Affordance and Habitus: Understanding Land Records E-services in Bangladesh

Laurence Brooks, Muhammad Shahanoor Alam

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Laurence Brooks[1] and Muhammad Shahanoor Alam[2]

[1]Centre for Computing and Social Responsibility (CCSR), De Montfort University, Leicester, LE1 9BH, UK.
[2]Senior Asst. Secretary (Addl. Dist. Magistrate), Ministry of Public Administration, Bangladesh
[1]Laurence.Brooks@dmu.ac.uk; [2]shahanoor79@gmail.com

Abstract. Technology is ubiquitous, including in some public sector organisations in developing countries. This paper explores the introduction and use of e-services into the land records service in Bangladesh and how the role and position of 'middlemen' has re-asserted itself. The concept of affordance, both dispositional and relational, together with social affordance (habitus) offers an opportunity to better understand why this has happened and potentially to look at how to approach this in the future.

Keywords: Affordance, habitus, land records management, Bangladesh

1 Introduction

Information Technology (IT) is seen as important in land records service because it provides insights into significant opportunities for public service through reducing cost and time of service delivery, enabling citizens' easy access to these services and ensuring transparency and accountability [1]. Since the late 1980s, development partners and governments in developing countries (DC) have been experimenting with a number of projects on IT in land records service delivery [7]. However, a significant number of projects and initiatives on IT in land related services have drastically failed in both developed and developing countries [5]. Thus, until now using IT in land records services remains a complex field for both practitioners and academics [2]. The land records service in Bangladesh has been identified as a problematic, outdated, corrupted and litigated matter by the government itself, the development partners, practitioners and the civil society [3]. Rampant corruption in this sector is seen as a barrier to economic growth of such an agrarian country. Further, the World Bank finds that most of the crimes and corruption involved with land records matters in Bangladesh. There are four core components of land records service delivery in Bangladesh: registering deeds of land ownership transfer known as land *registration*; updating records for changing ownership known as *mutation*; updating the cadaster (or survey) and receiving officially attested exact duplicate copies of land ownership records (Records of Rights). An attested copy of land records is widely used and it is the basis of all other land related services and a requisite for many public and private

services in the country. This service is known locally as: *Khatiyan, Nokol, Porcha, Soi Muhuri Nokol* etc. This study uses the common term 'land records service'. On average, per day 20 to 30 thousand applications are received from citizens for this service in Bangladesh. There is no other public service that receives this volume of applications from citizens. Consequently, the government has designed electronic or 'E-services' for the land records service. Two main concepts are involved in this study: 'attested copy of land ownership records' and 'service delivery of attested copy of land ownership records'. They will be referred to as 'land records' and 'land records service' respectively. Land records and land records service are inextricably connected with the life and livelihoods of people in Bangladesh. Land records is the key document for receiving loans from banks and financial institutions; buying, selling and donating of land; determining ownership and size of land; managing land litigations and civil suits of land; applying for basic services including electricity, gas, water; receiving subsidized rate of fertilizers, pesticides, fuels and other agricultural services [1]. Aiming to ensure citizens' easy access, the government and development partners across of the world have taken a number of initiatives. However, few projects have succeeded, and the key question here is why? Orlikowski and Baroudi [5] argue that interpretive studies assume that people create and associate their own subjective and inter-subjective meanings according to their interaction with participants. Thus, interpretive researchers aim to understand phenomena through meanings constructed by participants. Consequently, it provides a deeper insight to analyze the complex world from experience and interaction of its living being [6].

2 Affordance and Habitus

Development of human society and technology is mutually dependent. However, there is lack of agreement on how technology and organizations interact with one another [7]. Previous studies have shown that there are ambiguous and conflicting relations between organizations and technology [8]. A socio-technical view on technology shows it is both rooted in organizational processes, and organizations are seen as integral to the technology [9-11]. Orlikowski and Iacono [12], conceptualize technology as an ensemble artifact that includes software and hardware and activities and interactions performed in a specific social and cultural context. Thus, IS research has identified that mutual interaction in organizational contexts and technological processes plays a pivotal role in enhancing service delivery. Technology cannot be seen as a discrete entity beyond organizations, either by domain or logic; rather, it is interwoven with human work and organizational contexts [13]. Evidently, dynamic relations in technology and organization develop intended and unintended consequences [14].

Technology can be seen as affordance [15] that refers to possibilities of an object to perform an action and these possibilities belong to the varied context in which they sit [16]. For example, a rock can be used as a shelter for a lizard but it also can be used as a weapon by a human. Technology is neither an independent actor nor capable of determining human actions [16]. Further, Zammuto et al., [17] assert that af-

fordance is the result of intertwined relations between technology, organizational contexts and intents of human actors. With this notion, Barley [18] sees technology as a social object with its meaning defined by social context; as such, technology is always interpreted by human beings in this social context [19]. It can also be interpreted and reshaped by the need of situated agents [20]. If it fails to meet the expectation of its agents, it can be ignored, resisted or reshaped to achieve the goals of its users and agents [20]. Consequently, it can be seen as complex interdependent systems that rely on social, technical and organizational aspects [20]. This concept of affordance has begun to be used more commonly in IS research, as a way to better understand technology and individuals conjointly, mirroring the tight relationship of the material and social worlds in which they sit (see also Ciborro's ideas on imbrication [21]). Fayard and Weeks [22] conceptualize affordance as a dualistic concept, "affordance is both dispositional and relational, which we believe is a more difficult, yet potentially more useful interpretation". This allows for insights into how contexts might shape practices and use of technology by people, but the physical and social aspects of the context do not completely determine those practices. Affordances are 'dispositional', which is they are visible and physical, and linked to practice, as in what can be done with an artifact (and often what is expected of it). However, affordances are also 'relational', linked to a person's objectives (what they want to achieve), the technologies' material properties and also the organisational context, as a situation for use. Fayard and Weeks [23] use the example of informal interactions in photocopier rooms in three different organisations, identifying that these were shaped by "what was physically possible and socially appropriate". By accepting that there is a social meaning of space which constrains what might happen there, the physical environment is shown to be more than just a passive container.

There is also room for a third complimentary concept, that of 'social' affordance, which can be seen as "how the social construction of a technology impacts the practices afforded by that environment" [22]. The concept of 'habitus' [24,25] can be seen as complimentary to affordance here, as it shows how practice is influenced by social structures, but without reifying those structures. Habitus, unlike affordance, is seen as something which is acquired by individuals over time, through lived experience and the conditions of their existence. While two people, living in the same environments and experiencing the same things, are very similar they are never actually the same. The result is that for a full understanding of practice, we need analysis of the affordances of the environment as well as social and cultural factors, plus insights from the habitus, the social significance of the space and what is acceptable (the norms) for what might happen there for any given group of people.

3 Methodology

This paper is derived from a two year interventional and longitudinal study of land records E-service in Bangladesh. One of the authors is a former practitioner who served in a similar organization for about five years and has gathered empirical evidence of the context where the study has been conducted. The study applied a number

of methods, tools and techniques for data collection and analysis. They are mainly participant observation, interviews, focus group discussions, open ended discussions, workshops and organizational process and documents analysis. For the last two years, the E-service of land records has been observed in a district namely Khulna by the researchers and they intervened in designing and redesigning of this E-service delivery process with the collaboration of the organizational managers. This study has been conducted in a public sector organization –the District Record Room (DRR) – involved in delivering E-service of land records with the help of technological networks and telecentres. A total of 20 interviews were conducted among service recipients, service providers, middlemen and telecentre operators. Two focus group discussions were conducted; one with telecentre operators and the other with middlemen. One consultation workshop and open ended discussion were made with organizational managers, staff, telecentre operators and citizens, the service delivery recipients.

In addition, the initial findings have been presented and discussed with the practitioners at a national level workshop. Further, the research findings have been gathered and presented in five monthly review meetings and also five consultative and evaluative workshops with organizational staff. Data has been gathered and analysed thematically with a combination of top down and bottom up approaches. Although the theoretical lens provides themes, field findings generated themes in different ways than theoretical themes. Thus, thematic codes are derived both from top down and bottom up levels. The following sections present the findings from the study, followed by a discussion of how these can be interpreted in the context of affordances.

4 Using IT in the Land Records Service

4.1 A Cross Cultural Scenario

IS research in developing countries focuses on development, implementation and usage of IT artefacts. It also traces underlying political, economic and cultural and behaviour contexts and processes that are obstacles in IT implementation [26-28]. IT in service delivery in developing country is challenging due to the complex interrelationships with socioeconomic factors. Moreover, land records services are strongly influenced by social, cultural and bureaucratic processes. Thus, ignoring existing practices, capacity and socio-cultural contexts resulted in the failure of IT in land records services [29]. Sahay and Avgerou [30] identified that domination of existing organizational networks hindered IT in land records services in developing countries. Consequently, IT in land records service is challenging due to various forms of interests, networks and actors involved in land records service. Thus, the success of IT in land records service rests on organizational contexts, designing and redesigning of the IT alongside the organizational context. Heeks [31] asserts that IT in public sector organizations needs to be aligned with data resources, economic resources, social resources and action resources [31]. Consequently, successful integration of IT in organizational contexts relies on data capturing, storing, updating, manipulating, mining, analysing and displaying [31]. Thus, IT in public sector organizations are intermediated, interconnected, indigenized intelligently with organizational contexts in-

stead of technical ones [31]. Nowadays, governments, no matter how big or small, are embarking on IT leveraging to improve their performance. Evidently, there is significant investment in IT in land information systems to enhance citizens' easy access, reduce cost and improve process of service delivery, reduce corruption and achieve good governance. However, while about 85% of IT projects have been failed in developing countries [32], surprisingly, most of the IT projects failed due to technology driven designs [33].

4.2 Current State of IT in Bangladesh

Since 1996, Bangladesh has connected with Internet Service through VSAT]. However, the rate of internet penetration is very low i.e., 0.35%. Even lower than the neighbouring countries, such as: Bhutan (5.8%), Maldives (18.1%), India (7.0%), Sri Lanka (5.4%), and Pakistan (10.6%) [24]. Bangladesh has been striving to implement IT in public sector organizations to enhance the capacity of the government and to ensure better service delivery since its independence in 1971. Along the line, in 2009 the government launched the manifesto 'Vision 2021 – Digital Bangladesh'.

5 Problems in the Land Records System in Bangladesh

Land records are popularly known as 'Porcha' which clearly indicates the description of a piece of land, easily understandable to land owners. However, from the legal perspective, land records in Bangladesh is known as Record of Rights (RoR), and contains geographic, legal and revenue information for every plot of land. Thus, it includes the name and details of land owner(s) along with ratio of ownership in the case of multiple owners, plot(s) size and total number of plots, type of land, taxes and geographic boundary of land plot(s) and the name of the jurisdiction where land plots are located. Thereafter, land plots information is aggregated into a holding according to family based ownership. In addition, for every plot there are three to four versions of the land record. Consistent with these, the researcher and the managers of the organization have identified three main problems in the land record system: problems with complex land information, problems with multiple versions of land records and problems with aggregated land holding systems. Each of these are now discussed.

5.1 Complex Land Information Systems

Although the cadastral survey system collects land information through a plot to plot survey; the Bangladeshi land records system follows a top down and complex process. The country is divided into 64 districts. Every district, an administrative unit, is again divided into a number of cadastral survey blocks called jurisdictions. The jurisdiction has a certain geographic and cadastral survey boundary. Each jurisdiction has a name and ID number called Jurisdiction List number (J.L. No). For example, the district under study, Khulna, comprises a total of 796 jurisdictions. A jurisdiction comprises of many thousands of land holdings (land records) or RoR. A land record

comprises information about several of land plots within a jurisdiction. In order to trace the land record for a land plot requires knowing its plot ID numbers, holding ID number or RoR number, J.L. number (name) or name of the owner and name of the district.

Land plots owned by family members within a jurisdiction are recorded in a land holding. So, a land record comprises land information of several plots of land in a jurisdiction and land records are prepared as a family based aggregated land holding system. In order to access the land record of a plot requires information on its jurisdiction number or name, holding number and plot number. Thus, if someone needs a land record for a plot only; s/he needs to apply for the whole holding because the attested copy of the land record is issued as a whole holding. Further, within a holding there are a number of owners and the ratio of ownership also varies from plot to plot of the holding. Consequently, it is difficult for the citizens to understand both the land records system and its service delivery too.

5.2 Problems with the Different Versions of Land Records

Bangladesh was governed under British India (1757-1947), Pakistan (1947-1971) and gained independence as Bangladesh in 1971. With these three political regimes, three distinct versions of land records have evolved in the country. Surprisingly, all the three versions of land records are treated as active records. The first version, known as the Cadaster Survey Record (CS) was developed by the British Colonial government during 1888-1920. The second version, called the State Acquisition survey (in short SA) was prepared in 1955. The final version, called Bangladesh Revised Survey record (BRS or RS) was started in 1972 and is ongoing. Therefore, every plot of land has two to three versions of land records. In some cases, there were four versions land records for a plot of land. The multiple versions of active land record have made the system more complex. Since all versions of land records are active, citizens need attested copies of land records for all versions, for example, for purchase or sale. Equally, every plot has three to four ID numbers for a land plot and holding (record) numbers. Thus, it is difficult to remember and maintain three types of holding ID numbers and plot ID numbers by the land owners who are mostly illiterate people. Consequently, citizens need to rely on middlemen to collect accurate land holding IDs and land plot IDs for filing applications for land record services. In addition, many citizens do not know jurisdiction list (J.L.) numbers or name too. Evidently, three different versions of land records along with three types of land plots and holding ID numbers have become a confusing matter and vexatious problem for citizens to access the land records E-service. To avoid these complications citizens rely on the middlemen to access this service. Consequently, the E-service hardly made any difference to citizens' access to this service.

5.3 Family Based Aggregated Land Record System

As discussed above, the land record system follows an aggregated top down method. Several land plots in a jurisdiction are grouped into a holding called a land record or

Record of Rights (RoR). Thus, a RoR comprises a number of plots owned by family or clan members. A cadastral jurisdiction consists of approximately 2000 to 5000 family based land plots and on the basis of family based ownership, land plots are grouped into a land record and a jurisdiction contains approximately 200 to 500 land records. An average land record contains 10-50 land plots. Since a land record is an aggregated system, it contains name(s) of land owners against each of the land plots along with different ratio of ownership. So, land owners need to know ID numbers of their land records and plots along with versions of land records. As a result, if any citizen needs an attested copy of a land record for a land plot from a holding which contains 30 plots and names of many owners, it is not possible to issue an attested copy of land record for the particular plot of land, instead an attested copy of the whole land record (holding) is needed. Due to this aggregated system, over time, various middleman networks have been developed for mediating this service to the citizens. Citizens would rarely have the full information to submit an application for their land records. Thus, the complicated land record system is an obstacle to citizens' access to this E-service and pushed the citizens towards the middlemen. Consequently, even after the introduction of the E-service, citizens' continued to access to this service through middlemen who submit applications and mediate this service efficiently.

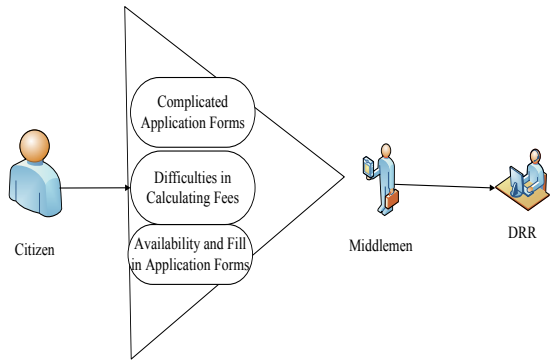

Fig. 1. Problems in Application Submission for Land Records Service

6 Problems in the Application Submission Process

Access to land record service requires submission of an application to the DRR. However, the forms and the application process remained complicated. The prescribed paper based application forms as well as fees and folios were full of jargon and so tricky for citizens to understand. Further submission of an application required a complete set of documents: a completed application form or a written application paper with necessary information of required record, certain amount of stamps pasted on application as fees for this service and appropriate number of folio papers for copying land records. None of the elements were available to the DRR; rather they were

available to the middlemen. So citizens requiring this service first needed to go to a middleman (see Fig. 2).

Thus, various types of middlemen have evolved to mediate this service namely, Stamp Vendors, Lawyers' Assistants (*Muhuri)*, Lawyers, Mobile Middlemen, staff of land related sections and offices and staff of other offices.

7 Problems in the E-service of Land Record in Bangladesh

With the inherent nature of an agro-based, post-colonial and developing country, Bangladesh's land record service is inextricably connected with organizational processes, structure, statutes, practice, staff, technology and intermediaries. Moreover, this service was complicated, centralized, middlemen oriented, vested interest driven and bribable. To address these problems, E-service of land record has been developed in 2011. The E-service network has been designed with three online access points for citizens' easy access to land record service. They are: Union Digital Center (UDC) - a telecentre at every rural union council; E-Service Center (ESC) a front desk in each district headquarters and a District Web Portal (DWP) – a website for each district. They are electronically connected to the DRR, the service provider of land records. This E-service of land records aimed to ensure citizens' easy and direct access to this service through the E-service networks (UDCs, DWP and ESC), and without middlemen networks. However, various forms of middlemen networks have been strongly rooted in this service over many years. Thus, after introducing the E-service of land records, the IT networks and the middlemen networks intra-act dynamically and continuously with organizational processes, staff and citizens.

8 Vested Interest of the Staff and Officers

The empirical data revealed that a range of officers had vested interest in land records services. They are: the RRDC - the section officer of the DRR, Additional Deputy Commissioner Revenue (ADCR) - involved in overseeing the DRR staff and the RRDC, Additional Commissioner General (ADCG) -involved in posting and transfers of the DRR staff, the Deputy Commissioner -involved in overall management and control of the DRR and the Divisional Commissioner - involved in inspection of the DRR (see figure 3). The flow of the vested interest moved vertically from the DRR staff to the Divisional Commissioner in the organizational process. Since the DRR staff are involved in receiving vested interests from this service and it goes upper level officers; thus, either the officers discipline them or the staff pushed the officers to also receive benefits from the vested interests from this service. So, every staff of the Deputy Commissioner office has a keen desire to have a posting at the DRR.

As the organizational processes and actors continued with their vested interests; it was not possible to remove the flow of vested interest overnight from this service, ie. through setting-up some E-service access points.

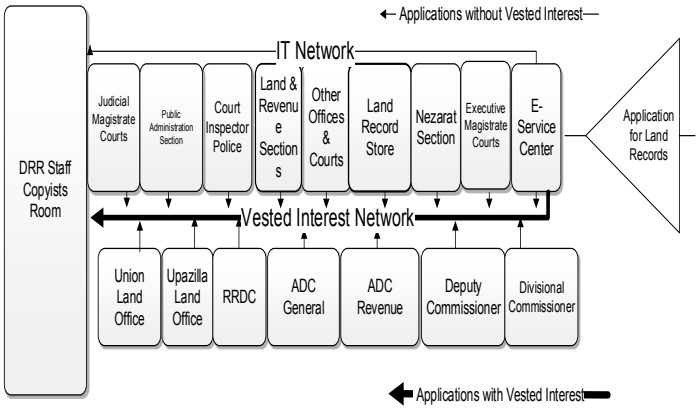

Fig. 2. Vested Interest Network in the Land Record Service

Better service delivery largely depends on the leadership and management capacity of a DC, because the DC approves the work distribution among the Additional Deputy Commissioners and the section officers. A senior official commented that a few DCs also have vested interests in this service. In the case of the district under study, during the research period, two DCs have been found. However, both of them have reputation for honesty. One was disinterested in executing or improving this service with a view to passing his tenure without any risks. This is another kind of vested interest. His preference was to keep things as stable as possible in order to have a quiet tenure there, even if some of his staff were acting corruptly.

9 Discussion

The E-service networks have been designed with a view to creating multiple access points for citizens' easy access to this service and to remove middlemen. However, the E-service networks have merely focused on the underlying contexts, processes and practices and their interactions. Consequently, the E-service has failed to remove the middlemen. Rather, the middlemen networks intra-act with the E-service access points through existing organizational processes and contexts. Thus, the middlemen networks entangled with this service to expedite citizens' service delivery. They provided 'speed money' to the DRR staff to expedite their clients' service quickly. Where the DRR staff declined to receive speed money from citizens they received speed money from the middlemen instead. Consequently, applications submitted by middlemen through the ESC received quicker service delivery than the applications submitted by the UDCs and the DWP. In terms of the affordance concept (see Table 1), what can be seen is the complex interplay of dispositional (ie. linked to the norms and practices of how things are done using the existing pathways and blocking the

citizens' direct access to the land records service), relational (achieving the best outcome for access to land records with the new technology still involved the middlemen and paying the 'speed money') and social/habitus (acceptance by most parties involved that middlemen and extra payments were legitimate, from the citizens perspective of getting things done, from the middlemen of subverting the avowed purpose of the computer-based technologies so that their role was still relevant and from the DRR staff that this extra income continued, especially as sometimes that was essential for their livelihood).

Table 1. Using affordances to analyse role of technology in land records e-servcies

Name	**Role**	**Dispositional affordance**	**Relational affordance**	**Social affordance**	**Habitus**
Citizen	End user	Option to use technology blocked through lack of knowledge	Trying to access land records, in as easy fashion as possible	Technology becomes another obstacle to be overcome	Resigned return to use of middlemen
Middlemen	Bridge between citizens and land records officials	Knowledge of processes, and literacy enables engagement with technology	Maintain usefulness and value in the process; use of bribes to speed up processes with DRR	Subvert E-service Center as best way to be re-introduced into the process; provide extra income to DRR staff	Without fundamental shift in citizens knowledge and understanding, middlemen return to bridging role
RRDC (District Record Room - DRR)	The section of the DRR	Grudging engagement with the technology	Concerns over lack of extra income	Ensure middlemen can still access, but now through the technology;	Alternative routes maintained; regain extra income
Deputy Commissioner (DC)	Involved in overall management and control of the DRR	Little change to practices	Maintain status quo	Try to avoid any impact of the technology	Re-insertion of the middlemen, keeping things as before

What was not appreciated by most of the parties involved was that the overall effects of these 3 affordances were reinforcing the legitimacy of the revised functioning of the system, post-introduction of the computer-based technologies; but in so doing were preventing those same technologies from properly bedding in and being allowed to take shape and create the new norms that would enable greater citizen direct access to these services, ie. autonomy. In this way, the concept of affordance and habitus allows greater insight into the systems, and potentially offers suggestions for how they might be developed in the future, for example, what might happen if the middlemen were brought inside the system and made a legitimate part of it, but without the option for speed money/bribes. While not yet seen as a failure, the IT systems in the land records e-service in Bangladesh do come close [26]. Reflecting on the use of affordance in this type of context [16], the paper shows that it provides insights which

may not be seen other ways, and the challenge for the future is to identify these habitus-grounded solutions and then to implement them.

References

1. Thomas P (2009) Bhoomi, Gyan Ganga, e-governance and the right to information: ICTs and development in India. Telematics and Informatics 26 (1):20-31. doi:10.1016/j.tele.2007.12.004
2. Holstein L (1993) Review of Bank Experience with Land Titling and Registration. World Bank, Washington, D.C.
3. Imran A, Gregor S (2011) Vested Interests Obstructing Information Systems Use: Land Administration in a Least Developed Country. Paper presented at the SIG GlobDev Fourth Annual Workshop, Shanghai, China, 03 December 2011
4. Kulkarni MN (2003) Beyond Computerisation of Land Records. Economic and Political Weekly 38 (24):2338
5. Orlikowski W, Baroudi J (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions. Information Systems Research 2 (1):1-28
6. Schwandt TA (1994) Constructivist, interpretivist approaches to human inquiry. In: Denzin NK, Lincoln YS (eds) Handbook of qualitative research. Thousand Oaks, Sage, CA., pp 118-137
7. Orlikowski W (1992) The duality of technology: rethinking the concept of technology in organizations. Organization Science 3:398-427
8. Barley SR (1990) The Alignment of Technology and Structure through Roles and Networks. Administrative Science Quarterly 35 (1):61-103
9. Davis LE, Taylor JC (1986) Technology, organisation and job structure. In: Dubin R (ed) Handbook of work organisation and society. Rand McNally, Chicago IL:, pp 379-419
10. Barua A, Brooks L, Gillon K, Hodgkinson R, Kohli R, Worthington S, Zukis B (2010) Creating, Capturing and Measuring Value From IT Investments: Could We Do Better? Communications of the Association for Information Systems (CAIS) 27 (2):13-26
11. Wanyama I, Zheng Q Organizational culture and information systems implementation: A Structuration Theory perspective. In: 2nd IEEE International Conference on Information and Financial Engineering (ICIFE), 2010. pp 507-511
12. Orlikowski WJ, Iacono CS (2001) Research Commentary: Desperately Seeking the "IT" in IT Research—A Call to Theorizing the IT Artifact. Information Systems Research 12 (2):121-134. doi:10.1287/isre.12.2.121.9700
13. Kling R, Iacono S (1989) The institutional character of computerized information systems. Office: Technology and People 5 (1):7-28
14. Markus ML, Lee AS (2000) Special Issue on Intensive Research in Information Systems: using Qualitative, Interpretive, and Case Methods to Study Information Technology -- Second Installment; Foreword. MIS Quarterly 24 (1):1-2
15. Gibson J (1979) The Ecological Approach to Perception. Houghton Mifflin, London
16. Lâm DP Sociomaterial entanglement in virtual spaces: knowledge creation practice in online platforms. In: de Vaujany F, Mitev N (eds) 2nd Organizations, Artifacts and Practices Workshop: Materiality and Space in Management and Organization Studies, Université Paris Dauphine, 2012. Université Paris Dauphine, DRM UMR CNRS, LSE Department of Management, p 14

17. Zammuto RF, Griffith TL, Majchrzak A, Dougherty DJ, Faraj S (2007) Information Technology and the Changing Fabric of Organization. Organization Science 18 (5):749-762. doi:10.1287/orsc.1070.0307
18. Barley S (1986) Technology as an occasion for structuring: evidence from observation of CT Scanners and the social order of radiology departments. Admnistrative Science Quarterly 31:78-108
19. Fulk J (1993) Social Construction of Communication Technology. Academy of Management Journal 36 (5):921-950. doi:10.2307/256641
20. Kallinikos J (2004) Farewell to Constructivism: Technology and Context-embedded Action. In: Avgerou C, Ciborra C, Land F (eds) The Social Study of Information and Communication Technology: Innovation, Actors and Contexts. London School of Economics and Political Sciences, London, pp 141-161
21. Ciborra C (2006) Imbrication of representations: Risk and digital technologies. J Manage Stud 43 (6):1339-1356
22. Fayard AL, Weeks J (2014) Affordances for Practice. Information and Organization 24 (4):236-249
23. Fayard AL, Weeks J (2007) Photocopiers and Water-coolers: The Affordances of Informal Interactions. Organization Studies 28 (5):605-634
24. Bourdieu P (1977) Outline of a theory of practice. Cambridge University Press, Cambridge
25. Bourdieu P (1990) The logic of practice. Stanford University Press, Stanford
26. Avgerou C, Madon S (2004) Framing IS studies: Understanding the Social Context of IS Innovation. In: Avgerou C, Ciborra C, Land F (eds) The Social Study of Information and Communication Technology: Innovation, Actors and Contexts. London School of Economics and Political Sciences, London, pp 162-182
27. Avgerou C, Walsham G (2000) Information Technology in Context: Studies from the perspective of developing countries. Ashgate, London
28. Walsham G (2001) Making a world of difference : IT in a global context. J. Wiley, Chichester
29. Acharya RB Adopting Geo-ICT for land administration: problems and solutions. In: 7th FIG Conference, 'Spatial Data Serving People: Land Governance and the Environment – Building the Capacity', Hanoi, Vietnam, , 19-22 October 2009 2009.
30. Sahay S, Avgerou C (2002) Introducing the Special Issue on Information and Communication Technologies in Developing Countries. Information Society 18 (2):73-76. doi:10.1080/01972240290075002
31. Heeks R (2002) Information System in Developing Countries: Failure, Success and Local Improvisations. The Information Society 18 (2):101-112
32. Heeks R (2003) Most E-government for Development Project Fail: how can risk be reduced?, iGovernment Working Paper Series, Paper No. 14. Institute for Development Policy and Management, University of Manchester,UK
33. McGrath K, Maiye A (2010) The role of institutions in ICT innovation: learning from interventions in a Nigerian e-government initiative. Information Technology for Development 16 (4):260-278. doi:10.1080/02681102.2010.498408
34. International Telecommunication Union (2009) Measuring the information society: The ICT development index. International Telecommunication Union, Geneva, Switzerland