5

RESOURCE ALLOCATION

The construction project cannot be executed without the contribution of resources. Thus, their accurate allocation is vital for effective project completion. This chapter covers the resource allocation process for smooth construction and also discusses the challenges that create obstacles.

5.1 THE MANAGEMENT OF RESOURCES

It is always a challenge for construction companies to manage complex construction projects within a specified schedule, budget and limited resources to maintain a fair profit. The importance of resources in the construction industry cannot be deemed as any negligence in resource allocation leading to the project failure or, ultimately termination. Here resource management comes in as a guide that helps to plan the project resources according to the set objectives and the client's demand.

The most effective way to decrease construction project costs and increase profit is adopting automated resource management systems. Still, many construction companies are practising outdated data collection and resource monitoring methods, which are very unproductive and drag the company towards inefficiency and profit loss. Every year around $1 billion loss occurs in the construction industry due to tools and equipment theft, where mismanagement of inventory is one of the reasons [50]. With the help of the automated system, all the company's assets can easily be centralised into one database, making resource monitoring and accessibility easy. The system can also be implemented by field personnel, shop, and warehouse to simplify the accounting and company's resources tracking. With the help of an automated system, automatic data collection can also be made as a replacer to a manual system which is often inaccurate and slow. With the introduction of additional highly efficient technologies such as Radio-Frequency

Identification (RFID) chips, the companies can increase the project productivity, sustain precise resources and materials accounting and decrease the project overhead in multiple projects at a time. Few more benefits of automated resource management [50] are discussed below,

1. Better productivity
   An automated system assists to ensure the movement of tools and equipment to the right place in an ongoing project which maximises employee efficiency.

2. Better accountability
   With the help of automated tracking systems, it is easy for managers to identify the employee who misplaced any tool or equipment.

3. Decreasing human error
   When implementing RFID tags and barcodes on each piece of equipment, there is no need to follow the inventory through earlier manual methods as it makes the tracking of the equipment smooth where management exactly knows the location and the number of items in their supervision. Otherwise, errors in inventory through manual methods can be costly.

4. Maintenance
   Besides location tracking and information about the number of items, automated systems also ensure equipment safety information. The systems alert the management for any pending inspections or calibrations of tools and equipment without relying on physical verification.

5. Reduce cost
   The availability of tools and equipment at the right time and place reduces disturbance during the project, enhancing productivity and ultimately decreasing cost.

6. Better knowledge of inventory
   While deciding on further purchases, automated resource management systems determine the existing quantity accurately and help the management to make a viable decision.

7. Eliminating paperwork
   A huge advantage is eliminating paperwork by adopting an automated resource management system in construction projects. In manual methods, a lot of printing is made, which creates additional costs, whereas these systems provide accurate reporting while eliminating the excessive cost.