

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

Material management systems for UK reinforced concrete building frame projects – why are they not being used?

Working time is lost when it is spent carrying out unplanned tasks, such as searching for material on site. Construction progress is delayed when material is missing. All of this contributes to the productivity problem for the industry. Sometimes, material is over-ordered to overcome these issues which leads to larger quantities of physical waste. Material management systems that use technology such as Radio Frequency Identification Tags, Global Positioning Systems, Information Technology and Building Information Modelling are discussed within the literature, the benefits of their use are generally known and they are more popular on larger infrastructure projects. So why do we not see this on relatively smaller projects that utilise reinforced concrete methods for building frame construction?

Management of material on UK reinforced concrete building construction sites was discussed with key professionals from this sector. The aim was to evaluate why technology is not being used to its full advantage to reduce material waste and improve labour productivity and to determine whether other solutions exist.

Three tools have been used to collect data for this study. First, the productivity problem had to be validated as much of the data within the literature was outdated and was not UK specific. Further, use of the Best Productivity Practices Implementation Index tool (BPPII) (Construction Industry Institute, 2013) determined the level of material management implementation on the selected eleven tier one projects. Lastly, thirty semi-structured interviews were conducted with key professionals across three different contracting organisations, based in the UK.

The results from the Productivity Validation Questionnaire and BPPII tool provided context for the current status of material management within the UK reinforced concrete building sector across tier one contracting organisations.

The BPPII results and interview findings suggest that technological material management systems are not considered for use within the reinforced concrete building sector. However, trends from interviews allowed the study to move through key areas: determination of the material flow at a site level, the role and responsibilities of individuals and groups and how they worked together to form a network for material management. The method of communication between project team members was considered. The use of a free application, both available for use on a smart mobile phone or as a web-based tool has the potential to improve communication reliability and enhance material management performance.

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June 2020