



# iSCHANNEL

The Information Systems Student Journal



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## EDITORIAL – From the Faculty Editor

After a few years away I am re-joining the iSCHANNEL as faculty editor. It's hard to believe that we have completed our ninth edition, and will shortly be starting our 10th! What an achievement this is and we must look forward to celebrating next year.

This ninth edition shows the clear progress the journal has taken. Firstly the processes of putting together the journal are much better and more professional – to the extent that faculty involvement in its production is minimal (excepting writing this editorial). In part this is because our PhD students and MSc students have collectively adopted the iSCHANNEL as their own and have stepped forward to volunteer.

More importantly though is the improved recognition the journal is receiving both within the LSE and beyond. For our students an article in the iSCHANNEL is accepted as a valuable thing to include in their CVs. Further for the incoming students receiving a journal produced by their peers from the previous year, and showing how good LSE essays can be, is valuable and important.

Congratulations to those whose articles are published in this year's journal. It was interesting to see how the topics being discussed and explored have evolved over the years. Back in 2006 the issues of censorship, trust, user-resistance, global- IT and e-government, e-voting, digital divide and patient records were explored, with social media notably absent. This year in contrast social networking predominates in two articles – with Huhnt's article exploring the issue of social capital and Stelmaszak exploring the privacy implications of LinkedIn. E-government remains important (with Dupré's article on user-take-up). Cloud computing, a term coined during in the iSCHANNEL's lifetime, is also discussed by Acs in a thoughtful piece on Snowden's revelations which reminds us of how geopolitical issues remain important at the heart of our discipline. Morizio's analysis of a USA healthcare information exchange shows that health, unsurprising given its industry size and importance, remains an interest among our students. Finally Parvarandeh explores the brand-new issues of MooCs – something which is challenging the very idea of university and study from which the iSCHANNEL was born. What impact MooCs will have on education in the long term we cannot know, but at least this most student of journals is reflecting their arrival.

Best wishes,

Dr. Will Venters

*Faculty Editor*

## EDITORIAL – The Transformative Character of Information

Over the last decades, at a rapidly increasing pace, information has pervaded the inner structure of society, and become integral part of its functioning as we know it. Kallinikos (2011) makes the point that information can no longer be seen as incidentally traversing human existence: over time, it has acquired a character that pervades, structures, and ultimately governs the construction of socio-economic life. As we witness this process, studies of Information Systems can hardly be conceptualized as intrinsically abstract, or detached from the everyday workings of human existence. Their core subject matter becomes, on the contrary, increasingly embedded in the social, economic, and political domains in which our lives are inscribed.

The six articles, included in this Volume 9 of iSCHANNEL, are diverse in their subjects and theoretical stances: however, they all focus on technologies embedded in society, which contribute to shape it in the form in which we currently experience it. These are technologies that utilize, manipulate, transfer information: their common matrix lies in how, through their functioning, they build and rebuild society's workings, and become, by doing so, an integral part of the contemporary world. Furthermore, in their articles, authors go beyond a neutral vision, which steers away from facing the implications of information beyond the technical domain. On the contrary, in their reasonings, they openly undertake discussion of how technologies - with information at their core - shape the society to which we belong.

In "The Increasing Importance of Social Capital on Virtual Social Networking Platforms", Christian Huhnt discusses multiple ways in which social capital is transferred, and ultimately reconstructed, by the means of social networking devices. Through a discussion of the shapes taken by collective action in the sphere of social networks, the author envisions a process that sees platform architecture as influencing the nature and dynamics of social capital exchanges. As a result, social networking platforms arise as a means through which exchanged information acquires a different, newly constructed value in the view of users. In his analysis of this process, the author looks at its consequences on the evolution of users' self-perception through the mediation of platforms.

In "Privacy, Social Network Theory and Patterns of Information Revelation on LinkedIn", Marta Stelmaszak examines privacy aspects on LinkedIn, especially in relation to risks coming from exposure to other users. Through the analysis of a set of LinkedIn profiles, with a focus on the information that these reveal to different degrees of connections,

the author finds a number of potential risks related to identifiability, information sharing, and weakness of users' control on the diffusion of information. The vision of LinkedIn, emerging from this article, is that of a platform that rebuilds the domain of professional networking, exposing users, among many benefits, to a set of newly-created risks to be aware of. Effects of these risks on privacy and information disclosure are at the core of the author's discussion.

In "Reshaping the Organizing Vision of Cloud Computing: How the Snowden Revelations Affected Stakeholder Action", Andrea Acs looks at how Snowden's revelations about US government surveillance affected perceptions of privacy, and consequently stakeholders' behaviour, in the cloud business. In doing so, the author details how an established theoretical paradigm, namely the organizing vision of cloud computing, may be reinterpreted and re-examined in relation to this phenomenon. In this piece, information disclosure is constructed as a force that reshapes actors' behaviour, to the point that theoretical understandings - through which the cloud business has been observed so far - are also to be revised as a result. The article is deeply illustrative of the power of an information-related event on the functioning of business, and on the roots of actors' behaviour.

In "Path to Sustainability for Health Information Exchanges in the US: A Case Study of Indiana through Alignment and Enactment Frameworks", Patricia Morizio studies Health Information Exchanges (HIEs) as a technical and organizational innovation, developed to overcome the fragmentation of the US healthcare system. Working through a lens resulting by the combination of alignment and enactment frameworks, the author looks at the Indiana experience as one in which HIEs, through new means to information sharing, seek sustainability by providing a potentially long-term fix to fragmentation. System design, as it emerges from the paper, is key to reconstructing the functioning of large-scale systems such as US healthcare: design needs, therefore, to be capable of embodying a clear agenda on how reform is to be led. For change to happen, system implementation needs to be coherent with the principles of this agenda.

In "Fostering the Success of E-Government Initiatives by Improving User Take-Up", François Dupré looks at e-government as a means through which public services, and citizens' ways of accessing them, are reformed with respect to their original forms of delivery. Exploring the implications of this reform in users' view, the paper focuses on vicarious learning as a potential means to increase citizens' trust in

ICT-based service provision. By doing so, the author examines vicarious learning as a novel route to user uptake, whose potential is that of strengthening the link between new forms of service provision and the communities to which these are aimed. The author looks at implications of this route for users' perception of public services as mediated by ICTs.

In "Assessing the Disruptive Potential of Massive Open Online Courses", Shahriar Parvarandeh studies Massive Open Online Courses (MOOCs) with respect to their capability of generating disruptive innovation in the higher education industry. Drawing on the notion of radical innovation, the author assesses the MOOC phenomenon with respect to its capability of reshaping educational programmes, and using platforms to increase and reconfigure their accessibility to the target market. In doing so the author observes, as well, the limitations to the disruptive potential of MOOCs, resulting from incumbents' usage of these programmes as ways to sustain existing programmes, rather than as means to explore new forms of content delivery. Technology is examined, throughout the paper, through the lens of its potential to reconstruct education, and make it accessible to wider communities by the means of online distribution.

By studying technologies that are deeply embedded in society, and discussing them with direct reference to their contexts of operation, these six articles convey a unitary message: together, they illustrate the transformative character of information, as a force reshaping the nature and functioning of the society we live in. In doing so, they choose to engage explicitly with the implications of these processes, which have direct and profound effects on people's lives in the contemporary world. Recognizing the Gramscian notion (1935) of the value of intellectual engagement for society, we present our Volume 9 contributions as paradigmatic of this value: in their discussions, authors deal openly with the consequences of information, as they affect the spheres of economics, politics, and societal workings at large. The choice of intellectual engagement, embodied by these articles, significantly contributes to enhancing their value in contemporary Information Systems scholarship.

Silvia Masiero

*Editor-in-Chief*

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# The Increasing Importance of Social Capital on Virtual Social Networking Platforms

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## KEYWORDS

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## ABSTRACT

Social Capital is a human psychological need that is being reshaped by the digital evolution due to intensive use of social networks. New tools, such as 'Social buttons' to "Like" and "Share" web content, have evolved, filtering, ranking and editing data to organise the exchange of Social Capital. It is based on an exchange, where the user gives away Social Capital first, in order to receive it. The contribution of knowledge or information is not for the quality improvement itself, but for the contributors' individual gain to generate Social Capital through the attention of others. A socially constructed architectural framework allows this Social Capital to trade like a currency between users' interaction and content sharing. New algorithms in social networks make users always contribute and interact, believing that they are in a consensus in earning and spending Social Capital. This suggests a biased view on qualitative digital content and a potential threat to organically constructed Social Capital. The dangerous result is the users' social irrelevance and illusional self-awareness caused by the ambivalent ontology of digital artifacts and vacuous, viral and fast-expiring information being exchanged for Social Capital, not for the purpose of meaningful knowledge.

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## Introduction

The past decade has witnessed a tremendous growth in social computing and user-generated content (Peck et al., 2008), shifting the role of technology from information processing to actionable social intelligence embedded in computing platforms (Wang et al., 2007). This confirmed the IS theories' eligibility of Social Shaping and Social Construction of Technology, suggesting that technologies are socially shaped, and so their resulting form reflects structural and political circumstances of their development and that the resulting technological artifacts are constructed by social groups whose process of interaction among each other interprets success and failure of these constructions (Howcroft et al., 2004). This paper does not discuss the most or least successful Social Networking sites, but the general cultural development in the process of using those networks and what this means for the user today. At this point, it may nevertheless be noteworthy to mention that those Social Networks able to maximise each users' Social Capital the most also became the most successful and survived.

This decade furthermore exemplified the increasing importance of Social Capital in a concept based on what Franck (Franck, 1998) defined as "The Economics of Attention". The journalist Joe Turnbull recently described this phenomenon as "a society where the cult of celebrity is arguably more pervasive than any formal religion, [in which] Facebook has given everyone the chance to be a mini-celebrity. Projected into every nook and cranny of daily life via mobile phones, tablets and laptops, a Facebook profile acts as a personal PR campaign." (Turnbull, 2013)

This essay will outline the general consensus about Social Capital, Social Cognitive Theory as well as Social Contagion in context to the nature and development of Social Media and Social Networking platforms in general. Why do we contribute, share, spend time and effort to actively engage on these platforms? We do so in order to exchange a new and ever more dominant form of Social Capital, which is attached to a lot of positive multiplier effects, but also to increasing threats in combination with a coded, manipulatable and commercially backed Social Networking environment.

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## Social Capital in Web 2.0: A Unilateral or Bilateral Concept?

Social Capital has been defined as “resources embedded in a social structure that are accessed and/or mobilised in purposive action.” (Coleman, 1990; Putnam, 1993 and 1995). Bourdieu and Wacquant (1992) define Social Capital as “the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalised relationships of mutual acquaintance and recognition.” This is the widely accepted definition of Social Capital in the literature at the time of writing. Social Capital has been linked to a variety of positive social outcomes, such as better public health, lower crime rates, and more efficient financial markets (Adler & Kwon, 2002).

Some authors even attach a currency to this form of capital, as with Franck’s ‘Economics of Attention/Awareness’ (German: *Ökonomie der Aufmerksamkeit*), describing the exchange of attention between humans in trading Social Capital (Franck, 1998). Wasko & Faraj’s (2005) view of Social Capital is more unilateral and systemised in different categories (cognitive, structural and relational capital) that should all lead to knowledge contribution. Franck’s view (Franck, 1998) is bilateral or, in other words, dialectic. He tries to explain its concept through a currency that is based on an exchange of attention. In order to gain attention, one has to give it away first. (Franck, 1998) Those who spend more attention than gain it have a shortage in Social Capital and those who gain more attention than spend it have a surplus (Franck, 1998). Wasko & Faraj’s (2005) view is unilateral, because it assumes that the aim to produce knowledge for others is for knowledge’s sake only and hence the willingness to distribute it to others is for the individuals’ gain of Social Capital. Franck’s (1998) concept however shows that those who only give away their knowledge would not be satisfied, as they would spend more attention than they would earn in Social Capital. Thus the production of knowledge itself is only done in order to compete in the exchange ratio of attention. The ultimate hypothetical goal is to input less than the output of others in your input would generate. As Chiu et al. explain: “The significant relationship between norm of reciprocity and individuals’ quantity of knowledge sharing implies that participants of a virtual community may seek a fair balance between what they contribute to the community and what they receive from it” (Chiu et al., 2006: 1885).

This concept is exemplified in the idea of open source. The one character or characters that are most likely to receive the highest income in Social Capital are the initiators, maintainers, or generally those who govern an open source project. One example would perhaps be Richard Stallman, as

the single “benevolent dictator” for the GNU/Linux development. In this project, his initial input of Social Capital spent might have been high, but throughout the development he largely received more input from other developers and users than he could possibly apply into the project himself. So why would one be willing to participate in an open source development? From this sociological perspective, and in relation to Franck’s (1998) definition of a currency system, the Social Capital gained by a developer through Richard Stallman’s attention is significantly high, when he accepts and includes a code that the developer has written for GNU/Linux. This form of Social Capital is what Von Hippel & Von Krogh (2000) describe as benefits of peer recognition, the learning and enjoyment (of knowledge), as with Wasko’s & Faraj’s (2005), ‘selective incentives’, tailored individual uses and problem-solving solutions, as well as more collective benefits, such as a community feeling, sense of belonging and cooperative qualities, such as solidarity, altruism, fairness, and the like. Those whom Von Hippel & Von Krogh (2000) describe as ‘free riders’, or in other words, users of the system in development, are not following merely unilateral pathways either. They contribute in comments on improvements that similarly lead to gains in Social Capital, in the simple form of the suggested change of the system by the developer.

As already briefly discussed, Wasko’s & Faraj’s (2005) paper focuses on knowledge contribution itself and the different kinds of Social Capital, namely structural, cognitive and relational that drive towards it. This view coincides with Chiu et al.’s (2006) study, interlinking Social Cognitive Theory with Social Capital Theory. As for that matter, they describe Social Cognitive Theory as:

[...] widely applied in the Information Systems (IS) literature with demonstrated validity. The theory defines human behavior as a triadic, dynamic, and reciprocal interaction of personal factors, behavior, and the Social Network (system) (Chiu et al., 2006: 1873)

The theory, mainly formulated by psychologist Albert Bandura (2001), describes how, partly due to the observation of social interaction by others, an individual learns new behaviour through knowledge acquisition.

Most interesting is that both studies find that “social interaction ties, reciprocity, and identification increased individuals’ *quantity* of knowledge sharing but not knowledge quality [...] Reciprocity is not a significant predictor of helpfulness of knowledge contribution in electronic networks of practice” (Chiu et al. 2006; Wasko & Faraj, 2005). This furthermore confirms that knowledge contribution in itself is not

the basis of the Social Capital, but rather the personal and psychological side-effects, such as well-being, confirmation and attention by others. The willingness to share something in order to gain Social Capital is higher than the actual willingness to contribute knowledge that is helpful to others.

Bandura's (2001) Social Cognitive theory is influential for what Susarla et al. (2012) classify as Social Contagion. As they explain, "Social Contagion broadly describes a class of phenomenon where preferences and actions of individuals are influenced by interpersonal contact, impacting the aggregate diffusion and spread of behaviours, new products, ideas, or epidemics." (Susarla et al., 2012, 24) Social contagion is almost the same theory as Arefi's (2003) 'Consensus' as a direct positive indicator for increased Social Capital, implying the 'shared interest' and collective action within a community.

Susarla et al.'s (2012) study looks at the impact of Youtube on the diffusion of user-generated-content and individual attention-seeking. Building on the potent idea of Social Contagion, such as the "desire for social conformity, homophily, and awareness diffusion" (Susarla et al., 2012: 24) they find, among other things, that friends' networks have a significant impact on diffusion and that "multiplier effects arising from Social Contagion within a Social Network can be instrumental in shaping perceptions of the usefulness of innovations, explaining the trajectory of diffusion of technological innovations" (Susarla et al., 2012: 38). Based on Social Contagion in the diffusion of user-generated content which influences others' decisions, perceptions and behaviour, they also outline that "Social Capital fostered through networked interactions might also mitigate the potential for information asymmetry, suggesting that research on reputation systems on the Internet (e.g. Resnick et al., 2000) could incorporate Social Networks based explanations".

### **Online Social Networks: A Social Construction of Technology**

With the development in Social Networking applications came the architectural upgrade of the Social Capital currency system to a form that would be equivalent to leveraging, hedging or credit systems in the financial services industry. Filtering and editing tools such as Social Buttons of 'Liking' and 'Sharing' allow us not only to manipulate the digestion of adaptive information and mass content, but also to gain Social Capital in a way that is impossible in the physical world. Additionally, the convergence of information, whether of private matter, or of personal, professional or commercial interest, is essentially all streamed through the same infrastructure and processed and evaluated using the exact same technological artifacts, particularly in

regard to approval by using the 'Like' or 'Re-tweet' buttons. The 'Like' button essentially becomes the virtual credit card to pay with Social Capital.

The academic literature has not discussed the phenomenon of the relation between Social Capital and 'Liking' as a currency in detail yet. Gerlitz's & Helmond's (2013) 'Like Economy' discusses how positive effects can be analysed and capitalised for strategically marketing products and services. According to them, Social Buttons contribute to a simultaneous de- and recentralisation of the web in structuring the mass data flow of media. 'Free labour' is given by the user as consumer and traces data into a value creation for multiple actors including Facebook and external webmasters (Terranova, 2004; Gerlitz & Helmond, 2013). This 'Like Economy' is therefore the evolution of the 'Hit-and-Link economy' in Web 1.0 (Gerlitz & Helmond, 2013: 3). Where in the 'Hit-and-Link economy' the webmaster had the control to artificially inflate 'hits' by spreading links across the web, now the 'power of content' is with the user in the same way being able to artificially inflate Likes of digital content to be spread across the web, hence the expression of 'user-generated-content'.

This 'webmaster-to-user-generated-content' in the development from Web 1.0 to Web 2.0 follows largely the theoretical approaches of Social Shaping and the Social Construction of Technology, as summarised by Howcroft et al. (2004). It exemplifies the fact that the design of individual artifacts and systems is based on the construction and use of those services by the actors, rather than vice versa. In other words, the 'Hit-and-Link economy' developed to the 'Like economy' insofar as when webmasters spread links to artificially improve their Google PageRank, users increasingly demanded and shaped the social validation of that ranking with socially constructed artifacts in the domain of Web 2.0 through blogs, Wikis and Social Networks (Howcroft et al., 2004). The 'Like' button was then the result of a socially constructed simplification methodology to express a variety of feelings within those new domains. As Gerlitz & Helmond (2013: 11) explain: "The button provides a one-click shortcut to express a variety of affective responses such as excitement, agreement, compassion, understanding, but also ironic and parodist liking". It nevertheless characterises the same threat to artificially inflated web content, just in a more democratic nature.

Therefore, artifacts such as the 'Like button' will only remain until the majority of users are still satisfied with their initial social purpose, which was the reason for their social construction in the first place. As soon as users realise that the outcome with the artifacts' use misleads its original purpose, they will socially construct and develop a new artifact which better

fits their social needs. However, this is only true while there is still a difference in organically shaped social needs and those needs created through digital artifacts. If this becomes so opaque or intertwined that the users do not realise a difference anymore, (eg. the infant that tries to 'swipe' a page of a printed magazine, instead of turning it over), or if they prefer the technologically constructed social purpose to that created in the physical world, then we would see artifacts developed according to Latour's Actor-Network Theory (ANT), which treats the social and technological aspects as inseparable and describes all users, whether humans or non-humans as actants, whose collective contribution creates new systems or artifacts within systems. (Howcroft et al., 2004: 348-349)

The limitations that come with the 'Like' button and in the context of social construction of technology are the equally apparent commercial interests of external corporate entities within the same set of user interaction. As Gerlitz & Helmond (2013: 15) describe: "While Social plugins allow materialising and measure positive affect, critique and discontent with external web content remain largely intensive and non-measurable."

Ellison's et al (2007) paper, written before the 'Like' feature was introduced on Facebook and spread across all other kinds of social media platforms, focuses on gaining Social Capital by having the possibility to maintain, bridge or bond friendships. Using empirical methods, they found that Facebook usage interacts with measures of psychological well-being, contributing positively on those with low self-esteem or low life satisfaction.

But Facebook does not constitute the entire Social Media environment in Social Networking applications. Similar platforms such as Twitter, Youtube, Myspace, LinkedIn and more recently Foursquare, Instagram, Snapchat or dating apps, such as Tinder, take the idea of Social Capital in a currency based system of attention into even greater extremes, leading to a more obvious and narrow focus. They provide solutions to capitalise on social currency in every thinkable life aspect of the daily contemporary Social Media user, from desktop to mobile apps, online and offline. This goes from private microblogging, as described by Java et al. (2007), over to video broadcasting and editing on Youtube and Vine (Susarla et al., 2012), up to the most recent social trends of 'Selfies' (taking self-portraits with a mobile camera) and '#foodporn' (taking a snapshot of the dishes you eat or cook) on Foursquare, Snapchat, Instagram, etc., thereby trying to capture every possible aspect of generating positive attention by others to gain income in Social Capital. As Susarla et al. summarise: "the new models of Social Computing are characterised by a spontaneous emergence of communities, with a

wealth of opportunity for *participatory interaction, self-expression, and collective action.*" (Susarla et al., 2012: 38)

Yet again, those movements in Social Media culture are a confirmation of the Social Construction of Technology, as it is the users who make developers aware that they now have to provide suitable technological frameworks for their cultural interests. It has to be added, however, that those most recent cultural phenomena derive from a technological environment already, but the motivations (i.e. Social Capital) are deeply rooted in human psychology.

This explanation also sets the idea of Social Capital as a psychological concept in Social Networking applications away from Latour's Actor-Network-Theory (Howcroft et al, 2004: 348-349), since if there were a future substitute to technology to allow Social Capital to perform better, those users now using technology would quickly change to this next, better and non-technological alternative. Whether there is any better alternative to technology has yet to be seen, but may sound unlikely at present. Hence, the more the social and technological aspects merge together, the more relevant ANT becomes for the future design of artifacts.

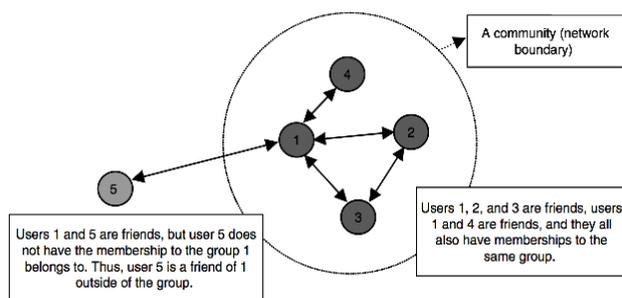
## Discussion and Conclusion

This paper has introduced the debate about the increasing importance of Social Capital in the context of Social Networking platforms and applications. Scholars have empirically tested the sociological theories of Social Capital, Social Cognitive theory and Social Contagion, all intertwined with another, primarily in relation to Facebook, Youtube, and Twitter (Chiu et al., 2006; Ellison et al., 2007; Java et al., 2007; Susarla et al., 2012; Gerlitz & Helmond, 2013). All scholars were interested in similar research questions, such as: "Why are those platforms used so excessively?" and "What makes people contribute to their activity willingly spending time and effort to share knowledge and information with others?"

The Social Capital generated through Social Networks is based on bilateral collective actions that lead to an equal distribution of 'income' in attention-seeking and attention-giving. This Economics of Attention, as Franck (1998) defines it, is crucial for the positive psychological effects it has on every user, such as rising self-esteem, satisfaction, confirmation, pride, well-being and happiness. Not merely the quality of information or knowledge exchanged is of importance, but the reciprocity of giving away Social Capital in order to receive it again is what makes people contribute, interact and feel comfortable within the community. The elements of information or knowledge are therefore, metaphorically, just turning into a form of exchange material or currency, just as

the more advanced mechanism of Social Buttons of 'Liking' and 'Sharing' are giving them credit (or not), as a credit card would do in a monetary system. What in Macroeconomic theory is termed as 'Balance of Payments' is what describes the consensus on Social Networking platforms.

The Social Capital that drives Social Networking activity and development is also an exemplary example for Information Systems' theory of the Social Shaping and Social Construction of Technology. It shows that people's interest in psychological well-being, given by Social Capital, is still superior to technology that can help and improve this desire. Therefore, technology is made and developed by social influences and not vice versa. The best and most recent example is the online dating app Tinder, which 'eliminates' the idea of rejection in asking someone for a date, as the application only allows interaction with two users if both users have anonymously agreed to one another before the interaction takes place.



**Figure 1:** Friend Relationships Inside and Outside the Group Boundary (Susarla et al., 2012: 28)\*

However, most recent developments in Social Networking applications and the everyday use of Social Media have drawn a lot of criticism in society. As outlined in the literature discussed, the quantity of knowledge distribution is much higher than its quality, which often leads to misconceptions or misunderstandings, false but fast information sharing through communities with large Social Contagion. Social Cognitive Theory and Social Contagion therefore increase users to believe in unbiased opinions and comments which are, for instance, only credited on large number of 'Likes' or 'Shares', Social Buttons, which symbolise vehicles that the Social Networking empire created itself and can freely be used by everyone, including external corporations, organisations and political bodies alike. The fear is the homophily of user-generated-content and the

oversized 'Social Contagion community' becoming a group of isolated individuals, with no more critical or lateral thinking skills. Those users might not be able to distinguish information and content, eligibility and quality, and its origin, whether it be private, commercial or propaganda. Hence, the 'Consensus' as described in a balance of payments is an illusion that is based on intelligent, refined algorithms, which make the individual users' experience with the 'feed' of information and exchange an edited and tailored balance to his or her individual interests and motivations. It leaves out the uncomfortable information that could stress or imbalance the gain in Social Capital, just as the preferences of each user wants it to be.

Therefore, in regard to Social Contagion, and in the same mechanism as the motivation for developers in an open source project, the horizontal hierarchy is an illusion, which remains sustainable only due to the anonymous and generative nature of technology, which allows all active users to gather enough Social Capital that they would request for their input. The value of each user's Social Capital depends on the position and importance of that user in a network of social bonding. To increase your own capital value, you start by affiliating yourself to someone who has a better position in the desired network than you do (Fig.1; User 5 befriending User 1), hence you pay or invest a lot of attention to that user or network. This process manipulates the external observers' ability to differentiate between those users with competence and actual knowledge and those with mere effective strong bonds to valuable Social Capital sources. But who has decided about whether those who enjoy a valuable Social Capital really deserve it? It is not their excessive and profound effort in strong knowledge or information contribution compared to others. It is rather their profound effort in understanding the Economics of Attention and being able to perceive others and be followed by others through strategies of self-promotion and marketing.

Another fear with the increasing dominance of technology to gain positive effects in Social Capital is that users might not see any alternative to gaining positive psychological effects other than to post, share and like virtual content day and night, in order to gain Social Capital. This makes their emotional pleasure isolated on virtual social media applications, sacrificing the real, physical world in favour of imaginary digital content. This is a dangerous development, especially for those who are born with this advanced technology and Social Media, as they might not be able to appreciate any features of psychological wellbeing in real life, other than on virtual platforms. They might prefer sharing a real life experience they witness first with their virtual community, before sharing and enjoying it with their physical, actual environment. This might be

\* Reprinted by permission. Copyright 2012 INFORMS. Anjana Susarla, Jeong-Ha Oh, Yong Tan (2012) Social Networks and the Diffusion of User-Generated Content: Evidence from YouTube. Information Systems Research 23(1):23-41. The Institute for Operations Research and the Management Sciences, 5521 Research Park Drive, Suite 200, Catonsville, Maryland 21228, USA.

interpreted as an addiction to a certain Social Capital which they only find through Social Networks and which might differ to a real, physical Social Capital. If this trend continues, then Latour's ANT becomes more relevant, as this would mean that technology and humans are not separable anymore in order to achieve this specific, almost drug-like, quality of Social Capital, not achievable in the physical world.

The paper has attempted to identify what literature has been written about Social Capital in context of social networking applications, an area that has grown to significant importance for our culture and society at large, as well as the politics surrounding it over the last decade. It should also act as a starting point in discussing the most recent developments in the architecture of Social Networking platforms and applications. Due to the increasing convergence of digital content with multilayered information infrastructures and big data, there is certainly more change to expect in the near future, which other scholars should explore in more depth.

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# Privacy, Social Network Theory and Patterns of Information Revelation on LinkedIn

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## KEYWORDS

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## ABSTRACT

Online social networks and privacy are often discussed in relation to Facebook or other similar predominantly social platforms (e.g. Friendster). LinkedIn, despite many public concerns about privacy, rarely is the scope of research, though privacy breaches have been identified coming from other users, the service provider and third-party applications. The scope of this paper is to analyse privacy aspects on LinkedIn in relation to potential risks coming from other users through the application of the social network theory and the analysis of patterns of information revelation on LinkedIn. Following a detailed analysis of LinkedIn profiles and information revealed to different degree of connections, a range of findings is presented, including the increase in polarisation of connections, a substantial increase in the number of weak ties, an unprecedented number of connections, as well as potential risks arising from the degree of identifiability, type of information revealed and visibility of information on LinkedIn.

## Introduction

*“LinkedIn has slipped under the radar when it comes to privacy controls and transparency (...). Everyone points to Google, Apple and Facebook and pretty much stops there.”* (Veldt, 2013)

LinkedIn, an online social network (OSN) for professionals, was created in 2002 by Reid Hoffman to allow the creation of personal brands and identification online (Lacter, 2009). In 2014, the network boasts over 277,000,000 registered members (LinkedIn, 2014). Though mainly designed to facilitate professional networking, LinkedIn invites members to add professionally-relevant information about themselves, such as education, skills, present and past employment, as well as to share updates of activity. In other words, upon signing to this OSN members are assigned personal profiles which they are encouraged to fill out with details of their professional identities and then connect with other members with whom they have something in common. Due to the purpose of the network, as well as the nature of information shared, LinkedIn has not been as closely scrutinised as other OSNs, such as Facebook, in terms of user privacy and information transparency.

It seems to be widely accepted by members that information shared on this OSN is by default visible

and its purpose is to attract potential connections or job prospects, unlike on Facebook. Though privacy concerns on LinkedIn may not mainly cover the type or nature of information revealed, they are present, often causing uproar among members and in nationwide media. In 2014, the most recent controversy surrounded third-party web browser plug-in software causing unwanted exposure of LinkedIn email addresses leading to privacy issues (BBC, 2014). In 2013, over 5,000 LinkedIn members signed a petition to LinkedIn to request a blocking function preventing unwanted individuals from viewing profiles due to stalking incidents (Change.org, 2013). Introduced in 2013 and quickly abandoned after a severe public reaction, the Intro function in iOS Mail is believed to have intercepted emails, added HTML to pull in extra information from LinkedIn and displayed it without users' permission (Sherman, 2013).

In 2010, the founder of LinkedIn himself caused a controversy after claiming at Davos Annual Meeting that “privacy is for old people” (YouTube, 2010). Many commentators concluded that such an attitude should cause concern over how LinkedIn approaches privacy in general (Cendella, 2011; Cavoukian, 2011).

This paper aims to examine the issues of privacy on LinkedIn in the light of social network theory (SNT) and patterns of information revelation (IR). In general, privacy breaches on OSNs may originate from service providers, from other users or third-party apps (Gao et al., 2011). This paper concentrates on analysing how the design of LinkedIn as an OSN impacts IR to other users in the light of SNT. Further, the paper

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analyses what degree of information revelation and control over privacy is allowed on LinkedIn and to what extent it is used by members.

The first part of this paper provides a review of literature on key themes concerning this subject, including privacy and privacy breaches on OSNs, social networking searching, as well as social network theory. In the second part the paper outlines two main theoretical frameworks used to analyse the issue of privacy on LinkedIn, namely the privacy aspect of social network theory and patterns of information revelation. The third part of the paper consists of an empirical study of 15 profiles of LinkedIn members. The results of the study are presented and analysed, followed by a summary of findings.

## Literature Review

### Privacy and Privacy Breaches on OSNs

The research in privacy and privacy risks on OSNs has gained momentum with the development of Facebook and Twitter. One of the main topics in this body of literature aims at defining privacy in the context of OSNs, as researchers believe that current definitions of privacy may not reflect new settings and challenges (Tomlinson et al., 2010). Therefore authors analysing privacy on OSNs often refer to more traditional definitions of privacy and apply them to the online world.

A group of researchers argues that privacy can be seen as control of the access to self (referring to Warren and Brandeis, 1890; Altman, 1975; DeCew, 1997; Solove, 2006; Houghton and Joinson, 2010). Due to the lack of a unified and simple definition of privacy, some authors (Tomlinson, Yau, MacDonald, 2010) analyse privacy on OSNs following developed dimensions of privacy (such as Westin, 1967; Marshall, 1972, 1974; Pedersen, 1979; Burgoon et al., 1989).

Some authors (Houghton and Joinson, 2010) suggest that within the context of OSNs, privacy can be defined as “the claim of individuals, groups, or institutions to determine for themselves when, how and to what extent information about them is communicated to others” (Westin, 1967: 7). This stream of literature provides a thorough and acceptable definition of privacy for the purposes of this paper reflecting the purpose and mechanics behind LinkedIn.

### Social Network Searching

Another source of literature relevant to the topic to provide the understanding of the use and type of information revealed on LinkedIn stems from the study of social network searching. As OSNs can be defined as platforms allowing individuals to “construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection and view and transverse their list of connections and those made by others within the system, OSNs allow for increased benefits and threats arising from searchability” (Boyd

& Ellison, 2007, p. 211).

Some authors argue that the development of OSNs “added a new dimension to the way that organisations search or investigate people” (Qi & Edgar-Nevill, 2011: 74). A study quoted in the paper, conducted by CareerBuilder.com in June 2009 suggests that more than 45% of managers who participated in the survey used OSNs to seek information on job candidates (Haefner, 2009). It is claimed that users’ sharing a variety of information on OSNs raises concerns about organisations’ access to personally identifiable data (Qi & Edgar-Nevill, 2011).

The stream of research in human resources on using social media for recruitment cannot be ignored, as it often aims at explaining why certain pieces of information are revealed by OSNs members. Some researchers analyse the biases of OSNs on the recruitment and selection procedures (Caers and Castelyns, 2010). In this context, the study conducted by the authors reveal that the majority of active LinkedIn members deem the network suited to be informed on friends’ career developments (85.1%), find updates on other organisations (57.8%) and make professional connections (47%) (Caers and Castelyns, 2014: 442).

### Social Network Theory

A large and relevant body of research for the purposes of this paper stems from the sociological study of social networks and its application to online social networking sites. Social network theory is primarily concerned with the study of actors (nodes) and networks they create (links), as well as the relevance of the depth and strength of social networks. Some of the main ideas within this theory concern sociological questions about relationships, such as connections (e.g. Feld and Carter, 1998; Festinger et al., 1950), homophily (e.g. McPherson, Smith-Lovin & Cook, 2001), distance between nodes (e.g. Freeman & Linton, 1992).

SNT has been applied to OSNs and the issue of privacy by a number of researchers. Most notably, Gross and Acquisti (2005) employ SNT to study information revelation and privacy in online social networks using the example of Facebook. Similarly, following the assumptions of SNT, Houghton and Joinson note a range of phenomena occurring on OSNs, such as convergence of relationships or interconnectivity (2010). While their research largely concerns Facebook, this paper follows similar theoretical frameworks to analyse LinkedIn.

### Theoretical Framework

For the purposes of this paper and due to the nature of LinkedIn, the definition of privacy accepted here follows researchers identifying privacy on OSNs as control information about the self revealed to other members of a social network (e.g. Houghton & Joinson, 2010).

As outlined in the introduction, this paper employs two theoretical frameworks to analyse the issues around privacy on LinkedIn, namely social network theory and information revelation. SNT has been applied in the context of OSNs before with particular attention to Facebook and provided a range of valid insights, therefore the application of this theory to LinkedIn follows this thread of research and allows to provide a comparable set of results. Information revelation in the context of OSNs has been studied before in the context of blogging and Facebook; in the study of LinkedIn it seems to be of particular relevance due to the user's capacity to reveal or hide specific information.

The application of SNT to online networks and privacy raises a number of important questions, as outlined in Gross and Acquisti (2005).

- First, online social networks increase polarisation of connections, reducing nuances of a variety of social relationships to binary oppositions: "friend or not" (Boyd, 2004), leading to cases where "people are indicated as Friends even though the user does not particularly know or trust this person" (Boyd, 2004: 80). The same applies to LinkedIn, where the notion of "connection" or "not a connection" does not reflect loose categorisation of weak or strong ties present in the offline world.
- Second, Donath and Boyd claim that "the number of weak ties one can form and maintain may be able to increase substantially [online], because the type of communication that can be done more cheaply and easily with new technology is well suited for these ties" (2004: 80). In fact, LinkedIn seems to encourage entering into a vast number of weak tie connections, and users with many connections seem to be perceived as more valuable within the network.
- Third, OSNs allow the inclusion of hundreds, or on LinkedIn even thousands of direct connections, therefore leading to unprecedented masses of second and third degree connections. This is in sharp contrast with offline social networks, where nodes usually maintain a limited number of significant ties and from 1,000 to 1,700 "acquaintances" or "interactions" (Donath & Boyd, 2004; Strahilevitz, 2004).

Patterns of information revelation on OSNs have been previously studied in the context of Facebook (Gross & Acquisti, 2005). Before analysing this particular case, the authors propose three patterns that they have noticed on different OSNs.

- First, the degree of identifiability of users changes across the types of OSNs. Some OSNs, as the authors note, encourage the use of real names (such as Facebook), while others discourage users from publicly revealing

their identities (e.g. dating sites, where often only the first name of a user is revealed in the network).

- Second observation covers the type of information revealed or elicited. The authors noted that these often concern hobbies and interests, through to drinking and drug habits.
- Third, according to the authors visibility of information is highly variable across networks. For example, some networks limit access to personal information to explicitly selected user's network members, while others broadcast information more openly.

### Research Setting

LinkedIn is an OSN widely used by professionals across all domains and in many countries (in some, like Germany or Poland, local equivalents are more prominent). The main purpose of the network is to allow professionals to connect with other members for networking within the business context. Members are invited to fill out personal profiles, connect with other members and browse their connections.

The study of 15 member profiles provides the opportunity to analyse in detail how SNT is reflected in practice on LinkedIn and what are the patterns of information revelation among its members. The limited number of members in the sample allows for a detailed enough analysis within a restricted period of time, and yet due to a randomised process of selection the results can be extended to larger member groups.

The sample has been chosen from a group of professional management consultant profiles present on LinkedIn the access to which has been provided through the author's colleague working professionally in the field. The author has set up a separate account for research purposes to be able to clearly identify first, second and third degree connections with the sample profiles. Access to public profiles was obtained through a Google search for respective members and their LinkedIn profiles, while out of network access was obtained through a keyword search based on professional headlines. The analysis was carried out first in terms of the SNT and its three assumptions, and then in terms of the patterns of information revelation.

### Results and Analysis

The analysis of 15 member profiles is presented as follows. First, default LinkedIn settings for new member accounts are presented, followed by an analysis of changes of information visibility within single profiles field by field and an analysis of information revealed across all profiles to first, second, third degree connections, public profiles and out of network members.

### Default Settings

Default LinkedIn privacy settings reveal all fields depending on the input from member to first degree connections, including "People also viewed" field, all connections and give the possibility to send a message to a user. By default, recommendations are visible to the network (first, second, third degree connections). Members cannot control visibility of information between first, second and third degree connections and by default all fields are visible to the whole network.

Members have a large degree of control over their public profiles and can select which fields are visible in public searches. However, by default, all information is shared and an "Advice for contacting" field is added. Any changes from the default suggest intentional action from a member.

Out of network visibility is, by default, limited to basics, picture and headline, with name and surname hidden (replaced by a placeholder "LinkedIn member"). Members have no control over the visibility to out of network LinkedIn members apart from Open Networker members who by default share all their information even with out of network members.

### Degree of Within-Profile Changes

In general, members do not seem to exercise the possibility to change the visibility of information. Only 4 profiles from the sample revealed user intervention in terms of public visibility of information, mostly concerning visibility of pictures. One member exhibited active involvement with the features and decided to hide five fields from his public profile, and another member decided not to reveal seven fields in public.

### Revelation by Degree of Connection

First degree connections have access to all information provided by members. Notably, the following fields: "Certifications", "Honors and awards", "Courses", "Projects", "Publications" and "Volunteering" were filled out only in 3, 3, 3, 6, 1 and 1 times out of 15 respectively. It is also worth pointing out again that 5 out of 15 members decided to reveal their date of birth to first degree connections. None of the members in the sample decided to hide his or her connections from first degree connections and only one member decided to hide "People also viewed" box.

Second degree connections have largely a similar extent of access to information. Just in one case, the picture was hidden from second degree connections. Dates of birth of 5 members who decided to reveal them were partially blanked by LinkedIn (leaving just the day and month visible) for second degree connections. 9 out of 15 members decided to reveal recommendations to the whole network, rather than

just to direct connections. "Connections" visibility was limited to shared connections only. Second degree connections can only message members through a paid-for InMail function.

Third degree connections, since they are covered under the same "network" as second degree connections have the same visibility over member information. The only exception here is the visibility of "Connections" which are hidden, therefore it is not possible to discover who is the second degree connection between the third degree connection and a member. A third degree connection can ask for an introduction, which is a paid function over a certain limit. Third degree connections can send messages to members only via the paid InMail function.

Public profile visibility is subject to member choice, yet by default every field is visible to everyone and members rarely change these settings (apart from cases described in the within-profile variations section). The only exception is the visibility of pictures (settings for picture visibility are available right below the picture upload box). LinkedIn automatically blocked the visibility of birthday dates and marital statuses of 5 members who revealed it. The same applies to recommendations and connections. It is not possible to message members through public profiles, which explains why 10 members provided information in "Advice for contacting". LinkedIn encourages public profile visitors to set up LinkedIn accounts to be able to contact members.

Surprisingly, out of network profiles have strictly limited visibility, apart from Open Networker profiles. Out of network profiles do not display the name and surname, 3 out of 15 members decided to hide their pictures. LinkedIn encourages out of network visitors to purchase premium accounts to obtain access to member information.

The "Name and surname" field is visible by default to all degrees of connection and in public searches, it is however hidden for out of network members. None of members in the sample selected the possibility to reveal name and initial only to non-first-degree connections. Each profile at each level provides "basics", i.e. approximate location, current employment, education. "Picture" visibility changes and in the sample of 15 profiles, 4 members decided to hide it from public profiles and 3 members decided not to reveal it for out of network members. Fields such as "Current positions", "Past positions", "Education", "Languages" or "Skills", if filled out, were usually shared with the network without any changes.

### Findings

Referring back to the theoretical framework of SNT and IR discussed in the previous parts of this paper, analysing the results in comparison to the assumptions of these frameworks is useful to provide a structured overview of privacy issues on LinkedIn.

First, SNT suggests that OSN increase polarisation of connections and reduce them to binary oppositions. As the results indicate, LinkedIn offers a slightly higher portfolio of options, from first, second and third degree connections through to public profiles and out of network. However, members have control only over their first degree connections that can be manually added or removed from the network, not over other degrees. Moreover, LinkedIn does not provide facilities to control which information is visible to which degrees of connections between first, second and third degrees (collectively “the network”). Unlike in offline networks, LinkedIn does not have the capacity to manage nuanced relationships or reveal only certain pieces of information to certain groups (or even individual) of members.

Second, it has been suggested that the use of OSN can substantially increase the number of weak ties. The results confirm that though it is impossible to measure the increase of the number of weak ties online as opposed to offline, LinkedIn employs a variety of measures encouraging connecting with members who are relatively poorly known or even unknown. LinkedIn, for example, allows members to connect through membership in the same group on LinkedIn. The Open Networker function on LinkedIn encourages members to connect with other members they do not know but who indicated they are willing to connect with any other user.

Third, by allowing the inclusion of hundreds or thousands of first degree connections, OSNs lead to unprecedented amounts of second and third degree connections within one’s network. This seems to have been confirmed through the study conducted. The LinkedIn account used for its purposes at one point in time had just 1 first degree connection and LinkedIn signalled that it gave access to 380,162+ members as second and third degree connections. An average user from the sample tested had 427 connections giving access to 5,576,901+ second and third degree connections. The author’s own LinkedIn account has 2,539 connections giving access to 13,731,237+ members within the network. This is the number of people whose information visibility is revealed and who can be contacted or introduced to.

In terms of patterns of information revelation, the degree of identifiability on LinkedIn is high. The network, for the purposes it has been created, encourages members to use real names and surnames to increase their trustworthiness, searchability and findability. Members have the option to hide their full surname for third degree connections, yet research revealed that very few do that. Moreover, 5 members in the sample shared their dates of birth with first degree connections which were only partially hidden automatically by LinkedIn.

The type of information revealed on LinkedIn is strictly professional and fits the purpose of the network. The only free text area allowing uncontrolled input is the “Summary” section, and following van Dijck’s (2013) suggestions, members tend to use narratives rather

than resume-like facts. However, it is interesting to consider the prescriptive role of LinkedIn’s interface in this respect; perhaps by inviting members to provide other information (“Tell us something about yourself” or “What do you do in your spare time”) the network would increase the amount of non-professional information shared.

Visibility of information is high within the network, including first, second and third degree connections. LinkedIn automatically blocks potentially risky information, such as dates of birth, from being visible to second and third degree connections. Members themselves tend to opt for high information visibility and do not actively manage their public profiles. This, however, is due to the purpose of the network. It is also interesting that there are different levels of visibility for paid LinkedIn members, namely premium and recruiter accounts.

It is worth noting that the author has indeed purchased a premium account to investigate visibility of out of network profile information. However, upon purchasing, it was revealed that access to full profile information out of network is available to recruiter accounts only.

After a further investigation it was revealed that recruiter accounts indeed have access to all out of network profiles and are able to contact out of network members through InMail. LinkedIn advertises this option suggesting “expand your searches beyond your personal connections to access the entire LinkedIn network” (LinkedIn, 2014). Full out of network visibility is available with Recruiter Corporate account (currently priced at 499.95 GBP pcm).

In 2013, this service was used by over 16,000 companies all over the world and the LinkedIn Recruiter platform became the flagship product of the company. According to one article:

Recruiter already offers several unique features that are incredibly hard for companies to build or find elsewhere: a giant data set of more than 200 million users and growing, a way to engage passive employees, and the ability to build career branding around a company. The value of the LinkedIn’s data is clear — it would take companies years and years to build a candidate pool even a fraction of that size, and it would be nearly impossible to keep up to date (Chang, 2013).

In the light of the above, it would be interesting to research how perceptions of privacy of information change when members are made aware that the network they use is, in fact, selling access to their information (initially not necessarily private or raising concerns) and members have no knowledge or control over who is viewing their full profiles (recruiters

can make themselves anonymous on “People who viewed your profile”). Even from the outset, this may suggest a breach of the trust that members have in the network and act against SNT, allowing recruiters who pay to make shortcuts in social networks.

## Conclusions

As supported by the research conducted, social network theory and the patterns of information revelation present on LinkedIn expose members to a number of privacy risks.

First, increased polarisation of connections can lead to the infiltration of a member’s network because even though some pieces of information should be available to first connections only, it seems to be easy to connect on LinkedIn under false pretence to obtain access to restricted information, such as date of birth.

Second, a sharp increase of the number of weak ties may lead to the risk of secondary data collection, i.e. collecting information on members’ use of the network, such as length of connections, other profiles visited or messages sent (Hogben, 2007).

Third, due to a high degree of identifiability (for example photos are always identifiable and 100% of members from the tested sample used their real names), there is a high risk of re-identifiability, profile squatting on other networks or services or reputation slander.

Fourth, the type of information revealed on LinkedIn, i.e. aiming at providing as full an account of one’s professional life as possible, may lead to a digital dossier aggregation, with profiles downloadable by third parties.

Fifth, high visibility of information may result in stalking and bullying, where cyberstalking can be identified as threatening behaviour in which a perpetrator contacts a victim by electronic means, such as email, instant messaging, or in the case of LinkedIn – InMail (Hogben, 2007).

Many authors agree, and the findings in this paper support the thesis, that OSNs by default set many pieces of information as publicly available, while members do not understand privacy settings available to them. Moreover, as has turned out to be the case on LinkedIn, members do not fully understand what they reveal and to whom.

The analysis conducted in this paper furthers the understanding of information revelation patterns on online social networks and points to the extent in which members act upon the possibility to tailor the amount of information revealed. The paper also applies social network theory to a new platform, providing insights into its functioning, but also further validating and confirming previous results of similar studies.

This paper covered just the aspects of privacy in

terms of information shared with other members, but as mentioned in the introduction, privacy risks may concern breaches by service providers themselves as well as third-party applications. Therefore it would be interesting to research these areas in relation to LinkedIn further.

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# Reshaping the Organizing Vision of Cloud Computing

## How the Snowden Revelations Affected Stakeholder Action

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### ABSTRACT

The recent revelations of government surveillance in the United States by Edward Snowden have had a profound effect on attitudes towards and perceptions of privacy. Given that this area of technology is highly privacy-sensitive and that the market is dominated by US companies and their local subsidiaries, the Snowden revelations led to changing perceptions of privacy in the cloud business. Therefore, this research aims to provide a European perspective, and discusses how relevant stakeholders, namely regulators, adopting organizations, and suppliers are reacting. The author argues that the technology was before black-boxed with a strong, common understanding of its risks, benefits and regulations and a supporting organising vision, and that this box is now being opened and stirred up as a result.

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### Introduction

Cloud computing has been one of the most prominent buzzwords in Information Technology circles in the past few years. Encompassing a wide range of services from web-based software to access to remote computing infrastructure, the term has been used as an umbrella to make sense of this emerging phenomenon. A commonly used definition for cloud computing is “remotely available service of utility computing via data center hard- and software” (Armbust et al., 2010). Service models of cloud computing take many shapes, the most common categorization being Infrastructure (IaaS), Platform (PaaS) and Software as a Service (SaaS). cloud computing’s complexity therefore lies in its diversity, as well as in its newness.

### Theoretical Frameworks

In order for an innovation to be widely adopted and diffused, a common understanding of the underlying technology is needed. The concept of *organising vision* introduced by Swanson and Ramiller (1997) provides a useful perspective on how the cloud computing market was formed, and eventually, changed after learning about the actions of the U.S. intelligence agencies.

The goal of *organising vision* is to explain how “a collective, cognitive view of new technologies enables success in IS innovation both within and across

firms” (Swanson and Ramiller, 1997). The discourse around the innovation is shaped by all members of community, and is often characterized by buzzwords. Furthermore, the authors state, “information systems innovation cannot simply be extrapolated from new technology, but rather, willfully cast in images of the future, quite literally, imagined”.

The process to reach a shared organising vision within the community includes three steps: *interpretation*, *legitimation* and *mobilization*. *Interpretation* is the exploratory process to provide a broadly shared account and provide institutional coherence; while *legitimation* is the process through which the underlying rationale is developed and the innovation gets grounded in broader business concerns. Thereafter, *mobilization* is there to facilitate exchange and structure market sources. (Swanson and Ramiller, 1997)

The framework of organizing vision is particularly useful to provide an account of cloud computing because it takes into consideration the multiple constituencies and accounts for how their discourse shapes the understanding of an innovation. Applying this theory helps us investigate how institutional forces shape the uptake of technology and how individual actors make sense of it, contrary to earlier research that views innovation as a local, rational choice (Swanson and Ramiller, 1997). This lends understanding to how the phenomenon of cloud computing as a buzzword is formed with taking into the perspectives of suppliers, customers and regulators.

The process of forming an organizational vision has

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been at a quite mature stage up until recently with participants having gone through all three stages and forming a stable view. However, as forming an *organising vision* is deeply grounded in practice and discourse and is dynamic, events that I will discuss in Part 2 have not only shaped, but also disrupted the process.

Another way to look at the cloud landscape is through what Galliers et al. (2001) call the supplier perspective. By black-boxing it, the industry often presents technology as a simple fix for organizational problems. In order to do so, they “conceal the complexity of the underpinning knowledge to allow for rapid diffusion.” (ibid .)

And indeed, the rhetoric surrounding technology focused on the business benefits of flexibility, on-demand use and scalability, a service-like cost structure and management benefits of transparency and the ability to focus on one’s core business. Above all, the technological promise that location does not matter, as also suggested by the label ‘cloud’, has become the strongest selling point (Grimes et al., 2009). However, as the authors call to our attention, “the cloud itself is an abstraction and is used to represent the Internet and all its complexity” (ibid ). The black-box of cloud computing therefore has been effectively communicated, with regulation in place and risks seemingly well-understood by adopters. As a result, industry discourse remained focused on how cloud adoption makes perfect business sense in the public and private sectors.

After discussing in more detail how cloud computing was understood by major stakeholders, Part 2 discusses the actions that disrupted it, and Part 3 explains how major stakeholders reacted to newly make sense of the situation. Thereafter, in Part 4, I discuss how a new *organising vision* is in the making.

## Part 1: Perspectives before Snowden

### Corporate Perspective

The cloud computing market in Europe seems strong and growing. Gartner estimates the worldwide public cloud services market to reach 131 billion US dollars in 2013, with Western Europe being the second biggest market, bringing in 24% of this revenue (van der Meulen and Rivera, 2013). Major business benefits are commonly seen in enhancing efficiency and speed through variability and scalability; a pay-per-use structure that aids understanding of IT costs; as well as a tool for innovation (Venters and Whitley, 2012a).

On the flip side, security and privacy have always been the major issues preventing faster adoption of cloud computing. Especially from an IT executive’s perspective, security, off-shore data housing, lock-in and compliance are the top four concerns (Venters and Whitley, 2012b), three of which can be associated with data protection issues. Others, however, argue that cloud computing can mitigate these risks by better management of hardware and skills, as well as more effective responses due to scale effects (ibid).

### Technology Perspective

In order to understand the reality of cloud computing adoption, it is crucial to understand the technology that drives and enables it. In parallel to the perception of potential cloud users I discussed above, the most significant challenge of the technology is to ensure security. In Xiao and Xiao’s model, the ecosystem of cloud security and privacy consists of defense, threats and vulnerabilities, which influence its two major pillars. One pillar of how security is dealt with in the cloud concerns the users’ business needs (e.g. integrity, availability, confidentiality and accountability (Xiao and Xiao, 2013)). These themselves are strongly intertwined with privacy concerns. The other pillar is privacy, which the authors acknowledge to be highly relevant to security.

Similarly, the National Institute of Standards and Technology, a major technology regulatory body defines the key issues to be multi-tenancy, trust, encryption and compliance (Mell, 2009). *Multi-tenancy* is one of the major enablers of hardware utilization, through placing the data of multiple, often anti-cyclical businesses’ data on one physical server and making it accessible through virtualization (Xiao and Xiao, 2013). This of course does not mean that customers can access each other’s data, but increases the cloud’s vulnerability. For example, should hackers target one organization, it might have a spillover effect on others.

*Trust* refers to relinquishing control over the protection of the data (Grance and Jansen, 2011), and entrusting that the third party not only has the benevolence, but also that they have the relevant skills for risk and security management, that insiders cannot abuse the data and that the data stays under the ownership of the data controller.

*Encryption* is a commonly used technique to address the issues of unjustified access by the provider’s employees or those associated with multi-tenancy (Xiao and Xiao, 2013). Encryption before the data leaves the company’s premises and storage in the cloud is thought to be an efficient way to ensure confidentiality and integrity (ibid.). Alternatively, firms can choose to replace corporate identifiers with anonymous data before it leaves company firewalls (Venters and Whitley, 2012b).

*Compliance* is the organization’s ability to operate in agreement with established laws, regulations and standards (Jansen and Grance, 2011). Of particular relevance for compliance is the physical location of the data, which is a technical, strategic and political issue all at once. Many regulations require data to stay within the borders of a given jurisdiction, while suppliers are often reluctant to disclose data center locations, often claiming that it is technically not possible given the ubiquitous nature of cloud computing. Academics closer to the matter argue against this, given that providers need to be aware of that information in order to, among others, access data and bill customers (Whitley, 2014a).

## Regulatory Perspective

The major regulation that governs the processing of personal data and transborder flows, and therefore is highly relevant to the use of cloud computing, is the EU's Data Protection Directive, translated into national legislation by member states (Whitley, 2014b). According to the Directive, personal data is "any information relating to an identified or identifiable natural person ('*data subject*'); an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identification number or to one or more factors specific to his physical, physiological, mental, economic, cultural or social identity". It also clearly defines the responsibility of the '*data controller*', the company users entrust their data with, to safeguard it and ensure appropriate measures taken in its protection, such as ensuring that the data is not transferred to countries the European Commission does not judge as providing "an adequate level of protection". It is the cloud customer's (who is legally the *data controller*) responsibility to ensure that the cloud provider, the *data processor*, does not transfer the data to any other countries than those of the European Economic Area, Brazil, Argentina, Canada (Whitley, 2014b).

As an extension, an agreement between the European Commission and the US Department of Commerce, the Safe Harbour Principles, provide an opportunity for US-based service providers to acquire certification. Through this mechanism, companies compliant with the EU's principles in the above-mentioned European directive, such as Apple and Google, are allowed to process personal data of EU citizens (export.go, n.d.), which should provide sufficient protection if combined with binding corporate rules (King and Raja, 2013). Therefore, it is compliant with regulations for the European subsidiaries of these companies to store the backup data of their clients in the United States to ensure geo-redundancy (Whittaker, 2011).

The issues addressed by such regulations are not limited to cloud computing, indeed, many of them were formulated before its existence. The dynamic and global nature of the cloud, however, make sourcing such services more complicated. One problem is that vendors have data centers in multiple jurisdictions as well as often further outsource to subcontractors (Whitley, 2014b). Privacy protection therefore might not be guaranteed to an adequate level. Another, maybe even more pressing, issue is concerned with physically locating the data. It is, however, questionable whether cloud providers are able and willing to disclose data locations (Clarke and Svantesson, 2010).

### Part 2: Events Leading to Changes in Understanding Concerns before Snowden

Based on what I discussed in Part 1, I believe there was a common understanding in the marketplace about what cloud computing is, what its benefits and risks are, and how to mitigate them. I argue that a series of recent events has had a profound influence

on this understanding and ultimately led to opening up the Black Box.

In 2001, the United States introduced the Patriot Act, which regulates wiretapping and the access to stored electronic communications. And while the law provides some protections for US citizens, for example through the Foreign Intelligence Surveillance Amendment Act (FISAA) of 2008, foreigners such as European citizens, are left vulnerable (Whitley, 2014b).

The press widely discussed how this impacts the rights of individuals, its relevance to cloud computing went largely unnoticed (Zorz, 2013) with many assuming that the above-discussed Safe Harbour provisions provide adequate protection (Whitley, 2014b). Eventually, the public learned that this is not the case. Microsoft came forward first in 2011 admitting that being a US-based company, if the National Security Agency (NSA) instructs them, they are forced to give out information stored in their clouds (Whittaker, 2011b). Not only is this contrary to the rules of the European Union, which they are also obligated to adhere to, they are also often restricted from informing the affected companies or individuals.

### The Snowden Revelations

The major blow, however, came in 2013 when Edward Snowden came forward, leaking information to The Guardian about the PRISM program that provides the NSA direct access to the servers of the likes of Apple, Google and Facebook (Greenwald and MacAskill, 2013). While many were already uneasy about the Patriot Act allowing for surveillance of individuals approved by secret courts, it was now that the world learned that the USA is conducting mass-surveillance on individuals in the name of national security, but without any direct reason to do so. The Snowden documents also revealed that encryption, the major safeguard of Internet privacy, has been also broken by the NSA by tinkering with the underlying cryptography (Larson et al., 2013).

The stream of leaked documents not only stirred conflict between the United States and the rest of the world, but also within the European Union. The GCHQ, the British counterpart of the NSA, is said to be collaborating with the NSA. The Guardian reported that in the operation codenamed Tempora, GCHQ is able to tap the fibre optic cables, thereby collecting and storing huge amounts of online and telephone data (Ball et al., 2013). The UK being one of the major Internet hubs within Europe, this goes way beyond compromising data of only UK citizens.

Given the small number of US companies that dominate the global cloud computing market, these events have the potential to fundamentally change our understanding and attitude towards such services. The implications to European cloud customers are threefold. For one, companies having cloud contracts with US-based providers, or more commonly their local subsidiaries now have to reinvestigate whether

they are compliant with existing EU regulations, as well as keep up with the potentially changing ones. Secondly, beyond compliance issues, they have to consider additional measures to safeguard data from the US government's prying eyes. Since information in the cloud is often not just private but also business critical, it is also the responsibility of cloud customers to safeguard their and their economies' competitiveness, should the US government decide to use it for other reasons than protecting national security. Lastly, given that vast amounts of aggregated data is collected and stored by the NSA, as well as encryption potentially being compromised, cloud customers now have to reconsider whether they are safe from malicious individuals, organizations and even competitors.

What are the alternatives to just deciding to hold back on cloud adoption? While we thought that location matters little, now we learn that there is a need for a more Europe-focused approach to cloud computing. Part 3 discusses how major European stakeholders, namely governments and the EU, corporate customers and vendors have reacted to alleviate a situation and form a new organizing vision.

### Part 3: Reactions

#### Governments and Regulators

*"It would be a sad outcome of the surveillance disclosures if they led to an approach to Internet policy-making and governance in which countries became a series of walled gardens with governments holding the keys to locked gates."* John F. Kerry, general counsel of the United States Commerce Department (Hakim, 2013)

And indeed, what Kerry fears seems to come true to at least some extent. National governments, as well as European institutions like the European Commission have responded swiftly to the events, both in rhetoric and in action. European leaders urged for the development of a European Network. The German chancellor, Angela Merkel, for example, called for an NSA-proof Internet in Europe. On the other hand, she also acknowledged that there are still national differences and until common ground is found, nations have to seek their own solutions (Clark, 2014).

The European Parliament is addressing the regulatory gap by updating the digital privacy regulation, which now includes explicit rules about cloud computing (Hakim, 2013). The amendments proposed include the data controllers having to notify subjects, should their data be moved outside of the EU (European Parliament, 2013). In the case of cloud computing, where data in bulks is in question, this may very well be prohibitive. The European Commission is also working on introducing significant sanctions on companies that turn over data to law enforcement authorities in ways that violate European privacy regulations (Hakim, 2013; Tielmans, 2014).

Moreover, the Commission is in conversation with US authorities regarding the major issues to be addressed considering the Safe Harbour Agreement. They

claim that the massive collection by US authorities goes behind what is proportionate and necessary. The agreement failed to provide the purpose it was originally designed for, namely to provide higher, European protection standards for personal data in the United States (Reding, 2014). The EC has given concrete recommendations for the US authorities to address, mainly in the areas of transparency, possibility of effective redress, effective enforcement and limitations of access by public authorities (ibid.).

Meanwhile, fixing regulation is just the tip of the iceberg. Many see an opportunity in keeping the data within the European region. One way to go about that is to build national clouds (eg. the made-in-France initiative cited by Darrow, 2012), which might not be beneficial. In a 2013 memo, the European Commission expressed being strongly against so-called "Fortress Europe" approaches, as actions based on national rules could prevent the free flow of data even within the EU. They also acknowledge that slowing adaptation of cloud computing is hurting European business' (especially SMEs') competitiveness. Therefore, the European Commission's strategy for "unleashing the potential for cloud computing in Europe" (European Commission, 2012) and thereby creating a single, European market, gained attention, speed and relevance since the Snowden revelations. Actions are taken on several fronts: updating unified data protection rules, building a single market and building standards and certification schemes for EU cloud providers.

This is not just a possibility to mitigate the current issues, but also provide a business opportunity for the region and European vendors. In the Commission's interpretations, there are three pillars to that. Most importantly, Europe is famous for high data protection standards. This could serve as a competitive advantage and help Europe become the world's most secure and trusted region for cloud computing. Secondly, a truly functioning European market would be big enough to achieve economies of scale. Lastly, they see the Public Sector as an early adapter, thereby driving further cloud growth (European Commission, 2013).

A slightly more radical measure, "Schengen for data" has also appeared in the news recently. Referring to the EU's free travel zone, the proposal includes a data routing system that would allow for data to stay within on the European continent. Significantly, the United Kingdom, whose intelligence agency, GCHQ, is said to be cooperating with the NSA, is not part of the Schengen zone and therefore could also be bypassed. However, experts find the idea very costly and largely ineffective, since it would not be of any use when people use websites from outside of Europe, such as Facebook (Seiffert, 2014).

#### Customers

*"If our systems ran on Amazon's cloud in the Netherlands and it went down as a result of a technical issue, we would have to shut business down before the backup came live in*

*the United States. We can't afford that.*" IT Manager for a major UK-based retailer

And indeed, many customers think similarly. In a survey of corporate customers, the Cloud Security Alliance asked non-US customers how the Snowden incident affected their cloud sourcing strategy (Cloud Security Alliance, 2013a). They found that 10% of respondents cancelled projects with US-based providers in response to the Snowden incident, while 56% claim that they are less likely to use them in the future.

Although privacy and compliance have always been among the biggest obstacles to cloud adoption (Willcocks et al., 2012) at least there has been a relatively clear understanding of what these were. Indeed, since the regulation within the European Union is currently in constant flux, companies might even have difficulties understanding what rules they have to comply with. The lack of transparency leads to difficulties in risk assessment (Whitley, 2014b) and as a result, potential customers struggle to make decisions based on what makes business sense.

Therefore, it becomes ever more important for corporations to structure ways of assessing risks. Pearson for example argues that privacy is much more than a compliance issue and that privacy considerations have to be part of designing cloud computing services (Pearson, 2009). He argues the Privacy Impact Assessments should be initiated early in the design phase and repeated in all stages and provides different solutions to mitigating risks identified throughout. A more recent form of addressing risks in a timely manner is to seek vendors that provide Privacy Level Agreements (PLAs), besides the traditional Service Level Agreements (SLAs). In same document, the CSA also stresses the importance of internal due diligence, namely reviewing the company's own security measures and potential privacy threats; and external due diligence, such as finding a provider with relevant certifications and understanding whether the customer will have the ability to see and control security at the vendor. (Cloud Security Alliance, 2013b)

Given the lack of major, Europe-based alternatives, some consider running private clouds and hope to realize at least some of the business benefits. Experts, among others the European Commission, warn, however, that on-premises solutions are not completely secure either. They "lack the ability to call on high levels of professional security" such as effective authentication and state of the art security implementation, which cloud provisioning with the right specifications could provide (European Commission, 2013).

## Vendors

*"Repeatedly we see companies saying we're the ones out there on the front lines defending this, ... U.S. companies can't solve this problem, and that's the biggest challenge right now."* Daniel Castro (as cited in Corbin, 2014)

While Europe accounts for 24% of the global cloud computing market, only 8% of the vendors are European (Armbrust et al, 2010). Clearly, the dominant US-based players are aiming to keep their market-leading position despite the growing mistrust and harder compliance. At the same time, European companies are to grab the opportunity and position themselves in the reshaping marketplace.

Some intend to pacify users through disclosing information beyond what they are required to. Google, for example, recently published a Transparency Report that details how often they were approached by authorities with requests for data, and the proportion of which they fulfilled (Google, 2014). Others, such as IBM, are hoping to increase their footprint by investing in new data centers (IBM, 2014). However, that only provides a solution once the legitimacy of Safe Harbour is back in place.

As a recent study of the cloud infrastructure market shows, location sensitivity, as expected, is a major decisional factor for European customers (Miller, 2014). In particular, a survey of hosting providers found that local knowledge, presence, cultural fit and an existing customer base contribute to successful cloud services (Armbrust et al, 2010). That understanding, combined with the mistrust of US providers and the European Union's efforts to foster European cloud computing, one should expect local players to gain greater presence.

Given the recent nature of this issue and the slower pace of the corporate world, the first new, European or local providers are to be seen in the consumer market. Examples include Younited\*, a Dropbox alternative in Finland and "E-mail made in Germany", a cooperative initiative of German ISP providers and telecoms (Juskalian, 2014). In the corporate world, we see some established providers trying to gain attention through using their European identity, such as the Aruba cloud† listing four major selling points: price, performance, data center location in London and being part of the European data center network.

If we are looking for hard numbers, the most relevant study that is currently available is one carried out by the Information Technology and Innovation Foundation (ITIF). It predicts that US providers' share of the non-US market could fall as low as 55% by 2016 (Castro, 2013). In their analysis, they attribute this trend to falling trust post-PRISM, as well as to Europe's actions for data protection and building their own cloud network.

## Part 4: Forming the New Organising Vision

### The "European Cloud"

In this article, I have shown how cloud computing and its risks were thought of, and thereafter discussed what events have influenced this understanding. I argue that before the recent events, there was a

\* <http://www.younited.com/>

† <http://www.arubacloud.com/home.aspx>

specific vision, and market participants shared a story of what risks and dangers were. While previously, the three stages of forming an *organising vision* were close to completion; the recent events caused the process to restart. *Interpretation* is now again under way, with participants trying to grasp how they and their use of the technology are affected. Governments, regulators, companies and vendors have now restarted the discourse, with clients asking hard questions, and suppliers rushing to change their advertising rhetoric and offerings that better fit the current needs. These interactions are vital to reshaping each others' perspectives as well as to *initiate forming a new organizing vision*.

A new, more geography-focused understanding is formed through *legitimation*. New buzzwords, such as the "European Cloud" and "Schengen for Data" emerge, while corporations, vendors and regulators join to make sense of the new situation. Furthermore, since parties act upon it, for example by forming legislation or other changing their sourcing practices, one can also argue that *mobilization* is now also in progress.

## Conclusion

In this article, I investigated how the Snowden revelations have affected the European cloud computing market in the past year. The European Union and its regulatory bodies busied themselves with updating data protection legislation and are in conversation with the US Department of Commerce to improve the Safe Harbour Agreement to ensure it plays its original role. In the meantime, cloud customers are losing trust in US-based providers and find that there are not many alternatives. They also find it evermore difficult to make sense of the reality of privacy risks and relevant regulation necessary for compliance. In response, the established, US-based vendors take action to increase transparency and local responsiveness, while European niche players emerge, largely encouraged by the European Union.

How exactly the landscape is going to turn out is still a question, but one thing seems to be sure: there is a trend towards more location-awareness regarding cloud computing. And just as Goldsmith and Wu (2006) earlier uncovered the illusion of the Internet creating a borderless world, we now learn that the black-boxed perception of a geography-independent cloud computing arena is just as an illusion.

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# Path to Sustainability for Health Information Exchanges in the US

## A Case Study of the Indiana HIE through Alignment and Enactment Frameworks

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### ABSTRACT

Unlike most industrialized nations, the United States has a highly fragmented healthcare system in which patient information is not typically shared across different providers. In recent years, however, the federal government has attempted to foster the development of health information exchanges (HIEs) by making funds available to states and local governments. As this paper seeks to demonstrate, what is most critical is not the economic business model chosen, but the degree to which system designers are able to generate value for the main actors involved. This paper will analyze the characteristics of the successfully implemented Indiana Health Information Exchange through alignment theory and enactment frameworks, highlighting its ability to meet the expectations of its most important users, embedded within the specific historical, organizational, and cultural environment, and how this interaction of factors has augmented its prospects of long-term sustainability.

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### Introduction

Health Information Exchanges (HIEs) are electronic systems which facilitate the aggregation, transmission, access, and retrieval of patient data across practices, hospital systems, and different levels of government agencies. Unlike many countries with already well-integrated health information systems (IS), the U.S. healthcare system is highly decentralized wherein patients commonly frequent different, unaffiliated health providers, each of which maintains its own private medical records. The aims of HIEs are to make disparate clinical data available to a multitude of providers in the vein of efficiency, accuracy, and timeliness (HealthIT.gov 2014). Additionally, HIEs can help providers avoid redundant re-entry or duplication of data as well as aid public health officials in analysing macro-health data regarding clinical quality and related research across large segments of the population (Grossman et al., 2008). The end goal in HIEs is to provide high-quality patient healthcare through digital integration (HealthIT.gov, 2014).

*The Economist* places annual U.S. healthcare spending at \$2.8 trillion (1<sup>st</sup> February 2014). This figure highlights the need to make the entire healthcare system much more efficient. With the ever-increasing benefits and possibilities of health IT, faith has been

instilled in the HIE movement to address these gaps in clinical care across the nation. According to Grossman et al. (2008), HIEs are a principal element of the U.S. government's strategy, initiated in 2004, to create a national health information network. Programs and funding are available from the federal government, while public and private sector stakeholders are making investments at the local and state levels. The federal government additionally sponsors a program to establish and advance HIE efforts within and between states through the Health Information Technology for Economic and Clinical Health (HITECH) Act (Covich et al., 2011).

However, the path to success for HIEs has been fraught with difficulty and a high rate of failure (Grossman et al. 2008). Furthermore, the stakes are high, as the cost of HIEs is no small figure. According to Sipkoff (2010), some examples of states which have made heavy investments in HIEs are Washington (\$4.4 million), Rhode Island (\$6 million), and, notably, New York (\$100 million). Though, as this paper will demonstrate, not all investments lead to success.

The problem of sustainability, or the degree to which a system can be administratively and financially maintained, has always been a key issue in technology implementations. This paper will examine the following questions: how might a complexity of factors generate sustainability for a given system, and what might these, sometimes less apparent, factors be for an HIE?

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The analysis will focus on alignment and enactment theories as one way of contextualizing sustainability. Starting with the notion of stakeholders and their role in the IS adoption process, I will leverage these research themes to highlight the extent to which stakeholder values and system design must be aligned in the creation of HIEs, and the impact that the various historical, environmental, organizational, and cultural contexts they are embedded within have on long-term sustainability. In the HIE field, there exists different literature attributing certain characteristics to HIE failures and successes, including whether privately- or publicly-funded business models are better apt to achieve sustainability. Other debates centre around government policy and regulation; privacy and confidentiality; technical issues (e.g., system architecture, integration, and connectivity); and governance models (Truscott et al., 2010). I will touch on these debates, but use the case of the Indiana Health Information Exchange (IHIE) in relation to the overarching alignment and enactment literature to demonstrate that what is of primary importance is the depth and breadth to which system designers address key stakeholder value propositions.

The intended contribution of this paper to the IS domain is two-fold. Firstly, it seeks to offer a theoretical contribution by analysing HIE sustainability through a unique combination of alignment and enactment frameworks. From an empirical perspective, it seeks to offer a qualitative explanation for the success of an HIE case study, as comprehensive qualitative research is less prevalent in mainstream HIE discussions. Often users and technical systems are assumed to be “black boxes” and, as such, failures are attributed to exogenous factors such as business model or technical implementation inadequacies. This paper, instead, will approach common HIE issues from an endogenous assessment of the human and technical factors involved and, in particular, the synergies between them.

## Literature Review

### Importance of Stakeholder Buy-In & Sustainability

The issue of stakeholder value proposition is a recurring theme in the e-health literature. Weak perceived value propositions among those who support or use the systems are a general attribute of many HIE failures. Grossman et al. (2008) note that stakeholders, as information providers, users, and funders, are crucial to the sustainability of any HIE. They are the ones supplying the clinical data which must be deemed valuable by physicians in terms of both quality and quantity to make the information exchange services worthwhile. Additional stakeholder concerns are loss of competitive advantage, data misuse (e.g., privacy concerns), technological and

regulatory limitations, and unclear best practices on how to finance HIEs (Grossman et al., 2008).

In a 2010 Accenture report, developing sustainable business models is cited as one of the major challenges for HIE programs (Truscott et al., 2010). However, the issue is deeper than mere financing, which is what this paper seeks to demonstrate. The problem begins when providers cannot justify using HIE services, and certainly not paying for them (McIlwain & Lassetter, 2009). After touching on the public vs. private sector debate and its consequences, I will elaborate on how the theoretical frameworks of alignment and enactment contribute to stakeholder buy-in.

### Public vs. Private Sector Business Models & Sustainability

According to The National Opinion Research Center, sustainability is characterized by the successful interaction of many different variables (or “drivers”) over time and is not contingent on any single factor, such as revenue source (Texas Health Services Authority [THSA], 2013). HIEs have been widely classified by the following four main business models: Not-For-Profit, Public Utility, Physician & Payor Collaborative, and For-Profit (Deloitte Center for Health Solutions [CHS] 2006, Lee et al. 2010, THSA 2013). The source of funding for HIEs can be grouped into several categories, ranging from public grants, private grants, subscription fees, transaction fees, and more (THSA, 2013).

The THSA (2013) notes that long-term financial sustainability will most likely not come from federal grants, as these programs are subject to end with little notice, depending on the political and economic climate. Private investment proves contentious as well, as HIEs can easily become solely focused on revenue targets, inherently ignoring patient or physician best interests. However, the importance of stakeholder alignment is something that is uncontested. As the authority describes, “Most importantly, a clear value proposition of participation is crucial to providers and hospitals. The benefits of participation in an HIE must always exceed the cost of participation, if the HIE is to remain sustainable” (THSA 2013). This implies that the most promising way forward would be through the right mix of public or private initial funding, followed by an eventually self-sustainable fee structure. However, it should not be assumed that this is the only feasible model. South Carolina’s SCHIEx and New York’s THINC are two HIEs which are viewed as public goods, primarily use grant funding, and are considered relative successes (Lee et al. 2010; National eHealth Collaborative 2011). Building upon this idea, I will demonstrate how the overarching IS themes of alignment and enactment are factors in this success.

## Alignment & Enactment Frameworks

Theories relating to the socio-technical construction of technology have long been used in IS to investigate technological implementation in different organizational contexts, accounting for the unique interplay of humans and technical systems (Lee et al., 2008). Pursuing the human focus further, more socially-embedded theories (e.g., Social Shaping of Technology, Sensemaking, and Institutionalism) focus on the virtual construction of technology by humans who impose their ingrained experiences on the artefact, which affects not only how a technology is used, but how it is actually shaped by this use. Two often-employed frameworks that fall on the spectrum of social-embeddedness are alignment and enactment. I have chosen to rely on this particular combination to highlight the social explanations behind public policy phenomena, such as health programs, which are often justified from technically-rational or administrative points of view, failing to integrate the expectations actors throughout the healthcare ecosystem hold in the appropriation of new work processes and technologies, especially those that touch so closely the very private matter of personal healthcare data. Enactment is a particularly socio-cultural and institutionally-aware framework that serves to compliment alignment models, which can neglect the individual sensemaking processes actors undergo when enacting a new technology. Conversely, alignment, unlike positivistic theories (such as Actor-Network Theory), can prove very relevant to the practitioner discussion of user acceptance in the modern healthcare realm. Paired together, the two theories, beyond offering a deeper theoretical understanding of the issues at play, could potentially lead to actionable recommendations for HIE providers.

In the following sections, I will discuss the main premises of these frameworks and how they can complement one another in critically examining the sustainability of the IHIE deployment.

### Alignment

According to Luftman & Brier (1999), alignment is defined by “the activities that management performs to achieve cohesive goals across the information technology and functional... organizations.” It is, therefore, a reflection of how IT integrates with the business and vice versa. In traditional methods of implementing business strategies, IT has often been considered a cost-centric expense and not the propeller of value that newer perspectives, including within the alignment dialogue, tend to stress, thereby overlooking the full advantage that IT can bring (Luftman & Brier, 1999). As many scholars have noted, the search for a universal recipe for strategic alignment is futile, as alignment strategy is completely situationally-

contextual (Chorn, 1991; Luftman & Brier, 1999; Reich & Benbasat 2000). Strategic fit is acknowledged as the extent of alignment “between competitive situation, strategy, organisation culture and leadership style” (Chorn, 1991). It is widely considered a key indicator of organizational effectiveness, an accurate predictor of sustained competitive advantage, and an ongoing, rather than static, managerial process (Chorn, 1991; Luftman & Brier 1999).

Reich & Benbasat (2000) discuss another element of business-IT alignment: the social. The authors contrast this dimension with the more widely-covered theme of rational, managerial alignment - what Horowitz (1984) calls the “intellectual” dimension. The social dimension, on the other hand, “investigates the actors in organizations, examining their values, communications with each other, and ultimately their understanding of each other’s domains [and is] more likely to focus on the people involved in the creation of alignment” (Reich & Benbasat, 2000). They describe the social dimension of alignment as being, potentially, more difficult to perfect and more crucial to success. They cite Berger & Luckmann’s (1967) study of the social construction of reality which posits that managers should understand “the contents of the players’ minds” such as stakeholders’ understandings and attitudes towards the technological artefacts at hand. According to Reich & Benbasat (2000), communication between stakeholders, both from the IT and business domains, is regarded as the most important indicator of alignment. Effective communication distinguishes systems that merely offer the best technical solution and those that deliver the most value to the stakeholders involved.

Alignment on its own cannot always provide a strong enough assessment of sustainability within a given context, which is why I will next discuss enactment to augment alignment theory and, consequently, allow for a more comprehensive evaluation.

### Enactment

Enactment is the process of social construction by which actors bring and set in motion past events, conscious and subconscious beliefs, attitudes, and general preconceptions in interactions with new situations (Weick, 1988). In this light, actors cannot recognize the meaning they are subconsciously imposing on the event, environment, other members of the organization, and themselves. These “preconceptions” affect the sensemaking process that all individuals undergo when confronted with a situation. As Weick (1988) notes, “the external environment literally bends around the enactments of people.” Through the process of enactment viewed from an external point of view (i.e., from a third-party perspective, such as a research study), one can start to objectively understand a given organizational

structure.

The convergence of technology within enactment theory led to the creation of the technology enactment framework (Fountain, 2001). As Cordella and Iannacci (2010) describe, this socio-technical framework draws on ideas from institutional, organizational, and social theory to understand the interaction of material technology within organizations. This framework is used to study how organizations enact technology in relation to their institutional features (Yildiz, 2007). “Objective technology”, such as the physical hardware, software, and infrastructure that these technologies depend on is distinct from “enacted technology”, which can be considered “the use and perception of technology in a particular setting” and according to the institution’s formal (structural and legal) and informal (social and cultural) norms (Cordella & Iannacci 2010).

Fountain (2001) outlines technological enactment’s role as the “filler” of “microstructural details required to understand the connection between individual action and structure.” She discusses that position within a hierarchy (e.g., manager, director, subordinate) or a network (e.g., government agency, private corporation) affects the view that one has on a particular situation as well as the interests that an actor holds (Fountain, 2001). The role of history is also an important concept. As Selzinck (1992) writes, “Institutionalization constrains conduct...by making it hostage to its own history.” This idea stresses the influence of history on sensemaking and, ultimately, enacted technology (Fountain, 2001). More generally, system designers can construct a technology in the hope of some outcome. This outcome could be parallel or completely divergent to the resulting enacted technology, depending on the individual actors involved.

### **Case Study: The Indiana Health Information Exchange (IHIE)**

#### **History**

The U.S. state of Indiana has a long history of innovation in health IT. In 1994, pre-dating any national HIE initiatives, the state launched its Indiana Network for Patient Care data exchange, the precursor to the present Indiana Health Information Exchange, also known as IHIE (West & Friedman, 2012). Established in 2004, IHIE is one of the country’s largest, connecting over 10 million patients; 18,000 doctors; and 80 hospitals, community health centres, long-term care and rehabilitation facilities; and other providers in a secure, robust, statewide health IT network (Finn, 2011). By the end of 2010, IHIE covered 43% of the state’s population (Penno n.d., cited in West & Friedman 2012). From its inception through 2010, it

had delivered a total of more than 77 million clinical results (Indiana Health Information Exchange, 2011). It has partnerships with HIEs and health systems within Indiana and in neighbouring states. In the following sections, I will describe the factors involved in the strategy and initial implementation of IHIE.

#### **Stakeholders**

IHIE operates through a variety of governance structures for most efficient consultation with its diverse user groups. The main stakeholders consist of a board of directors from various hospital networks, government agency representatives, medical societies, individual doctors, scientists, consumer representatives, and a public outreach forum (West & Friedman, 2012).

The IHIE system caters to this variety of stakeholders’ needs. For the purpose of this paper, using Donald Norman’s definition, affordances are “the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used” (Norman, 1988). IHIE provides a number of affordances to its stakeholders and other users. These include the creation of patient-specific quality reports for clinicians using real-time information through Indiana’s Quality Health First (QHF) Program; doctor performance assessment; the clinical messaging service “DOCS4DOCS”; web-based training; and the provision of standardized and integrated clinical, claims, and cost information across all providers within the network (West & Friedman, 2012). Overall, according to Grossman et al. (2008), IHIE served “multiple roles as data provider, data aggregator and manager of QHF’s other activities, including negotiating with stakeholders and overseeing quality measure development.” More recently, IHIE added long-term care to its portfolio of offered services through the National Coordinator for Health IT (ONC) Challenge Grant Program and commenced a project to merge clinical and health plan claims data to evaluate performance of providers within the overarching goal of improving community-wide quality assurance and instituting “pay-for-performance” models (Grossman et al., 2008; West & Friedman, 2012).

In addition to affordances, funding is another critical aspect of sustainability. As such, we will now look at IHIE’s financial business model.

#### **Business Model**

IHIE was launched with the financial support of hospitals and other stakeholders. It has chosen to sustain itself through a private-public hybrid model in which hospitals, laboratories, and other users are charged fees to deliver results to other hospitals (Finn, 2011). Although the state attempts to avoid over-dependence on subsidies or grants, IHIE also

continues to rely on external funding. For example, in 2010, it received its largest amount - \$50 million - from ONC's HITECH Act fund.

However, in IHIE's long term strategic plan, it views revenue-generating services as crucial to building long-lasting sustainability (Grossman et al., 2008). The clinical messaging service is seen as the most obvious selling point for existing and potential users, as it is easiest to demonstrate the reduction in operating costs by distributing clinical results to and from hospitals electronically. Consequently, hospitals and other participants are more willing to pay fees for this service.

### Environment

The context in which an HIE is implemented can also be a pervasive, less evident, yet still critical factor for sustainability. West & Friedman (2012) outline the historical and organizational environment in which IHIE is situated in terms of eight categories: external environment, organizational environment, consensus about goals, consensus about means, unique local aspects about the state, consensus about roles, willingness to contribute financial or organizational resources, and consensus about behavioral expectations - all of which were positively aligned in IHIE's favor.

### Plan for Sustainability

In assessment of sustainability, IHIE's explicit plan for sustainability should be taken into account. According to the THSA (2013), its strategy is focused on offering an ever-growing portfolio of "value-added services" to different stakeholders throughout the healthcare network. (For a summary of IHIE's near-term sustainability strategy, see THSA 2013.)

In short, IHIE's main priorities are not purely financially-focused, but instead aimed at expanding reach of the system's core products of clinical messaging and QHF patient report generation services in both current and new markets of healthcare providers, health plans, and employers. Securing payment from participants is in-line with visions of future self-sustainability, but it is just one component.

### Analysis

IHIE is widely considered one of unfortunately few HIE successes in the U.S. (Finn, 2011; West & Friedman, 2012; Terry, 2014). The exchange's main focus is on supporting more focused, transaction-based information exchange, namely through its clinical messaging service, as designers identified this as the activity which most hospital systems would support in terms of providing data, use, and potential funding (Grossman et al., 2008). These users are not

enticed merely by operational cost savings, but by the productivity-enhancing potential of the system as well as its role as outsourcer of related services, namely digitizing public health reporting and medical records, thereby lightening the work burden of the participating institutions (Grossman et al., 2008).

Successful health IS design is not driven by one unique value or business model beside that of sustainability. Relating this idea to alignment theory, to achieve sustainability, it is necessary to create system architectures which distribute value to all actors involved, from doctors and other hospital staff to healthcare administration, financial sponsors, and even patients. In essence, the business model becomes more about stakeholder-valued affordances than funding. According to the Deloitte Center for Health Solutions 2006 report, while "financing and ROI issues often receive a disproportionate share of stakeholder attention, successful HIEs keep their purpose and mission at the forefront," such as IHIE (Deloitte CHS 2006). IHIE's mission to facilitate a simple business need - i.e., the generation and access of shared patient data in the aim of increasing quality, efficiency, and safety throughout the state healthcare system - is relatively uncomplicated, clear, and meticulously executed (Deloitte CHS, 2006).

According to Grossman et al. (2008), a major stakeholder concern for potential participants was how participating would affect what previously proprietary data could be shared, explicitly affecting data privacy and security issues. Grossman et al. (2008) note that the potential loss of competitive advantage by liberating control of "their" data was, perhaps, the biggest concern of potential participants. Proprietary clinical data was considered an important strategic asset binding patients to their services, as physicians would find it less complicated to send patients to a hospital that already has their data on file. Hospitals also feared that competing providers would use their client information for marketing reasons and to direct patients to other hospitals. Additionally, healthcare providers were cautious of intended data use for hospital performance measurements, as they could, potentially, be found non-compliant with some federal operational or privacy laws. As a direct response, IHIE actively worked through all of these varied concerns with stakeholders to increase participation (Grossman et al., 2008). With regard to the data ownership and privacy issue, Grossman et al. (2008) outline how IHIE differentiated itself from other exchanges by allowing only designated physicians to access patient data. Moreover, to view this data, the patient would have had to previously consent for the specific provider to have control over his or her records, and there would have to be a "triggering event" for the designated physician to even be able to view the records (i.e., the physician would need a reason, such as a patient visit). Additionally, clinical

information could not be used for quality reporting or similar purposes without explicit approval.

By accommodating the high privacy and data concerns of physicians and encouraging collaboration as a neutral party, IHIE convinced hospitals that working together with their competitors was the best way forward. The neutrality and trust that IHIE built up among stakeholders through earlier information exchange projects was also key to convincing hospital CEOs to collaborate (Grossman et al., 2008).

IHIE achieved alignment, specifically Reich & Benbasat's notion of "social alignment", through understanding healthcare providers' desired outcomes and by shaping the system and its incentives from their points of view. IHIE staff effectively "black-boxed" this alignment through the crucial aspect of communication (between stakeholders, both from the IT and business domains) throughout the project. Alignment was further secured through specific, strategic decisions made by IHIE management, such as the connection with the Regenstrief Institute whose experts thoroughly understood the value and complexities of the technology. Additionally, the state's "mothership approach" to data, which favours data integration and sharing over other states' (such as Utah's) "post office approach", which tends to treat medical data as the private passing of information from sender to recipient, contributes to increased participation levels (West & Friedman, 2012). Another differentiator for IHIE's success is the system's adaptation of existing technological infrastructures to deliver additional features, such as the integration of automatic public health reporting for government agencies (Grossman et al., 2008).

West & Friedman (2012) summarize the key business-IT alignment factors in IHIE's so far successful path to sustainability:

Indiana has made excellent progress in building consensus on goals, means, and roles for various stakeholders. Its inclusive governance structures with different committees and advisory boards has worked well. The state coordinates effectively with various local and regional networks... [and] has pioneered a business model based on providing important services to stakeholders, and therefore is well-positioned for future sustainability.

However, alignment theory can superficially neglect the way technology is socially-constructed in institutional and cultural environments, and how this can affect the end results of a technological intervention. This is where enactment frameworks can complement the analysis of IHIE to provide a

more nuanced picture of the factors that contribute to its sustainability.

Analysing West & Friedman's outline of IHIE's historical and organizational environment (Figure 1), the state's history as a pioneer of stable, effective health IT systems worked to IHIE's advantage, as it had a strong, historical knowledge base off which to build the HIE. This included prior experience with the related regulatory, policy, and clinical issues of such systems. The organizational environment is also conducive to shared visions of success, as the group consists of a wide-range of both public and private actors, each which is given a seat at the governance table. This participatory environment allows IHIE designers to understand all players' main requirements - for example, privacy concerns for physicians or secure, open data sharing and reporting for public health officials. Furthermore, the combination of the historical and organizational environment, facilitated by IHIE's leadership, contributes to the widespread consensus about goals, means, roles, and behavioural expectations (West & Friedman, 2012).

Because of these historical, organizational, and contextual factors, IHIE stakeholders are motivated to use and support the system, from both operational and financial perspectives. Through this lens, we are better able to understand the details of the connection between individual users' actions and overarching institutional structure (Fountain, 2001). In terms of IHIE's initial successful implementation, these actors received the unenacted technology and, through the "sensemaking" process - namely with regard to their implicit and explicit views on its role concerning their individual needs; technical and clinical usage; operational effectiveness; and long-term sustainability - they enacted the technology. This enacted technology manifested through IHIE appears to be congruent with the intended design of the system.

## Conclusion

As the THSA (2013) notes, the benefits of having a wide-spread network of effective HIEs are nationally recognized. Other authors have discussed HIE success factors in relation to financial business models; government policy and regulation; privacy and confidentiality; technical issues; and governance models (Truscott et al., 2010). The focus of this paper was instead on sustainability from a combined IT alignment and enactment perspective. Whether entirely self-sufficient or falling somewhere on the spectrum of private or public investment, HIEs become sustainable when they reach a critical mass of health institutions participating, contributing, and benefiting from their services. This paper sought to

demonstrate the factors of IHIE's widely-acclaimed success through alignment and enactment theories which serve as effective lenses to highlight the degree to which stakeholder values and system design must be aligned in the creation of HIEs, and the effect that the historical, environmental, organizational, and cultural contexts they are embedded within has on future sustainability. In conclusion, what is most critical to sustainability within HIEs appears not to be the economic business model chosen, but the degree to which system designers are able to generate value for the main actors involved. Time will tell how IHIE will ultimately fare but, so far, signs are pointing towards a continuously improving and growing exchange, and one that should be looked at as a model to newer or struggling HIEs.

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# Fostering the Success of E-Government Initiatives by Improving User Take-Up

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## ABSTRACT

The concept of e-government describes the increasing offer of e-services by governments and the growing use of those by citizens. Drawing on an academic literature as well as public reports, this paper will argue that despite the existence of a wide range of concepts to define e-government, international norms roughly sketch a model and a purpose towards which governments should tend. As failures in the implementation of ICT-driven changes can hinder entire policies and arguably societies, this paper proposes the use of vicarious learning and behavioural decision science to increase the rate of success of ICT-projects in the public sector.

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## Introduction

Over the past decades, the development of new Information and Communications Technologies (ICTs) and their appropriation by the private and public sectors have been through an acceleration that has never been seen before. This led to deep changes within governments, as well as regarding their relationships with other actors (the citizens and businesses). As Nora and Minc noted in their seminal report,

If the public authorities allow data processing to penetrate in a disorderly way, they preempt the future. On the other hand, no global scenario can be imposed from a single centre without suffocating society or paralyzing government. Therefore, it is necessary to conciliate a maximum of freedom and a minimum of coordination, to facilitate change rather than impose it. (Nora & Minc, 1980: 113)

Thus, the appropriation of ICT by the public sector implies two issues: improving the society's welfare by bettering its services, and doing so in a way which does not lead to unwanted outcomes. Indeed, the question of "why" implementing new ICT in governments cannot be separated from the "how" to do it question. However, the latter is not studied often in research papers or in ways with which we are not fully satisfied. The purpose of this paper is to try to clarify this by answering the question: how to trigger the appropriation of new ICT by the citizens and the administration to achieve the purposes of

e-government? Therefore, this paper will conduct a literature review on the theoretical models used to define "e-government" ("what") before identifying the digital strategies' trends thanks to governmental or international organisation's publications ("where is it going and why"). Then it will briefly offer new ways to study the feasibility of ICT-driven changes in the public sectors, and focus on "how" to implement it thanks to vicarious learning and the use of behavioural decision science. The main aim of this paper is to offer potential ways to increase the rate of success of e-government: in order to do so, a common ground must be established as to what e-government is and which trends it follows.

## What is E-Government?

"E-government" is a concept which is used in various contexts and can have different meanings. We will use the following definition (Jayashree & Marthandan, 2010) in this paper: e-government is "the use of technology to enhance information sharing, service delivery, constituency and client participation and governance by transforming internal and external relationships. This includes transactions between government and business, government and citizen, government and employee and among different units and levels of government". The use of internet in a public management context has been linked (Margetts & Dunleavy, 2013) to New Public Management (NPM) for the first implementation processes. Indeed, NPM is the approach according to which "the public sector can be improved by the importation of business concepts, techniques and values" (Politt & Bouckaert, 2011: 10) and the fast appropriation of ICT by the private sector led to new expectations from the citizens and was seen as a model regarding cost-effectiveness. Dunleavy et al (2006) characterize NPM with three traits: disaggregation (the preference for

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small and specialised organisations), competition and incentivisation.

However, as early as 2006, the emergence of a new form of governance born from the use of ICT in the public sector was portrayed (Dunleavy et al., 2006): the “Digital-Era Governance” (DEG) with the reintegration of services, holistic services for the citizens and the deepening of ICT-driven changes within the administration (Margetts & Dunleavy, 2013). Nevertheless, Cordella offers an interesting angle on the subject by coining the term “e-bureaucracy” (Cordella, 2007) which implies that initially, ICT-driven changes were implemented in a NPM context but, as they led to more equality and impartiality, they favoured the citizens according to the Weberian ideal of bureaucracy. This approach is adequate as the budgetary imperatives nowadays compel governments to justify their expenses, thus an ICT project will only be accepted if it is supposed to lead to greater savings later on; therefore both the cost-effectiveness and the positive impact on citizens are present in the concept of “e-government”. To conclude, we can state that e-government is like democracy, we know it when we see it, but it comes in a variety of forms.

### Can a Single Trend Be Identified in E-Government Initiatives?

E-government is a theoretical concept which covers a number of different realities. However, e-government is studied by the OECD in its “e-government studies”, by the United Nations (Department of Economic and Social Affairs) and the European Commission has gathered data on the subject since 2001 (OECD, 2009). Moreover, many governments created “digital strategies” to assert their priorities in implementing thoroughgoing ICT-driven changes and the European Commission proposed a 10-year strategy on 3 March 2010 called “Europe 2020” which includes a “Digital Agenda”. We mentioned a double challenge (the appropriation of the new ICT by the administration and the citizen) linked to the concept of e-government; if we translate this idea in different terms, this means that e-government is built on citizen’s capabilities (capabilities is defined here as: “what it takes” to do something) but also on the administration’s capabilities. Also, we cannot help noticing that e-government has positive externalities on the entire society. Indeed, it improves the transactions (Jayashree and Marthandan, 2010) between businesses (B2B), between citizens and businesses (B2C); it facilitates the interactions between governments (G2G), between governments and businesses (G2B) and between governments and citizens (G2C). Therefore, the question of “why” moving towards e-government does not deserve more thoughts: the added value of successful ICT-driven changes in the relationship between public services and societies is significant and this kind of measures is usually widely accepted as it is motivated by cost-effectiveness as well as by the idea of doing what is right for the citizens (supporters of “small” or “big” government cannot really disagree as far as

e-government is concerned).

However, the digital strategies from France and the United-Kingdom differ on a number of points but the studies conducted by international organisations seem to advocate for best practices which would lead us to think that “e-government” is a single and well-defined state. Thus, the question “where is it going” deserves some observations.

First of all, it is quite enlightening to take a look at the subtitles of the UN and OECD studies (OECD, 2009; UN, 2012): “e-Government for the people” and “user-centred approaches”. It is clear that e-government has to be designed with the citizens in mind: the notions of transparency and accountability are extremely significant here. Arguably, this is where the difference between the first wave (Margetts and Dunleavy, 2013) of NPM and the second one of DEG lies: the reason for implementing ICT-driven projects shifted from a cost-effectiveness justification to more democratic and interventionist motives. It is interesting though to see that the justification for the state intervention is strongly culturally embedded. Indeed, the webpage presenting the digital strategy for the UK (Cabinet Office, 2012) proudly displays: “digital services so good that people prefer to use them”; whereas the press release presenting the French (Cabinet du Premier Ministre, 2013) “feuille de route du gouvernement sur le numérique” (Government’s roadmap for digital technology) asserts that: “the Government will keep its role as a driving force in the definition of an ambitious European digital policy”. This difference in the justification for the state intervention is probably due to the tradition of Colbertism in France.

When looking at the digital strategies of the French and British government, a significant difference in their approach to e-government strikes the reader: the British plan proposes 14 very concrete actions concerning the way administration has to improve its use of ICT (it is very technical and technocratic) whereas the French plan has three very broad pillars (make digital technology an opportunity for youth, strengthen the competitiveness of our companies, promote our values in the digital society and economy) mostly focusing on the impact e-government should have on society. Hence our impression is that the British plan is more practical; we also have to notice again that e-government is a culturally embedded concept. However, this difference in the approach can also be explained by a more advanced state of digital government in the UK than in France. Indeed, the UK has been ranked third in the “world e-government development leader 2012” ranking (United Nations, 2012) and France only sixth. Or, as stated by the European Commission, there are still 30% of people in Europe who have never used the internet. Thus, France might still have to tackle the challenge of getting people to use e-government services whereas the UK can focus on implementing thoroughgoing changes within the administration because the citizens already use e-government services.

To answer the question on “where is it going” is

difficult because, as we have seen, e-government is a culturally and socially embedded concept. Indeed, international organisations seem to be pushing countries in a single direction by using rankings (United Nations, 2012), formulating advice (OECD, 2009), and setting up agendas (e.g. the Digital Agenda for Europe). But those methods are not coercive and consist in the exchange of “best practices”. However, it could be argued that e-government is evolving towards “lean government and platform-based governance” (Janssen, Estevez, 2013) that is to say, that the government is smaller (less public spending and less interventions) and plays the role of an “enabler” to empower pre-existing capabilities within citizens and businesses. Evidence of this shift is to be seen in the move towards the opening of public data but also in the two national strategies we studied here: the UK is trying to cut its bureaucratic routines as much as possible while France is aiming at empowering its businesses and citizens by taking a different road but with the same final objective. Therefore, the important remaining question is “how” to reach this “lean government” state using lean platforms and inspired by the private sector’s best practices.

#### How Can E-Government Initiatives Be Made Easier?

The question of “how” to implement e-government is the trickiest. Indeed, one characteristic of every project is that it sometimes fails. Here, failure is defined by the lack of users for the new ICT and/or significant additional costs and delays. This trait seems to be even more frequent for ICT-driven changes in the public sector. However, we could argue that given their size and their ambition IT projects led by governments “benefit” from more media-exposure and every backtracking or small failure draws a lot of attention. Giving up on an ICT project in a multinational company is ill-perceived by the shareholders as it represents a loss of money but is even less acceptable for taxpayers. Politically, there is no way out, ICT projects in the public sector must succeed. Indeed, empirical studies (Arduini et al, 2013; Burn & Robins, 2003; Weerakkody et al., 2010, 2012) on ICT-implementation in the public sector have identified roughly the same issues for this kind of project (Weerakkody et al, 2012): “political, fiscal, social, strategic and organisational issues need to be addressed when formulating plans for deploying e-government”. We find here the two challenges that we have already identified: the political, fiscal and social aspects refer to the appropriation by citizens of the new ICT, whereas the strategic and organisational issues can be linked to the appropriation of the ICT by the administration. In this last part of our paper, we will start by focusing on “how” to make public servants use the new ICT before studying “how” to convince the citizens to use it.

There is a certain bias in the study of information systems: the new technology is seen as a “silver bullet” (OECD, 2009), that is to say that the new ICT is seen as enough by itself to change the organisation, what Markus calls “magic bullet thinking” (Markus, 2004). We find this unsatisfactory as it does not

tackle the issue of the appropriation of the ICT by the individuals. Thus, the angle of Ciborra on organisational change and ICT is very relevant as it emphasizes the importance of “improvisation-bricolage” (Ciborra, 1996), that is to say that actors within the organisation will use the new ICT and modify it by doing so, therefore leading to a change in routines: the organisational change. But this opens a new can of worms: if the appropriation of ICT tools needed for e-government depends on the public servants, how can high-level managers play a role in the success of a governmental ICT project? This is why we think that “extrapolation” (Bardach, 2004) of “vicarious learning” (Barzelay, 2007) is a good solution to tackle this issue. Indeed, by using case studies and examples from other countries, managers should be able, thanks to this method, to tell which projects have a better chance to work in a given context. Indeed, there are a lot of case studies conducted by scholars on ICT implementation in different contexts: local administration in Italy (Arduini et al, 2013), a Legal Aid department in Australia (Burn, Robins, 2003), local government in the UK and in Slovakia (Weerakkody et al, 2012), Qatar (Weerakkody et al, 2013)... Moreover, the OECD regularly conducts studies about e-government in different countries and the UN as well as the European Commission provides useful information. Therefore, there is a number of sources available upon which extrapolations can be conducted by public authorities to pick the projects which have a better chance of appropriation by the administration: this is learning from the experience of others.

The other challenge for every governmental ICT-project is to convince citizens to use the new tools, especially since the “paradigm shift towards Citizen Centricity” (OECD, 2009) which can also be defined as the shift from NPM to DEG in other words (or in our definition and more simply: the continuous implementation of e-government). The OECD identifies challenges to the user take-up which we are not going to study here. However, as we have seen with the European Union’s statistics (30% of the EU’s citizens have never used the internet!) as well as the French “Feuille de route pour le numérique”, convincing citizens to use e-government’ services is a major hurdle. The OECD has identified four types of country approaches to increase user take-up (OECD, 2009, p19) but those classical approaches are not going to be studied here either, we will instead offer an approach based on behavioural decision science. Indeed, when it was possible for the first time in France to pay one’s taxes online, the government offered people an additional week and a small tax discount if they used this means rather than the traditional paper form. This is an incentive, that is to say a category of “nudge” (Thaler, Sunstein, 2009). Nudges are changes in the choice architecture which lead people to take the right decisions without the use of coercion: libertarian paternalism is the doctrine behind this approach. Many good results have been achieved thanks to nudges and David Cameron implemented a “Behavioural Insights Team” (“Nudge Unit”) in the Cabinet Office when he became Prime

Minister. This department uses knowledge stemming from academic literature in the field of behavioural decision science to allow public policies and services to achieve better outcomes. For example, it worked on increasing the number of people registered as organ donors. We believe that this type of intervention could lead to good results to increase the take-up of e-government services by citizens.

### Theoretical and Methodological Issues

In this paper we offered two possibilities to allow for an increase rate of success in e-government initiatives thanks to an improved user take-up. However, we must mention the difficulties inherent in the use of these. Indeed, behavioural decision science relies on the belief that people would like to make better choices for themselves but cannot because of their biases. Nevertheless, this idea that governments have to intervene to “protect people against themselves” (libertarian paternalism) in a more subtle way than usual (as no coercion is used) is highly criticised as it is sometimes perceived as plain paternalism. Moreover, the long-term effects are still to be studied. Moreover, “vicarious learning” is a powerful tool, but evaluations “ex ante” are difficult to conduct in the public sector as they are costly in time and resources. Also, the political terms are limited in time and the pressure for quick results seriously jeopardises the possibilities to conduct such studies. These limits have to be taken into account, but we still believe that e-government initiatives could be made easier thanks to behavioural decision science and vicarious learning.

### Conclusion

To conclude, the use of information and communications technologies by governments is shaping societies: it modifies the way citizens and businesses interact with other individuals or companies as well as with governments. By creating a different framework within which interactions will take place it implies changes in the concept of “social link” as it was before the implementation of the ICT. Thus, it is necessary to study what “e-government” is, what it is trying to achieve and for which reasons, as well as how it intends to do so: the broad picture is needed to draw conclusions regarding our initial question. We took a tour of the existing concepts and models around the notion of e-government and claimed that e-government is a broad concept embracing all the models stemming from academic quarrels (“what”) and is actually evolving towards a user-centred model based on the use of “lean platforms”: a “lean government” (“where is it going”). This tendency towards uniformisation is motivated by international norms (OECD, UN, Digital Agenda 2020...) and new expectations from citizens who believe that “e-government” will provide better and cheaper services (“why”) even though the national digital strategies assume different shapes.

This study was useful to clarify what the expected changes within governments and societies are

because this knowledge is needed to choose how to implement new ICT (we refer to Nora and Minc’s quote). As we identified a double challenge regarding appropriation of the new technologies (by the citizens and the public servants/ the administration), we draw on a different literature to offer new ways to tackle this issue which is not studied in a satisfactory way in the case studies we read. To finish, even if ICT is not a “silver bullet”, its failure can prove perilous for governments as shown with the failures of the website designed to support Obama’s healthcare reform putting the entire policy in jeopardy. This strengthens our belief that the “how to implement” question should be further studied.

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# Assessing the Disruptive Potential of Massive Open Online Courses

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Disruptive Innovation

## ABSTRACT

The massive open online course (MOOC) innovation has generated remarkable momentum and interest, but has received scant attention in the literature. The innovation is surrounded by uncertainty, particularly with respect to its possible implications for the higher education industry and its various stakeholder groups. This paper addresses a gap in the academic literature and assesses the disruptive potential of the MOOC innovation in the context of the higher education industry. Through analysis of emerging evidence with respect to disruptive innovation theory, it evaluates the MOOC innovation against the following three archetypal ex-ante characteristics and early marketplace behaviours of disruptive innovations: 1) reconfiguration of value delivery along performance dimensions relative to mainstream offerings; 2) entry into a new or low-end market; and 3) ability to improve to the point of mainstream market acceptance. It concludes that whilst the MOOC innovation seemingly embodies these three archetypal ex-ante characteristics and early marketplace behaviours that imply its disruptive potential, the realisation of any such potential is likely to be constrained by its innovators – incumbent higher education institutions – which appear to be pursuing MOOCs with intent to sustain their current businesses, rather than to disrupt them.

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## Introduction

Since its inception in 2008, the massive open online course (MOOC) innovation has generated remarkable momentum and interest. The three biggest MOOC platforms – edX, Coursera and Udacity (The New York Times, 2012) – currently host 671 courses from 135 globally and academically diverse, high-ranking higher education institutions (Coursera, 2013; edX, 2013a,b; Udacity, 2013). Coursera, the largest, has alone enrolled more than 5.6 million students (Fowler, 2013). Moreover, investors who anticipate a global market consisting of more than *two billion* potential consumers have repeatedly injected capital worth tens-of-millions of dollars into fledgling MOOC platform providers (Bersin, 2013; The Economist, 2013). Perhaps most significantly, the MOOC phenomenon has garnered the attention of national governments concerned for the sanctity of their education systems (Austrade, 2013; Kolowich, 2013a; UK Department for Business, Innovation and Skills, 2013) and principal international development organisations that anticipate potential impacts from MOOCs in the domain of poverty alleviation (World Bank, 2013).

Such momentum coupled with the novelty of the MOOC innovation has instigated intense uncertainty and debate (Hommel, 2013). Concerns include the impacts that the innovation may have on the higher education industry and its various stakeholder groups such as students, academics and employers, whether MOOC providers can develop sustainable business models, how higher education institutions should strategize in light of the MOOC phenomenon, and whether the MOOC constitutes a potentially disruptive innovation (Cooke, 2013; Dellarocas and Alstyne, 2013; Farmer, 2013; Judson, 2013).

The latter concern is particularly pertinent and profound for two reasons. Firstly, the MOOC innovation has arisen following the recent and rapid digital transformations undergone by other content industries including publishing, music and advertising (Bhattacharjee et al., 2011; Dellarocas and Alstyne, 2013; Moreau, 2013; Overdorf and Barragree, 2001; Palfreman, 2009). The transformations of such industries – and the associated weakening of their respective longstanding incumbent firms and business models – have been instigated by digitally enabled disruptive innovations in goods and processes that disaggregated and digitised the production and distribution of content. They have set a precedent for the disruption of other content industries, such

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as higher education, by innovations that similarly disaggregate and digitise content, such as the MOOC. Whether the MOOC innovation possesses disruptive potential in the context of the higher education industry thus deserves serious consideration. Secondly, determination of whether the MOOC innovation embodies disruptive potential might enable better-informed consideration of other concerns associated with it, such as those aforementioned. From the point of market introduction, disruptive innovations routinely diffuse and evolve to impact industries along distinct and typical trajectories. Disruptive innovation theory thus facilitates the derivation of ex-ante predictions concerning the future impacts of potentially disruptive innovations *relative to events that occur in the marketplace* following their introduction, providing that potentially disruptive innovations are aptly identified as such (Christensen, 2006; Christensen et al., 2004). Accordingly, emergent academic literature has noted the importance of determining “whether [...] MOOCs can be categorized as disruptive innovations” (Wellen, 2013: 2).

Prior assertions that the MOOC innovation is “disruptive” (Anderson, 2013: 1) or even “definitely a disruptive innovation” (Skiba, 2012: 417) have seemingly been made in the absence of references to disruptive innovation theory or the higher education industry’s degree of susceptibility to disruption. They should thus arguably be treated with scepticism – the term “disruptive innovation” is commonly misunderstood and misapplied (Markides, 2006), specifically in the higher education context (Straumsheim, 2013). Moreover, whilst early identification of an innovation’s disruptive potential may be advantageous given the predictive power of disruptive innovation theory, *erroneous* identification may harbour negative consequences as such can provoke implementation of suboptimal strategies and targeting of non-existent markets (Christensen, 2007; Parvarandeh, 2013). Aptly, Yuan and Powell (2013: 14) state that “using disruptive innovation to explain the phenomenon of MOOCs in HE [higher education] should be applied with caution to avoid superficial conclusions”.

Given that disruptive innovations exhibit common characteristics and marketplace behaviours from their inception, which enable their ex-ante identification (Christensen, 2006; Hang et al., 2011), this paper evaluates the disruptive potential of the MOOC innovation to address a gap in the literature and facilitate better-informed discussion of the phenomenon. It draws upon emerging evidence to consider the MOOC innovation against the following three archetypal ex-ante characteristics and early marketplace behaviours of disruptive innovations: 1) reconfiguration of value delivery along performance dimensions relative to mainstream offerings; 2) entry into a new or low-end market; and 3) ability to improve to the point of mainstream market acceptance. It subsequently considers the extent to which the innovators themselves – incumbent higher education institutions – are fostering the disruptive potential of MOOCs, before concluding.

## The MOOC as a Potentially Disruptive Innovation

A disruptive innovation may be defined as:

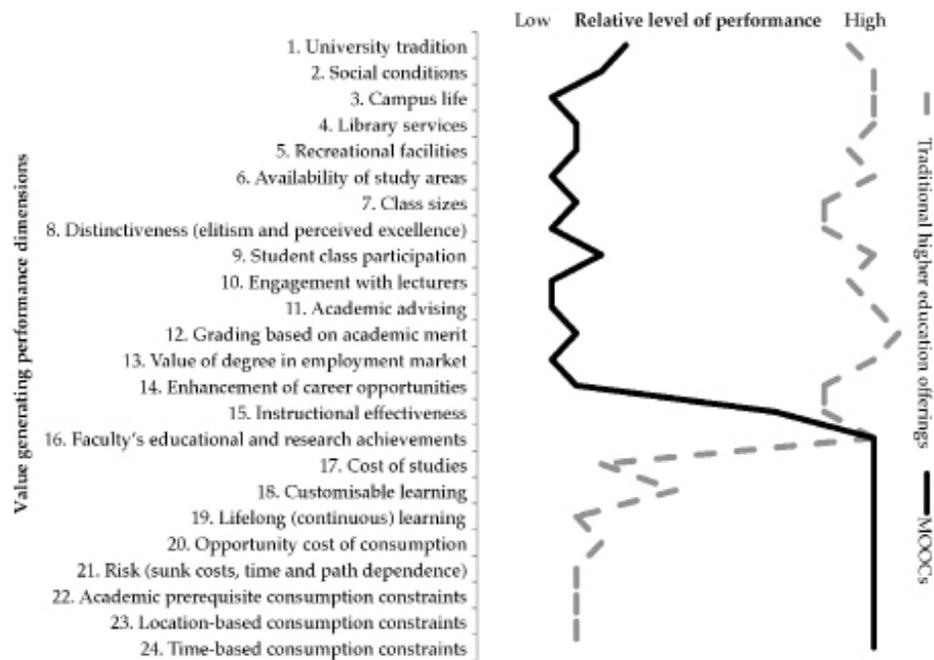
An innovation that [initially] cannot be used by customers in mainstream markets. It defines a new performance trajectory by defining new dimensions of performance compared to existing innovations. Disruptive innovations either create new markets by bringing new features to nonconsumers or offer more convenience or lower prices to consumers at the low end of an existing market (Christensen et al. 2004: 293).

Their converse, sustaining innovations, offer superior performance along markets’ traditionally valued performance dimensions and are typically introduced by industry incumbents to target mainstream customers. By offering substandard performance against these dimensions and instead delivering customer value in new ways (often through increased simplicity and lower prices), disruptive innovations enter markets comprised of low-end consumers and / or traditional nonconsumers who appreciate their reconfigured value propositions and for whom mainstream products offer superfluous performance (Christensen and Raynor, 2003; Dombrowski and Gholz, 2009; Schmidt and Druehl, 2008). These innovations induce industry “disruption” by evolving in ways that 1) retain their superior performance along newly emphasised dimensions relative to traditional offerings; and 2) improve their performance along traditional dimensions to the level required for adoption by mainstream market consumers (Christensen and Raynor, 2003; Christensen et al., 2004; Hang et al., 2011).

Prior to discussion of the MOOC innovation relative to disruptive innovation theory, the constitution of the mainstream market, industry incumbents and traditional offerings in the higher education industry context must be defined. Contemporarily and despite the increased prominence of distance learning and online and part-time study modes, the vast majority (69%) of undergraduate and postgraduate students study full-time on higher education institution campuses (Higher Education Statistics Agency, 2013). The mainstream market is thus herein defined as comprising full-time, campus-based higher education students. Incumbents are campus-based higher education institutions. Traditional higher education offerings are full-time, campus-based degree programmes.

### Reconfiguration of Value Delivery along Product Performance Dimensions

The preliminary antecedent to disruption is reconfiguration of value delivery along dimensions of product performance relative to mainstream offerings (Dombrowski and Gholz, 2009). Whether the MOOC innovation satisfies this prerequisite may be evaluated by mapping its value curve – alongside that of traditional higher education offerings – against the



**Figure 1:** Value Curves of MOOCs and Traditional Higher Education Offerings  
Author's analysis; figure adapted from Kim and Mauborgne (1997)\*

performance dimensions most valued by mainstream consumers and most emphasised by MOOCs (Kim and Mauborgne, 1997; Parvarandeh, 2013). A distinct curve would indicate underlying disruptive potential, as illustrated in Figure 1\*.

In summary of the value curves illustrated in Figure 1, the disaggregated and digital delivery of higher education content offered by MOOCs provides consumers increased flexibility in consumption with respect to space and time relative to traditional higher education offerings, which deliver live, perishable content, consumption of which is therein constrained (dimensions 23 and 24). Simultaneously, digital content delivery to decentralised individuals and the lack of a physical campus sees that MOOCs perform poorly against dimensions associated with social interaction and campus facilities (dimensions 1 to 6). Moreover, the open and free (or low cost) nature of MOOCs (dimension 17) all but eliminates barriers to entry and exit (dimensions 20 to 22) (UK Department for Business, Innovation and Skills, 2013) and thus facilitates choice in consumption and lifelong learning (dimensions 18 and 19) (Chen et al., 2013; Skiba, 2012), though also engenders large class sizes and indistinctive educational experiences (dimensions 7 and 8). Finally, dimensions concerned with student learning, assessment and outcomes (dimensions 9 to 15) are those against which MOOCs are most commonly considered to perform inadequately against relative to traditional higher education offerings (Laplante, 2013; Mazoue, 2013; Rubin, 2013; Yuan and Powel, 2013). Critically, MOOCs do not lead to the award of degrees (Lawton and Katsomitros, 2012). With respect to these dimensions, the San José

State University Philosophy Department (2013: 1) contends that MOOCs compromise such “essential components of a good quality education”. Such arguments and the distinct value curve of the MOOC innovation demonstrates its compliance with this first characteristic of disruptive innovation: MOOCs reconfigure value delivery along performance dimensions relative to traditional higher education offerings and underperform against traditionally valued performance dimensions. This engenders the MOOC innovation’s disruptive potential – providing that MOOCs are subsequently able to improve along traditionally valued performance dimensions to the point of mainstream market acceptance (Christensen et al., 2004; Hang et al., 2011); a matter to be subsequently discussed – and also has implications for the innovation’s *initial* market entry.

### The Market: Entry and Characteristics

Upon their introduction, disruptive innovations enter low-end or new markets since their inadequate performance along traditionally valued dimensions renders them unsuitable for mainstream market consumption (Christensen et al., 2004; Schmidt and Druehl, 2008). Two factors indicate that MOOCs have embarked on a trajectory of new-market disruption. Firstly, piecemeal data on MOOC participants is emerging<sup>†</sup>, suggestive that MOOCs are attracting a psycho-demographic of consumers distinct from the mainstream market. Demographically, MOOC consumers are highly educated: most (70.3 to

\* Performance dimensions derived from Athiyaman (1997); Chen et al. (2013); Elliott and Healy (2001); Li and Bray (2007); Mai (2005); Ming (2010); Sojkin et al. (2011); UK Department for Business, Innovation and Skills (2013)

† G. Christensen et al. (2013) report data on 34,779 respondents enrolled on at least one of 32 University of Pennsylvania MOOCs (24 unique MOOCs with the remainder being repeat sessions). Huhn (2013) reports data on 8,459 respondents enrolled on at least one of four University of Wisconsin–Madison MOOCs. Kolowich (2012) reports data on 14,045 respondents enrolled on a single MOOC offered by Stanford University. University of Edinburgh (2013) reports data on 45,182 respondents enrolled on six MOOCs offered by the University of Edinburgh.

79.4%) hold bachelor level degrees and a substantial proportion (40.2 to 44.2%) hold advanced level degrees (G. Christensen et al., 2013; Huhn, 2013; University of Edinburgh, 2013). Most (50 to 62.4%) are in full-time employment (G. Christensen et al., 2013; Huhn, 2013; Kolowich, 2012). This indicates a market that is demographically distinct from the mainstream higher education market comprised of full-time students, and one with less need and capacity to consume traditional higher education offerings. Regarding psychographics, MOOC consumers possess consumption motivations that contrast with those of mainstream higher education consumers. Few partake in MOOCs to facilitate the obtention of a degree (13.2%) or a new job (17%) (G. Christensen et al., 2013), which represent two primary determinants of traditional higher education consumption decisions (Li and Bray, 2007; Maringe, 2006; Ming, 2010; Sojkin et al., 2011). Most (50.05%) do so to satisfy curiosity or “just for fun” (G. Christensen et al., 2013: 11).

These data imply a psycho-demographic of consumers likely excluded from the traditional higher education market by the high opportunity costs of consumption, complexity and major performance overshoots of traditional higher education offerings relative to their consumption requirements. Such is archetypal of new-market disruption: the innovation takes root among nonconsumers excluded from the mainstream market by traditional offerings rendered unfit for their consumption typically by high prices, complexity and superfluous performance (Horn and Staker, 2011). The second indication that MOOCs have embarked on a trajectory of new-market disruption is their apparently absent impact on the size of the traditional higher education market, which continues to undergo strong and steady growth despite the enrolment of millions of students to MOOCs. Demand for traditional higher education is rising and outstripping supply in countries across the world, leading to calls for increased capacity (Association of Universities and Colleges of Canada, 2013; Gibney, 2013; Islamic Development Bank, 2013; Kokutse, 2013; Oxford Business Group, 2013; Paddick, 2013; UNESCO Institute for Statistics, 2013).

The distinct characteristics of the MOOC market and the continued growth of the traditional higher education market seemingly indicate that MOOCs have embarked on a trajectory of new-market disruption by attracting nonconsumers. Wellen (2013: 10) supports this argument, stating that “in most cases, MOOCs are used...by nontraditional learners”. Notably, new-market encroachment can prove particularly damaging to an industry’s incumbents since, in contrast to low-end encroachment, the absence of an immediately apparent threat to incumbents’ market shares is more likely to stimulate inertia and unresponsiveness among them (Hang et al., 2011). Unusually, in the case of the MOOC innovation, the innovators are the industry incumbents – a matter that will shortly be discussed. Since they appear to have established a new-market foothold, MOOCs adhere to the market entry characteristic of disruptive innovation. As earlier alluded, their potential to

diffuse beyond this market and induce industry disruption depends on their ability to improve along traditionally valued performance dimensions to the level required by mainstream consumers.

### Performance Improvement

Once a reconfigured value proposition and an initial market foothold have been established, an innovation’s disruptive potential lies in its ability to improve to the point of mainstream market acceptance whilst retaining its benefits relative to traditional offerings. Two factors are therein determinant. The first is competition among players, which must be sufficient to stimulate performance improvement (Hang et al., 2011). The second is the innovation’s “extendable core” (Wessel and Christensen, 2012) – that is its defining features that engender its advantages along particular performance dimensions relative to mainstream offerings, and by extension, its disruptive potential (Dombrowski and Gholz, 2009; Wessel and Christensen, 2012). An innovation’s extendable core constrains its improvement along *incompatible* performance dimensions – specifically, those that require it to be altered such that its relative advantages are destroyed. These two factors may be respectively interpreted as *competitive pressure* and *scope* to improve performance. Regarding the former, there exist ample well-financed, established competitors and new entrants to the MOOC space to stimulate performance improvement (UK Department for Business, Innovation and Skills, 2013). With respect to the latter factor, the scope for the performance of MOOCs to be improved along traditional performance dimensions is defined by the MOOC innovation’s extendable core, central to which are the concepts of massive, open and online and the resultantly superior performance of MOOCs along value curve dimensions 17 to 24 relative to traditional higher education offerings. Although the deficiencies of MOOCs relative to mainstream market requirements are multiple (cf. Figure 1), many higher education experts (Daniel, 2012; Hill, 2012; Laplante, 2013; Rubin, 2013; UK Department for Business, Innovation and Skills, 2013; Yuan and Powel, 2013) imply that MOOCs’ relative advantages may enable them to begin garnering wider acceptance upon: 1) improving to provide assessments that facilitate student authentication and eliminate plagiarism (corresponding to value curve dimension 12); and 2) granting academic credit that leads to a degree or other valuable signifier of completion recognised by employers (corresponding to value curve dimensions 13 and 14).

MOOC providers are indeed introducing proctored examinations at test centres worldwide at a low consumer cost of approximately \$80 (Lawton and Katsomitros, 2012). Such improvement falls within the scope of the MOOC innovation’s extendable core: it does not destroy any of the relative advantages of MOOCs along value curve dimensions 17 to 24. Subsequent to adequate assessments, there is “no inherent reason why MOOC-acquired learning cannot be accredited” (Boxall, 2012). Performance

improvement along this dimension thus appears to depend not on the MOOC innovation's extendable core, but rather on the higher education institutions that administer them.

### Higher Education Institutions and the Disruptive Potential of MOOCs

Suggesting that the MOOC innovation bears "the early hallmarks of a disruptive innovation", Horn and Christensen (2013) highlight as curious that "the market leaders [incumbent higher education institutions ...] are the ones pioneering it". Whilst incumbent-led disruption is atypical, this in itself should not trigger the conclusion that the MOOC innovation does not possess disruptive potential. Such is dependent on the characteristics of the innovation itself, not those of the innovating firms (Schmidt and Druehl, 2008). That MOOCs are attributable to industry incumbents may, however, implicate the *realisation* of their disruptive potential. Compared to entrants, incumbents are more likely to be constrained from successfully instigating disruptive change by inertia engendered by myriad organisational factors including excessive bureaucracy, path dependencies and commitments to dominant product or business model designs, existing un-learnable competencies and routines, protectiveness of current customers and aversion to risk and cannibalisation, and myopic dominant logics with respect to existing and potential customers' current and future requirements (Assink, 2006; Gilbert, 2005; Gulati and Garino, 2000). Significantly, extant successful mainstream business and revenue streams may render incumbents incapable of allocating resources to successfully market disruptive innovations, the current returns from which are often relatively negligible (Christensen and Overdorf, 2000). This issue is compounded if the innovation and new market demand the adoption of cost-structures and processes incompatible with those of mainstream businesses (Bower and Christensen, 1995). Such limiting conditions are salient in the case of MOOCs (Jackson, 2013; Lucas, 2013; Waldrop, 2013), and surmounting them to drive disruption requires that higher education institutions pursue MOOCs in independent business units protected from the potentially inhibiting influences of their core activities (Christensen and Raynor, 2003; Schmidt and Druehl, 2008). Armstrong (2012) and Daniel (2012) suggest that this *is* being practiced, at least by some higher education institutions.

Whilst higher education institutions may have organised to exploit the disruptive potential of MOOCs, their motives for doing so scantily support Horn and Christensen's (2013) excitement that they are strategizing to drive disruption. Conversely, the apparent twofold motives of higher education institutions suggest that they are pursuing MOOCs in order to *strengthen their core businesses*. One of these motives comprises brand projection and engagement to bolster the recruitment of potential students worldwide to paid traditional degree programmes (Garrett, 2013; Lawton and Katsomitros, 2012; UK Department for Business, Innovation and Skills,

2013; University of Edinburgh, 2013). The other is to undertake pedagogical experimentation to improve the efficiency of traditional, campus-based instruction, with a possible view to therein integrate online provisions whereby students watch pre-recorded lectures online in advance of classes that may subsequently be dedicated to group discussion (a concept known as the "flipped" classroom) (Lavelle, 2013; Lawton and Katsomitros, 2012; UK Department for Business, Innovation and Skills, 2013; Waldrop, 2013; Yuan and Powel, 2013).

Summarily, Rice University's vice provost for interdisciplinary initiatives notes that "we see MOOCs as a way to innovate our classroom experience" (quoted in Jackson, 2013). Indeed, MOOCs may offer unique opportunities for higher education institutions to achieve such business-sustaining objectives. MOOCs generate brand awareness among potential recruits worldwide through repeat engagement (Pirani, 2013) and emerging piecemeal evidence suggests that higher education institutions may be benefiting from increased student enquiries as a result of offering MOOCs (Jackson, 2013). They also yield rich data that higher education institutions have begun mining to inform both student recruitment and on-campus pedagogical development (Austrade, 2013; Finkel, 2013). Further evidence suggests that higher education institutions are pursuing MOOCs in order to sustain their current business models. Higher education institutions have expressed that their MOOC activities are not aimed at developing sustainable business models or monetisation opportunities (University of Edinburgh, 2013), with a recent Babson Research Group survey indicating that most chief academic officers do not believe that MOOCs can provide a sustainable channel for offering courses (Pirani, 2013).

Since they are apparently employing MOOCs as a tool to strengthen their existing businesses, it stands to reason that higher education institutions will inhibit their disruptive potential. Indeed, this dynamic may be underway as "universities are deciding not to provide credit for a MOOC unless a participant later enrolls in a paid program" (Finkel, 2013). Moreover, scarce examples of credit-bearing MOOCs, such as the University of Georgia's, are localised to in-house students (Haggard, 2013). Some observers imply that the disruptive potential of MOOCs may only be realised when students receive academic credit regardless of whether they are enrolled with the providing institution – specifically, when the provision of education becomes unbundled from accreditation and the traditional higher education business model is truly reformed (Kolowich, 2013b, Lawton and Katsomitros, 2012). The validity of this argument remains unproven, though by using MOOCs and their accrediting powers – which Horn (2013) argues constitute a self-governance mechanism that the higher education industry employs to protect itself from disruption – in manners that reinforce their current business models, higher education institutions are arguably inhibiting the disruptive potential of MOOCs.

## Conclusion

Through analysis of emerging evidence relative to disruptive innovation theory, this paper has assessed the disruptive potential of MOOCs and the extent to which that potential might be realised. It has revealed that MOOCs embody the archetypal ex-ante characteristics and early marketplace behaviours of disruptive innovations: the MOOC innovation 1) underperforms against the mainstream higher education market's traditionally valued performance dimensions; 2) has attracted a market comprised of traditional nonconsumers whose characteristics and requirements exclude them from consumption of traditional offerings; and 3) embodies an extendable core that allows performance improvement *where it is seemingly most needed* in order for them to begin garnering mainstream market acceptance. Notably, the claim of this paper is not that MOOCs constitute a disruptive innovation, as expressed by Skiba (2012) and others. Such an ex-ante assertion would necessarily incorporate predictions concerning future marketplace events, which are uncertain (Yu and Hang, 2009); arguably, an innovation cannot be labelled disruptive ex-ante of its evolution and inducement of industry disruption. Rather, the claim is that MOOCs embody the characteristics and early marketplace behaviours that typify disruptive innovations and are thus indicative of their ex-ante disruptive *potential*.

Yet such potential is unlikely to be realised whilst incumbent higher education institutions, as the innovators of MOOCs, pursue them as a tool to sustain their current business models, rather than as an innovation to challenge them. Citing Christensen (2003), Yuan and Powel (2013: 14) note that "all technologies can be applied to sustain or disrupt any industry's incumbents". Whilst disruption does not absolutely necessitate the displacement of incumbent firms (Wessel and Christensen, 2012), it typically requires business model innovation, organisational renewal and "asymmetric incentives between existing healthy business and potentially disruptive business" (Yu and Hang, 2009: 437). Such asymmetries seem to remain absent in the case of MOOCs. Accordingly, Garrett (2013) notes that universities "certainly do not want their core business...disrupted, and clearly they do not think they are doing so by investing in MOOCs".

It must be recognised that the MOOCs innovation remains in its infancy, and that any analysis of its disruptive potential at a given point in time should not stimulate a foregone conclusion as to the subsequent realisation of any such potential. Analyses should be conducted on an on-going basis relative to marketplace events: realisation of disruptive potential may be influenced by myriad general (such as lifestyle, legislative and sociodemographic change) and industry-specific drivers (Hang et al., 2011) and can be a slow and staggered process characterised by barriers (cf. Wessel and Christensen, 2012). Such dynamics may be particularly significant in the analysis of potentially disruptive innovations

in the higher education context. In many respects, the industry appears more susceptible to digital disruption than any that preceded it. Concerns from across society concerning the ability of the traditional higher education business model to meet social and economic objectives – given rapidly rising costs, unmet demand and calls for open access – have never been more salient (Breneman, 2011; Kelly and Hess, 2013; Meyer, 2010; Rubin, 2013). Yet the industry has exhibited significant resilience to disruption or reinvention by other forms of online distance learning (Lenox, 2013; Meyer, 2010) for nearly a quarter century following the introduction and subsequent proliferation of such courses in 1989 (Eisenbarth, 2002). Invariably, any digital disruption is likely to evolve slowly. Higher education is characterised by tradition (Long, 2013) (in some respects, centuries' worth) and significant government intervention to ensure its efficacy in the public interest, to which the on-going existence of incumbent institutions is perceived to be crucial (Breneman, 2011). Thus moreover from the apparent desire of incumbent higher education institutions to avoid self-disruption, it is noted that "when public entities and public policy enter the mix, resistance to disruption can be fierce" (Kelly and Hess, 2013: 3). Such will likely slow the diffusion of unproven disruptive innovations.

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## Information Systems and Innovation within the Department of Management

Within LSE's Department of Management, we form the leading European university-based research cluster focusing on Information Systems and Innovation, and are recognised widely as amongst the top ten such clusters in the world. We have 12 full-time academics and benefit from the contributions of Visiting Professors, all of whom are scholars of international repute and leaders in the field, from Visiting Fellows who are experts in their respective fields, and from project researchers and our PhD students.

Faculty are active in the International Federation of Information Processing (IFIP), the Association for Information Systems (AIS), the UK Academy for Information Systems (UKAIS), the British Computer Society (BCS), and other national and international organizations including United Nations and European Union bodies. They are Editors-in-Chief of major journals including JIT, ITP) and variously serve as Senior and Associate Editors on most high quality refereed journals in the IS field (e.g. MISQ, MISQE, ISR, EJIS, ISJ plus over 20 others).

Teaching in Information Systems has been rated as excellent by the UK's Quality Assurance Agency and its research is recognized as internationally excellent by the Higher Education Funding Council for England. Awards and recognition are extensive and include Frank Land's Leo award of the AIS for Lifetime Exceptional Achievement, Ciborra's AIS Distinguished Member award, and Willcocks's Price Waterhouse Coopers/Corbett Associates World Outsourcing Achievement award for academic contribution to this field.

The Department of Management runs several high profile Information Systems seminar programmes. These include the annual Social Study of ICTs seminar run over two days in March which attracts over 200 international participants and has a related two day research workshop.

Information Systems faculty are actively involved in the delivery of two degree programmes offered within the Department of Management – a one-year MSc in Management, Information Systems and Digital Innovation of (MISDI) and a PhD in information systems. In addition they provide Information Systems knowledge within the core management BSc and MSc courses within the department.

These Faculty's research, teaching and dissemination strategies are closely interlinked and their distinctive focus on the social study of Information Communication Technologies (ICTs) and Innovation underlies a concern for policy and practice issues in six major fields (see figure). The MSc in Management, Information Systems and Digital Innovation (MISDI) draws on all items.

## LSE Information Systems Alumni Group (LISA)

LISA is the LSE Information Systems and Innovation Group's official alumni group. It is dedicated to establishing, maintaining and forging new relationships between alumni, industry and the Group. It is open to any alumni of the Group's programmes and is supported by staff within the Group. LISA has over 1000 members globally and is expanding through its regular activities.

LISA regularly organises events for alumni and current students and provides opportunities to network, socialise and learn. Some of LISA's previous activities include alumni panel discussions, expert industry and academic speaker sessions, career workshops and social events.

If you wish to contribute or participate in our activities, kindly get in touch with our representatives.

### President

Adnan Naseem (ADMIS '06)  
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### Communications Lead

Heemanshu Jain (ADMIS '09)  
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### Vice President

Charles Wahab (ADMIS '07)  
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To know more about latest events organised by LISA and connect with LISA members all across the globe join us on Facebook and LinkedIn.

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<https://www.facebook.com/groups/LSE.IS.Alumni/>

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<http://www.linkedin.com/groups?gid=65057>

More information about LISA is also available on our website [www.lisa-online.com](http://www.lisa-online.com) and the latest event info can be tracked by following us on Twitter [@lisanetwork](https://twitter.com/lisanetwork)



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