

INVESTIGATING THE IMPACT OF CLOUD ADOPTION IN FIRMS

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Motivation

Cloud computing combines elements of grid computing, utility computing and autonomic computing in an innovative deployment architecture (Zissis & Lekkas, 2012). More specifically, the US National Institute of Standards and Technology (NIST) define it in terms of *five characteristics* (on-demand self-service, broad network access, resource pooling, rapid elasticity, and measured service), *four deployment models* (private, community, public and hybrid clouds), and *three service models* (Software as a Service, Platform as a Service, and Infrastructure as a Service) (cf. Mell & Grance, 2011). The potential impact of cloud computing has sparked significant interest in the IS and IT industry. Cloud computing services, which are effectively based on a pay-as-you-go model (Armbrust *et al.*, 2010), result in immediate savings on hardware and software (Morgan and Conboy, 2013) and can also lead to time savings by supporting process transparency and auditability and also by facilitating better communication within the firm and (Conboy & Morgan, 2012). However, empirical research on cloud computing is limited, focusing on the technical rather than business aspects (Leimeister *et al.*, 2010) and on the barriers to adoption rather than the value implications of use (Conboy and Morgan, 2012; Clohessy & Acton, 2013). In particular, very little is known about the implications of cloud solutions on the use of time in firms – even though time use is recognised as a fundamental business performance indicator (Ciborra, 1999). This study therefore systematically investigates the business implications of the cloud adoption within the client firm using a temporal perspective.

Literature Review

Increased responsiveness at shorter notice: Cloud solutions affect firm agility (the capacity of firms to make significant changes at short notice in response to environmental changes). For the first time, firms can avail of dev/test environments on demand which can facilitate exploratory and innovative work within the firm. At the same time, cloud solutions are easy to install (Conboy & Morgan, 2012) and highly scalable (Armbrust *et al.*, 2010) which increases firms' capacity to rapidly respond to change by varying their own demand for particular services (*ibid.*). In addition, cloud solutions can

increase firms' capacity to run complex queries on large distributed data sets in near real time and these results can be used to trigger responses to environmental and market changes. However, increased firm agility leads to greater industry turbulence. As such, cloud solutions may enable individual firms to quickly adapt to change but firms are more likely to encounter such change going forward.

Better synchronisation and improved access to data: Cloud solutions improve the availability and accessibility of data (Yu *et al.*, 2010), the capacity to synchronise data across multiple locations and across multiple devices (Agrawal *et al.*, 2010), and provide greater opportunities for individuals and teams to collaborate at work (Marston *et al.*, 2011). But to take full advantage of these benefits, individuals and teams need to develop new ways of timing and coordinating work, new techniques to cope with the costs of switching from one task to another and new mechanisms to support concurrent work practices.

Increased velocity leading to greater time pressure: Cloud solutions result in significant process improvements (Conboy & Morgan, 2012). However, the resulting time savings can, in turn, lead to time compression (Kumar, 1995) and increased time pressure across industries (O Riordan *et al.*, 2012a). Indeed, most network-enabled firms are increasingly expected to be able to operate in real time (Orlikowski & Yates, 2002). As such, cloud solutions may enable individual firms to make time savings but ultimately, firms will have to work hard to derive sustainable competitive advantages from these savings because of the increased time pressure that these technologies also induce at the industry level.

Method and potential contribution(s)

This study leverages an existing theoretical framework on temporality in firms to systematically investigate the direct and indirect consequences of adopting cloud solutions in three technology-intensive firms. Given the exploratory nature of the topic, the data will be collected and analysed using qualitative techniques. This research addresses a fundamental gap in our current understanding of the business implications of adopting cloud solutions in firms. Given the impact that cloud technologies are currently having, the research is of strong industry relevance. From a theoretical perspective, its core contribution is to ongoing efforts to develop new ways of investigating temporality and its relationship with technology in organisational settings (cf. O Riordan *et al.*, 2012b).

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