Service Science: An Actor-Network Theory Approach

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ABSTRACT

Service comprise of socio-technical (human and technological) factors which exchange various resources and competencies. Service networks are used to transfer resources and competencies, yet they remain an underexplored and ‘invisible’ infrastructure. Service networks become increasingly complex when technology is implemented to execute specific service processes. This ultimately adds to the complexity of a service environment, making it one of the most difficult environments to examine and manage. In addition, although the emerging paradigm of ‘Service Science’ calls for more theoretical focus on understanding complex service systems, few efforts have surfaced which apply a new theoretical lens on understanding the underlying trajectories of socio-technical dynamics within a service system. This paper presents a literature review on Actor-Network Theory (ANT) and discusses how it may be employed to examine the socio-technical nature of service networks. ANT offers a rich vocabulary to describe the interplay of socio-technical dynamics which influence the service system reconfiguration. Thus, this paper offers a discussion on how ANT may be employed to examine the complexity of service systems and service innovation.

Keywords: Actor-Network Theory, Literature Review, Service Innovation, Service Network, Service Science

1. INTRODUCTION

In paper we offer a discussion on Actor-Network Theory (ANT) – the sociology of technology and science, which, as the literature suggests, is often viewed as a more radical approach towards understanding technological influences (i.e., a socio-technical view). The paper discusses how ANT may be used to examine actors’ behaviour within a service system, since every action leaves a ‘footprint’ which provides us with more insight on the underlying infrastructure of service operations. Often, researchers are tasked with defending a particular theory to focus their research, but as Walsham (1997, p. 478) suggests:

“There is not, and never will be, a best theory. Theory is our chronologically inadequate attempt to come to terms with the infinite complexity of the real world. Our quest should be for improved theory, not best theory, and for theory that is relevant to the issues of our time.”

We adopt ANT to examine Service Science since it addresses both social and technical di-
dimensions of service network and the impact of service innovations. This paper also discusses how ANT is a very influential across IS theory and draws on the "strengths of qualitative research to provide a powerful, but somewhat different framework for understanding IS innovation" (Tatnall & Gilding, 1999, p. 962). Thus, this paper also discusses why ANT is considered appropriate to apply within Service Science research undertakings. It pays particular attention to the concepts of 'materiality,' 'inscription,' and 'translation' explaining how the introduction of a service system impacts the structure of a service network. This draws our attention towards the need to understand how, within a service environment, the social influences the technical, and the technical influences the social.

2. SOCIETY AND TECHNOLOGY

There have been numerous conceptualisations of the relationship which exists between technology and society and many studies highlight the important factor in which information technology (IT) plays to enable and increase the transformations of organisations (Orlikowski, 1991; Demirkan et al., 2008). However, it is difficult for Service Science practitioners to accept a presumptuous attitude towards the promise of technology, and suggest that these assumptions regarding the affordance of technology are becoming a cliché (e.g., Demirkan et al., 2008).

In the past, there have been two differing schools of thought on the relationship of IT and social factors. One school of thought focused on technological determinism (Winner, 1977), which suggests that technology follows it own logic and patterns of usage. Alternatively, there was considerable support for constructionism which suggests that society develops the technology and society determines technology’s role (Woolgar, 1991). These schools of thought were much debated throughout literature over in the 1970’s and 1980’s. But, in recent years, researchers began to examine the role in which both arguments played simultaneously to advance our understanding of the embedded relationship of IT and the organisation. Continued interest focused towards the question of how IT and the organisational roles interplay and how they come into ‘being,’ suggesting the need to pay more attention to the characteristics and properties which support their co-existence (Kling, 1991; Orlikowski, 1992). Nowadays, we acknowledge that there is a mid-point between the two schools of thought which offers us a ‘truer’ picture of technologies ability to ‘enable’ and ‘restrict’ transformations. There have been increasing efforts to propose suitable models to explain the socio-technical factors of organisations. One approach in particular which is gaining more research ground across diverse research fields is ANT, which offers a radical vocabulary to examine the socio-technical building blocks on the nature of service networks.

A service system comprises of socio-technical systems which stabilise a service network through the exchange of resources and competencies which generate value. Ng et al. (2010) discuss the transformation of system thinking during the 1960’s which viewed the organisation as an ‘open system’ made up of socio-technical factors. Within this school of thought, Emery and Trist (1960) examine how a system maintains quasi-stationary equilibrium despite changes in the environment. A socio-technical view of organisations incorporates the need to examine the hybrid nature of social (i.e., people) and the technical (i.e., things) in order to understand how actions are executed and the factors which influence the actions’ outcomes. Although technical factors are often concerned with machinery, it also includes methods and procedures to explore how work is organised as a process (Ng et al., 2010). Nowadays, technology (i.e., service systems) plays a critical role in supporting critical organisational functions which highlight the importance of understanding how socio-technical systems impact of service relational structures. This paper argues that ANT is a fitting research approach to gain insight of socio-technical systems. This work also complements the emergence of Service Science developments.
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