

# The materials management in malaysia construction construction essay



In construction, materials and equipment account for 50-60 of the project cost, and the most common cause of delays in construction is lack of materials (Amir Tavakoli & Adil Kakalia, 1993). Studies conducted by the Construction Industry Institute, American Association of Cost Engineers, and others have emphasized the importance of construction materials management (Amir Tavakoli & Adil Kakalia, 1993). These studies have concluded that effective materials management system will result in a 6-8% improvement in labour productivity, improved cash flow, reduced bulk materials surplus, reduced materials management human resource, improved vendor performance, reduced requirement for physical warehouse facilities, quantity purchasing discounts, minimized cost impact of change orders, and fewer project delays. The saving made as a result of these improvements outstrip the cost of implementing a materials management system by ten to one (Amir Tavakoli & Adil Kakalia, 1993).

Nowadays, the cost of materials for construction is increasing form year to year due to market force, lack of natural resources, and etc. In order to reduce the construction cost, material management has to be carrying out to control the construction cost to make more profit.

## **1. 2 Problem statement**

Lack of materials management in construction will result in rising of construction cost, more wastage, lowering the profit and etc. In order to make a higher profit with a high construction cost, developer tend to sell their development in a higher price and hence building cost will become higher and result in purchaser have to pay a larger afford on the payment.

Government should pay more afford to contractor on materials management in order to reduce wastage as nowadays our world is more concern in recycle and also to reduce the afford of people to buy a comfort residential for themselves or to get a shop to undergoes their business.

### **1. 3 Objectives**

1. To identify whether the materials management system are properly carried out in construction site.

2. To determine the proper way in carrying out materials management on construction site.

2. To determine the advantages of the used of materials management.

### **1. 4 Rationale of study**

Building materials is a important resources in a construction industry. No matter how big or small the project is, contractor should pay more attention on building materials in order to reduce wastage and also to maximize their profit. Many construction companies still do not do well in materials management which can help them to make more profit and also to help their construction running smoothly. So, there are some reasons why this research needs to be carried out.

First of all, how to applied and organised the proper materials management system to a project. Secondly, how to increase the profit of construction company by the used of materials management system.

Hopefully, this research will give a clear picture on materials management and provide a guideline for local construction company to improve their materials management system.

## **1. 5 Methodology**

Methodology method to be used is questionnaires. First, aims and objectives will be planned and draft out all the content needed. After finalize the survey questionnaire, 30 samples will be conducted by sending to different construction company. The targeted constructions companies' contacts are obtain from internet, friends and newspaper.

After collected the questionnaires, the data collected will be analyze.

Conclusion and recommendations will have made at the end of the research.

The purpose of using questionnaires is that it can be compare different ways of materials management system carried out by different construction company and this also is an easy way to collect data.

## **Chapter 2 Literature review**

### **2. 1 Definition**

Materials management is an organizational philosophy that has evolved through application of the systems approach to management, an approach that provides for integration of all management functions. A primary objective of this philosophy is to coordinate all business activities that are part of the materials cycle, from supplier through company operations and on to the customer. Materials management is an umbrella that integrates all the critical materials sub functions and , as such, is a major company

function, among such others as engineering, finance, and manufacturing as show in figure 1. 1(Eugene L. Magad and John M. Amos, 1995):

Capture

Figure : Major company function cooperating to achieve common objectives

A simpler definition of materials management could be ' the line of responsibility which begins with the selection of suppliers and ends when the material is delivered to its point of use.' (Dean S. Ammer, 1969).

Material managements is a concept which brings together under one manager the responsibility for determining the manufacturing requirements, scheduling the manufacturing process, and procuring, storing and dispersing material. As such it is concerned with, and control, activities involved in the acquisition and use of all material employed in the production of a finished good. (R J Carter and P M Price, 1993)

## **2. 2 Concept**

Neither the terminology nor the concept of a totally integrated material organization has been accepted by all business throughout the world. Many of the local company use the different term to coding this management such as " Material Management", " logistics", and " Physical distribution" for similar organizations. Others have embraced the title but not the full organizational philosophy. Despite different names, however, the trend in recent years has been for companies to adopt the materials management or logistics management title. (Eugene L. Magad and John M. Amos, 1995)

Business costs attributable to material are significant portion of the total cost of goods and services. Increasingly, companies are recognizing the need to implement this type of organization to maximize profits, improve customer service, establish needs controls, and reduce costs. (Eugene L. Magad and John M. Amos, 1995)

## **2.3 Functions of Material Management**

In building construction industry, Material Management works with all departments, the major function is to provide the right materials to the right operating point at the right time in a usable condition and at the minimum cost. So, in generally the Material Management play an important role whether the profit the Contractors firm will maximize or remain unchanged. (R. J. Carter and P. M Price, 1993)

Besides that, the amount of wastage also reduced with the used of materials management as nowadays what our community concern more about in the term of " Recycle". Below are the basic function of the use of materials management in construction industry:

Classification of materials

Location on site

Movement on site

Reduction of waste

Quality Control

The main point of Material Management is to satisfy the needs of all operating systems, such as the manufacturing production line, the need arising from customer demand patterns, promotional activities and physical distribution schedules. (Ian E Chandler, 1978)

### **2. 3. 1 Classification of materials**

Materials can be classified into groups reflecting the manner in which they can be handled and stored on the site. The way in which a material is delivered will determine how it is offloaded and where it is located. For example, sand will arrive in a tip-up body vehicle and will need to deposit onto an even clean base with walls to prevent excessive spreading. No labour will be required other than an operative directing the vehicle. (Ian E Chandler, 1978)

The classification can be divided into five broad areas.

#### **Bulk**

The material is delivered in bulk and deposited on site into some form of container. These materials have a high wastage rate and tend to be used indiscriminately. (Ian E Chandler, 1978)

#### **Bagged**

A bulk material placed in bags for ease of handling and controlled use in small quantities. The bag also offers some protection against wastage and deterioration. Generally, to ensure speedy unloading a large number of

operatives are required to carry the bags to the storage point. (Ian E Chandler, 1978)

#### Palleted

Bagged materials can be loaded onto pallets on the transport vehicle and on arrival at the site mechanical means can be used to offload them, such as fork lift trucks or cranes. (Ian E Chandler, 1978)

#### Packaged

An increasing number of materials are packaged to prevent damage during transit and deterioration in storage. They can be banded together fully enclosed or just protected at their most vulnerable parts. (Ian E Chandler, 1978)

#### Loose

Components are in a partially fabricated state it may not be feasible to pallet or package them. They will have to be handled individually according to their weight, size and intrinsic strength. (Ian E Chandler, 1978)

The firm's policy should be, wherever possible, to obtain the materials either palleted or packaged. This will generally involve the buyer in negotiations with the suppliers to determine the most suitable requirements. There are advantages that will be of benefit to both parties: (Ian E Chandler, 1978)

Faster turn-round for vehicles on site

Quicker and easier loading at the source



Possible rationalization of pallet sizes and loads, together with package sizes.

As a summary for classification of materials by classify the materials into five groups, it can help to aid the site management in determining the handling and storage policy and practice it needs to carry out on the site. The manner in which the material is delivered will determine its storage location, when it will be required, and how it will be off-loaded and transported. (Ian E Chandler, 1978)

### **2. 3. 2 Location on site**

The overriding objective of the location of materials and components on the site is that they should be as close to the point of use as is practically and economically possible. (Ian E Chandler, 1978) When materials are delivering from a far distance to the site, it will result in wasting time in delivering, risk of damage to the materials and also an increase in the cost of materials. It is necessary that the distance of the delivering materials to be managed. In develop a plan for this management, the factor which will affect the plan is the time, space, labour, plant and costs.

Time. If the contract has to be completed in a relatively short time compared to similar projects, then the cost of material handling becomes a secondary consideration. It is necessary to stock-pile materials to cushion the effects of irregular delivery. This will have to be re-handled at a later date if they are deposited some distance away from the point of use. The net effect on the programme in achieving continuous production to obtain completion on time may, in this particular case, justify the extra expenditure for the double handling. (Ian E Chandler, 1978)

Space. On the majority of sites the space available for the storage and movement of materials and components is the major consideration. The amount of land left around a building or a group of building is restricted owing to design and cost factors. The cost of land is very high, owing mainly to its scarcity value for building, this means that the building will take up as much as of the available land area. The developer must achieve a balance between a high density of population and areas for leisure amenities. (Ian E Chandler, 1978)

Labour and plant. The off-loading and handling of materials in site which should be carry out by worker or machine has to be done correctly. The important of this is more main on time as time is very important for construction. For example, by using a crane to lift concrete to a high floor is much for faster than carrying by worker as the amount to be lifted is much larger and the time used is much more shorter. But there still many item that must be carry by worker such as some small item which carry only a small amount and easily broken item should be carry by worker carefully to avoid losing or damage to the item.

Costs. Whatever the outcome of looking at the location problem from the point of view of time, space or labour and plant the ultimate decision will inevitably be tempered by the cost factor. If the costs exceed the budget for that particular operation a decision will have to be taken in the best interests of the project. It may be justifiable to exceed the estimate for one activity in order to produce a saving in another. If after a number of feasible solutions have been obtained on the basis of the other limiting factors, then the

distinguishing criteria will be cost, with the problem being solved by using the cheapest method. (Ian E Chandler, 1978)

### **2. 3. 3 Movement on Site**

Movement on site mean to move the material from 1 position to another position. Incorrect ways of movement might cause damage to the materials and increase the costs. Basically, movement on site can be divided into 2 types which is horizontal movement and vertical movement.

For horizontal movement, the aim is to ensure that the material is moved from one position to another over the site to minimize time, handling, damage and costs by using routes planned to ensure safety and ease travel. The routes should be defined by laying roads or marking their width. Material checker should have the responsibility and authority to ' police' the activity. (Ian E Chandler, 1978)

Plant should be well maintained to avoid break down of vehicle in the way of delivery or any other to avoid wasting time on delivery. This might cause delay of construction when materials deliver to the site late and hence causes lost to the contractor.

While for vertical movement, this is the movement of materials from one level to another in either a strict perpendicular manner or with a certain amount of horizontal movement. (Ian E Chandler, 1978)

Very little vertical movement, except in single or two storey buildings, is carried out by labour excluding for example, bricks and mortar in hods and the placing of sanitary fittings. Labours intensive lifting is expensive both in

time and money. The optimum is to get the materials to the required level in the most efficient way. Lifting plant should be positioned around the building to ensure that excessive horizontal movement within the structural envelope is minimized. It should be positioned around the structural envelope is minimized. It should be able to carry component that needs to be lifted, also bearing in mind its overall size. The load must be carried safely and should be secured if there is the slightest danger of it falling. If the lifting conveyance is fixed provision has to be made to prevent the load falling outside the area occupied by the lift appliance. (Ian E Chandler, 1978)

The amount of space on site will determine the allocation of the horizontal and vertical movement corridors, with an inherent danger of excessive travel by the site transport on an unlimited site and detailed planning required on a restricted one. The mode of transport to the site will affect how and where the materials will be offloaded. Site corridors should be designated according to vehicle or pedestrian use and prepared according to the loads they will have to convey. The type of transport will have to be decided at the planning stage to ensure that deliveries can be handled efficiently. Vertical movement will depend upon the materials to be lifted and the height they have to reach. (Ian E Chandler, 1978)

## **2. 3. 4 Reduction of Waste**

Contractors are often active in the design phase when involved in design-build, construction management at risk, and agency construction management contractual relationships. This early involvement in the process

provides the opportunity to help build realistic specifications for reducing waste in the construction process. (William R. Mincks & Hal Johnston, 2012)

Designers are typically aware of the physical attributes of materials; however, they don't usually consider the waste generated by the use of the material in the construction process. The contractor is aware of the efficient use of material and its waste in each application. This insight can help the designer choose the optimal material for each particular use. (William R. Mincks & Hal Johnston, 2012)

The specification need to reflect what the owner is intending to accomplish concerning waste management. The specification should include requirements to achieve reduction of waste, such as requiring detailed waste management plans from the contractor and trade contractors on the jobsite. (William R. Mincks & Hal Johnston, 2012)

Waste is generated in a systematic process that can be scheduled. Begin making schedule requirements that will illustrate when and how waste will be generated. The schedule should be used to better understand waste generation and how best to recycle, reuse, or dispose of the different kinds of materials being used on the project. (William R. Mincks & Hal Johnston, 2012) Figure 2. 0 shows the composition of construction waste.

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Figure : Composition of construction waste

Closer cooperation between designer and contractor in the design stages of building can help to prevent waste. The present form of competitive  
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tendering produces a waste of contractors' management resources in the synthesis of an unaccepted tender. This is also reflected in the successful tender in so much as the contractor will have had little or no influence over the design. His experience could have alleviated some of the waste brought about by inherent design factors.

The incidence of waste has repercussions throughout the contract. Its effect will be seen through extra administrative work by management personnel, an increase in contract time, reallocation of labour, extra costs in replacement of materials, remedying faulty work because of materials, and extra costs in cleaning and disposing of waste materials. (Ian E Chandler, 1978)

### **2. 3. 5 Quality Control**

According to Sidney M. Levy (2007), the control of quality construction begins with an intensive review of the plans and specifications. There may be few deficiencies in the plans and specifications, some of which may have been uncovered during the estimating process, while other were unearthed by the subcontractor and vendors. The project superintendent may have unearthed constructability issues during his or her review. The need for all parties to thoroughly examine the documents under their control cannot be overemphasized. When problem are uncovered early in the game, the impact and associated costs are considerably less.

Quality control is the function which must be performed throughout an organization in order to achieve its quality objectives. To produce effective quality control of incoming materials and components a practical site based

system must be adopted. The control of work-in-progress will not be discussed unless it overlaps the system to be applied to materials. (Ian E Chandler, 1978) Component of building is cannot without the present of quality control because of the interrelationship of each other's. The quality must set at the target where it is likely possible to achieved and sufficient. If the target of quality is arrange out of the capability, it not just wasting the time but also create delay of the project. So, quality control is not just based on what quality standard is to be achieved, but it is also based on the existing techniques and capability to control the quality.

In order to control the quality of materials, materials can be inspected by 3 method which is visual method, tactile method, and statistical method. Inspection is not carried out by using either one of these methods but by according to the type of materials by using which method. Inspection is preferred to be carry out before the materials are unloaded as this can avoid unnecessary defective hence to prevent from wasting time and energy to demolish and rebuild.

Visual inspection is generally only possible if the items are not packaged and where the quality can be seen at a glance, eg timber. During unloading some damaged goods may be found if a competent person is in charge. If it is left to untrained operatives to unload, damage may be caused and defective items not noticed and their importance realized. Checks should be carried out prior to and during unloading, with a final check on the method of protection. The vast majority of quality control checks are visual and defective material is generally easily recognized. (Ian E Chandler, 1978)

For tactile inspection, from the appearance of a material it may be seen to be defective or of a poor quality but by touching it this can be confirmed. This method of inspection has only a limited application and is usually confined to materials such as sand, cement, plaster and joinery timber. (Ian E Chandler, 1978)

By using statistical techniques on samples from bulk deliveries the state of the whole deliver can be fairly accurately forecast. It is not intended to describe here the mathematics behind these techniques but to show where they can be applied on the site. The most common sampling test used is the concrete cube test. A quality of concrete is taken from a batch, and compacted into a number of cast iron cubes. These are allowed to cure for a specific number of days and then the concrete cubes are tested for compressive strength. It is assumed that the cubes represent the whole batch of concrete and that the results of the tests on the sample reflect the expected results if all the concrete was tested. This same technique can be used on bricks, aggregate, timber, and components. (Ian E Chandler, 1978)

Suggested by Ian E Chandler (1978), to be effective a quality control system should be based on a close liaison between the architect and the builder. A system should be developed in conjunction with the general materials handling procedures and this carried out under the responsibility of the person in control of materials. The system must be set the quality standard, plan how it is to be adopted, implement the methods of inspection and provide for a long term control of quality. An efficient system will cover its costs, ensure that a job is executed to the satisfaction of the architect and possibly provide an additional saving for the contractor. With strict control, <https://assignbuster.com/the-materials-management-in-malaysia-construction-construction-essay/>



pressure can be brought to bear on the materials suppliers and with good quality materials a high standard of workmanship can be achieved in creating the finished article.

## **2. 4 Advantages of Material Management in Building Construction**

In Building construction industries, what is the advantages of Material Management will bring the benefit to Contractors Company. In fact, the adoption of Material Management by the Contractors Company will generate a number of significantly valuable advantages in terms of total organizational control and materials control. In according to Eugene L. Magad and John M. Amos (1995), the advantages are as follows:

Maximun company profit

Improved customer service

Improvement of credibility

Enhancement of communication

Improved quality of staff

### **2. 4. 1 Maximum company profit**

According to Eugene L. Magad and John M. Amos (1995), like other major company functions, Material Management is mainly responsible to maximize the company profits. Because Material Management control the company 4M which is materials, machines, manpower, and money, it has significant potential for increasing company profits by reducing costs. Cost reduction

opportunities are possible throughout the material function. Some typical examples are as follows:

Decreasing part shortages (resulting in more efficient use of labour, plant and materials).

Reducing inventory level through improved controls.

Lowering transportation costs as result of using minimum cost of transport vehicle to send the building materials

Always ensure the material is order and send to the site at the suitable time, prevent any material which is brought to the site prematurely.

If possible, purchasing manager should order the material in large quantity and enjoy certain amount of discount. (Material in large quantity like cement, timber, and etc where can be store for longer period of time)

Material Management can make an important contribution to a company's profit margin by reducing total costs, which can then provide a reduction in Building development price. Reduction development price can result in higher sales during the periods of marketing for completed building, as well as the ability to maintain sales volume during a contracting market. Another benefit achieved by reducing materials cost is that can help a company to maintain the same product (Building) price during periods of increasing resources costs. (Eugene L. Magad and John M. Amos , 1995)

According to Elijah E. Ogbadu (2009), materials management and marketing department should cooperate in ensuring the organization for the

profitability. Materials management has the ability to produce the exact quality of the materials used to avoid wastage to obtain the lowest possible cost which will then bring marketing maintain competitive advantage. Consequently sales and profit will be increased.

### **2. 4. 2 Improved customer service**

The second benefit of applied the Material Management in building industry is that the product quality provided to the customer will increased. Quality control is part of the essential topic under the Material Management function. In regard with the product quality, the firm which adopted the Material Management system will normally balanced their product cost and quality. It is not true that with the lowest cost of product will decline the quality of the product. When the building sales in the market with the reasonable cost and better quality, then it will constantly maintain the customer product quality and with lower building cost. (Eugene L. Magad and John M. Amos , 1995)

### **2. 4. 3 Improvement of credibility**

An important factor in the day-to-day operation of a company is the reliability and accuracy of each group's performance and activities. Each and group within the company must depend on others for correct timing and performance, if anyone falters, the overall performance is affected. In some respects, company activities are more complex than this. Individual department begin to take safety precautions when they are forced to work with others who are less reliable than they. With a Material Management organization, various functions (marketing, manufacturing, etc) get better, more reliable service. The Material Management organization provides <https://assignbuster.com/the-materials-management-in-malaysia-construction-construction-essay/>

credibility of performance, which helps to reduce costs and lessen confusion. It also contributes to an atmosphere of mutual and cooperation. (Eugene L. Magad and John M. Amos , 1995)

#### **2. 4. 4 Enhancement of communication**

The Material Management offer the benefit of enhance the communication by provide a communication network that reacts quickly and facilitates improved rational action throughout the system. Combining the various fragmented groups enhances communication by shortening message channels, allowing common use of data, providing greater potential use of communication through data processing equipment, and encouraging the flow of information between people. (Eugene L. Magad and John M. Amos , 1995)

#### **2. 4. 5 Improved quality of staff**

This statement given that the material manager will promote team based working and will offer greater promotion and staff development opportunities, the company will attract a higher capability staff to work together. Majority, the employee will aim for higher status of working environment and also challenging work. The company with systematic organization may attract those experienced staff working within the firm, so the company with Material Management system is form of systematic approach which will create a good image to company. (Eugene L. Magad and John M. Amos , 1995)