Conceptualization Of The Convergence Phenomenon To Develop An Applicable And Integrated Framework

Elizabeth A. Teracino
Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands, e.a.teracino@rug.nl

DongBack Seo
Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands, d.seo@rug.nl

Follow this and additional works at: http://aisel.aisnet.org/pacis2012

Recommended Citation
http://aisel.aisnet.org/pacis2012/62

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2012 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
CONCEPTUALIZATION OF THE CONVERGENCE PHENOMENON TO DEVELOP AN APPLICABLE AND INTEGRATED FRAMEWORK

Elizabeth A. Teracino, Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands, e.a.teracino@rug.nl

DongBack Seo, Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands, d.seo@rug.nl

Abstract

Financial service companies, such as banks and accounting firms, and product software companies, such as enterprise resource planning (ERP) software companies, previously from discrete industries, are beginning to adopt Software-as-a-Service principles, potentially leading them into a new environment. The motivation for this research is to understand what is beginning to occur between these software and service industries, as a result of the convergence phenomenon. However, a similar phenomenon has already happened among the mobile and landline communications, computer, and TV broadcasting industries. Through reviewing and analyzing literature on the convergence phenomenon in the industries in which it has already developed, the main aspects are identified and integrated into one comprehensive framework with which to analyze the phenomenon as a whole. Their inter-relations and dynamics are explored via mobilization of institutional theory. The framework’s applicability is then explored against the historical case of the telecommunications, broadcast and computer industries. Future research suggestions are offered to further test and corroborate the framework to increase its generalizability and applicability for analyzing the convergence phenomenon in all industries experiencing it at different paces.

Keywords: convergence, Software-as-a-Service, mobilization, Institutional Theory
1 INTRODUCTION AND MOTIVATION

Information Communication Technologies (ICTs) have traditionally been used by companies to internally streamline organizational processes. However, this is changing and software is more frequently being used to deliver services externally to customers. Financial service companies, such as banks and accounting firms, are starting to deliver a substantial part of their services through software delivery channels. Basic examples of this are online banking portals and online book keeping. Software-as-a-Service (SaaS) is the term used to describe this use of software as a delivery channel for services. Product software companies, particularly enterprise resource planning (ERP) software companies, are also utilizing SaaS principles in order to integrate different services to be delivered through their software solutions. The adoption of SaaS may mean that these two previously discrete industries are moving towards utilizing new hybrid delivery methods. Moreover, many of these services are traditionally delivered by accounting firms.

Recently, software vendors and financial service partners are jointly involved in the delivery of an integrated software package to end clients. The partnership between the Dutch enterprise software provider Exact and Rabobank is an example, where Exact’s ERP software solution will now also include Rabobank banking services as an added functionality for customers. Alliances and partnerships are growing in popularity and importance in this environment (Gulati et al., 2009), and more research is needed on firm collaborations via alliances and partnerships surrounding the integrated software solution, as these can add to or detract from the value created (Sarker et al., 2012). For example partners in an ERP venture can be involved in the reselling, extension and delivery of the integrated software to the end clients, and this can have a positive or negative effect on the success of the solution. Thus managing collaborations could become essential in this environment. However, it is currently difficult for these firms to evaluate competition and collaboration strategies in this rapidly changing environment.

What is occurring between the software and service industries is remarkably similar to what has occurred in other industries as a result of the convergence phenomenon. The convergence phenomenon is when a technological evolution occurs where previously separate products or services merge into a single offering, resulting in cross-industrial collaborations and the integration of services and markets. A well-known example of this resides in the telecommunications, broadcast and computer industries, when all types of traffic (data, voice, etc) were able to converge over the standard IP, where services and content may combined (Seo & Sherif, 2009). These combined services and content could then be accessed from one device or terminal and this final stage of the phenomenon is defined as fusion (Seo & Sherif, 2009). On top of the fusion, new services could be added which allowed for new services to diverge to different outlets. An example of this divergence is varying applications on a smart phone. This combination of services and content is where jointly created value can stem from, as is such for the case of SaaS. Since there is a possibility of accessing multiple types of data, content and independent functions/services from the same integrated software platform, convergence can be said to be occurring on the application level for the case of SaaS. Fusion is the partnering of software vendors and financial service companies to provide their services together through an integrated software solution.

The importance of managing these fusion services in the midst of the convergence phenomenon can be seen in the stark contrast between the cases of the telcos of the European Union (EU) and Asia (mainly Korea and Japan). In Asia, Korea and Japan adapted to the convergence phenomenon and managed their fusion services by becoming content managers earlier on (Seo & Sherif, 2009). In doing so, the Korean telcos managed to lock in consumers, avoiding the service / delivery commodity label. Today, they are still experiencing high growth through their mobile TV initiatives, where nearly half of the population of Korea was subscribed to this new service by 2009 (Chan-Olmsted et al., 2011). On the other hand, telcos of the EU are rapidly losing revenues due to having failed to adapt despite a continually changing environment. KPN, a Dutch incumbent telco lobbied to fight for the ability to differentiate between fees for voice and data, in order to salvage its failing legacy revenue model, which is entirely dependent on voice transfer. However, the Dutch recently passed amendments that guarantee net neutrality, the first of this type of movement. This means telco service providers cannot increase charges on voice transfer despite losing out on revenues to applications
The research question then is: what insights can the convergence phenomenon that has occurred in the telecommunications, broadcast and computer industries provide about what is occurring now between the financial services and software industries?

The objective is to discover the main aspects that can explain the convergence phenomenon and explore their inter-relations. In order to approach this, five steps are taken. First, a literature review and analysis are conducted with the aim of identifying the main aspects most contributing to and resulting from the convergence phenomenon. Second, a framework is developed consisting of these aspects. Third, the inter-relations between these aspects and their dynamics are explored via the paradigm of institutional theory and mobilization. Fourth, a chronological progress is presented in order to assess the framework against a historical case of the telecommunications, broadcast and computer industries. Fifth, the framework is explored via the case of SaaS, and future research ideas to further develop the framework for analyzing the fusion occurring between ERP vendors and financial service companies are offered in a discussion.

The academic contribution of this paper is twofold. The first is the integration, for the first time in the literature, of all the segmented perspectives of convergence found in the telecommunications, broadcasting and computer literature into one comprehensive framework, where the inter-relations of the major aspects involved are explored with the purpose of analyzing the phenomenon as a whole. The second contribution is the assessment of the applicability of the framework which is explored against a historical case. The aim is that this framework may then be used to analyze the convergence phenomenon that is occurring in other industries as well. For practitioners, the contribution is a framework to analyze an industry environment experiencing the convergence phenomenon and consequently define strategic positioning more accurately.

2 INSTITUTIONAL THEORY AS A CONCEPTUAL BACKGROUND FOR THE CONVERGENCE PHENOMENON

In viewing the SaaS environment as a result of the greater convergence phenomenon, we gain two main insights which are discussed as follows. First, since firms moving into the converging SaaS environment stem from different industries, this could affect how they will approach this type of environment, for example how they view collaboration and competition. Organizations within an industry adopt similar practices/structures due to rules (e.g. regulations, policies), norms (e.g. standard protocols, expected methods of interaction within an industry), and taken-for-granted knowledge structures (e.g. behaviour defined by culture or language). This type of organizational behaviour is studied in institutional theory (DiMaggio & Powell, 1983, 1991; Friedland & Alford, 1991), and the rules, norms and knowledge structures are referred to as institutional logics (Thornton, 2004; Greenwood & Suddaby, 2006). It is widely accepted that these logics guide an organization’s behaviour in various social and commercial settings (Scott, 2001; Droege & Marvel, 2010). This is even more so the case in industries that are considered highly institutionalized, such as financial services (Greenwood & Suddaby, 2006) or the industries of telecommunications and broadcast prior to deregulations. Thus, firms from these discrete industries are likely to have different perspectives of such as WhatsApp and Skype (examples of fusion services), since all data must be treated the same due to consumer privacy concerns. This only further seals the fate of their revenue model and solidifies their position as a service / delivery commodity. The saliency in this example for ERP vendors lies in the fact that as a provider of fusion services, there is a danger of becoming a service / delivery commodity. Who is to say that another ERP vendor couldn’t come in and replace the service providing aspect of another vendor in a few years time?

To gain insight into the fusion between the software and financial service industries (e.g. banks, accounting firms) from the phenomenon perspective, the convergence phenomenon first needs to be understood as a whole (convergence, divergence and fusion) where it first occurred: in the telecommunication, broadcast and computer industries. The convergence phenomenon has progressed most completely for these industries, providing the most developed picture of the complexities of the phenomenon over the longest period of time. Understanding the major aspects that have affected and caused this phenomenon and their dynamic interactions may provide insight into how to approach the evaluation of the fusion happening now between the software and service providing industries. The research question then is: what insights can the convergence phenomenon that has occurred in the telecommunications, broadcast and computer industries provide about what is occurring now between the financial services and software industries?
the environment. For example, incumbents from one industry entering the new environment may view the incumbents from other industries as new entrants into their own industry, which was the case for the telcos and broadcasters when collaborating over mobile TV (Chan-Olmsted et al., 2011). They also may have different interests on the process level. For example, product software vendors have traditionally focused more on product development, whereas service providing firms have traditionally focused more on sales and delivery of services through their own delivery channel. Similar industrial differences in interests on the process level were also present in the case of the telecommunications, broadcast and computer industries (Seo, 2007). Further, industry-specific standards and regulations, or logics, played a huge role in the progression of the convergence phenomenon in the cases of the telecommunications, broadcast and computer industries, as indicated in convergence phenomenon-related literature (Kim et al., 2010).

Second, this environment is fairly new and lacking predetermined institutional logics, and thus firms can still attempt to influence these. To dominate this environment could mean being able to insert self-interests into the establishment of logics (Droege & Marvel, 2010). In this research the assumption is made that this would provide firms a great competitive advantage in this environment. Since one firm alone cannot influence an environment’s logics, firms must work together to do so despite potential differences in interests. As a result, these intra- and inter-industrial collaborations have an element of competition motivated by these differences in self-interests (Park & Ungson, 2001), as also evidenced in the general alliance literature. There is even fear of the potential of cannibalism between aligned firms, for example, that an ERP could potentially ‘eat’ some of the service providing partners’ business (Sarker et al., 2012). Thus the conflicting interests of firms collaborating, as well as status differentials, play a huge role in the success of the solution and the joint value creation process (Sarker et al., 2012).

While agency theory addresses a firm’s attempt to control others’ behaviour so they achieve the firm’s interests over their own, and thus could address the conflicting interest factor, it does not help us in understanding the crucial effects of the industrial environments firms previously stem from. The multiple industrial contexts affecting collaborating firms will need to be accounted for in this research as previously determined from our first finding of the analysis of the convergence phenomenon. The research takes an industrial perspective for this reason, however much competitive and collaborative research has limited applicability in this case. This is because often the focus has been on competition and/or collaboration within the confines of one industry, a famous example being Porter’s five forces. While some organizational theories, such as population ecology theory, can lend insight as to the effects of firms’ industrial backgrounds, they are lacking when it comes to understanding the power differentials between collaborating firms. Actor network theory, while potentially useful in factoring in the technology as having an effect within the network of collaborating firms, also doesn’t allow accommodations for power imbalances to be made, nor for industrial contexts to be incorporated. To account for the why firms decide to collaborate, the simultaneous competition and collaboration involved in this process, and the potential attempts to influence the creation of institutional logics in the SaaS environment as well as in the telecommunications, broadcast and computer industries, this phenomenon could be seen from an industrial view as mobilization.

Mobilization is when there is collective understanding of a possible environment that better suits interests than that of the environment to which firms are subscribed, and this can lead to the collective action (Seo & Creed, 2002) to influence new logics (Droege & Marvel, 2010). Mobilization is a change mechanism of institutional theory, a theory which aims to solve the existing paradox of how actors embedded within and conditioned by the institution itself can change that very institution (Seo & Creed, 2002; DiMaggio & Powell, 1991; Holm, 1995; Hirsch & Lounsbury, 1997). The theory revolves around the idea that organizations comply with logics in order to gain legitimacy and reputation for example within an industry (DiMaggio & Powell, 1983). This can provide many benefits, an example having more access to resources and networks. But what happens when organizations begin to participate in a new environment, where there are no pre-defined logics to subscribe to in order to gain such benefits through obtaining such attributes? Institutional theory can account for the industrial logics each firm is influenced by in the pursuit of these benefits, while mobilization can provide insight into the reasons for firms to seek to change the logics that provide
these benefits in the first place. While it is very difficult to measure the creation of institutional logics, it is possible to attempt first to measure how well firms work together, if they decide to do so, to begin to participate in the environment. In the next section, the methodological steps taken to conceptualize the convergence phenomenon in the context of mobilization and institutional theory are described.

3 METHODOLOGY

There are three methodological steps taken, each elaborated on in separate following sections. First, a literature survey, meta-analysis, and review, is conducted with the aim of identifying the main aspects of the convergence phenomenon via the scattered perspectives in the literature. When speaking about ‘the literature’, this paper is referring to articles in international referred reviewed journals that had a focus on the convergence phenomenon. This initial search focused on the industries of telecommunications, broadcast and computer specifically, as the nearly all of articles focusing on the phenomenon were specific to these industries. However, due to the technical and multi-dimensional nature of the topic, journals from a variety of disciplines came up in the search, such as law, economics, regulatory policy, marketing, and business strategy (See Table A1 in Appendix for examples). Some of these articles were found to be relevant to the convergence phenomenon and were included as a part of ‘the literature.’ For instance, some articles came from top ranking management journals, such as Strategic Management Journal, and were included as these are interdisciplinary journals with studies closely related to the IS field. This allowed for a variety of perspectives of the phenomenon, focused within the telecommunications, broadcast and computer industries.

The search included studies conducted from 1971 to 2011, in Business Source Premier (BSP) in order to capture the relevant articles. The Internet Protocol (IP) standard was introduced in 1982, however, the possible convergence between the computing and telecommunications systems was mentioned as far back as 1977 (Farber & Baran, 1977). To assure we covered the entire possible time period of the phenomenon, we opted to start the article search at 1971 to be certain. A total of 48 articles were found useful and contributing to this specific research niche. The main keywords that found the most relevant results (See Table A1 in the Appendix) were ‘convergence’ and ‘digital’ (20 articles) and the combination of ‘convergence’ and ‘telecommunications’ (28 articles). Prior to Seo & Sherif’s (2009) exploration of the varying definitions of ‘convergence’ from a historical and cross-industrial perspective, the definition for ‘convergence’ varied heavily by author and time period (Srivastava & Finger, 2006). In order to assure a complete keyword search was exhausted, an exploratory literature search was done in stages, where after each round of results the new potential keywords were searched in following rounds through a snowball effect.

Second, from these segmented aspects, an integrated framework is created. The purpose of integration is to identify the aspects’ inter-relations. These inter-relations between the main aspects discovered in the literature review are explored via institutional theory and mobilization. This mechanism allows for the continuous and dynamic nature of the aspects to affect each other simultaneously. A framework is developed including these aspects and their inter-relations. Third, the applicability of the framework is assessed using the historical case of the convergence phenomenon on the telecommunications, broadcasting and computer industries. A historical case is used for this assessment particularly as the convergence phenomenon occurred over many decades and is quite complex, involving multiple industries and technologies, and affecting businesses, markets and users alike. A historical case provides the necessary distance to observe how an innovative phenomenon, such as the convergence phenomenon, both emerges and alters its environment simultaneously (Hargadon & Douglas, 2001). In assessing the dynamics of the framework against this historical case, the aim is to validate aspects and explore their inter-relations. The following section discusses the results of the literature review and identifies the major aspects of the convergence phenomenon.
4 LITERATURE REVIEW

The findings of this literature review reveal that four aspects are discussed most frequently: technological evolution, regulation, firm collaborations, and standardization. Considering the paradigm of institutional theory as a basis for explaining this phenomenon, aspects are categorized as either environmental, organizational or in between, in relation to the story of the convergence phenomenon. What is meant by an environmental aspect is that an individual firm by itself cannot control changes in this aspect. These changes occur and affect the environment under which firms operate. These aspects could potentially be an institutional logic, or a disruptive innovation, for example. An organizational aspect is an aspect an individual firm can alter directly. This includes internal organizational changes made by individual firms, which are often as a response to changes in environmental aspects. An in between is an aspect that has the properties of both an environmental and organizational aspect, which could be explained by mobilization. An example of this could be if firms mobilize with the purpose of causing changes in an environmental aspect. The research streams surrounding these aspects as per the literature are discussed as follows.

4.1 Environmental Aspects

4.1.1 Technological Evolution

Technological evolution is mentioned in all of the articles retrieved, as it is widely accepted as the main environmental aspect necessary for the convergence phenomenon (Kim et al., 2010; Mueller, 1999). It includes digitization, advancements in standards, and network convergence to IP, which allowed for the phenomenon's inception (Kim et al., 2010). The possibility of inter-industry convergence between the industries of computers and telecommunications was first mentioned by Farber & Baran (1977), which initiated the convergence research in the area of ICTs. The focus began with the convergence of ICT products and markets (Nora & Minc, 1980), as a result of the technological evolution. It was still uncertain how pervasive this technology evolution would be (Lanzolla & Anderson, 2010). The real hype surrounding convergence began with the pervasiveness of the Internet in the late 1990s, much later than researchers and practitioners had predicted (Gambardella & Torrisi, 1998; Blackman, 1998). The advent of the internet and its pervasiveness since has amplified the benefits of network effects and externalities, and increased the desirability of convergence (Pitts III, 1999; Shy, 2010; Bores et al., 2003; Yoffie, 1996) from an economic perspective. This sparked further inquiries as to if there were other drivers of convergence, other than the technological evolution.

4.1.2 Regulation

Regulation refers to governmental or institutional laws or policies that hinder or foster competition, examples being international tariffs, competition principles, funding and subsidizing stipulations, network access and content broadcasting limitations, and licensing conditions (OECD, 2004), and these naturally vary by industry. An example of regulatory discrepancies can be seen in the example of content, which is not regulated in the telecommunications or computer industries, however is highly regulated in the broadcasting industry (Blackman, 1998). As the telecommunications and broadcast industries are highly regulated industries, regulatory governmental policies affecting licensing and barrier entries have played a role alongside the technological evolution, environmentally speaking. Regulation is noted in this segment of the literature as affecting policies and access to the Internet in a limiting way (Golding & Murdock, 2001; Nora & Minc, 1980, Fabar & Baran, 1977; Bangemann, 1997), creating unfair competition between players in different industries (Humphreys & Simpson, 2008; OECD, 2004). This resulted in varying perspectives as to regulatory needs and perceptions of deregulation for the new environment emerging as a result of the convergence phenomenon, as regulations lagged behind the fast pace of network convergence, and the technological evolution (Blackman, 1998).
4.2 Between Environmental and Organizational Aspects

4.2.1 Firm Collaboration

Collaboration can be defined broadly as any two or more firms coming together to work towards a particular goal. Collaborations could take the form of firms partnering for R&D and joint-ventures, merging or acquiring each other for the purpose of gaining more control over the production and/or value chains (Mueller, 1999), cross-industry tapping into a new market (Chan-Olmsted, 1998) or it could simply be an informal alliance for positioning purposes. There are two specific research focuses within firm collaboration that arose in the literature review: mergers and acquisitions (M&A) and standardization.

The first stream of research within firm collaboration is that of M&A. In the telecommunications and broadcast industries, as an after-effect of the deregulation acts that occurred in the EU and U.S. in the late 1990s and early 2000s, mergers and acquisitions (M&A) constituted one of the focuses representing one of many forms of firm collaborations. M&A provided a speedier method of vertical growth in a time when it was necessary to implement new technologies and speed up the R&D phase (Eunni et al., 2005; Pitts III, 1999; Warf, 2003), and leveraging off of the customer base of another firm was a profitable way of doing so (Chan-Olmsted, 1998; Chan-Olmsted & Kang, 2003). A few empirical analyses on the M&A demonstrated an increase of M&A post deregulation in the U.S. (Chan-Olmsted, 1998; Chon et al., 2003; Grover & Khwaja, 2003) demonstrating a link between deregulation and M&A within industry and cross-industry, as firms prepared for a new converging environment.

The second stream of research within firm collaboration is that of standardization. A standard is technical specifications adhered to by a producer/firm/party, as a result of a formal negotiation/agreement (de jure) or as determined by the markets (de facto) (Oshri & Weeber, 2006; Besen & Farrell, 1994). Changes in the way standards were created and adopted, their interoperability and compatibility levels, and how these changes affected competition and collaboration amongst firms are an important aspect of the story of convergence (Vercoulen & Van Wegberg, 1998). It was found that 34% of the objectives to partner were focused on controlling emerging technologies (e.g. standardization) (Grover & Khwaja, 2003). Networking with those outside of one’s industry in this emerging environment became increasingly more important strategically for positioning purposes related to standards (De Laat, 1999). Standard-setting alliances despite competitive stances of firms or previous industry boundaries are common in this new emerging environment (Van Wegberg, 1996). Oshri & Weeber (2006) further researched the both cooperative and competitive hybrid of collaboration during standards-setting activities of those involved in the Wireless Information Devices Operating System (WID-OS) battle on smart phones. They demonstrate that these types of collaborative partnerships, which could be a hybrid of both de jure and de facto at the different stages of standardization, became more attractive for firms as technology became more complicated and costs of R&D increased over time.

4.3 Organizational Aspect

This organizational aspect includes internal strategies, financial and pricing model alterations, reorganizing of internal labor, utilizing outsourcing, development of new products and/or entering new markets, among others. These changes are industry specific particularly in the case of the convergence phenomenon where there are differences in the environmental aspects affecting each industry. Because an industrial perspective is taken, these organizational changes on the firm level will be reflected upon instead by the external actions of firms in the form of firm collaboration.

4.4 Other Aspects

User demand as an aspect comes up in a few of the studies, mainly from the user perspective. The user demand for the ‘dedicated product’ (just a phone or just a camera) and for ‘convergence products’ is explored (Han et al., 2009), and it is found that when the user is pursuing convenience goals (mobility and portability), the ‘convergence product’ is more desired, and when the user is pursuing functional goals (e.g. they are a professional photographer), the ‘dedicated product’ is more desired. It is also found that the majority of users have strong demand for fusion products,
contributing to the progress of convergence (Kim et al., 2010). This aspect will not be included in the framework, as an industrial perspective is taken.

The literature review reveals that studies pertaining to the convergence phenomenon are segmented. In order to integrate these perspectives, their inter-relations must be determined. In the following section mobilization as a mechanism of institutional theory is used to link the aspects together to create a framework.

5 FRAMEWORK

To allow for the framework to be generalized, firm collaboration is renamed to ‘mobilization,’ since the concept of mobility encapsulates the dualistic properties of firm collaboration as a ‘between two levels’ aspect of the convergence phenomenon. Regulation is also renamed to ‘institutional logics’ as regulation represents just one of the many forms of institutional logics that define an institution (Thornton, 2004). The framework can be seen in Figure 1. Next, each relationship in the framework is described.

![Figure 1. Framework for the inter-relations of the main aspects contributing to, and resulting from, the convergence phenomenon](image)

- **Relationship a:** One dynamic loop or cycle of institutional theory, linking the environmental and organizational aspects in one snapshot.
- **Relationship one:** The technology evolution is a constant disruptive aspect affecting firms directly, and is indicated by a thick directional arrow pointing from technology evolution to organizational changes on the firm level.
- **Relationship two:** An organizational change is transferred into a strategic mobilization effort.
- **Relationship three:** This represents the various forms mobilization can take, e.g. various forms of collaboration.
- **Relationship four:** This represents when firms collaborate with the purpose of creating entirely new institutional logics, and groupings of firms negotiate these new logics with other groupings of mobilized firms they encounter in the new environment (Droege & Marvel, 2010). This also represents when firms mobilize to change the existing institution(s).

When the previous institutional logics are changed or new ones created, the cycle of the framework is complete and the next ‘loop’ would be initiated. These inter-relations will be further explored and the
framework analyzed against the historical case of the telecommunications, broadcast and computer industries in three upcoming sections: convergence, divergence and fusion.

6 CONVERGENCE

Although telecommunication companies had their own network protocols and standards that were used to deliver their content to the end user during the pre-digitization era, these lacked interoperability. In most countries, the environment was entirely monopolistic and state-centric (e.g. EU). Monopolies (e.g. AT&T, BT, Deutsche Telekom, France Telecom) had exclusive control over the production, service, network, installation, maintenance, channel of delivery – all vertical components possible – and had to protect their de jure standard(s) for competitive reasons. The state owned, protected and funded the incumbents, often a monopoly, in order to ensure consistency and integrity, and exploit economies of scale effectively. While network access was regulated, content was not as it was considered a privacy issue. The original business model of the telcos in the past focused solely on the, now legacy, service of analog voice transfer. This model thrived via economies of scale (guaranteed more or less by the state) and network externalities.

The broadcasting industry was traditionally viewed as a public service in most countries up until cable technologies became more mainstream. The environment was also that of an oligopolistic and monopolistic nature. Content was regulated heavily along with network access. Content was a major regulatory concern, especially in the EU where broadcast was strictly considered a public service, which adds the element of nationalism to the mix, creating high entry barriers. Thus, a typical broadcast business model pre-convergence relied on government funding and advertising revenues. For both the broadcast and telecommunications industries, institutional change could occur within each industry through mobilization, where firms could mobilize to petition or lobby regulators for their own industry for example, if their interests were not being met over time. These mobilization efforts and changes thus were industry-specific before convergence, denoting one version of relationship four in the framework.

On the other hand, the computer industry was not then, and still is not, held to the regulatory policies or laws of the telecommunication or broadcasting industries. This introduced the possibility to increase network externalities, with unregulated content and access. The technological evolution consistently progressed with the move from analog to digital, 1G to 2G, and advances in coaxial cables coupled with decreasing processor prices. The Internet soon entered the environment, creating a new delivery channel, amongst many socio-economic implications. IP became the standard of the internet in 1982, and of convergence (Mueller, 1999), allowing for separate networks to inter-network. The internet would quickly change the way firms from all industries would deliver their services and products. This has not changed, which why relationship one, or the technology evolution is a constant disruptive aspect affecting firms directly, can be confirmed. Individual firms, in transitioning to and adopting the TCP/IP standard, made organizational changes. Eventually all forms of content would be deliverable in the same file format over the same standard (e.g. Voice-Over-Internet-Protocol, Webcasting). This set up the possibility for, and the anticipation of, the ‘multimedia industry’ (Oshri & Weeber, 2006), where all forms of content would be deliverable via the same file type due to convergence on the network level.

7 DIVERGENCE

Once convergence existed on the network level, divergence of media in all forms could occur. The potential to substitute services between industries became feasible, and content was becoming scalable (Oshri & , 2006). The telcos, or network providers, now could compete with providers in other industries (e.g. Internet services, wireless communications), while broadcasters, or content providers, could distribute their content via different networks despite the type of content. The telcos, broadcasters and firms in the computer industry adapted to and approached this differently, as the traditional business boundaries between firms in different industries began to break down and blur (Yoffie, 1996). The differences in the structure of organizations, whether vertical or horizontal, regarding their value chains before the blurring of these boundaries, affected how firms approached this new situation. A vertical value chain denotes that the organization conducts and/or controls most
of the value chain processes/activities in the chain. A horizontal value chain is a chain formed by multiple independent firms that control one or more of the process/activity components of the chain. For the telcos and broadcasters, both of which came from industries with a predominantly vertical organizational preference, perspectives on potential strategies for dealing with convergence focused on vertical integration (Rangone & Turconi, 2003; Blackman, 1998). Competitive advantage was thought to have been maximized if the horizontal components of these new technologies could be vertically integrated (Blackman, 1998). On the flip side, the computer industry focused on the opposite strategy, where firms in discrete industries would focus on specializing in one or a few horizontal components of the value chain instead of vertically integrating (Yoffie, 1996; Mueller, 1999). These differences in perspectives on strategy were amplified by increasing regulatory asymmetry.

Regulations were lagging behind the pace of the technological evolution and it was determined that this would hinder competition with oncoming globalization (Boriello, 2000; OECD, 2004; Humphreys & Simpson, 2008; Blackman, 1998; Bangemann, 1997; Economist Intel Unit, 1997). It was clear that while convergence and divergence didn’t change government objectives, it would eventually begin to affect how well the existing policies would continue meet those objectives (OECD, 2004). If all ‘electronic communication’ (OECD, 2004) were to be deregulated, at least to a level that would catch up with the fast progression of the technological evolution, the phenomenon could progress (Yoffie, 1996; Grover & Khawaja, 2003; Kim et al., 2010), fostering international competition. As a result, deregulations occurred in the late 1990s (U.S.) and 2000s (EU), causing many strategic mobilization efforts. This supports relationship two, where an organizational change is transferred into a strategic mobilization effort.

The telcos and broadcasters, preferring vertical integration, experienced a lot of M&A at this time. A more extreme example of this strategy can be seen in the M&A increase in the United States promptly following the Telecommunications Act of 1996 where the telcos were the most active in acquiring other players (Chon et al., 2003). Consolidations between cable and telecom companies immediately reflected the results of this deregulation (Chon et al., 2003), and relationship two. Deregulation had blurred the line between communication providers and distributors, an example being AT&T purchasing Media One and TCI to acquire access to local cable. The M&A between telcos and internet companies, some of the bigger transactions of this time, reflected the results of digitization (Chon et al., 2003). For example, AT&T bought stake in Net2Phone, a long distance provider over the internet, in order to vertically integrate this new form of service offering (Grover & Khawaja, 2003). Long distance telephony slowly became commoditized and adding services/products to the mix became the focus of telcos (Joseph et al., 2005), however once the dotcom bust occurred M&A came to a halt in 2002 (Grover & Khawaja, 2003). Those who failed to adapt their business model and strategies to accommodate for this shift to a need for fusion services are still losing revenues today, KPN of the Netherlands being an example of this. A ‘do-nothing’ strategy by telcos, particularly incumbents, when a disruptive technology is inevitable, leads to failure (Ho & Chen, 2009).

Another difference in the perspective by industry can be seen in the light of standardization strategies. Firms in both the telecommunications and broadcast industries have tended to standardize technologies in a de jure method, prior to developing their products and/or services, which requires more time and negotiation efforts between firms (Seo, 2007). This can take longer, but saves resources later on. This means more coordination between firms within this industry, which may also contribute to the preference for vertical integration and M&A methods. On the flip side, firms from the computer industry tended to develop their products and services first, and then compete in a de facto way later for their standard to become the dominant one (Seo, 2007). This means these products and services reach the market faster, but they run the risk of having another standard chosen as the dominant standard which could be costly resource-wise later on. More recently, a hybrid of de jure and de facto methods for standard setting activities has emerged as a result of convergence and divergence (Oshri & Weeber, 2006). This can be seen when standard setting activities are broken down into the development and sponsorship stages, where alliances between competitors have been
seen in the development stage, while the sponsorship stage has been marked by a predominantly cooperative nature (Oshri & Weeber, 2006).

In Korea and Japan, the telcos and broadcasters didn’t focus on M&A as a method, nor did they see differences in their standardization strategies, but instead created alliances and partnerships cross-industrially for the purpose of offering fusion services. This reflects relationship three, which represents the various forms mobilization can take. The Korean government imposed de jure standards for mobile TV for a new market that began to grow due to divergence and the increasing pervasiveness of smartphones. Smartphones had become a prevalent access point to which services were diverged and it became possible to then diversify ones service offerings or in other words, use fusion services to add value to the value chain. In this case, the telecommunications and broadcasting industries were both involved in the development of this market in Asia, even despite regulatory asymmetry, via alliances and partnerships.

8 FUSION

To illustrate fusion and the salience of industrial differences in approaching the management of fusion services, which was handled best by Asian firms, Korea is a good example (Chan-Olmsted et al., 2011). The differences between the Korean telcos and TV broadcasters further illustrates differences in industry-specific strategies since the broadcasting incumbents (e.g. KBS and MBC) were pitted against the telecomm incumbents (e.g. SK Telecom) in a tug of war for content and access respectively (Chan-Olmsted et al., 2011) initially. It was found that the telcos (e.g. SK Telecom) felt that to avoid cannibalization with their financial models based on voice and messaging applications, it was important to find services that were technologically feasible and already demanded by customers and saw mobile TV as strategic entry point into broadcast (Chan-Olmsted et al., 2011). The overall trend for the Korean telcos was that with more access it made more sense to invest more in network infrastructure, however for broadcasters who had more content holdings, this was not a priority as it was more expensive to do. From the broadcaster perspective, it was noted that while alliances with fellow broadcasters were more natural due to having similar business goals, alliances with mobile service providers was more out of business necessity to stay competitive, and a need for technological information (Chan-Olmsted et al., 2011). Essentially, the telcos became content managers, or fusion service providers, in efforts to differentiate their services and themselves in the new environment in order to avoid becoming a commodity.

While mobilization efforts to influence institutional logics are apparent, no firm institutional logics have yet been established anywhere in the world in this environment as of yet. This next step is in progress at present, and is denoted by relationship four, which represents when mobilized firms encounter other mobilized firms, and these groupings of firms negotiate the creation of these new logics.

9 DISCUSSION

In applying the framework to the case of the ERP software providers and financial service firms, it becomes clear that as a fusion service provider, the ERP software providers could be in danger of becoming a commodity as the telcos of the U.S. and EU did. In learning from the Asian telcos, becoming a content manager earlier on to lock-in consumers could be something for ERP vendors to keep in mind strategically. Also, it is clear that partners, alliances and stakeholders are of utmost importance strategically speaking when mobilizing a new environment. It could be useful for future researchers to focus on exploring how firms could analyze potential collaborators, and thus make better informed decisions when mobilizing into the SaaS environment.

The convergence phenomenon beginning to occur between ERP vendors and financial service firms has yet to reach the phase that the telcos, broadcasters and computer industry firms have, as there is no dominant standard for SaaS as there was when IP became the standard for the internet. However, the fact that ERP vendors are already providing fusion services shows that the phenomenon is in progress. It can be observed that thus far, only non-exclusive alliances have thus far been initiated, but only between the banks and ERP vendors, while the accounting firms have yet to become
involved. This leads us to believe that the progression of the phenomenon is nearing relationship two for these industries.

10 CONCLUSION

This study addresses the need for an integrated framework that can be used to analyze the progression of the convergence phenomenon as a whole, in multiple industries experiencing the phenomenon at different paces. To create this framework, the main aspects of the convergence phenomenon were identified through an extensive literature review, and their inter-relations were established through institutional theory and mobilization which are used as a conceptual background for the convergence phenomenon. In exploring the relationships established in the framework against the historical case of the phenomenon’s effects on the telecommunications, broadcast and computer industries, the linkages between the main aspects were tested and assessed. While the case of SaaS has not reached the point in the phenomenon that the telecommunications, broadcast and computer industries have, it can be noted that there is a danger for ERP vendors of becoming a commodity as service providers, and that there is increased importance placed on the management of collaborations in providing fusion services. Limitations in the research include focusing in only on the industries of the telecommunications, broadcast and computer in discovery of the main aspects of the phenomenon. There need for the framework to be further corroborated against the software and financial service industries experiencing this phenomenon to discover missing aspects and/or linkages between aspects that may be relevant to this specific case. The framework could also be further corroborated against the cases of the lighting and electricity, and music industries, which are other industries experiencing this phenomenon as well. Further, the organizational perspective was not considered despite including an organizational aspect into the framework. An organizational perspective could greatly contribute to the framework’s salience, and lend insight as to how firms could better manage various mobilization efforts. Finally, this research did not include empirical data. Empirical studies, such as case studies at ERP vendors and financial service firms collaborating with each other, could further test and refine the framework and provide deeper insight to the mobilization occurring between these industries.

11 APPENDIX

<table>
<thead>
<tr>
<th>Keywords</th>
<th># of Articles</th>
<th># of Relevant Articles</th>
<th>Examples of Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convergence + Fixed-mobile</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Convergence + ICT</td>
<td>28</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Convergence + Ecosystem</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Convergence + products</td>
<td>25</td>
<td>2 (repeats)</td>
<td></td>
</tr>
<tr>
<td>Convergence + next generation networks</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Convergence + Network</td>
<td>445 (too vague)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital + ecosystem</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Ubiquitous + Computing</td>
<td>162</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Ubiquitous + computing + convergence</td>
<td>12</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Table A1. Keyword Search
References


