

# Exploring the meaning and drivers of personal productivity of knowledge workers in mobile settings

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## Introduction

The interaction between transport and productivity has been long-standing. It follows from the fundamental functionality of transport, serving as a means of linking spatially separated activities, whether related to production or consumption of goods and services. Unsurprisingly, investments in transport infrastructure have been central to economic growth, connecting urban, regional and national economies, facilitating movement of goods and people. Venables (2007) indicated further that improved transport links could lead to increased demand for skilled workers, further stimulating their productivity. Further evidence concerns positive productivity impacts from increased proximity that allow realisation of economies of scale, especially by knowledge intensive industries (Graham, 2007) by sharing skills, expertise, and knowledge, among the various intangible assets. In yet another research and policy perspective, travel time has been acknowledged as having an increasingly productive potential (Lyons and Urry, 2005). However, the associated empirical efforts have treated the notion of travel time productivity rather simplistically, leading to superficial understanding of its drivers, especially the role of technology, or meaning within the broader work arrangements and lifestyle. The present contribution seeks to advance state of this knowledge by making use of an insightful analysis of a set of semi-structured interviews with knowledge workers with different levels of seniority and technical role.

## Background

In the conventional, and still dominant, transport modelling approaches, the primary sources of utility, or equivalent metrics of ‘usefulness’, have been associated with activities at the destinations (Mokhtarian, 2009). The travel time, on the other hand, has remained seen as the cost to be minimised or, when seen from the perspective of passenger transport, ‘wasted’. Resulting from the pre-eminence of private car transport, this dominant assumption has led to adoption of a microeconomic convention in which savings in travel time are set equal to the marginal product of labour plus the non-wage cost of employing labour (Fowkes, 1986). In spite of the early recognition of recognition, e.g. in the so-called Hensher’s equation and the associated empirical evidence (Hensher, 1977), the phenomenon of productive travel time re-emerged in the transport discourse only in the early 2000s (Lyons and Urry, 2005). This re-emergence has been attributed to the rapid development of mobile Information and Communication Technologies (ICT) increasing the possibilities for working while traveling (Axtell, 2008), and has already received been conceptualised with a body of microeconomic frameworks linking time use decisions, ICT, and productivity Pawlak et al. (2015, 2017). This frameworks acknowledged the return value for the individual of single activities while

working, acknowledging the multitasking nature of travel time use and the different nature of activities (Circella, 2012).

The parallel trend in the labour market has been that of the growing proportion of mobile workers, given that practices of mobile work have also become an artefact of the middle skilled occupations (Felstead and Henseke, 2017). The parallel trend in the labour market has been that of the growing proportion of mobile workers, given that practices of mobile work have also become an artefact of the middle skilled occupations (Felstead and Henseke, 2017).

The increasing relevance of such numbers have shed a new light on mobile work. On the aggregate level the introduction of ICT and the increased mobility of worker has been found to have a positive effect on the productivity on the firm level (Bertschek, 2016). Nevertheless the effect on single workers appears to be more complicated, as workers can experience reduced familiarity and identification with the company (Bosch-Sijtsema, 2010). However during the act of mobile working itself, ICT is perceived as a highly functional tool with a positive effect on work (Yuan, 2010). The number of different findings highlight the complex nature of mobile work, and the limited understanding of the effects of such practices.

Despite growing importance of this topic, the related empirical studies have relied so far on rather crude interpretation of metrics of travel time productivity, usually limited to self-reported indicators, relative to typical working conditions, e.g. office (Wardmann and Lyons, 2016). Little is known regarding what activities, conditions and technologies make the individuals see themselves productive.

## **Methods and data**

To address this research gap, the present study systematically explores insights gathered from 22 semi-structured interviews collected among employees of Cisco, a global IT company. The context of Cisco is especially relevant as its employees are encouraged to use mobile technologies, including from the company's portfolio, to participate in work activities flexibly, from any location. The interviews covered three broad thematic areas: the current practices of work in mobile settings, the meaning of being productive and the role of technology. The interviews covered the length of approximately 40 minutes. To enrich the insights, the interviewees have been selected to offer variation in terms of level of seniority and technical role within the company. Additionally the structure of the pool of respondent accounted for socio-demographic variation (gender, age) as the literature presents evidence that such factors affect attitude and preferences towards mobile work (Felstead and Henseke, 2017).

In the first thematic area, the current practices of work in mobile settings, respondents were asked about their preference of settings, their choice of work activities, the use of their usual commuting time and, more broadly, about their perception of mobile working. As a second area the relationship with ICT is addressed through questions aimed to uncover the disadvantage or aid experienced while mobile working. Lastly the thematic area of productivity is addressed. The interviewees were asked to describe their understanding of notions of productivity and un-productivity, while also giving examples of real happenings and output in order to make the question less abstract. Additionally two more questions addressed the relationship of time spent working and productivity, and the perception of productivity over long periods of time. From this design we expect to see a relation between the decision making of work in mobile setting and the structuring of time for different individual characters, assuming that certain behaviours might be correlated to diverse "time personalities" (Hubers C., 2018, pp 100).

While different methodologies can be applied to analyse text material, we decide to conduct a quite descriptive analysis instead of a statistical one. Given the personal nature of the topic we find high value in reporting personal experience at this stage. Therefore to analyse the interview material we have used logic interpolation from the text of the interviews, to draw logical links between contents of the interview in each thematic area (Attride-Stirling, 2001; Berg, 2001). This approach has proven particularly useful as all the three thematic areas were closely connected and influencing each other, the boundaries between the thematic areas were almost systematically crossed which resulted in answers covering more than one thematic area. At the same time, despite subjective and personal nature of the topic, such mapping proved to be helpful to be able to effectively compare content across different interviewees in the same thematic areas.

### **Preliminary results**

The results obtained so far point towards a picture in which the mobile workers undertake very careful planning in terms of their expected activities, length of the particular work activities to be undertaken, or use of equipment, including technology, in order to maximise their productive output. The respondents would typically consciously evaluate suitability of particular work task to undertake, depending on the expected transport conditions on the chosen modes of transport. Such conditions can include constraints on use of technology. For instance, a number of the interviewees indicated sensitiveness to disruption of the connectivity on airplanes.

“Because of the lack of connection, you have to make a detailed planning of the activities [to perform on the airplane]”

Yet others would report on being more productive because of the inability to connect, and hence achieving periods of work uninterrupted by unexpected messages:

“I dive in, it’s like my uninterrupted time”

Furthermore, the level of detail in planning has been found to be surprisingly substantial, including accounting for the possibility of being disrupted by the meal service and re-ordering tasks to achieve the longest possible, uninterrupted period for a task requiring concentration. One of the interviewees reported:

“I think about it as a great time on a plain as a longer period to crunch through a budget, because I know how long the flight is going to be”

And also:

“The cart service has gone through and no one is going to bother me for the next two hours”

Regardless of the level of seniority or technical role, a common feature among the respondent was concern about privacy and sensitivity to the possibility of co-travellers overlooking the screens or overhearing the conversations.

“I have privacy screens, key board mufflers, fake outs, all the stuff that prevents people to be looking at my screen”

Such considerations would restrict the activity types, potentially hampering the productivity while travelling.

As the dimension of the single task management seems to be carefully planned by the respondents with a discrete level of awareness of time and space necessities, also an interesting pattern emerges when looking at the interaction of those tasks. While individuals reported a feeling of productiveness when being able to complete a high number of tasks in a certain time, the nature of the tasks appeared to have an effect on the number of objectives completed.

“A productive day is when I complete all the tasks I have planned for the day”

A number of individuals would report their days to be more productive when tasks of similar nature, but not necessary of similar content were undertaken consecutively. For instance back to back meetings were perceived as more effective than spreading a few meetings over more days, although meetings were different in content:

“Monday was the most productive day, I had a series of meetings, external meetings and internal meetings. Having access to the phone I could access one meeting after the other”

Similarly while talking about a week of long team meetings another interviewee reported:

“I didn’t do anything yesterday, I won’t (do anything) today as I am exhausted. I am just replying to the easiest emails”

While a meeting was often reported as an example, possibly because of the rousing nature of the activity, similar results were reported more solitary activities:

“Over those two days there was no decision making, only development” (talking about two particularly productive days)

When engaging in analysis tasks or tasks with a creative nature, individual tended to report days where a number of similar tasks were executed as the most productive.

Evidence seems to indicate that while the completeness and absence of disruption affects the productivity of the single task, interviewees also indicate an effect the type of the previous tasks on the effectiveness. In particular results suggest preference for a number of consecutive, similar activities on different topics rather than opposite activities on the same topic.

Lastly the time of the day has been reported to play a role, as we would expect. Individuals reported to actively attempt to travel off peak when possible to avoid crowding and congestion. Additionally people claimed that a busy peak time commute would have a lasting negative effect on their productivity levels during the day, because of both mental exhaustion and increased stress.

## Conclusions and expected results

Overall, the insights gathered so far reveal a very complex set of interactions between more strategic considerations (expected activities and conditions) and instantaneous conditions (overlooking passengers), intertwined by heterogeneous role of technology as determinants for productivity. There is also an inter-individual and intra-individual interpretation of the concept of productivity, depending on particular work-related contexts, information of which are not routinely captured in surveys describing travel time use or productivity. The preliminary results yield information so far about the time dimension in relation to productivity, the final findings are foreseen to give insight on single drivers of productivity and further information on the role of technology.

The ongoing analysis of the interviews is expected to present detailed results on personal productivity. While preferences about organization of work and work location have emerged in the preliminary findings, there is more subtlety on what drives workers productivity. Interestingly, the interviewees appeared to be able to define more clearly what makes them un-productive rather than what makes them productive. A topic that we strongly expect to emerge is the quality of communication. Bad communication was consistently reported as a driver of inefficiency with various reasons being given such as a highly formal communication style to ambiguously written emails. While we expect to see some factors of productivity to be quite common and have similar effects among the sample, we also expect other factors to depend on certain features of the individuals. Even at such an early point of the analysis different groups of individuals start to be defined. For instance, individuals with more structured perception of their work and the progression of the objectives over a long period of time appear to have lower tolerance for mobile work. Also individuals with a higher variability in their work tasks tend to appreciate and search more for opportunities of mobile work. Nevertheless these differences tend to smooth when higher levels of seniority are reached. Although we are presenting preliminary considerations, these are the lines on which we expect this analysis to develop. Hence the current research offers recommendations with respect to how to more accurately express and measure productivity among knowledge workers in mobile settings.

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