

SUMMARY NOTE FOR CIVIL ENGINEERING STUDENTS AT LOUGHBOROUGH UNIVERSITY

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ABSTRACT

The following summary note will reflect on the current state of the civil engineering landscape in relation to agile working and productivity. The benefits and detriments of agile working will be detailed in order to provide context and information for the Loughborough University civil engineering students to complete a piece of coursework. It is concluded that a hybrid model of agile working is recommended to achieve both environmental and productivity benefits.

INTRODUCTION

The Covid-19 pandemic affected the lives of the global population in a number of different ways. The pandemic led to the direct and indirect loss of 15 million lives, as per the UNESCO Sustainable Development Goals Progress Report 2022. Global health systems were overwhelmed, wiping out 4 years of progress in regard to poverty eradication, and new sustainable technologies were deprioritised to address the worldwide situation.

The civil engineering landscape was also affected. Projects slowed to a halt as the virus prevented many attending the workplace due to illness and contagion. Those with long-term health issues and susceptibility to the virus were forced to maintain distance from others. Materials were harder to access and in short supply, and the lack of haulage drivers caused significant delays to engineering projects around the country.

However, positive effects were also observed. A significant proportion of the civil engineering workforce experienced a greater work-life balance, some spending more time with their families than before the pandemic. Working from home, especially for those in design consultancies became the norm, releasing time to pursue hobbies or spend time with their families, in place of commuting.

Some have questioned the effectiveness of working-from-home, or “agile working” as it will be referred to in this summary note in regard to productivity in a post-Covid-19 world. Some highlight that innovation and creativity predominantly happen through collaboration and direct interpersonal communication. This summary note will aim to address both the positive and negative aspects agile working, presenting both sides of the argument and concluding as to whether working from home should be encouraged or discouraged.

BACKGROUND

To understand the context at large, it is important to first define “productivity” in the context of civil engineering. Productivity often refers to the output of an individual, team or organisation, for example: how many setting out points were completed in a single shift by a setting out engineer. Ed McCann, in his 2021 ICE Presidential Address, highlighted the importance of productivity in the context of “efficiency and effectiveness”; that is, how many resources were required to complete a task, and if the output of the task was correct and accurate. The combination of these would lead to greater productivity, as any resource savings could be allocated to completing more activities, and effective working would prevent revisiting a task for remediation.

Productivity itself, and the monitoring of productivity, can be limited and inaccurate if only the quantitative output is being measured. There are often many factors which are not considered in the assessment of productivity; for example, an individual’s mental health, their relationship to their partner and family, and their motivation for working at a high-level. If productivity is the only concern to a company, then there is the risk of effective staff members ending their career early, moving onto another role in a separate organisation, or “quiet-quitting” evident in the 2022 movement.

Therefore, productivity must be regarded as a balancing act, especially in a culture post-Covid-19 which expects a higher-level of job satisfaction and work-life balance than before the pandemic.

NEGATIVES OF AGILE WORKING

The increase in agile working has led to a change in focus for managers within the civil engineering landscape. Prior to the pandemic, assessing an individual’s output could be seen with minimal effort due to being physically present in the same space. Lapses in concentration or periods of low output would be noticed and addressed with the individual directly. As well as this, those with a struggling mental health, confidence or communication issues could be involved within a team that can spot times of depression or low mood or aided by a mental health ambassador in person. There is an argument that those solely working from home could be exhibiting these signs of depression or disconnectedness and the team would be unaware.

In regard to productivity, managers have less information or instinct with individuals as to how to address low performance if regular communication is not present. Information and data is paramount in successful management, and if this is not obtained, it can be hard to derive a plan to help a person improve their performance. Adjacent to this, online confidence is a relatively new skill, which some struggle with. Being able to speak with people with which a natural rapport has developed is beneficial to some, contrary to speaking over online video. In some cases, the other person’s face may never be seen to the individual. With confidence comes productivity and innovation; stifling this through agile working can be seen by some as a detriment.

Collaboration is a key component of productivity; the interchange of knowledge and ideas within a team can lead to innovation and new solutions to engineering problems. The colliding of ideas and the chance meetings within an organisation is hard to replicate in an online-only setting. Apple Park in California is designed purely to improve the chance of these serendipitous meetings: to promote the cross-pollination of departments and teams which directly leads to greater productivity and innovative solutions.

BENEFITS OF AGILE WORKING

In Ed McCann's Presidential Address in 2021, a key theme highlighted was the concept of "efficiency". Agile working allows work to be completed, while saving hours of an individual's day. If these commuting hours are accounted for in the workday, it essentially means the work has been completed up to 2 hours faster if the commute would have taken an hour each way. The resource in question within this scenario is the individual's time; the time saved by not commuting could be dedicated to projects or maintaining a healthy family life at home. These extra hours would allow the person to have a greater efficacy for not only work, but life itself. It is a generally well-held notion that a happy worker is a productive worker. Scientific research from the Stanford Department of Psychology state one of the primary factors in focus and attention in humans is sufficient quantity and quality of sleep; a factor which can be improved with an increased rest and recovery time resulting from agile working.

By building a company which promotes this culture, it also makes the company more attractive to potential recruits. For many, the freedom which agile working allows is a prerequisite to many individuals in the civil engineering pool today. Maintaining this attractiveness and "moving with the times", especially where the civil engineering knowledge supply is low is a way to ensure productivity remains high. It may also combat the aforementioned negative aspect of agile working, which is the introduction of innovation and new ideas to a company.

The environmental effects, as well as the economic benefits of agile working can not be ignored. Many engineering companies, for example civil engineering contractor Galliford Try have set Net Zero targets for their carbon emissions. Galliford Try's Net Zero target is to reduce all of their own operations to have a net zero carbon output by 2030, and all of the engineering processes including from their subcontractors to zero by 2045. A large contribution towards this is the lowering of Scope 1 carbon emissions; that is, the reduction of emissions originating directly from assets owned by the company. Galliford Try have attempted to address this by switching the majority of company-car vehicles to electric, but an even bigger impact would be to promote agile working and ensure company cars were used significantly less, if at all. If fewer people are commuting to the office, the size of office spaces could be reduced, lowering the Scope 2 emissions as a result of heating or cooling working spaces. This directly contributes to some of the environmental targets set on a national and global scale: Goal 12 of the UNESCO Sustainable Development Goals is related to Responsible Consumption, which reducing the energy used to heat unnecessary spaces would contribute to.

RECOMMENDATIONS

It is recommended that a hybrid-model of agile working would lead to the greatest productivity and job satisfaction for many companies. In Keith Howell's 2022 ICE Presidential Address, a key theme was the conversion from an "output" to "outcome" based culture. The preferred outcome for many civil engineering companies as evidenced in their yearly statements and development plans, is to promote a positive working culture, embrace and encourage positive mental health, and reduce their impact on the environment. In turn, these factors lead to a greater level of productivity, and can lead to a more attractive business proposition for new hires and new clients.

For those that require more in-person communication to be confident, communicate effectively and improve their performance, then an office environment should be available to allow this. Within the Galliford Try Temporary Works department, a model of 3 days working-from-home, and 2 days

working in the office is adopted to a great effect on innovation and mental health. Agile working also leads to aforementioned environmental benefits which is not only a target, but a requirement to achieve carbon output goals.

CONCLUSION

This summary note has defined productivity in the context of civil engineering and aimed to present both the benefits and negatives of an agile working environment. It has been concluded that a hybrid model of agile working to promote positive mental health, as well as allowing in-person communication to ensure collaboration and the transfer of ideas would be an ideal outcome for most civil engineering companies.