M2: Compare the advantages and disadvantages of resource management techniques.

A technique I would like to compare is far cheaper and easier to use. Timesheets are the most common way of logging hours and tracking labour for a project. They can be used for many different purposes, not just for getting paid at the end of the week. They can be used to track how long a job is taking, how many man hours have been taken in comparison to what was planned and assess driving time. They are the simplest form of labour tracking, and is the easiest to implement, as staff have to submit a timesheet to get paid. However, they do have their downsides. If your staff aren’t honest, they can claim more hours than what they have worked, which means it is costing the company money in terms of paying them more as well as making the job look slightly worse financially than what it should do. This scenario would only happen if you didn’t have trackers in the vans to check the hours. Another simple mistake could be putting down the wrong project on your timesheet. This would result in your hours being allocated to the wrong project, which would add an extra cost to the job.

The second technique I’d like to discuss is Microsoft Project. Microsoft Project is a stand-alone programme used widely across the construction industry and many more to plan tasks, allocate resources and control budgets for ongoing and upcoming projects. The programme’s main positive point is the huge range of tasks that can be carried out using the software. Projects can be planned from start to finish, materials can be allocated and labour can be assigned to project to allow maximum productivity and success for the project. However, there is a downside to Microsoft Project, and that is the cost. The cost of the software ranges from £559.99 for a standard license, and £949.99 for Project Professional. This is fine for larger, national construction companies, but when it comes to smaller companies, it is a very expensive tool in terms of capital cost. As well as this, for upwards of £1000, you only get one license. This could cause a problem if there are several people needing to use the software. In addition to this, it isn’t just the upfront purchase cost that is an issue. Microsoft Project is a brilliant but complex tool for construction which takes a substantial amount of training, if you are completely new to the software. In the busy construction environment, companies will find it difficult to allow time to train and become competent with using Project, especially if you are a smaller firm.

 SAGE accounting and similar software is vital in tracking costs and resources. Every invoice, timesheet or receipt will be inputted into the software and add to the job total, which can be obtained at the end of the project. The costs can also be explored while the project is active to see how much labour, plant and materials have been allocated. This software works well in partnership with Project as you can insert current costs, which will give you a proposed job cost total. By doing this, you can see if you are working to budget and what elements might be letting the project down, which means you can make changes to ensure that you come out with a profit instead of a loss. On the other hand, similar to Microsoft Project, the software, whether it be Sage or a similar product, often has a large upfront capital cost. Once again, this can be an issue for smaller companies as they may not have the revenue to fund this important software. As well as this, it only works well if it is set up right and if the figures inputted are accurate. If not, the software will come out with unrealistic figures and could provide a false outcome on a project. Once again, simple things like missing a zero or forgetting to input a purchase order could have a substantial financial effect on the project and on the business as a whole.

Another paper or computer based management technique is bills of quantities and material schedules. As mentioned above, these can be inputted into an electronic programme like Project, or could be kept as a paper-based document in the site office or at HQ. BOQ’s allow you to order the correct materials, to the correct specification and get them there on time. By also consulting the project programme, it means products and materials can be ordered to site before they are required, meaning there is no waiting time on site. BOQ’s are good because they can also highlight the products and materials that have a long lead time. This means that you should be able to avoid any problems with getting products to site. An example of this is the national brick shortage that we are experiencing at the moment with many types of brick. If you know you need 20,000 bricks in 8 weeks’ time, and also know they have a 7-week lead time, you will need to order them ASAP and get them to site and stockpiled before the bricklayers arrive. If you don’t order these in plenty of time, you will have bricklayers standing on site charging you money for doing nothing. As well as this, it will put back the programme, which could be a big issue when working to strict deadlines with LED’s. The downside to BOQ’s and materials schedules is the fact that if not compiled correctly, it can lead to mistakes in terms of orders and requirements for site. If the BOQ says you need 18m of concrete for foundations, when you actually need 30m, it could mean your foundations will be condemned due to pouring the same structure on two different occasions, as well as having a cost implication for the extra material. This mistake can be as simple as missing out a zero or measuring in the wrong scale, and if it isn’t checked, could have huge implications on the project.

As discussed above, there a positives and negatives to both computer based and paper based systems. In my opinion, computer based systems are far more useful and sustainable than those in the paper based form. Software like Microsoft Project can basically run a project nowadays, and alongside a good accounting package, it can make the management staff’s lives so much easier. They no longer have to guess at figures or guess what materials are needed. However, the expense and training costs can be immense, which is a problem for those smaller companies. I still think paper based systems, like timesheets and programmes have their place, but as we continue moving further into the development of technology, these will become obsolete and will all end up becoming computer based, most likely through some sort of app.

M3: Discuss the factors that may have an adverse impact on planning and organisation.

**Shortage of Labour**

The industry is currently experiencing a massive shortage of skilled labour, which is why there are more apprenticeships being offered across the country. This is a massive problem for construction firms in general, as well as when it comes to specific and more specialist elements. For example, if you have a brickwork job where you need to lay 20,000 bricks, if you don’t get labour scheduled early enough, you may struggle find someone to cover the project. As a result, you will probably have to pay more money to get someone to do it or bring someone in from further away and have to pay a higher rate, as well as their travel and accommodation expenses. This is obviously a problem because it could add to the end contract sum, and if not sorted, could result in the contractor missing the deadline for the element of works. Therefore, it is vital to plan work to compensate for these issues, whether it be recruiting labour earlier or adding extra money to the tender to cover the extra cost.

**Perishable Materials**

A lot of construction materials have to be used within a certain amount of time or else they will go off or not be fit for use. Once again, avoiding this comes down to the planning of the project. If you are using ready mix mortar for a brickwork job, it is important to get it delivered the day before the element of works start so that it is at the required consistency when the bricklayer needs to use it. Another perishable material is concrete. If delivered too early, concrete can go off before it needs to be used. This means it won’t be able to be poured and will have to be thrown in the skip and more ordered. If the incorrect materials are delivered or they are delivered at the wrong time, it could have massive cost implications to make right, as well as adding to the project end date. If this happens, the QS will need to go back to their programme and see where they can spare resources from either a different element of the project, or from a different project altogether.

**Weather**

The weather can have a huge impact on the running of a project, and is incredibly difficult to plan and foresee. When working on a project that is running for a number of weeks, you can normally check the weather for the next week, but further than that it is so difficult to plan and make adjustments. The weather usually effects the likes of brickwork and concreting. Bricklayers are unable to lay bricks if it is raining, so a period of sustained bad weather could have a huge impact on the programme, as well as incurring a financial cost. When concreting, it is preferred to not pour in the rain, and when it comes to snow and freezing conditions, concreting is avoided due to the potential for cracking. You can get concrete with additives to withstand the cold temperatures, however, this incurs an extra cost and can never be assured that it will work.

**Design Change**

Finally, design changes can provide a number of problems when it comes to the construction phase of a project. If these aren’t transferred through the supply chain, it could mean the contractor on site is working off an incorrect and out of date drawing. An example of this is, if the contractor is installing a soakaway and is working off Rev A, but they should be working off Rev C, it is likely to be a completely different soakaway, at a different depth and possibly in a completely different location. The result of this would be that they would have to remove the soakaway, fill the whole back in and re-install it at the correct location on site. This obviously carries a potentially large financial cost as well as adding a substantial amount of time onto the end programme. If the design changes would have been communicated correctly, this situation would have been avoided, there wouldn’t be variation costs and the project would still be on track to meet the deadline.