Chapter XVI
A Socio-Technical Interpretation of IT Convergence Services:
Applying a Perspective from Actor Network Theory and Complex Adaptive Systems

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ABSTRACT

The trend toward convergence, initiated by advances in ICT, entails the creation of new value chain networks, made up by partnerships between actors in unrelated industries. Such a process of convergence, however, can create a new dimension of network complexity, precipitating dynamic behavior among actors. In this paper we seek to understand how different actors in value chain networks have co-evolved in practice with the development of convergence services. Interpretative case studies on two different converged services in Korea (mobile banking, and One phone services) are undertaken to examine how different actor network adapted in different ways to shape the overall complexity of the converged service. The case study analysis is innovative in being conducted within a combined framework of Complex Adaptive Systems and Actor Network Theory. This synthesis offers a way to characterize the drivers of co-evolutionary behavior, capturing the translation processes undergone by actor networks.

INTRODUCTION

The rapid development of Information and Communication Technology (ICT) and associated rollout of ICT infrastructure places firms in a position where they increasingly offer converged digital services. This concept refers both to new services, infrastructure, or features (ITU, 1996), and the integration of various consumer interfaces (EU, 1997). The trend towards convergence involves both a technological development and a socio-economic process, with firms being impelled to create new Value Chain Networks (VCNs) linking activities in previously unrelated industries. The phenomenon of digital convergence can be approached in various ways. For instance, it can mean the convergence of different networks through an increase in interconnection and interoperability, entailing the convergence of services and markets, of firms and industries, and of regulatory institutions (Ovum, 1999). In such situations, there is both a need and an opportunity for the partners in any convergence to adopt a joint coordinated approach in order to establish more efficient value chains. This perception also captures how, in a modern, networked economy, a firm's success or failure may be dependent on the success of its network, rather than on its inter-functional performance (Archibald, Karabakal, and Karlsson, 1999).

As networks develop and firms form new partnerships, however, the process of digital convergence creates a new dimension of network complexity, precipitating dynamic behavior among actors. In recent years, scholars and practitioners have sought to understand how different actors interact with others in the VCN, as these forms of behavior have co-evolved with the development of converged services. The pragmatic challenge for network participants is no longer to eliminate network complexity or volatility, but rather how best to manage and exploit these phenomena. Although a number of articles have discussed the contexts of digital convergence, the drivers of such forms of network evolution have yet to be theoretically explored from a socio-technical perspective. This paper describes an interpretative case study undertaken to examine the specific adaptations of a VCN in the course of the convergence of digital services. We use a combined framework of Complexity Adaptive Systems (CAS) theory (Axelrod and Cohen, 2000; Anderson, 1999) and Actor Network Theory (ANT) based on Callon and Latour (1981), analyzing the theories' implications for different convergence cases. Further, we classify phenomena of digital convergence into two categories and perform case studies for each category. The proposed framework suggests a possible synthesis between CAS and ANT offering a structured way to characterize the drivers of co-evolutionary behavior

This paper is structured as follows. The next section briefly presents a literature review of ANT and CAS. Each case study domain is introduced descriptively. We then characterize ANT and CAS as tools for capturing the emergent co-evolutionary nature of digital convergence. These considerations lead to the framing of our research design and its application. We analyze two different cases of converged services (Mobile banking, the One phone service) in sections 4, 5 and 6 using ANT. Working through our design specification, we then analyze the two different cases according to the key characteristics of CAS, comparing the findings of the two methodologies. Our conclusion considers how CAS and ANT may be to some extent re-specified for the purpose of examining digital convergence from a socio-technical perspective.

LITERATURE REVIEW

Case Study Domain: Digital Convergence Services

This section defines two different convergence domains 1) within the telecommunications sector;

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