%, indicated that they use purchasing of materials practice. This was closely followed by 31 respondents (24%) who indicated that they use purchasing of materials practice in managing materials on construction project sites. 29 respondents indicated they use purchasing of materials practices always. 20 respondents indicated they use purchasing of materials practices less frequent. Out of 129 respondents, 17 (13.2%) indicated they do not use purchasing of materials practices in managing their materials.

From Table 3, respondents indicated how frequent they use material planning methods in managing their materials on their construction project site. 45 respondents indicated they use material planning methods frequent in managing their materials on their construction project site while 45 of them (34.9%) indicated that they use material planning methods very frequent in managing their materials on their construction project site. Seven respondents indicated that they use material planning methods always in managing their materials on their construction project site. Six (5.4%) of the respondents indicated that they do not use material planning methods in managing their materials on their construction project site.

Transportation of materials was 3rd material management practice on the table with thirty-eight respondents indicating transportation of materials in managing their materials on their construction project site as always (Table 5). 35 respondents indicated transportation of materials in managing their materials on their construction project site as frequent. While fourteen (10.9%) indicated not frequent. Twenty-four (18.6%) indicated transportation of materials in managing their materials on their construction project site as very frequent. Eighteen (14%) respondents indicated less frequent.

Table 3 - Material management practices in construction projects

Material management practices	Frequency				
	Not frequent	Less frequent	Frequent	Very Frequent	Always
Acquisition of materials	17 (13.2%)	20 (15.5%)	31 (24.0%)	32 (24.8%)	29 (22.5%)
Materials management techniques	6 (4.7%)	26 (20.2%)	45 (34.9%)	45 (34.9%)	7 (5.4%)
Transportation of materials	14 (10.9%)	18 (14.0%)	35 (27.1%)	24 (18.6%)	38 (29.5%)
Materials handling	11 (8.5%)	11 (8.5%)	33 (25.6%)	51 (39.5%)	23 (17.8%)
Inventory management	23 (17.8%)	16 (12.4%)	45 (34.9%)	25 (19.4%)	20 (15.5%)
Warehousing management	24 (18.6%)	36 (27.9%)	41 (31.8%)	14 (10.9%)	14 (10.9%)
Materials waste control	13 (10.1%)	29 (22.5%)	33 (25.6%)	39 (30.2%)	15 (11.6%)
Economic order quantity	21 (16.3%)	27 (20.9%)	35 (27.1%)	20 (15.5%)	26 (20.2%)
Just-in-time method	42 (32.6%)	10 (7.8%)	33 (25.6%)	39 (30.2%)	5 (3.9%)
Recovering and recycling materials	53 (41.1%)	42 (32.6%)	17 (13.2%)	13 (10.1%)	4 (3.1%)

Table 3 suggests a greater majority of respondents, 51 representing 39.5% use material handling as a material management practice very frequent on construction project sites. Eleven of the respondents (8.5%) did not use material handling as a material management practice on construction project sites. Twenty-three (17.8%) use material handling as a material management practice always on construction project sites. Eleven respondents indicated less frequent. 33 respondents indicated frequent.

It is observed that 25(19.4%) and 45(34.9%) of respondents indicated inventory management as a management practice used very frequent or frequent whereas sixteen (12.4%) and twenty-three (17.8%) of respondents thought differently. They use the practice less frequent or not frequent. 20 respondents representing 15.5% indicated always. Warehousing management is observed from the table to be frequent by 41(31.8%) respondents, 36 (27.9%) as less frequent, 24 (18.6%) as not frequent and 14 (10.9%) respondents each as very frequent and always respectively. As to whether material waste control in material management practice is effective in the construction industry, 33 (25.6%) and 39(30.2%) respondents/percentages used the practice frequent or very frequent. On the contrary, thirteen respondents constituting 10.1% did not use the practice frequently. 29 (22.5%) respondents use the practice less frequent. While 15 (11.6%) use the practice always in the management of their materials. From table 5, 35 (27.1%) respondents used economic order quantity frequent in material management, 27 (20.9%) used it less frequent, twenty-one (16.3%) did not use the practice frequently, 20 (15.5%) used the practice very frequent, while 26(20.2%) used it always. Just in time method can be observed to have 39 (30.2%) and 33 (25.6%) respondents/percentages use just in time method in material management very frequent or frequent and should be continued by management. However, 42 (32.6%) and 10 (7.8%) respondents objected to the management practice as being significant. Only, five (3.9%) used the practice always in material management. The last item from table (5) was recovering and recycling of materials. With 53 (41.1%) and 42 (32.6%) of respondents using the practice not frequent/less frequent, it suffices to note that four (3.1%) respondents used this practice always. However, 17 (13.2%) and 13 (10.1%) respondents responded to the material management practice as frequent or very frequent.

4.4 Discussion

The result is used to answer the above research question in determining the existing material management practices in construction projects. Ten material management practices in construction projects were used to elicit respondents' opinions. The results present the frequencies and percentages of the material management practices.

From the results, it was observed that respondents indicated how frequent they use material management practices in construction projects. With 32 respondents indicated that they use purchasing of materials practice. This was closely followed by 31 respondents who indicated that they use purchasing of materials practice in managing materials on construction project sites. 29 respondents indicated they use purchasing of materials practices always. This result is consistent with [29], which states that failures in the purchasing process or in supervising and organizing the buying functions could lead to over-ordering of materials (problems with waste), overpaying for materials (inadequate administration procedures), losing benefits (lack of skilled negotiating procedures), and ignorance of the best

service/potential source's locations at any given time. 20 respondents indicated they use purchasing of materials practices less frequent. Out of 129 respondents, 17 indicated they do not use purchasing of materials practices in managing their materials. This agreed with previous finding mentioned that the company should always consider that purchase of materials is a potential cause for delay [22]. From the results, respondents indicated how frequent they use material planning methods in managing their materials on their construction project site. 45 respondents indicated they use material planning methods frequent in managing their materials on their construction project site, while 45 of them indicated that they use material planning methods very frequent in managing their materials on their construction project site.

Seven respondents indicated that they use material planning methods always in managing their materials on their construction project site. This result is in line with [30] about how material planning may greatly affect project plans by serving as a roadmap for all ensuing operations. Six respondents said they don't manage their materials on the site of their building project using techniques of material planning. Transportation of materials was 3rd material management practice on the table with thirty-eight respondents indicating transportation of materials in managing their materials on their construction project site as always. 35 respondents indicated transportation of materials in managing their materials on their construction project site as frequent. This result is in line with [31], which identified the most important factor affecting the productivity of construction workers as the delay in the transportation of materials and equipment to the job site. While fourteen indicated not frequent. Twenty-four indicated transportation of materials in managing their materials on their construction project site as very frequent. Eighteen respondents indicated less frequent.

From the results, a greater majority of respondents, 51 respondents use material handling as a material management practice very frequent on construction project sites. This result is in line with [32], which states that construction companies frequently treat the importance attached to materials handling superficially. Provisions should be made to handle and store the materials appropriately when they are received. In addition, special attention should be paid to the flow of materials after they are purchased from suppliers. Eleven of the respondents did not use material handling as a material management practice on construction project sites. Twenty-three use material handling as material management practice always on construction project sites. Eleven respondents indicated less frequent. 33 respondents indicated frequent. It is observed that 25 and 45 respondents indicated inventory management as a management practice used very frequent or frequent respectively, whereas sixteen and twenty-three respondents thought differently. They use the practice less frequent or not frequent. 20 respondents indicated always. Warehousing management is observed from the results to be frequent by 41 respondents, 36 respondents as less frequent, 24 respondents as not frequent and 14 respondents each as very frequent and always respectively.

As to whether material waste control in material management practice is effective in the construction industry, 33 and 39 respondents used the practice frequent and very frequent respectively. This result is aligned with [33], which said that waste from building activities might be substantial, and [34] confirmed that waste from materials has been acknowledged as a significant issue in the construction sector. On the contrary, thirteen respondents did not use the practice frequently. 29 respondents use the practice less frequent. While 15 respondents use the practice always in the management of their materials. From the results, 35 respondents used economic order quantity frequent in material management, 27 respondents used it less frequent, twenty-one did not use the practice frequently, 20 respondents used the practice very frequent, and while 26 respondents used it always.

Just in time method can be observed to have 39 respondents and 33 respondents use just in time method in material management very frequent or frequent and should be continued by management. This result is aligned with [24], which lists just-in-time, economical order quantity and warehouse management as important materials management methods. However, 42 and 10 respondents objected to the management practice as being significant. Only, five respondents used the practice always in material management. The last item from the results was recovering and recycling of materials. With 53 and 42 respondents using the practice not frequent/less frequent, it suffices to note that four respondents used this practice always. However, 17 and 13 respondents responded to the material management practice as frequent or very frequent.

5. Conclusion

Following the findings of the study, the following conclusions were drawn. That there is poor culture and attitudes of construction workers, supervisors, and companies towards materials management practices. Given the existing materials management practices, the paper argues for the adoption of material handling and material planning methods as a viable material management practice. This will require capacity building on the use of ICT and consequently an adoption of ICT in material management

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