

London School of Economics and Political Science

**IT-Enabled Rationalization of Public Administration in Developing
Countries: Essays on Ghana's Customs Modernization**

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Statement of Conjoint Work

I confirm that paper 3 (chapter 8) was co-authored with Prof. Chrisanthi Avgerou. I did majority of the work as first author. My contributions included literature review, data collection, analysis, important parts of the theoretical development, as well as writing. Prof. Avgerou provided critical guidance in the paper's overall direction, and needed support in focusing, refining and effectively communicating the paper for a top-journal audience.

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During my freshman orientation years ago, the university president gave a piece of advice that has been a beacon along my journey through higher education. “Respect the authority of ideas and not the idea of authority,” he had said. My abstract understanding of his admonition at the time has since given way to an experiential one after pursuing a PhD degree. Exploring ideas on their merit—independent of inherited wisdom and the authority of conventional thinking and its thinkers—has been not just a motor of discovery for me, but frequently, its own reward.

Authoring a doctoral thesis has often required me to trade-in apparent certainty for doubt, doubt for bewilderment, and on occasion, bewilderment for illumination. It is for such occasions of illumination that the last four years have been—even if bumpy in parts—delightfully worthwhile. The PhD journey, of course, neither starts nor ends in four years of institutionally regulated time. It is a culmination of many prior years of intellectual development and the beginning of many more. I have therefore approached my work not as some final word, but as a small contribution that might usefully add to an ongoing conversation that I have been fortunate to listen in on, and momentarily partake in.

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Papers included in thesis

The thesis is presented as a series of papers. It comprises versions of the following original works that have been published or are in review. The papers were all researched, developed and written during my enrolment in the PhD in Information Systems and Innovation at the Department of Management, London School of Economics, 2013-2017.

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[Under review at a major IS journal since February 2017]

IT-Enabled Rationalization of Public Administration in Developing Countries: Essays on Ghana's Customs Modernization

Abstract

Through a series of three standalone yet related essays, this thesis theorizes effects of the government administration context in developing countries on situated IT-enabled practices. It develops arguments on the capacity of the institutional logics perspective for explaining complex interactions between the broader social context and IT-enabled practices carried out by situated actors in the public administration of developing countries. We theorize IT-enabled rationalization—a process through which inefficiencies, and dysfunctional institutionalized practices are transformed through IT—as the hybridizing outcomes from the resolutions in practice of often incompatible institutional logics of administration with those introduced by IT. Through a case study of IT modernization initiatives at Ghana's customs organization, these arguments are developed by identifying historically formed administration logics and the consequences of their interplay with idealtypic public administration logics introduced through IT. We find that rather than forcing out dysfunctional practices and replacing them with IT-driven ones i.e., replacing old logics with new, as is often an implicit goal of IT adoption in such settings, the two sets of incompatible logics are instead comingled in practice through a process identified as blending. This suggests that IT adoption in the public administration of developing countries might enable rationalization, although not independently of countervailing broader institutional context.

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Abbreviations

ASYCUDA	Automated System for Customs Data
B2G	Business to Government
CEPS	Customs Excise and Preventive Services (later renamed GCD)
DIC	Destination Inspection Company
ECOWAS	Economic Community of West African States
EDI	Electronic Data Interchange
FCVR	Final Classification and Valuation Report
FDI	Foreign Direct Investment
GCD	Ghana Customs Division
GCNET	Ghana Community Network
GEPA	Ghana Export Promotion Authority
GHATIG	Ghana Trade and Investment Gateway
GoG	Government of Ghana
GPHA	Ghana Ports and Harbours Authority
GPRS	Ghana Poverty Reduction Strategy
GRA	Ghana Revenue Authority
IDF	Import Declaration Form
IMF	International Monetary Fund
IRS	Internal Revenue Service
IS	Information Systems
ISO	International Standards Organization
IT	Information Technology
MOFEP	Ministry of Finance and Economic Planning
MOTI	Ministry of Trade and Industry
NPM	New Public Management
PNDC	Provisional National Defense Council
PPP	Public-private partnership
SAD	Single Administrative Document
TRADENET	Trade Network System
UNCTAD	United Nations Conference on Trade and Development
WCO	World Customs Organization
WTO	World Trade Organization

Chapter 1: Introduction

LILONGWE, the capital of Malawi, is [...] harder to escape scrutiny than in most places. So people took notice [...] when lots of civil servants were suddenly buying houses in the city's new suburbs [...] A government clerk was found with \$300,000 in his car [...] This was the genesis of the Cashgate scandal [...] a systematic looting of public money [...] the state was defrauded of [...] almost 1% of Malawi's annual GDP, in just six months. A central element to the fraud was the manipulation of a government software system that was supposed to help control spending [...] No one checked whether any goods had been delivered [...] Cheques were left in printers overnight and made out in corridors rather than secure offices. Payment orders [...] were honoured by the central bank even if they had only two of the three required signatures. In one instance, high-value cheques with consecutive serial numbers for exact sums were cashed on the same day. The theft went unchecked in part because a reconciliation of bank payments by the accountant-general's office had not been made for over a year.

(Economist 2014)

The anecdote is a rather dramatic cautionary tale of the potential pitfalls of IT-enabled rationalization in the public administration of a developing country. A public financial management system had been implemented to enable technical transformation of dysfunctions and maladministration practices; but somehow, the system produced contradictory and unexpected outcomes that made the administration worse of. The story illustrates a complex nexus of technology, organizational arrangements, behaviours and institutionalized practices that exist in many developing country public administrations.

While arguably on the extreme end of IT-enabled rationalization experiences across developing countries, the anecdote raises important and enduring themes of Information Systems (IS) in developing country public administrations. Among these being: a questionable *problematization* of IT as a technical panacea for rather complex and intractable ills of organization and society; peculiarities of historically-formed behaviours and institutionalized practices that are not easily transformed through IT adoption; and a

commonplace disconnect between IT adoption and the organizational and social changes needed for enduring change.

These three thematic strands are interwoven to form the basis of the thesis' enquiry. They are explored in-depth in the series of three papers comprising the thesis. The next section provides a brief background to the research, and then describes the purpose and motivation of the research. An overview of the papers is then presented, followed by an outline of the central arguments of the thesis. Contributions of the thesis are briefly highlighted followed by a chapter conclusion and overview of the rest of the thesis.

Background

Throughout the 1980s and 90s, attention was drawn to the link between institutions and socioeconomic development. North (1990), for example, argued that institutions determine socioeconomic outcomes. Perceived weak public administrations in developing countries were specifically identified as a major drawback to development. The implications of a weak public sector from a socioeconomic perspective are summarized in a report by the World Bank Group (1992):

When capacity of the public sector to manage the economy, and deliver services is weak, prospects for development are poor. The public sector in many developing countries has been characterized by [...] poor returns on the scarce public funds invested in it, and weakness in the capacity of core agencies to design and implement policies that would address problems [...] [a situation that] progressively erodes the capacity of the state to provide economic and social services (p.12)

Development stakeholders and international development agencies such as the World Bank shifted emphasis to institutional improvements, governance and public administration reforms as responses to problems of socioeconomic underdevelopment (The World Bank Group, 1992, p. 3). Public administration rationalization in developing countries became a

clarion call by development organizations and stakeholders at the global and national levels. Several ‘governance conditionalities’ intended to ameliorate problems of poor institutions and governance, and to accelerate reform, were included as part of aid and other assistance to developing countries (Kapur & Webb 2000).

IT has frequently been the underpinning for attempts at reforming the public administration in developing countries due to a belief in its potential for enabling organizational change (Wahid 2011; Schuppan 2009; Basu 2004). The case of Ghana customs’ IT modernization studied in this thesis is typical of such globalised, IT-based reform efforts by development organizations like the World Bank and stakeholders such as governments, IT vendors and private actors.

In the past few decades, the domain of foreign trade clearance in developing countries has experienced extensive IT-enabled reform initiatives (Grainger & Mclinden 2013; Portugal-Perez & Wilson 2009; Glenday 1997; Kituyi 2013). Ghana customs’ IT modernization was purposively selected as a case study because it had several defining attributes that made it ideal to explore our phenomena of interest.

As a public administration of the government of Ghana that has existed for over a hundred years, Ghana customs has a rich and long history of multiple institutionalized practices, many of which have become severely dysfunctional over time. While the organization has made strides over its more than three-decade experience with IT modernization, it was obvious from initial literature review and case exploration that in general, various technical objectives of IT remained unmet, with persistent contradictory effects. The case was therefore ideal for investigating complexities of stability and change related to IT-enabled practices, their persistence or transformations over time. Ghana customs IT modernization was an ideal empirical setting to theorize the complex interactions of the

broader social context with situated IT-related practices, in order to understand the sociotechnical changes that have resulted (or not) over time.

IT-enabled rationalization in developing country public administrations

Significant IT investments have been made in developing countries over the last four decades based on a belief that IT can transform dysfunctional public administrations or those underperforming relative to developmental objectives. The World Bank, a leading global development agency that reports data on its investments, alone supported over 6,700 large IT projects for public administration reforms between 1995-2015, mostly in developing countries (World Bank Group 2015). And since 2003, 98% of public governance projects the World Bank supported have had IT components to them (World Bank Group 2011, p.36,38).

Despite such investments by international organizations and governments, it remains unclear whether and how IT has contributed to improvements. IT in developing country public administrations appears to face a ‘double whammy’, in the sense that the picture of IT projects—relatively speaking— is reported to be bleaker in developing countries (Avgerou 2008; Heeks 2002b; Walsham & Sahay 2006; Danish 2006), and in the public sector as a particular organizational domain (Shea & Garson 2010, chap.17; Robertson & Seneviratne 1995).

Accurate empirical picture of IT in the public sector of developing countries remains a challenge because of unclear standards and lack of baseline information to determine success; difficulties in measuring effects consistently from varied evidence; and lack of shared data on IT-related activities and outcomes over time (Scott, 2011, p. 8; Andrews, 2013). But contradictory outcomes of IT are reported frequently and the typical narrative is of unmet expectations. From mostly anecdotal studies, some successes have been identified (Krishna & Walsham 2005), as have ambiguities (Avgerou & Addo 2017) and widespread

disappointments (Scott 2011, p.i; Andrews 2012; Andrews 2013; Schacter 2000; Heeks 2003; Berman & Tetley 2001).

Of the World Bank's public governance reform projects involving IT, about 70 percent were not implemented as planned but had to be modified, delayed or cancelled (World Bank Group 2011, p.85). Also, of 145 developing countries that undertook donor-supported reforms between 1998 and 2008, half declined rather than improved in indicators of government effectiveness (Andrews 2013, p.15).

Contradictory effects of IT and unmet expectations in developing country public administrations are worrisome given significance of the public administration: it remains the exclusive organizational vehicle for providing public goods and advancing socioeconomic development despite its crippling institutionalized practices. Pressures continue to mount for successful information systems (IS) innovation to reform dysfunctions given an abiding optimism in the potential of IT, the high opportunity costs of IT investments in resource-scarce developing countries, and a perceived need for 'catching up' with 'developed' countries in light of increasing global integration (Avgerou 2008; Korac-Kakabadse et al. 2000).

Research interest is therefore justified in view of such pressures and existing theoretical deficits. Hence, this thesis grapples with the varied but connected problems of IT-enabled change identified through the Ghana case, with a view to contributing a context-relevant, theoretical understanding of IT rationalization in the public administration of developing countries.

Purpose and motivation of research

The thesis is motivated by the problem of whether and how IT enables rationalization—that is, transformation of perceived dysfunctional institutionalized practices—within the public administration of developing countries, given various reports of

contradictory effects. Institutionalized practices are understood as ‘stable, repetitive and enduring activities’ that are ‘infused with value beyond the technical requirements of the task at hand’ (Oliver 1992, p.563; Selznick 1957, p.17).

To understand such mix of practical, cognitive, and institutional factors influencing practices, similar distinction has been made between everyday organizational routines and the ‘formative context’ within which they form and receive meaning and scope (Ciborra & Lanzara 1994, p.64). Such distinction is important for reframing technical and managerial challenges involving technology in organizations (Blackler 1990), and is in keeping with IS findings that the process by which actors come to adopt and make meaningful use of technology is not solely technical (Silverstone & Haddon 1996; Haddon 2011; Ciborra 1998; Ciborra & Hanseth 1998).

To that end, the thesis investigates and theorizes implications of the broader context of developing countries, believed to be pertinent to IT-enabled rationalization and related phenomena (Avgerou 2001; Hayes & Westrup 2012). The purpose of our theorization is to explain how IT might enable rationalization of public administration in a development context; and why the effects of IT might be contradictory.

Three interrelated questions guide development of such explanation (1) how is IT problematized in a developing country public administration context? (2) Why are there contradictory effects and peculiar outcomes of IT-enabled rationalization in the context of developing country administration? (3) How does IT-enabled rationalization of public administration in a developing country context unfold?

The thesis develops arguments for the capacity of the institutional logics perspective to help in explaining complex interactions between the broader social context and IT-related practices carried out by situated actors in the public administration of developing countries.

Overview of papers

The set of papers comprising the thesis are standalone but intended to contribute to a set of central arguments. Each paper advances the purpose of the thesis as described. While the thesis is situated in the information systems in developing countries (ISDC), ICT for development (ICT4D) and E-government in developing countries domains, the substantive claims are multidisciplinary in nature and have been explicitly or implicitly sensitized by diverse research traditions and ideas from varied fields of enquiry such as IS and STS (sociotechnical systems), Sociology (Weberian sociology, structuration, new institutional theory), Anthropology of the state (customs administration practices), Post-colonial studies (critical theories, hegemony, subalternity and discourse), Political Economy (trade, institutions and socioeconomic underdevelopment), Public Administration (substantive theories of administration and public administration traditions), and Organizational Studies (practice theories, organizational institutionalism).

The papers in this thesis further employ different research methods to answer related questions as follows.

Paper 1 (Chapter 6): Subalternity in Information Systems in Developing Countries: A Critical Analysis of Ghana's TRADENET

This paper sets the stage for the subsequent papers in the thesis that undertake substantive theorizing of IT-enabled rationalization through the institutional logics construct. The purpose of this paper is to provide an introduction to the empirical setting of the research and to introduce a critique of ISDC; one related to problematization—how ‘problems’ such as development and administrative dysfunctions are constructed and linked to technical-rational ‘solutions’.

Inspired by critical and postcolonial literature, as well as findings on ISDC related to unrecognized local ‘alternative rationalities’ in developing countries (Avgerou 2000b;

Avgerou 2002), we trace problematization of Ghana's TRADENET through critical discourse analysis (CDA). We compare the dominant technical-rational problematizations to findings of a postimplementation case study which revealed consequential local positions that were unrecognized in TRADENET discourses. We find that TRADENET was contradicted by historically formed, institutionalized rent-seeking behaviours, culture and traditions that technical-rational positions on development and ISDC did not recognize or address.

We conceptualize such alternative, historically formed positions that are often neglected in a-historical, technical problematizations as 'subaltern' and explore the usefulness of the construct of subalternity for signposting poorly-understood 'alternative rationalities' of IT in developing countries (Avgerou 2000b). Subaltern positions, it is suggested, contradict dominant or 'hegemonic' problematization. The construct of 'subalternity' is offered as a way of 'going beyond' technical-rational understandings of ISDC that often fail to recognize historical and broader institutional sources of resistance to change. The paper suggests that uncovering subaltern positions and 'alternative rationalities' of ISDC might illuminate peculiar contradictory effects of IT and help advance theory and practice.

Such critical perspective of 'subalternity' informs a general sensitivity to the thesis, in the sense that local practices, institutions and rationalities of the developing country are privileged over universalistic technical-rational assumptions. The cumulative eight months of fieldwork spent at Ghana's customs organization was motivated by precisely such need for a rich, ethnographic, immersive understanding of IT-related practices and their broader institutional foundations.

In paper 2 (chapter 7) and paper 3 (chapter 8), we privilege broader local contexts by identifying historically-formed, multiple institutional forces that shape and are shaped by Ghana's IT-enabled customs administration rationalization. In paper 2 (chapter 7), we seek to

explain one of the empirical puzzles of the study—the persistence of paper use in Ghana’s customs administration, or the “fetishization of paper”, despite the capabilities of technology to fully digitize, integrate and automate processes—through influence of such historically-formed broader context.

Paper 2 (Chapter 7): Explaining ‘Irrationalities’ of IT-Enabled Change in a developing Country Bureaucracy: Case of Ghana’s TRADENET

If paper 1 (chapter 6) represents a somewhat pessimistic picture, paper 2 (chapter 7) presents a view of mixed IT effects. We begin to present and develop the institutionalist arguments developed in the thesis, particularly related to the institutional logics construct and its capacity to help explain influences of broader multiple institutional forces on situated IT-related practices. This paper presents and explains one of the empirical puzzles of the thesis—the contradictory effects (or ‘irrationalities’) of IT-enabled rationalization in developing country public administrations such as the overreliance on paper forms despite the capabilities of technology to fully digitize, integrate and automate processes. While evidence of IT-enabled change is reported, focus is on mixed or contradictory effects; instances where technology makes some desired difference but not wholly according to technical-rational objectives.

This paper develops and presents aspects of an exploratory study of TRADENET where key empirical puzzles were identified along with suitable explanatory constructs developed around the institutional logics perspective. The paper investigates two TRADENET-enabled practices—Import Declaration Form (IDF) processing and revenue collections/risk controls—and demonstrates that where ‘irrationality’ was present, managerial logics of TRADENET contradicted pre-existing institutional logics in the public administration.

‘Irrationality’ is interpreted as a compromising outcome when new logics of IT and old bureaucratic logics contradicted. The paper explains contradictory outcomes of IT adoption by emphasizing logics of situated actors such as rent-seeking, and relating these to macro-level, historically-formed, multiple institutional forces in developing countries such as neopatrimonialism.

Findings of this exploratory study served as a basis for further investigations in paper 3 (chapter 8), where the unfolding of IT-enabled change was traced in-depth, and over a longer period of observations to theorize processes of IT rationalization.

Paper 3 (Chapter 8): IT-Enabled Public Administration Rationalization in Developing Countries: Evidence from Ghana’s Customs Modernization

Implication of IT in rationalizing public administration in developing countries is poorly understood, more so given peculiar institutional dynamics of the public administration and the long-term horizon needed for enduring change. Through interpretive case study of two types of IT for customs clearance—a customs management system (ASYCUDA) and an electronic data interchange (TRADENET)—deployed successively over thirty years (1986-2004, 2004-2015) to transform traditional practices of Ghana’s customs, the paper elaborates how and why IT might enable rationalization of dysfunctional institutionalized practices.

The paper climaxes our study and develops the central arguments made in the thesis. It expatiates on insights from the exploratory study reported in paper 2 (chapter 7) and develops them further by (a) adopting an additional case of IT adoption, that of ASYCUDA which preceded TRADENET, in order to generate more observations on the two IT-enabled practices of document processing and revenue collections/risk controls (b) adopting a longitudinal approach to allow observations over a longer period of sociotechnical change,

covering roughly 30 years (c) adopting an implicit comparative stance (rather than single case study), to allow comparison within and across periods of IT adoption (temporal bracketing).

We take a longitudinal and institutionalist approach that considers change as an emergent, unfolding process; and we uncover institutional logics underlying traditional practices, contradictions encountered when IT introduces ‘modernizing’ logics, and subsequent ‘blending’ of traditional and modernizing logics into distinctive logics that underpin new practices.

Findings challenge extant technical-rational and variance-based accounts of IT rationalization in public administrations of developing countries that tend to take episodic or point-in-time perspectives, inadvertently concluding that IT does not enable transformation. Our contributions are an explanation of the effects of broader institutional context on situated IT-related practices of public administration in developing countries; as well as theorization of how institutionalized practices and their logics sociotechnically transform through IT.

Central arguments

The central argument of the thesis is that contrary to technical-rational problematizations of IT in developing country public administrations that often characterize reports of contradictory effects, ambiguous outcomes and disappointments, IT adoption enables rationalizing effects, although not independent of countervailing, historically-formed local institutions that provide logics for situated actors to act upon.

The process through which IT adoption enables transformation of dysfunctional institutionalized practices is understood in this thesis as “IT-enabled rationalization” (or “IT modernization”) and is theorized as follows:

- IT might be considered as a ‘carrier’ of institutions in the form of ideal type prescriptions that are introduced into public administration to provide new organizing

principles (logics) and to underpin organizational reforms that might ‘force out’ dysfunctional institutionalized practices and their related old logics

- Such new organizing principles or logics introduced through IT adoption enter the public administration organization, which is ‘institutionally plural’, meaning that it is subject to multiple broader institutional forces that influence practices by providing specific guiding logics for given action domains. Such institutional plurality reflects the institutional orders characteristic of the broader society within which public administration and its constituent actors are embedded.
- Once adopted within the public administration of developing countries, IT therefore encounters multiple, historically-formed institutional logics that have persisted over time to drive the various institutionalized practices carried out by local situated actors who draw upon such logics in their daily sociotechnical practices
- Rather than displacing dysfunctional practices and replacing them with IT driven ones, i.e. forcing out ‘old’ logics with ‘new’ IT ones, the two sets of incompatible logics are hybridized in practice through a process identified as ‘blending’
- The rationalizing effects of IT vary by practice according to task structure, as well as the degree of consistency or contradiction of interacting logics.
- Blending results in distinctive institutionalized sociotechnical practices that reflect novel logics of IT while retaining properties of previous lingering logics. As such change is incremental rather than substitutive and occurs over long time horizons.

Contributions

Each of the papers makes some contribution to the relevant issue domain and literature. The thesis overall makes a theoretical contribution by elaborating the implication of broader, historically-formed multiple institutional forces on situated IT-enabled practices in the public administration of developing countries through application of the institutional

logics perspective. It further lays foundations for the development of a process model of IT-enabled rationalization in the context of developing country public administrations. The chosen approach is significant for not only bridging micro and macro-level accounts of sociotechnical change but also acknowledging and explaining the interactions of multiple contradicting institutional forces that are hybridized through situated IT-related practices. In these ways, the thesis also contributes an understanding of the significance of technology in sociotechnically (re)producing and transforming institutional logics and their related practices.

Conclusion

This chapter has presented core themes of the thesis, the problem and purpose of the research, as well as the research questions and motivation. It has also outlined the main arguments presented in the papers and their overarching narrative. Next, chapters 2, 3, 4 and 5 develop theoretical foundations for the thesis by discussing Weber's views on rationalization, new institutionalist accounts of rationalization, institutional logics perspective as an approach to explaining rationalization, as well as understandings of IT in developing countries.

These foundational chapters are meant to extend and connect the brief theoretical discussions presented within the papers (which were necessarily truncated by publication constraints). The substantive papers are then presented in order of increasing development; first, the background paper on the discursive framing of IT and related material implications (chapter 6); next, the exploratory study of IT-enabled customs practices and contradictory outcomes through the institutional logics perspective (chapter 7); and finally, the summative study that theorizes the process of IT-enabled rationalization through the institutional logics perspective (chapter 8). The thesis then discusses the key findings from the papers to develop and further justify the central arguments (chapter 9), and then concludes (chapters 10).

Chapter 2: Max Weber on Rationalization

The goal of chapters 2-5 is to further situate the central arguments of the thesis on extensive theoretical foundations and to clarify theoretical linkages implicit in the papers. The theoretical discussions focus on salient elements in Weber's conceptualization of rationalization (chapter 2), new institutional perspectives on rationalization (chapter 3), institutional logics perspective on rationalization (chapter 4), and IS and organizational change in developing countries (chapter 5), all of which are relevant to the thesis' investigations and claims.

Consistent with the thesis' overall interpretive stance, these theoretical chapters take as their connecting thread the notion of rationalities as a means for linking rationalization—*qua* IT-related sociotechnical phenomena at the organizational and broader levels—to its micro/individual foundations. This chapter on Weberian rationalization sets the stage for appreciating the thesis' chosen approach to investigate IT-enabled rationalization in the public administration of developing countries.

Taking Weber's notions of rationality and rationalization—rooted in his interpretive sociology (*verstehen*)—as a starting point, this chapter discusses contributions and important limitations of Weber's views on rationalization. It also considers Weberian bureaucratic organization and its theoretical and practical problems. The point of these discussions is not only to present what might be considered an essential background (Weberian perspectives on rationalities, rationalization and bureaucracy as characteristic of modern organization), but to suggest ways its limitations might be overcome through additional lenses of institutions and institutional logics (chapters 3, 4), as well as conceptions of alternative rationalities in developing countries (chapter 5.5).

The position of this chapter is that Weber's approach to interpretive social explanation—specifically, linking social action such as organizational arrangements, and

social processes such as bureaucratization to their underlying micro/individual foundations through the construct of rationalities, is useful as a starting point to a discussion of rationalization as a general yet variable process of institutional change. However, Weber's approach has limitations to be overcome if one desires a more encompassing analytical framework of rationalization such as this thesis attempts.

Notable among these limitations are an overlarge emphasis on the Western capitalist economic drivers of rationalization in his day such as efficiency (hereafter, the new institutionalism critique), a rather modest conceptualization of the mechanics of dynamic change [or an over-emphasis on categorical explanations and idealtypes] (the dynamic change critique), and the assumed universalism of (Western) rationalities (the alternative rationalities critique). It should be noted that these limitations are not critiques of Weber's work in an absolute sense; rather, they might be viewed in the light of the thesis' attempt at 'puzzle-solving' –that is, developing appropriate middle-range theorization of the specific empirical problems raised in the thesis.

The next sub-sections discuss the significance of Weber's theoretical approach to explaining rationalization, as well as his notions of rationality, rationalization, and bureaucracy. Each of the three critiques (the new institutionalism, dynamic change, and alternative rationalities critiques) is then presented. The main points are then synthesized and the chapter concluded. Subsequent chapters take on discussions of approaches to overcoming the critiques of Weberian rationalization, and developing a context-sensitized view of IT-enabled rationalization in developing countries.

Significance of Weber's approach

Weber provides a touchstone for our analysis of rationalization as a general yet variable process of institutional change. An understanding of the significance of his methodological approach is useful for appreciating some central issues underlying the interpretive stance taken in the thesis, such as the opposition between positivist and subjective views, and the balance between subjective/relative versus generalized explanations.

Empirical interests of Weber's work lay in problems of institutional change within the modern capitalist economic and social systems of his day. He was concerned with, as Parsons (1947, p.24) observes, "problems of the structural peculiarities of modern Western society, of the conditions on which it was dependent, and of its stability and tendencies of change [...] differences from other social systems [...] as an institutionally organized system of action."

To deal with these empirical problems, Weber pursued the path of relating systemic dynamics to motives of individuals (as opposed to the alternative of separating the dynamics of the system from understandings of underlying behaviours and actions at the individual level in order to derive 'laws'). This approach of accounting for individual foundations of social action—a kind of 'methodological individualism'—offers important contrast to other sociological approaches like Marxism and historicism that treat social collectives (rather than individuals) as actors with unified interests and values (Camic et al. 2005, p.8).¹

By accounting for the rationalities underlying social action, Weber's interpretive sociology—captured in his notion of *verstehen*—offered a counterpoint to sociological explanations of social action that assumed an objective world 'out there' with fixed effects, independent of subjects and their interpretation. Weber emphasises culture and social

¹ Camic et al.,(2005, p.26) note that Weber himself does not use the term 'methodological individualism' although it accurately reflects his stance. His version of methodological individualism is also not identical to economic versions from theories such as rational choice and game theory. Weber's methodological individualism reflects a middle way between holistic and individualistic ontologies of society (Camic et al. 2005, p.19).

behaviour as a response to the historical tradition of German thought of his day which privileged positivistic analyses as the sole means to generalized explanations about the social world, akin to what pertains in the natural sciences.

Parsons (1947, p.9) points out that “Weber’s essential starting point is an acceptance of the subjective point of view, combined with a critical attack on the ‘historical’ position. His basic thesis in this connection is that generalized theoretical categories are as essential to the proof of causal relationships in the human and cultural field as they are in the natural sciences.”

Weber further differed from the historical school by rejecting their position that the aim or outcome of scientific investigation must be a complete ontological picture of the phenomena of interest. Against this view, he maintained that empirical knowledge of cases are by nature abstract, never includes all facts, and are subject to the focus of the investigator (Parsons 1947, p.9).

These considerations and assumptions lay at the heart of Weber’s analysis, particularly his methodology of ideal types as a way of explaining diverse patterns of economic and social organization as well as their corresponding rationalities. The next subsections outline Weber’s ideas on rationality, rationalization and bureaucracy in relation to the methodology of ideal types.

Rationality

The subject of rationality has spawned a rich and complex literature across fields as diverse as sociology, political science, philosophy, psychology, among others. The object of this section is not to engage such general literature on rationality, but only to outline its

relevance in Weber's sociology of modern social action and its economic and authority structures.²

Weber's interest with rationality was part of a broader effort at explaining the patterns of organization in modern society. An important premise of Weber's view of rationality is that there is no single rationality that captures the logic of all human action and organization types. His methodology for analysing structures of authority and economic life consisted of formulating ideal types of social arrangements and determining the corresponding ideal rationality and action.

Ideal types of rational actions were intended to guide comparison of actual observed actions so that account could be made of deviations. Ideal type—an important element of Weber's work—describes a normative course of action that is abstract and general, rather than concrete or specific. It does not describe given actions of individuals but 'typical' ones that are 'objectively possible' (Parsons 1947, p.13). To that end, Weber identifies four types of social action—instrumental-rational (goal driven), value-rational (value and belief driven), affectual (affection and emotion driven), traditional (traditions and customs driven).

For Weber, an action is rational if (a) it is oriented to a clear goal or to a set of values that are clearly formulated and consistent (b) the means chosen are efficient and well-suited to the goal (Parsons 1947, p.16; Weber 1968). Within this framing, action is deemed irrational if it deviates from the idealtypic rational action. In other words, irrational action is any action that is inconsistent with the assumed means to achieving the ends of the ideal model. However, it is to be noted that rationality and irrationality go beyond adherence or deviations from an isolated ideal type to involve the integration or mal-integration of whole social systems of action (Parsons 1947, p.17).

² I draw on various ideas across Weber's eclectic essays published in volumes such as *Economy and Society*. Weber's fragmentary body of work—often compared to a rich quarry—is often similarly appropriated in piecemeal fashion by various scholars (Camic et al. 2005, p.31).

Notions of rationality in Weber's oeuvre include formal rationality, substantive rationality and institutionalized rationality. Formal rationality was said to enable the most precise and efficient means for resolving problems by providing universal and abstract regulations; rather than arbitrary, personalised and idiosyncratic ones (Weber 1968; Kalberg 1980). Substantive rationality on the other hand, guides action by providing 'value postulates' that enable standards against which reality is judged (Kalberg 1980). Institutionalized rationality describes the institutional conditions that sustain a given course of action.

Given multiple possible value postulates, substantive rationality is based on the consistency of its value postulates. Something is not inherently irrational but is only irrational in relation to a specific 'rational' standpoint. For example, from the point of view of a free market economy, monopolies are 'irrational' because they prevent competition; similarly, from the point of view of science, religion is 'irrational' because it does not subscribe to empiricism (Kalberg 1980).

Weber's analysis of economic activity distinguishes modern capitalist market economy with its economic rationality from family-centric structures of traditional societies with their communal rationality. Market economic activity is said to orient toward 'capital accounting', or the increase of enterprise capital under specific conditions that distinguish the capitalist system from other forms of economic organization.

Economic systems of traditional societies on the other hand exhibit communal rationality that does not clearly delineate economic action from other forms of action, nor involve calculations toward 'capital accounting'—considered by Weber as the height of formal rationality. Familiar ties and affections override depersonalized calculus for enterprise capital accumulation.

Furthermore, Weber's analysis of authority explains different modes of authority and how they are legitimized. Charismatic, traditional and rational-legal authority were identified

as ideal types. These correspond to legitimation by personal qualities of the leader, customs, and rules as a means of achieving ends. In his conception of rational-legal domination (bureaucracy), viewed as the applicable ideal rational form in modern organization, Weber identified both formal and substantive rationality as underpinning the transformation from patrimonial (based on charismatic and traditional) to rational-legal patterns of action (Anter 2014; Weber 1946).

This sub-section has only sought to provide broad contours of Weber's ideas on rationality as an entry point into his conceptions of rationalization and the bureaucracy, in the context of his influential interpretive sociology. The next sub-section elaborates the relation of rationality to Weber's view of rationalization.

Rationalization

In his efforts at explaining broad patterns of social stability and change, Weber's sociological gaze is set upon historical and social trends toward rationalization and rational-legal legitimation. Weber posited that an important driver of modernity is rationalization. Rationalization might be broadly conceived as the replacement of tradition and affection-based social behaviours with calculative ones (Weber 2002; Kalberg 1980; Weber 1968). It has also been described as "the substitution for the unthinking acceptance of ancient custom, of deliberate adaptation to situations in terms of self-interest" (Parsons 1947, p.123).

Weber employs the term with at least three different meanings. Firstly, in discussions of means-ends calculations specific to individual rationalities (a kind of behavioural/action transformation); secondly, in relation to bureaucracy and its arrangements of human behaviour across space and time (bureaucratization or organizational transformation); and finally, in a more general sense as the antithesis of 'enchantment', or a disenchantment with traditional, mysticism, myth and magic based ways of viewing the world and action (a kind of social transformation) (Weber 1946; Weber 1968).

The later understanding of disenchantment is tied to his ideas of secularization and the emptying of religious and spiritual beliefs from social organization. Such secularization was part of the shifts from tradition to modernity that was characteristic of the Western world of Weber's day.

According to Weber, rationalization therefore occurs at various levels of society and are driven by specific modes of rationality: practical, theoretical, substantive and formal (Kalberg 1980) which correspond to ideal types of social organization. Two of these – substantive and formal– are pertinent to the achievement of organizational goals such as the bureaucracy by calculated, systematic means (Kalberg 1980; Weber 1968). The next subsection expatiates Weber's view of rationalization *qua* bureaucracy.

Bureaucracy

Weber's (1946) conceptualization of bureaucracy outlines the benefits of rational-legal administrative structures in governing organizational activities (relative to traditional or charismatic authority structures). Bureaucratic organization is conceived as an efficient instrument for realizing specified goals, coordinating activities and maintaining the organization.

Characteristics that help bureaucracy achieve these benefits include a fixed division of expert and trained labour, hierarchy of authority and positions, written documentation as a basis for administration and adherence to general rules, and professionalization. Bureaucracy entails separation of the personal from the official, and bureaucrats are to be selected on qualifications and merit (rather than nepotistically), appointed (rather than elected or arbitrarily chosen), and compensated (as full time staff rather than maintained by patronage).

The process of bureaucratization was suggested by Weber to be driven by capitalist impulses through competition among firms in the marketplace, competition among states, and bourgeois demands for legal protection from arbitrary power—all of which provided impetus

for efficiency and harmonization (Weber 1968). Weber (1968) posited that bureaucratization, the consummate organizational manifestation of rationalization, has such great momentum that the process was inevitable, ultimately leading to an 'iron cage' that imprisons humans by harmonizing action to extremes.

But aside the 'iron cage' critique, bureaucracy has been further criticized for other deficiencies in theory and practice. It has been noted as driving the pursuit of barest minimum standards as bureaucrats acquire a culture of acting only according to 'the rule' (Gouldner 1954). Furthermore, bureaucratic organizations tend to increase in size, become resistant to change, and fail to innovate (Burns & Stalker 1961). Merton (1957) has also noted the excessive rule-following fostered by bureaucracy that leads to 'goal displacement' as rules are misapplied at the expense of overall organizational objectives. Selznick (1949) has pointed out the sub-optimization that might result from delegation as various units pursue different incoherent objectives.

In addition to such fundamental critiques of the bureaucratic model, various dysfunctions have been associated with the practice of bureaucracy such as bribery and corruption (Rose-Ackerman 1999; Mbaku 1996; Klitgaard 1988), red tape (Goodsell 2000; Bozeman 2000; Kaufman 1977), incompetence (Hood & Lodge 2004; Kamoche 1997), politicization (Peters 2010; Dasandi 2014). Such limitations of the practice of bureaucracy has raised criticisms of its idealtypic nature and lack of touch with practical and historical realities (Peters 1981), as well as the non-compatibility of its underlying rationalities and assumptions in non-Western contexts (Lynn 2001; Hyden 2010).

Despite these critiques, the model of bureaucracy has become not only a paradigm of modern organization but a basis of organizational theorizing (Walton 2005), notwithstanding the contemporary emergence of flattened structures through temporary means like delayering, adhocracies, task forces and project teams, or permanent means like matrices (Gazell & Pugh

1990). Other emergent organizational forms such as technology-enabled remote work, self-managed teams, flexible work systems (Smith 1997), etc., similarly remain marginal to the bureaucratic paradigm.

However, with increasing globalization and advancements in technology, the bureaucratic form continues to face challenge. New organizational forms increasingly rely on external networks through strategic alliances and outsourcing that require decentralization and non-hierarchical structures of control and coordination (Clegg & Hardy 1996). Taken together, new forms of organization (Clegg & Hardy 1996; Gazell & Pugh 1990; Smith 1997), challenge the bureaucratic model in several important respects. Flattened hierarchical structures, networked activities and flexible work systems decrease task specialization as workers perform a wider range of activities. Vertical and horizontal differentiation are also reduced as hierarchy is flattened and decentralization is enhanced through increasingly more available information (Walton 2005, p.575).

In the context of public administration, the bureaucratic model has come under immense global pressures for change, manifesting in national level political, economic and social reform pressures (Welch & Wong 1998). With the advent of the so-called New public management (NPM) in the 1980s, economic and market-oriented rationalities from the private sector have been introduced into public administration as a means of rationalizing perceived bureaucratic dysfunctions (Dunleavy & Hood 1994; Hood 1995).

NPM emphasises efficiency through entrepreneurialism, reliance on market mechanisms and transformative managerial practices (Minogue 2001; McCourt 2001b; Hood 1995). Dunleavy and Hood (1994) argue that the transition from 'old public administration' to 'new public administration' represents a difference from bureaucracy in several respects. New public management's underlying thesis of best use of resources in pursuit of organizational goals stands in contrast to bureaucracy which is concerned primarily with

legalistic enforcement of laws, rules and entitlements, as well as regulation of public/state powers in relation to citizens (Dunleavy & Hood 1994). This points to the contrasting rationality assumptions of NPM versus that of bureaucracy –namely, an assumption of *homo economicus* in the case of NPM, and *homo sociologicus* in the case of Weberian bureaucracy. *Homo economicus* describes the atomistic utility-maximizing rational choice assumptions common in economics and related fields whereas *homo sociologicus* describes an ideal role-fulfilling man who is a tabula rasa upon which society and culture inscribes values and goals.

Critiques of Weberian rationalization

New institutionalism critique

In their seminal article, *The Iron Cage Revisited: Institutional Fields and Collective Rationality in Organizational Fields*, DiMaggio and Powell (1983) advance upon the conceptualization of Weberian rationalization by arguing that the structural causes of bureaucratization and rationalization have changed from capitalist economic competition and efficiency as conceived by Weber (1968) to institutional ones driven by isomorphising normative, coercive and mimetic forces.

DiMaggio and Powell (1983) observe that while bureaucratization of the corporation and the state have been largely achieved in many parts of the world as per Weber's predictions, organizations continue to homogenize in other ways, and that such homogenization seems to be driven less by economic competition and efficiency and more by institutional structures that do not necessarily induce competition or efficiency.

Such institutional forces emerge from structural interactions within organizational fields (Giddens 1984), and is effected largely through the state and professions (DiMaggio & Powell 1983). Organizational fields, understood as “those organizations that, in the aggregate, constitute a recognized area of institutional life”–are observed to homogenize

over time without necessarily needing to adapt to competitive forces through efficiency or by interacting directly with one another (DiMaggio & Powell 1983).

Such homogenization into similar structures, or isomorphism, as noted by DiMaggio and Powell (1983) has elements of taken-for-grantedness that cannot be explained by systematic rational calculations, even granted that organizational actors are rational. These seminal insights spawned several new institutional studies that looked at institutional sources of rationalization, specifically, structures of isomorphism and diffusion at various levels beyond the organizational field. In these studies, rationalized organizations were, broadly speaking, outcomes of rationalized environments (Meyer & Scott 1992; Scott 1995), rather than the result of specific individual rationalities.

Dynamics of change critique

While Weber's methodology is justified by his research goal of explaining various discrete types of modern social and economic organization, as well as broad sweeps of social change, it might be said to be limited in its potential to elaborate dynamics of bottom-up social change, as well as situated change over time. These two limitations relate to the employment of typologies and rejection of the nuances of historicism; two strengths of his method which are not amenable to middle-range 'puzzle solving' such as this thesis attempts.

By focusing on categories and categorical explanations of fixed outcomes e.g. bureaucracy, in relation to fixed rationalities, it does not afford much scope for continuous change that might emerge as hybrid or ad hoc modes of organizing. Secondly, given that Weber is primarily interested in interpretive explanation of broad trends such as modernization, rationalization etc., he employs a level of abstraction that admits process but is not sufficiently dynamic or attune to important details of history. E.g. the unfolding of bureaucratization around the world has exhibited a wide range of nuance that is not adequately explained by typologies. Such historical unfolding has been contextual and

idiosyncratic, conditioned by multiple institutional and structural forces, and barely as homogenous as a typological analysis might suggest.

While Weber's view of process, such as his accounts of rationalization and bureaucratization provides some useful explanation, the methodology of ideal types give a somewhat 'rigid' picture of change, devoid of nuances of the fluid historical and institutional context of organizations. The theoretical simplification and 'elegance' that the ideal types approach allows might thus be also viewed as a potential weakness when one tries to understand particular organizational structures in particular places at particular times (versus others).

Discussions of the institutional logics perspective presented in chapter 4 further shed light on these limitations by showing how they are overcome. Chapter 4 emphasizes the dynamism inherent in the institutional logics perspective as it combines institutional and contextual elements of change with multiple, historically-formed logics of action and organization. Importantly, the 'logics' in institutional logics have cognitive foundations that relate directly to principles of action provided by multiple, historically-formed institutions (rather than the ideal rationality construct of Weber which is strictly typological).

Alternative rationalities critique

In the IS context, Avgerou (2002, chap.3) takes Weber's formal and substantive rationality (the orthodoxy) as a starting point and relates critiques of this view of rationality citing critical theorists such as Horkheimer and Adorno and Marcuse, as well as alternate views from more recent scholars like Habermas.

Adorno and Horkheimer (1944) in response to Weber's (1978) analysis of rationality and rationalization critiqued his instrumental view of rationality as a means to progressively controlling and dominating bureaucratic institutions of 'totally administered society' and 'closed, totalitarian systems'. Another critique offered by Habermas (1984) suggests an

alternative notion of rationality, communicative rationality, which stands in contrast to Weberian instrumental and strategic rationality.

Such distinction reveals two contrasting approaches: Weber's oriented towards outcomes and Habermas' toward shared understanding. Communicative rationality is a view of rationality as an inter-subjective interpretation that happens via social interaction and linguistic communication. Habermas (1984) explains that validity claims are not only in an objectively factual world (as instrumental and strategic rationality suggests) but also in a subjective social world of experiences, feelings, desires etc., that are accessible through language and communicative exchange.

Aside such critiques drawn from the Western intellectual canon, other critiques are presented in the section on alternative rationalities of IT in developing countries (chapter 5.5). These relate to localized, context-specific, historically-formed substantive rationalities and local understandings of society and organization in relation to IT and development.

Conclusion

This chapter has laid foundation for the thesis' approach to investigating rationalization in the public sector of developing countries. Weber's work has been explored in this effort as an appropriate starting point because his interpretive analysis has provided a bedrock for many social science analyses of modern economic and authority structures, particularly in relation to the bureaucracy.

It has been suggested that Weber's approach has potent advantages for an interpretive stance on explaining IT-enabled rationalization in the context of developing countries. Notably, his notion of rationalities as the underpinning for social and economic phenomena is useful for connecting macro phenomena to their individual foundations. However, limitations of Weber's approach include its overemphasis on Western capitalist economic drivers of rationalization (the new institutionalist critique), a universalistic approach to rationalization

(the alternative rationalities critique) and a limited explanation of the mechanics of dynamic change (the dynamics of change critique).

The thesis advances a view of rationalization that attempts to overcome these main critiques through the institutional logics perspective; an institutionalist construct that enables consideration of broad structural forces in particular social and organizational contexts as well as multiple, historically-formed logics of individuals embedded in those social and organizational *milieus*. The next chapters incrementally develop these ideas from their component themes and streams of research.

Chapter 3: Beyond Weberian Rationalization

This chapter and the next two chapters continue exploration of the topic of rationalization by building upon foundational Weberian notions outlined in chapter 2. Specifically, they discuss ways of overcoming the three critiques raised in relation to Weberian rationalization – the overlarge emphasis on the capitalist industrial economic drivers of rationalization in his day such as efficiency (the new institutionalism critique), the modest conceptualization of the mechanics of dynamic change [through an over-emphasis on categories and idealtypes] (the dynamic change critique), and the assumed universalism of rationalities (the alternative rationalities critique).

This chapter presents merits of the new institutional view of rationalization as well as its important critiques. After broadly laying out these points regarding rationalization *qua* institutionalization, we present a picture of rationalization in the public administration of developing countries as processes of institutional shift over time away from the dominant bureaucratic model and its perceived dysfunctions. The chapter then concludes by synthesizing the main claims.

Rationalization in new institutional studies

As noted in the new institutionalist critiques of Weberian rationalization, new institutionalism has significant merit in its explanation of rationalization as undergirded by isomorphic mechanisms present in organizational fields. Such account shifts emphasis from Weber's focus on purely explaining modern capitalist economic structures and related authority and legitimation structures. In so doing, the new institutional approach to rationalization provides a potent explanation of empirical observations of organizational homogenization even where purely economic calculus is not identifiable.

Despite these strengths of new institutionalist studies, such diffusion and isomorphic studies have tended to focus on structural aspects of change (at the meso/organizational or

macro/ social levels beyond the individual). The inability of diffusion and isomorphic studies in new institutionalism to account for the means linking situated forms of organizing with wider instrumental beliefs and practices have been strongly critiqued (Hasselbladh & Kallinikos 2000).

In addition, Hasselbladh and Kallinikos (2000) lament the general failure of such studies to address the issue of how rationalization and its processes of institutionalization are socially constructed. They note that “as the outcome of social construction, institutionalization needs to abandon the bird’s eye view of the field, and come closer to the social and cognitive means and procedures underlying rationalized beliefs and schemes of action” (Hasselbladh & Kallinikos 2000).

Furthermore, it is pointed out that the process of rationalization involves the development and organizational embeddedness of principles and devices of control that guide action; and that means by which patterns of formal organizing are stabilized have not only objectifying effects but subjectifying ones as well (Hasselbladh & Kallinikos 2000).

To overcome these critiques, Hasselbladh and Kallinikos (2000) argue that rationalization cannot be adequately understood as simply the establishment and diffusion of regulative structures and instrumental schemes that are merely passively adopted by organizations. More generally, a theory of institutionalization should be capable of elaborating forms by which organizational objects, procedures and roles develop and become embedded in organizations. This involves specifying both the ‘object side’-or how rationalization becomes embedded, and the ‘subject side’ or creation of ‘actorhood’ whereby individuals become subject to institutional structures.

They further suggest that the project of rationalization is connected to ways of defining reality, i.e., discourses, and the operations and techniques involved in establishing domains of action (Foucault 1980; Foucault 1982). They advise closer scrutiny of the

linkages between organizational ideals, discourses and techniques of control and point out that,

A deeper appreciation of rationalization and institutionalization in organizational settings must include a comprehensive analysis of discourse. It also needs to involve the detailed exposition of the various techniques of control and the organizational practices associated with them. Such an analytical venture can disclose the cognitive means and procedures and the social forms or relationships through which ideals are developed and stabilized into the conventions we call institutions (Hasselbladh & Kallinikos 2000, p.707)

In addition to these constitutive aspects, Hasselbladh and Kallinikos (2000) identify important conditions for rationalization such as the degree of reproducibility, durability and communicability and their related forms of objectification. These condition the ‘cognitive infrastructure’ that defines the ‘object side’ of institutionalization in terms of not only what is to be done but how.

Subjectifying aspects of ideals, discourses and techniques further relate to ‘actorhood’, or how people come to become subject to broad institutional structures. In particular, the socio-cognitive technologies of writing and formal codification not only contribute to the ‘object side’ discussed above but also “creates a visibility of organizational relations that is essential to the construction of predictable and self-managing forms of actorhood associated with contemporary organizations”.

Rationalization in the public administration of developing countries

In the context of the public sector, we suggest that Weberian rationalization which became somewhat synonymous with bureaucratization ought to be complemented with new institutional views of rationalization to provide a better account of ongoing shifts from the now dominant bureaucratic model to subsequent organizational forms such as public management that have different underlying rationalities.

The shift away from patrimonialism is a dynamic and ongoing one that goes beyond bureaucracy and continues to spawn new forms. Such ongoing rationalization continues to be carried out under the moniker of ‘modernization’ (Margetts et al. 2010). It is such ongoing, shifting patterns of administrative ‘modernization’ that this thesis seeks to understand in the context of the public administration in developing countries, which despite decades of rationalization efforts, continues to exhibit vestiges of patrimonialism and traditions in its constitution and practices.

The public administration of developing countries is an appropriate setting for studying rationalization because of the cycles of idealtypic patterns—bureaucracy and public management (New Public Management and Washington models), chief among them—that have been introduced over a relatively short period of time to rationalize them away from patrimonialism (Chang 2001; Schacter 2000).

Such successive rationalization efforts in the public administration of developing countries have historical origins in the post-World War II period when majority of today’s developing countries gained political independence from Western powers such as Britain and France. Pathways and patterns of bureaucratization in developing countries are traceable to the patterns of administration bequeathed by the various Western powers through colonization (La Palombara 1967; Young 1994; Fischer-Tiné & Mann 2004; Sartre 2001; Hyden 2010).

Furthermore, post-colonial power relations between developing countries and the so-called developed countries (Sartre 2001); as well as global socioeconomic integration, and political economic structures provide a backdrop for ongoing administrative rationalization efforts in developing countries (Kotz 2002; Chalfin 2010). In this respect, various administration models have been introduced in developing countries with varying degrees of successes. These include New Public Management (NPM) (Brinkerhoff & Brinkerhoff 2015;

McCourt 2001b; Schwartz 2008), and Washington models (Gore 2000; Williamson 2004; World Bank Group 1997b).

In addition, specific functional domains of public administration in developing countries are embedded in organizational fields that are subject to normative, coercive and mimetic pressures from Western governments and influential development organizations such as the World Bank, International Monetary Fund (IMF) and others (World Bank Group 2000; Agnew 2010). For example, in the domain of international trade administration by customs organizations in developing countries, there have been strong diffusion and isomorphic pressures for rationalization, around a discourse of 'trade facilitation', driven by Western organizations such as the World Trade Organization (WTO), World Customs Organization (WCO), World Bank and others (Glenday 1997; Grainger & McLinden 2013; Grainger 2008).

From a research point of view, the historical, organizational and broader contexts of the unfolding of public administration rationalization in developing countries affords opportunity to empirically traverse ideal, ahistorical, acontextual, depictions of rationalization. Specifically, public administration reform in developing countries provide an empirical opportunity to investigate not just the structural and institutional sources of rationalization, but also their underlying rationalities and the interactions between the two that drive patterns and processes of stability and change at the situated level of practices.

To pursue such empirical endeavour, the critique of Hasselbladh and Kallinikos (2000) is instructive; namely, that theorizing rationalization must elaborate processes by which organizational objects, procedures and roles develop and become embedded in situated organizational contexts. This involves both specifying the 'object side'-or how idealtypic patterns of rationalization become established (institutionalization), as well as the 'subject side' or creation of 'actorhood' through influences of rationalization ideal types. Such effort

involves relating structural mechanisms of rationalization (institutions, political-economic forces etc.) that tend to be idealtypic, to relevant processes of social construction at the individual (micro) and organizational (meso) levels that embeds them in the material practices of organizing.

We suggest that empirically investigating the effects of broader context on IT-enabled rationalization in developing country public administration (the object of this thesis) requires attention to both structural (Weber 1946; Weber 1968; DiMaggio & Powell 1983; Boxenbaum & Jonsson 2008; Meyer & Scott 1992) and constructivist considerations as suggested by Hasselbladh and Kallinikos (2000).

In particular, we focus on the following important aspects: the historical unfolding of change at organizational, national and broader levels (Avgerou 2001; Avgerou 2002; Pettigrew 1985; Pettigrew 1990); the multiple institutions and macro structures that drive change (Kraatz & Block 2008); the general values, rationalities and cultural perspectives of situated actors (individuals, organizations and even the state) (Kalberg 1980; Weber 1946; Avgerou 2000b; Avgerou 2002); the discourses at the organizational, societal, national, global levels that relate to points (1) (2) and (3) above and might be translated into techniques and processes of control that shape reality (Foucault 1982; Foucault 1980; Berger & Luckmann 1967; Bonina 2012); the processes by which discourses are materialized or embodied in practice through objectifying and subjectifying, i.e., the operations, techniques and artefacts connected to establishing specific domains of action for actors to act upon (Foucault 1980; Foucault 1982; Hasselbladh & Kallinikos 2000).

Bureaucracy, NPM and alternatives in developing countries

Despite successes of bureaucracy around the world since the twentieth century (compared to alternatives involving arbitrary use of state power) (Minogue 2001, pp.3–4), it has faced various problems in practice, especially in developing countries. Minogue (2001,

p.5) notes some of these challenges as follows: in many systems there is no clear separation between politics and administration; decision-making does not always conform to technical and economic rationality but subject to conflict and negotiation among interest groups within and outside the bureaucracy; hierarchy and centralization often combines with formal and often mindless adherence to create defects or “bureaucratic pathologies” such as red tape; there is greater complexity in transactions of the modern state that goes beyond the simple bureaucratic model.

Importantly, what is considered ‘bureaucracy’ may be a misrepresentation, since in practice there are variants of the bureaucratic form, and ‘bureaucracies’ may be a more reflective term. du Guy (2005, p.3) notes that,

[...] bureaucracy is not—as many critics assume—a simple singularity. Rather whatever singularity it is deemed to possess is multiple not monolithic (Minson 1993; Osborne 1994; Adler and Borys 1996) [...] Different states, for instance, with varying constitutional arrangements, have all produced recognizably ‘bureaucratic’ administrative apparatuses; but state bureaucracies in the plural, in the sense that they are distinctive and non- reducible.

Similarly, NPM has taken various forms in developing countries. Polidano (2001) suggests mixed experiences due to “local contingency factors” that influence outcomes (p.46). Ultimately, NPM cannot be said to be a dominant paradigm in developing countries. But this is not to suggest it is irrelevant. As noted by Polidano (2001, p.64) “in addition to the ‘three Es’ of NPM (economy, efficiency and effectiveness),” there is also “experimentation and eclecticism” in practice of NPM.

Many developing countries have experimented with other items in the NPM bundle, such as corporatization (converting civil service departments into free-standing agencies or enterprises, whether within or outside the civil service). Jamaica, Ghana, Singapore and Tanzania and many Latin American countries embarked in varying degrees on this aspect of

NPM (p.47). For example, a noteworthy trend in Africa has been the merging of customs and income tax departments into corporate-like national revenue authorities to promote effectiveness of internal revenue mobilization. Case in point, Ghana is reported to have increased revenue from 4.5% of GDP in 1983 to 17% by 1994 thanks to such reform (Chand & Moene 1999).

Proponents of NPM for developing countries suggest that despite differences in context between ‘developed’ NPM countries like New Zealand and developing countries, there is room for developing country administrations to learn from NPM on how to create efficiency and effectiveness (Bale & Dale 1998; Wallis & Dollery 2001).

Opponents of this view criticize such best practice approach to widespread NPM adoption, noting NPM is not a set of neutral management practices as it seems but has “doctrinal content” which may conflict with administrative values (Hood 1991). Clarke and Newman (1997) for example, claim NPM to implicitly have a ‘New Right’ agenda which may not be compatible with other forms of political notions.

Another view of reform aside NPM that is identifiable in the developing country context is what McCourt calls the “Washington model” of public sector reform, which preceded NPM in the early 1980s through what became known as the “Washington consensus” (McCourt 1998b). This approach differs from NPM by primarily addressing issues of fiscal and economic imbalances.

Simply put, the application of World Bank and IMF structural adjustment principles to public management as a matter of best practice. This approach sometimes conflicts with NPM ideals, such as when centralization of functions like headcount reduction and recruitment happens in the process of downsizing (retrenchment) in contravention of NPM norms of decentralized, budget-driven approach to downsizing (McCourt 1998a).

Along these lines of donor driven reforms, Minogue (2001, p.6) draws attention to the regime of 'good governance' promoted by international development organizations in the 1990s and 2000s as part of donor programs, sometimes incorporating elements of public management reform in their definitions (DFID, 1997; The WorldBank Group, 1994; UNDP, 1998). This approach of packaging good governance initiatives and conditionalities with requirements of public management reform is believed to produce better-managed and more responsive public services ((World Bank Group 1997a).

Nonetheless, McCourt (2001) points out "a familiar process of interaction between an imported model and domestic imperatives", observing that policies and priorities of international donors do not always correspond to local needs and preferences, and that NPM-like reforms are sometimes the locus of local power struggles. This reality is a far cry from the ideal separation of politics from administration espoused by proponents like Kingdom (1991).

Given such normative and political influences on the nature of public administration in developing countries, as well as the local power struggles that often surround reform, it is important to consider political context in understanding public administration in a given country. For example, in developing countries, with rare exceptions such as Lesotho that is said to have robust bureaucracy not co-opted by politics (Ferguson 1990), politics is not easily delineated from form and function of public administration.

Aside NPM and the 'Washington Model', a much less common, and relatively minor approach to public administration which appears in developing countries like South Africa, Swaziland, Kenya and Tanzania is strategic management (McCourt 2001a, p.240), an approach that has been successfully used in New Zealand to remedy problems with NPM such as fragmentation from devolution (Pallot 1997).

Strategic management, not unlike NPM, originates from the private sector. It involves identifying organizational aims, consequent objectives, and resource allocations and processes that can help reach those goals over a long period (Johnson & Scholes 1993; McCourt 2001a, p.239).

McCourt (2001a, 240) suggests three distinctions of this strategic management approach from NPM. First, it extends from the level of individual agencies (where NPM mostly applies) to the government; second, it emphasizes partnerships between governments and across public and private organizations; third, it focuses on outcomes (impact on society) rather than outputs (good and services produced) by government. These characteristics, particularly as they relate to the long term, are potentially beneficial for developing countries, e.g., South Africa’s strategic approach to handling employment reform (Government of South Africa, 1998).

In conclusion, a contingency view is appropriate for understanding public administration in particular developing countries because of historical and contextual conditions that determine the suitability or otherwise of a given administration model. When analyzed against common criteria such as performance, capacity, integrity, neutrality, etc., the main models of public administration discussed all exhibit strengths and weaknesses (McCourt 2001a, p.243). These varied characteristics are summarized in

Table 1 below.

Model	Focus	Performance	Capacity	Integrity	Neutrality	Dependence	Emulation
(Weberian) Public Administration	Inputs	Poor	Low demands	Inflexibility breeds corruption	Qualified by bureaucratic bias	No external inputs needed	Most developing country administrations
Washington model	Costs	Efficiency improved; services deteriorated	Low demands	No effect	Geared to needs of structural adjustment loan programs	External funds and pressure needed	Countries with good governance and donor programs
NPM	Outputs	Uncertain evidence of improvement	High demands	Decentralization may facilitate corruption	Assumes major role for private sector	Management 'transaction cost' may require funding	'Old Commonwealth' and Malaysia

Table 1: Main public administration models in developing countries (McCourt 2001a, p.243)

Conclusion

This chapter has outlined new institutionalist ideas on rationalization as going beyond the rationality and capitalist market-driven efficiency assumptions of Weber to incorporate institutional mechanisms from organizational fields (DiMaggio & Powell 1983). Beyond these general theoretical discussions of rationalization as processes of institutionalization, the chapter has presented perspectives on rationalization in the public administration of developing countries from both theoretical and historical perspectives. Specifically, it has considered rationalization patterns of the public administration in developing countries over time.

But while new institutionalism succeeds at explaining generalized patterns of rationalization beyond the bureaucratic model through institutional diffusion and isomorphism, it fails to connect such structural constructs back to micro-level cognitive foundations such as Weber had done with his postulates on rationality modes underlying social action.

Indeed, although new institutionalism had advanced upon Weberian rationalization by elaborating upon general structural mechanisms by which organizational patterns spread, it might be said to have regressed relative to Weber's (1968) concerns with accounting for the actor and their interpretations (Weber's notion of *verstehen*).

Critiques of new institutionalist accounts of rationalization (Hasselbladh & Kallinikos 2000) have alluded to this problem of its disconnect between the structural aspects and the constructivist means by which structures come to matter in situated actions of organizational actors.

In the next chapter, it is suggested that the institutional logics perspective offers advantages for the thesis' goal of theorizing IT-enabled rationalization in the public

administration of developing countries in a way that overcomes some of the new institutionalism critiques.

By enabling analysis of rationalization at the organizational level, as well as the effects of underlying multiple, historically-formed individual logics of action; the institutional logics perspective has capacity to bridge the micro and macro levels of change (Thornton & Ocasio 2008), and thereby overcome the critique of Hasselbladh and Kallinikos (2000). Furthermore, institutional logics reconcile the actor-centric interpretive concerns captured in Weber's *verstehen*, without foregoing awareness of broader structural mechanisms outlined by new institutionalism.

Chapter 4: Institutional Logics Perspective on Rationalization

This chapter develops ideas on institutions and institutional logics to justify our explanations for how rationalization might result as a process of IT -enabled institutionalized practice change. This requires general understanding of what is meant by institutions, institutional theories, institutionalized practices, as well as the institutional logics perspective. This chapter takes on these tasks.

The overall claim of this chapter is that understanding how IT might enable rationalization of institutionalized practice requires understanding the elements of persistence and change involved. Institutional theory has promise for understanding such dynamics of persistence and change, although suggested to be better at explaining persistence than change (King et al. 1994; Orlikowski & Barley 2001; Powell & DiMaggio 1991; Robey & Boudreau 1999). To understand change, closer attention needs to be paid to structural aspects of institutions, practices, technology and their interactions.

This is where the institutional logics perspective is introduced and developed as an important approach for discussing institutional dynamics of broader context and IT in practice. Next, we discuss institutions, and institutional theories. We then describe institutionalized practice –the main empirical object of the study—and how an institutional logics perspective, might enable explanation of its change.

Institutions and institutional theories

Institutions

While there is no universal definition of institution, it has been conceptualized as “social structures that have attained a high degree of resilience [and] are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life” (Scott 1995, p.33). Institutions

may also be understood as historically developed patterns of social actions and relations, which have acquired a taken-for-granted meaning, value, and significance that is not subject to individual cognitive considerations (Powell & DiMaggio 1991). Jepperson (1991, p.143) further describes institution as “an organized, established, procedure”.

‘Organized’ evokes the idea of patterns or procedures that structure; whereas ‘established’ suggests persistence of such patterns over time. These provide rule-like basis for guiding individual action and giving a sense of identity, and can be transmitted through diverse carriers such as relational systems, routines, symbols and artefacts (Scott 1995). But rather than seeing institutions as a-contextual, institutions are meaningful in relation to particular contexts, and different institutions might exist in a given context (Jepperson 1991). Furthermore, institutions are effective across levels from the individual, organizational to societal and world systems, and can therefore be said to be ‘nested’ from the micro-practice level to “supraorganizational patterns” (Friedland & Alford 1991; Scott 1995). Nested institutions might be consistent with each other or contradictory; organizations comprise different and often inconsistent institutional influences that exist separately or in relationship to underpin varied patterns of activity (Kraatz & Block 2008; Friedland & Alford 1991; Meyer & Rowan 1977).

Institutions have typically been considered relative to the situated agent, organization or entire organizational field, that is, as some exogenous force that acts across these levels (DiMaggio & Powell 1983). In this view, agents or organizations are passive recipients of the taken for granted influences of institutions (Oliver 1991; Scott 2008). Such emphasis has tended to explain consistency and stability as largely influenced externally. One branch of this view has sought to explain the persistence of institutions in the face of pressures for change (Zucker 1977). A related branch, exploring institutional isomorphism—how organizations with similar pressures change to resemble each other over time—has been

important in contemporary institutional research; with coercive, normative and mimetic processes being identified as mechanisms (Powell & DiMaggio 1991; DiMaggio & Powell 1983).

Hasselbladh and Kallinikos (Hasselbladh & Kallinikos 2000) have critiqued such diffusion and isomorphism approaches in organization studies for not providing sufficient accounts of the ways situated organizing links with wider instrumental beliefs and practices. Neo-institutionalism is suggested to bypass a central issue of how rationalization is socially constructed and becomes embedded; that is, they do not address the social and cognitive means and procedures underlying beliefs and rationalized schemes of action (Hasselbladh & Kallinikos 2000). Institutionalization, however, does not end with diffusion and isomorphism but involves the creation of actorhood and constitution of action through discursive and codifying means that are rendered durable through socio-cognitive elaboration (Hasselbladh & Kallinikos 2000).

Notwithstanding, approaches of institutional isomorphism have been variously applied in institutionalist research that have sought to explain the spread or responses to institutional influences. In the IS and related literature examples related to IT phenomena abound (Kim et al. 2009; Nurdin et al. 2012; Krell et al. 2009; Boyer-Wright & Kottemann 2008). Given such focus on explaining consistency, institutional theories have been considered, if not criticized as being biased toward explaining stability rather than change (Scott 2008; Orlikowski & Barley 2001).

But research that adopts a structurational view suggests opportunities for institutional transformation through practice (Orlikowski 2007; Orlikowski 1996; Labatut et al. 2012). Technology, through its material enabling and constraining properties, has been suggested to provide occasion for change by effectively structuring (Orlikowski & Gash 1994; Orlikowski

1992) or by providing a “trigger” for restructuring an existing institutional order (Barley & Tolbert 1997; Barley 1986).

Furthermore, technology has been suggested to have regulative properties within formal organizations, not unlike social structures and culture (Kallinikos & Hasselbladh 2009). Technological artefacts or systems are said to epitomize operational couplings that extend beyond the human-technology interface. Such couplings enable control and reproduction of social relations by having multiple, back-staged, and unobtrusive links that evade user interpretation. Technologies by structuring social relationships, might complement or compete with institutional modes of governance (Kallinikos et al. 2013).

Institutional theories

The institutional understanding employed in this study draws from what has been termed the ‘new institutionalism’ which has sought to explore sociological foundations of institutions, their interactions and social effects (DiMaggio & Powell 1983; Powell & DiMaggio 1991; Scott 2008). Early contributions of new institutionalism (Zucker 1977; Meyer & Rowan 1977), drew upon work on the social construction of reality, where institution was conceptualized as “a reciprocal typification of habitualized action by types of actors” (Berger & Luckmann 1967, p.54). By this conceptualization, institutions were seen as “socially constructed templates for action, generated and maintained through ongoing interactions” (Barley & Tolbert 1997, p.94).

New institutionalism stands in contrast to ‘old institutionalism’, a precursor approach most common in political science, which concerned itself primarily with studying formal institutions and their legal and administrative arrangements in government, politics and public sector settings (Rhodes 1995; Hirsch 1997). It might be distinguished from the old institutionalism by its rejection of rational actor models of classical economics in place of cognitive and cultural explanations (Powell & DiMaggio 1991; Scott 1995). It also

emphasises cumulative explanation and theory building rather than mere description and evaluation (Rhodes 1995; Hirsch 1997). New institutional theory generally rejects functionalist and rational actor understandings of organizational phenomena based on a view that individuals are not atomistic with spontaneous preferences but act based on their being socially and historically embedded and influenced (Barley & Tolbert 1997; Scott 2008; Powell & DiMaggio 1991). Rational choice arguments are deemed inadequate because numerous social institutions like money, marriage or bureaucracy are persistent and reproduce themselves through guided actions of individuals (Jepperson 1991).

‘Institutional theory’ therefore is not a unitary theory but rather offers a set of perspectives unified in seeking to address themes of stability and change across diverse social settings and in various disciplines. New institutionalism, for example, has been employed in disciplines and fields within the social sciences from political science and economics to sociology and organizational studies (Powell & DiMaggio 1991; Scott 2008). Scott (2008) identifies three distinctive “pillars” or strands of new institutionalism that address regulative, normative and cognitive aspects of institutions. These aspects of institutionalism relate to whether actors *have to* change (regulative) due to rules or policies, *ought to* change (normative) due to internalized norms and expectations, or *want to* change (cognitive) because of personal values, rationales and calculations (Palthe 2014).

Formal rules that exert coercive influence in social and economic systems are captured under the regulative pillar, e.g. organizational and economic research that looks at government regulations, rules, policies and their implications for organization (North 1990; Williamson 1975). Such theorizations view organizational change as underpinned by market forces, and organizational rules, policies and regulations that have coercive sanctions attached (Bertot et al. 2012; Daeho 2011; Krell et al. 2009).

Normative pillar of new institutional theory emphasizes norms as a foundation for social roles and behaviour (March & Olsen 1989; March & Olsen 1984). Such theorizations highlight the importance of social obligations that often manifest through informal relations rather than formal ones (Martinez-Moyano & Gil-Garcia 2004; Hill 1974). They are also likely to draw from organizational contexts for normative influences, rather than broader social and cultural drivers of organizational change (Palthe 2014).

The cognitive pillar focuses on individual and collective rationalities through symbolic schemas and social constructions of meaning and is common in sociological approaches of organizational research (DiMaggio & Powell 1983; Meyer & Rowan 1977). It is influenced by structurational ideas from sociology (Berger & Luckmann 1967; Giddens 1984; Bourdieu 1977) by privileging the “centrality of cognitive elements of institutions: the rules that constitute the nature of reality and the frames through which meaning is made” (Scott 2008, p.40).

The cognitive pillar offers advantages to the arguments of this thesis, such as being relevant for explaining change through individual level rationalities or logics, and is hence adopted as our approach. Unlike the other approaches that assume individual values, preferences, goals and interests, the cognitive pillar roots these in the cultural, historical and social context that shapes experience. Powell and DiMaggio (1991) suggest that macro-level phenomena can find roots in micro-level actions.

For this reason, a wide variety of idiosyncratic situated practices can be studied with recourse to their underlying institutional influences (Powell & DiMaggio 1991). It offers entry into understanding conflicting organizational arrangements, practices and outcomes by investigating how actors make sense of institutional scripts and enact them to guide their work (Jepperson 1991).

Institutionalized practice

Institutionalized practices have been defined as ‘stable, repetitive and enduring activities’ that are ‘infused with value beyond the technical requirements of the task at hand’ (Oliver 1992, p.563; Selznick 1957, p.17). They have also been described as “‘programmed actions” (Berger & Luckman, p.75), where such “program” for action is acquired historically and reproduced through repetition (as opposed to, for example, being norm driven). Their routinized aspects are “scripted”, meaning they are carried out through “observable, recurrent activities and patterns of interaction characteristic of a given setting” (Barley & Tolbert 1997). The scripts are external to an actor’s consciousness (Jepperson 1991, p.143), and are the institutional carriers that shape and are shaped by action.

Such interaction between action and institutional scripts are therefore structural and viewed as constitutive of social structure (Giddens 1984). Due to these two salient aspects of institutionalized practices—their routinized nature and ‘external’ influence—they endure and tend to be resistant to change. This point is critical for understanding the challenges of transforming practices in the context of an institutionally plural organizational domain such as the public sector in developing countries.

The challenge is not limited to changing the structure of everyday tasks, or ‘how things are done’ but goes deeper to the underlying drivers of persistence that resist efforts at change. We suggest that to understand how IT is implicated in transforming institutionalized work practices within a developing country public administration requires a long-term perspective given that institutional change takes time.

Through such perspective, the forces of history, tradition and habit that enable value congruence among organizational actors and causes re-enacted activities to acquire rule-like status are privileged. Such factors have been identified as rendering institutionalized practices

resistant to change (Oliver 1992; Berger & Luckmann 1967; Tolbert & Zucker 1983) and therefore problematic from the point of view of IT interventions.

Furthermore, institutional and long-term lenses expose important questions. For example, does IT enable deinstitutionalization of old work practices or institutionalization of new ones (Oliver 1992; Barley & Tolbert 1997; Avgerou 2000a)? Such questions are broadly relevant in 'non-traditional' contexts of IS (i.e., outside business settings of the 'developed' world) where diverse institutional forces and entrenched organizational peculiarities attend IT use and often frustrate intended technical-rational outcomes (Avgerou 2002).

Institutional logics perspective

Institutional logics has been defined as “a set of material practices and symbolic constructions which constitutes its organizing principles and which is available to organizations and individuals to elaborate” (Friedland & Alford 1991). Thornton and Ocasio (1999, p.804) similarly defined institutional logics as “socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality.”

Through the notion of “embedded agency” (Thornton & Ocasio 2008), institutional logics stresses that humans are not passive recipients and performers of taken-for-granted institutional scripts but act rationally with their rationality embedded in an institutional context. Humans therefore navigate institutional structures in accordance with cognitive logics. The construct therefore, advances upon, and is distinguishable from new institutionalist accounts that assume human actions are not guided by cognitive rationality but are historically and contextually embedded within cultural, social and political structures (Powell & DiMaggio 1991).

Friedland and Alford (Friedland & Alford 1991) in relating society, organizations and individuals theoretically, considered institutions as patterns of activity beyond the organizational level that are rooted in symbolism and material practices. Such symbols and practices provide resources for individuals, groups, or organizations to draw upon, elaborate or manipulate to shape their actions and give their experiences meaning; and in the process, reproduce such institutions. Institutional logics are thus the organizing principles that underpin micro practices, consistent with a given institution (Friedland and Alford 1991). Aside providing organizing principles, institutional logics also give motive and sense of self to social actors who in turn reproduce it through their action (Friedland & Alford 1991).

The institutional logics perspective attempts to remedy perceived deficiencies of new institutionalist ideas by integrating several of its elements into a coherent and versatile perspective that might enable analysis of both stability and change. For example, it bridges macro level forces (the institutional element) (Powell & DiMaggio 1991; DiMaggio & Powell 1983) with micro level cognitive considerations of individuals (the logics element) (Zucker 1977) thereby overcoming narrowly situated rational choice assumptions of action, as well as overly broad structural explanations (Thornton & Ocasio 2008, p.101).

By conceiving of society as an interinstitutional system—that is, as comprising multiple institutional orders—institutional logics suggests that action is motivated by multiple and contingent influences and principles. Institutional orders—the market, the corporation, profession, state, family, religion, and the community (Thornton et al. 2012a; Friedland & Alford 1991)—define societal level domains of action and each constituent institutional has a core logic. Hence, rather than a rationality-irrationality binary assumed by rational choice assumptions, individual action is underpinned by multiple and shifting logics consistent with given domains of action.

Not only does the institutional logics perspective theorize societal level influences but it also helps explain diverse interactions and outcomes within an ‘institutionally plural’ context by recognizing that multiple and often incompatible institutions exist at the organizational, field, and societal levels and interact in complex ways, in combinations (hybrids) or separately. By such multiple-level view, logics manifest and interact across layers from the situated organizational level to the field level and broader societal levels. As such institutional logics could be seen as ideal types that are collectively reflective of the typology of the institutional order, and can be disaggregated into constituent logics based on the level of analysis and logic under consideration.

As ideal type constructs, logics have been variously conceptualized. Thornton et al (2012b) for example, specify them as “elemental categories”—the sources of norms, legitimacy, authority, identity, attention etc. Berente and Yoo (2012) on the other hand, emphasize their “dimensions” –aspects of organizing principles, assumptions of means and ends, identities and domains of effect. Such specifications depend on the focus of study as well as the level of analytical interest. Regardless of their specification, they indicate the elements that connect micro level motivations and cognitive drivers to their broader institutional underpinnings.

Finally, by connecting micro level aspects (logics) to their broad institutional underpinnings, the institutional logics perspective, in keeping with new institutionalism ideas, admits the structural basis of institutions and institutional practices with regard to their recursive interaction (Giddens 1984; Powell & DiMaggio 1991; Thornton & Ocasio 2008). Such dynamic interactions and transformations of institutional logics are the basis for transformations in IT-enabled practices and organizational transformations (Berente & Yoo 2012; Sahay et al. 2010; Purdy & Gray 2009).

Rationalization through an institutional logics perspective

The thrust of the thesis is that the institutional logics perspective is useful for explaining processes of IT-enabled rationalization by tracing effects of the broader historically-formed multi-institutional context on situated IT-related practices.

Having outlined the new institutional turn to explaining rationalization as the outcome of diffusion and isomorphism mechanisms operating at the level of organizational fields (DiMaggio & Powell 1983; Meyer & Scott 1992), the institutional logics perspective is presented to advance upon such institutionalist thinking by connecting the multiple macro institutions at the organizational level and beyond to cognitive foundations at the micro level that drive action. In this way, the institutional logics perspective is suggested as a way to overcome an important piece of Hasselbladh and Kallinikos' (2000) critique by bridging the macro and micro levels of change; as well as reconciling structural and constructivist considerations (Thornton et al. 2012b; Thornton & Ocasio 2008; Friedland & Alford 1991).

By combining ideational, symbolic, discursive and material elements, the institutional logics perspective is suggested to be compatible with considerations of historical interactions, multiple institutional structures, values and rationalities discernible through discourses, as well as operations, techniques and artefacts of embeddedness such as technologies, operating procedures, practices etc. (These aspects are later touched upon through our empirical studies).

The thesis focuses on rationalization processes and their effects at the situated level that occurs through the transformation of traditional institutionalized practices into rationalized ones. The situated level is understood as encompassing everyday sociotechnical practices carried out by actors in an institutionally plural public administration environment. Through the institutional logics perspective, we link such situated accounts with broader context of multiple, historically-formed institutions and structures that provide guiding

principles, causal means-ends assumptions, and sense of identity to actors in the performance of situated practices (Thornton et al. 2012b; Thornton & Ocasio 2008; Friedland & Alford 1991).

Institutional logics capture the idealtypic patterns that are stabilized through replicability, durability, communicability (Hasselbladh & Kallinikos 2000) by inscriptions of techniques, artefacts and procedures of control such as operating procedures, documentations, technologies and organizational arrangements; and can then be de-scripted and elaborated upon in the performance of everyday practices. As such, they are constitutive of and might be constituted through the sociotechnical fabric of organization. Given their structural properties (Thornton et al. 2012b; Thornton & Ocasio 2008; Friedland & Alford 1991; Giddens 1984), they might be effectively studied by studying organizational practices.

In theorizing rationalization through institutional logics, we attempt to account for the broader, multiple, historically-formed structural drivers of change as well as uncover “the cognitive means and procedures and the social forms or relationships through which ideals (institutions and structures) are developed and stabilized” (Hasselbladh & Kallinikos 2000, p.707); and also elaborated upon in situated practices within organizations.

Empirically, such study might involve tracing the legible encoding of organization and organizing as expressed through material-discursive means involving discourses (text, meanings etc.) and their techniques of control (artefacts, procedures, policy arrangements, measurement targets etc.) (Foucault 1980; Foucault 1982; Hasselbladh & Kallinikos 2000). Furthermore, the unfolding of rationalization over time might be investigated through process studies that emphasize interactions of institutional logics, organizational actions, practices and their contexts over time. Indeed, process studies have been noted to be particularly good for investigating institutional logics and their related unfolding processes (Thornton & Ocasio 2008).

Conclusion

This chapter has laid down the theoretical foundations for our choice of institutional theory, specifically the institutional logics perspective, as an approach to developing an explanation for how IT might enable rationalization in the public administration of developing countries. It has been shown that while institutional theory helps explain persistence of practices and organizations over time, there are opportunities for understanding the mechanics of transformation.

This idea is developed further through the institutional logics perspective which allows explanation of structural change under multiple contradicting institutional logics characteristic of ‘institutionally plural’ organizations. These ideas are combined in chapter 5.4 on IT in developing countries to outline a sociotechnical perspective on how IT might enable transformation of institutionalized practices. The next chapter presents a review of the extant literature on information systems in developing countries, with an emphasis on IT and organizational change in the public administration and development contexts.

Chapter 5: Information Systems in Developing Countries

This chapter broadly outlines ways in which IT-enabled change has been explained in relevant literature of IS in developing countries. This establishes a basis for analysing situated IT-enabled practices in public administration of developing countries and their transformation through an institutionalist and context-sensitive perspective, with specific attention to the implications of IT for transforming dysfunctional ‘institutionalized practices’, the class of practices that form the empirical object of study.

These theoretical strands further underpin an understanding of the main theoretical advancement of the thesis; the application of the institutional logics perspective as a structuralist construct that can help explain IT-enabled practice phenomena at both the micro and macro levels by connecting the logics of situated actors with broader, multiple historically-formed institutions within which they are embedded.

The rest of the chapter succinctly reviews explanations of IT-enabled action from the IS, ISDC and IT in developing country literature, explanations of the significance of context in ISDC, and understandings of IT phenomena and IT-enabled change in the public administration of developing countries. The chapter further discusses alternative rationalities of IT in developing countries then concludes by synthesizing the main points raised.

IT effects in organizational and social settings

It is well established in information systems research that the implication of IT in use in a given social setting differs from its capabilities, affordances, or outcomes in other social settings. At the organizational level, information systems researchers are sensitized about the tension between the situated nature of IT-enabled change and planned, technical-rational, or theoretical positions on the ways IT is implicated or should be implicated in organizational change (Suchman 1985). IT-enabled organizational change (IS innovation) (Swanson 1994; Allen 1996) is a process that takes place within the formative conditions of a particular social

and organizational context (Ciborra & Lanzara 1994; Suchman 1985; Avgerou 2002; Avgerou & Madon 2004; Avgerou 2001). Such formative social and organizational conditions are said to influence and be influenced by IT, to the extent that outcomes are often contingent, and at best, only partially determined (Jones & Karsten 2008; Jones & Karsten 2003; Barley & Tolbert 1997; Orlikowski & Baroudi 1991).

With regard to IT in a developing country context, research has amassed empirical case studies that confirm the situated manner in which information systems are shaped within organizations and communities attempting to better their socioeconomic conditions (IFIP 9.4 conference proceedings; Avgerou & Walsham, 2000; Krishna & Walsham, 2005; Madon, 1993). While such research have extensively documented the situated dynamics of IT interventions in developing country social and organizational settings, less progress has been made in understanding the influence of broader institutional context—that is, at the national and international levels—and their implications for situated change (Avgerou & Walsham 2000; Avgerou 2001). This limitation reflects a general challenge in ISDC research in producing middle range theory that links the micro situated context of IT use to its macro context (Hayes & Westrup 2012).

As such, ISDC and related research domains like ICT4D have focused on situated technology use but the complex interactions with existing institutional arrangements and the consequent implication for socioeconomic development remains under-theorized (Avgerou 2001). In her review of work on IS innovation in developing countries, Avgerou (2008) notes that,

The distinctiveness of the ISDC research lies in its attention to the developing country context of IS innovation and problematization of the developmental role of IS innovation. These research concerns are of course interrelated [...] Nevertheless, this analytical distinction suggests two areas where the ISDC research has the potential to make significant contributions: (a) on understanding how historically constructed social conditions (with cultural, economic, political and cognitive dimensions) are implicated in the IS innovation

process and (b) on understanding how IS innovation is implicated in interventions for changing people's life conditions through different development ideologies and policies.

Broader context, is therefore considered inextricably linked to both IT enabled change and its developmental implications—whether one considers development as outcome or part of the context of IT adoption and consequent IS innovation in developing countries (Avgerou 2001; Avgerou 2002; Sahay & Avgerou 2002; Walsham et al. 2007).

In their forward to the MIS Quarterly special issue on ISDC, Walsham and colleagues (Walsham et al. 2007) similarly argue for a move beyond technological change perspectives to studying the shifts in social, political and cultural contexts and the myriad actors and institutions involved in development efforts. Sensitized by these positions, this thesis does not focus on theorizing IT *per se*, nor on situated IT practices *per se*, but on IT-related practices in relation to a broader context that conditions sociotechnical change.

Context of IT-enabled change in development

Studies of IT in developing countries often take one of two broad approaches to the treatment of IT in relation to context (Avgerou & Madon 2004). In the first—the universalistic approach—technology is seen as having properties that are largely transferable across contexts. As such, the value of technology, information and related processes are considered separately from the social context in which actors who implement and use the technology are embedded. IT is therefore studied mainly for its affordances and capabilities, with the resultant implication that organizations must follow particular structures that can harness the benefits of IT (Hirschheim et al. 1996; Fulk & DeSanctis 1999). Any behaviour deemed inconsistent with such optimization logic is considered problematic, an anomaly or irrational (Avgerou 2002; Avgerou 2000b).

Situated approaches, by contrast, consider the circumstances of IT-enabled organizational change with a view to uncover local meanings, processes and interests that

enable or disable IT-enabled change. The notion of embeddedness captures such belief that actors operate from within social and organizational settings whose effects should not be isolated. IT-enabled change is viewed as a 'here and now' accomplishment that requires actors acting upon the values, meanings and mental frames acquired from the social and organizational setting. Hence, rather than acting according to some universal logic, actors are understood to act appropriately to the context, for example, by negotiating through and with IT, tinkering with IT or improvising in their day to day IT-enabled tasks.

Despite the rich contributions of the situated approach to IS studies, many such studies tend to limit their scope to the organizational, group or immediate milieu of IT-enabled change. The broader social context, to the extent that it matters for the study, is assumed or implied, rather than explicitly problematized. Hence, the institutional structures within which the *milieu* or action is embedded are often ignored.

This approach of 'narrowly situated accounts' (Avgerou & Madon 2004, p.167) often ignores social structures and history of a case's context and assumes rather than problematize the broader context beyond actors' work. But if such assumptions are not known, due to, perhaps, unfamiliarity on the part of readers, the process of IT-enabled change depicted might appear unsubstantiated, problematic or even paradoxical.

By contrast, three studies in the ISDC domain illustrate how broader context might underpin situated explanation of IT-enabled change. The first two studies illustrate the approach of framing IT-enabled change and its context by tracing through the network of actors and relations that enable and sustain it (Avgerou & Madon 2004). This approach escapes the need by contextualism approaches to identify *a priori* the relevant context of IT-enabled change in relation to its content (Pettigrew 1987; Pettigrew 1985; Avgerou 2001). Rather than assuming the layered view of context, such approach takes a flat relational ontology as a starting point (Latour 1991; Latour 2005).

In the first set of studies Sahay and colleagues investigate the implementation and use of geographical information systems (GIS) in district level administration in India (Walsham & Sahay 1999; Barrett et al. 2001; Sahay 1997). These studies go beyond events at the district administration to broadly examine how the GIS system came to be implemented, appropriated and socially shaped within the peculiar social and historical context of India. Walsham and Sahay (1999) use actor-network analysis to reveal that despite official's keenness on the GIS project, the creation and maintenance of a stable set of actors with aligned interests in support of the GIS, had not materialized in any of the districts due to various contextual factors.

Sayed and Westrup (2003), also drawing on actor-network theory, use the case of Oracle's implementation of an ERP system in Egypt to explore processes of globalization that are linked to IT. Their article discusses how ITs are linked to socioeconomic development by international organizations like the World Bank, and how various actors from private and public sectors interact at national and multinational levels to form new and complex networks sustained through IT. IT is shown to link such heterogeneous networks of human and non-human actors to Egypt's development plans.

Avgerou (2002) studied IS innovation attempts in a Greek social security administration within a broader context of the modern Greek state. Her longitudinal study integrates historical and political economic dimensions to justify why certain problematic behaviour, commonly attributed to lack of resources, irrationality or incompetence, might be alternatively understood.

Avgerou's study illustrates the importance of integrating historical, political and economic elements into analysis of IT-enabled change in developing countries to produce richer, more contextually-sensitized accounts. Altogether, these examples show the relevance of being sensitized to broader context in situated studies of IT in developing countries.

Problematizing context of IT in development

Hayes and Westrup (2012, p.23) critique the implication of context as a “catch all” to refer to various constitutive elements in ICT for development (ICT4D), implementation and use. They note the growing sensitization within ICT4D of the need to put studies of ICT ‘in context’ from the organizational to national level and beyond; consistent with Pettigrew’s layered notion of contextualism (Pettigrew 1985; Pettigrew 1987; Avgerou 2001; Avgerou 2008).

In contrast to notions of context as comprising of stratified ‘layers’ that are objectively something ‘out there’, Hayes and Westrup (2012) develop a notion of context as a dynamic and shifting construction from processes of development and its interpretation in relation to ICT. They associate the former layers notion with a ‘distal’ view and the later dynamic notion with a ‘proximal’ view (Cooper & Law 1995; Hayes & Westrup 2012).

Rather than the distal view which focuses on adequacy of representing context and its constitutive implication in the content of ICT-enabled change, Hayes and Westrup (2012) suggest the proximal view to focus on processes emerging from relations of ‘macro’ and ‘micro’ actors, multiple accounts of different actors, and the ways they perform partial and provisional ‘contextualizing moves’ to connect or disconnect different elements that make up content of ICT innovation relative to some context.

But this is not to suggest the privileging of one view over the other. Rather, they acknowledge exploration of relationship between the two approaches because “it is fruitful to use both by focusing on how distal categories are applied, reinterpreted or produced in proximal accounts and how distal categories are used and engaged in design, policy, and development” (Hayes & Westrup 2012, p.28).

Explaining IT phenomena

Institutional approaches

Institutional theory has gained currency in IS for its ability to elucidate organizational stability or complex change involving IT. It is seen as a useful approach to understanding the appropriation and embedding of IT without succumbing to deterministic claims (Robey & Boudreau 1999; Orlikowski & Barley 2001; King et al. 1994; Barley 1986). The institutional perspective goes beyond techno-rational explanations to consider normative, social and political factors beyond the immediate situated context of IT use (Orlikowski & Barley 2001).

Most institutionalist studies in IS adopt an organisational unit of analysis as opposed to a multi-level approach which encompasses societal and individual levels (Currie 2009). Drawing from sociological institutional ideas (Powell & DiMaggio 1991; Greenwood et al. 2008), such organizational institutionalism (Scott 2008) opposes a strictly 'rational', ahistorical and a-contextual view of organizational phenomena in favour of a culturally influenced, historically shaped, contextually embedded and politically mediated perspective.

Concerning IT phenomena, King et al (1994, p.141) argue that “well-established but narrowly constructed explanations of social order and change—rational-actor individualism, the theory of the firm, bureaucratic theory, structural-functionalist descriptions of organizations, and so forth—simply do not explain, much less predict, a considerable amount of the order and change we observe [whereas] an institutional perspective links these explanations, and provides a broader and more robust scope for analysis.”

At least four distinct approaches of analytically integrating IT and institutions can be identified in the broad IS literature. In the first approach common in IT development, implementation, adoption, use, diffusion and innovation studies, IT, it's related practices or processes are recipients and objects of broader institutional forces (Yoo et al. 2005; Shih et

al. 2008; Gibbs et al. 2003; McGrath & Maiye 2010). Such studies emphasize coercive, normative, mimetic or other specific effects of institutional forces on processes of IS innovation and IT phenomena at various levels of analysis, particularly the organizational, field and national levels. The strength of this approach lies in its ability to highlight broader institutional dynamics that frame and influence IT and its related processes. Nonetheless, this approach generally does not address how such institutional elements become constitutive of IT or are transformed in the process.

In the second approach, IT and its use are involved in complex processes of institutionalization that involve recursive and ongoing interactions with organizational structures, processes, practices, routines etc. (Luna-Reyes & Gil-Garcia 2013; Madon et al. 2009; Baptista 2009). Such ongoing processes are often linked to situated actions and practices, and make varying degrees of structural assumption between institutions and IT (Barley & Tolbert 1997). For example, Baptista (2009) explains the process of institutionalization of IT in organizations as interplay of micro-level processes that result in embedding of IT in formal functioning, habits and routines of actors. A strength of this approach is the focus on organizational and micro-level processes by which IT becomes embedded in organizing and organizations. It nonetheless, often takes for its starting point IT as a given, without attempts at theorizing its deeper constitutive material interlocking with institutions.

In the third view, IT embodies or ‘carries’ various institutions (Heeks 2005; Gagliardone 2014; Czarniawska 2009; Gosain 2004; Scott 2008). “Technology”, suggests Czarniawska (2008), “makes organizing durable, thus contributing to the institutional stability of one of its products—the modern organization”. In this view, institutions are said to be inscribed or embodied in IT via processes involving various networks of actors who translate their interests into and through IT. IT allows social and institutional forces to be

made 'durable' through its material properties and functionalities that can traverse time and space (Callon 1986; Akrich 1992). This view focuses on institutional endurance and organizational transmission at the expense of situated processes, actions and practices of actors that enable change.

In the fourth approach, IT by its material and functional couplings exert regulatory effects that are similar to structures like institutions (Kallinikos et al. 2013; Kallinikos & Hasselbladh 2009; Kallinikos 2006). By its design, IT is said to have operational couplings that extend beyond user interpretations at the human-technology interface to effect control and configure social relations. Stabilized IT artefacts and systems therefore impose a parallel regulatory regime in its own right through its form, functions and materiality. Such approach emphasises the enduring effects of IT *qua* IT, beyond situated practices it is embedded in and its interpretation of users. Nonetheless, it focuses on technology as stabilized; at the expense of any structural implications in situated practice.

In the ISDC and ICT4D domains, institutional theory and related accounts have enabled rich understanding of IT dynamics in development and social change broadly (Miscione 2007; Silva & Figueroa 2002; Currie & Swanson 2009; Avgerou 2003). Such research highlights macro forces that influence IT-enabled change in developing countries and processes through which local adaptation and appropriation of IT occurs. Accounting for broad social, economic and political context of IT-enabled change remains salient in ISDC research, where problems are suggested to be linked to, or exacerbated by peculiar aspects of institutional context of developing countries (Heeks 2002c; Sahay & Avgerou 2002; Avgerou 2001).

Several ISDC scholars have examined implications of diverse institutional contexts beyond the organization (Avgerou & Walsham 2000; Madon & Sahay 2000; Madon 1993; Walsham et al. 2007), in contrast to IS studies that analyse IT-enabled change through

universalistic and narrowly situated perspectives (Avgerou & Madon 2004) and within an organizational ‘container’(Winter et al. 2014). In particular, institutions have been shown to be relevant in understanding IT-enabled processes and outcomes in developing countries (McGrath & Maiye 2010; Avgerou 2003; Avgerou et al. 2009; Njihia & Merali 2013). Aside the above studies that illustrate how institutions shape IT in developing countries, another approach has been the consideration of IT as an institution in its own right (Avgerou 2000a), a perspective that allows explanations of how it might influence sweeping outcomes beyond its situated materiality.

A key question of ISDC studies on IT and institutional transformation has been whether and how IT can enable deinstitutionalization of anti-developmental practices or enable institutionalization of developmental ones. While some scholars have argued that IT simply “amplifies” underlying institutional structures and human intent rather than transforming them (Toyama 2011a; Toyama 2015; Toyama 2011b), others have suggested potential transformation of practices through such means as deinstitutionalization (Sahay et al. 2010), embeddedness (Avgerou et al. 2011; Miscione 2007) and appropriation (Brand & Schwittay 2006; Madon 1993; Thapa et al. 2012).

Despite the enriching institutional emphasis in ISDC research, theoretical challenges exist in the literature. One such challenge is how to reconcile accounts of situated actors and IT enabled work practices at the micro level with institutional factors at the macro level while escaping the determinism trap. For example, purely institutional accounts of IT enabled organizational change might be accused of downplaying cognitive and behavioural capacity of actors for improvisation and situated action; whereas, purely situated actor-based accounts might be accused of ignoring the macro institutional fields within which actors are embedded, and which they draw upon for action.

A second related challenge is to elaborate how IT is implicated in restructuring institutionalized practices, against a backdrop of admonition by institutional scholars that “institutionalized practices are rarely ever completely extinguished. The practice continues albeit weaker in scope (extent of diffusion) or potency” (2008, p.327).

Structurational approaches

To overcome a ‘narrowly situated’ view of IT (Avgerou & Madon 2004, p.167) or an overbroad institutionalist view, IT phenomena in developing countries require special research attention if the processes through which they unfold and the outcomes they produce differ from those expected according to existing understanding of IS innovation and its organizational or socio-economic consequences.

A distinctive feature of studies that attempt to go beyond ‘narrow situated’ accounts is the tracing of at least part of the explanation of IS phenomena in a country’s broader social context (Walsham & Sahay 1999; Barrett et al. 2001; Sahay 1997). Such analysis evokes the structurational view (Berger & Luckmann 1967; Giddens 1984; Bourdieu 1977) that is inherent in contemporary (new) institutionalist ideas (Powell & DiMaggio 1991; Greenwood et al. 2008) and provides a basis for analysing action as driven by the mutual shaping of agents and social structures.

The search for explanation of seemingly idiosyncratic action and outcomes that appear paradoxical in developing countries focuses on relationships between observed actions in an organizational setting with various broader conditions of the country’s historically formed circumstances. Such contextual research extends the scope of situated analyses of the here-and-now accomplishment of IT-enabled change to identify the social origin of the values, meanings and mental frames that actors act upon. Several general theories on processes of change resulting from the relationship of human agency and social structures

have been adopted by IS researchers to identify the influence of a country's social context on IS innovation in an organizational setting.

Such structural approaches include Giddens' structuration (Giddens 1984; Jones & Karsten 2008), critical realism (Mutch 2010; Mingers et al. 2013; Njihia & Merali 2013; Volkoff et al. 2007), Bourdieu's theory of practice (Bourdieu 1977; Bourdieu & Wacquant 1992; Levina & Vaast 2005; Leidner & Kayworth 2006). While these are useful for understanding recursive interactions of structures and IT-enabled practices, such approaches often neglect other aspects of IT phenomena that are not readily captured in the immediate material context of organizations, such as long-term change, and the multiplicity of interacting institutional forces at work within organizations.

While extant IS explanations of IT-enabled practice change such as appropriation (DeSanctis & Poole 1994; Barley & Tolbert 1997) and enactment (Orlikowski 2007; Fountain 2001) do not explicitly preclude the influence of institutions, they remain limited by not accommodating broader underlying dynamics such as institutions; and by their view of episodic, rather than long-term unfolding change. With respect to the explanatory approach of such accounts they remain largely variance accounts that seek to explain observed differences, indeterminacy or non-linearity in IT processes and outcomes—the 'why'—rather than process accounts that explain long-term transformations—the 'how' (Sabherwal & Robey 1995; Volkoff et al. 2007; Lyytinen & Newman 2008).

Sociotechnical or socio-theoretical approaches in IS like structuration (Orlikowski & Robey 1991; DeSanctis & Poole 1994) or social shaping of technologies (Walsham & Sahay 1999; Jackson et al. 2001) that are often employed to account for IT change do not explicate broader institutional or long-term dynamics that are also constitutive of such change. This should not be construed as a critique as the main concern of such studies are the recursive

interactions between technology and social structures or the stabilization and change of social structures through technologies.

Tasks studied by situated approaches in IS, in that sense, might be distinguished from institutionalized work practices, which we define as ‘stable, repetitive and enduring activities’ that are ‘infused with value beyond the technical requirements of the task at hand’ (Oliver 1992, p.563; Selznick 1957, p.17). We suggest that to understand how IT is implicated in transforming such institutionalized work practices requires, in addition to structural considerations, a long-term perspective beyond delimited, episodic view offered by situated studies.

Alternatively, applying an institutionalist perspective such as institutional logics, as well as a long-term processual view, brings important questions to the fore. For example, does IT enable deinstitutionalization of dysfunctional work practices or institutionalization of new ones? Can institutionalized work practices be ‘eliminated’ and ‘replaced’ through IT? How might we explain stability and change in institutionalized practices when IT is adopted?

Such questions are pertinent in non-traditional contexts of IT adoption (i.e., outside business settings of the ‘developed’ world) where diverse institutional forces and entrenched organizational patterns attend IT use and often frustrate intended techno-rational outcomes (Avgerou 2002). In such contexts, standard IS sociotechnical approaches—by failing to open up the black box of long term institutional dynamics underlying work practices—do not sufficiently capture ongoing IT-enabled changes, and problematically characterizes outcomes in terms of the ‘success versus failure’ duality common in IS implementation studies.

The result is that in domains such as Information Systems in Developing Countries (ISDC), Information and Communication Technology for Development (ICT4D), and to some extent E-government, IS failure—often viewed from a sociotechnical perspective—is considered to be unusually high and IT adoptions rarely unproblematic.

In this thesis, we adopt an analytical perspective of change based on the institutional logics perspective (Thornton & Ocasio 2008; Thornton & Ocasio 2005; Thornton et al. 2012b; Friedland & Alford 1991). The main reason for the choice of this approach is that in addition to accommodating a structural view, it guides explanation of situated practice change by considering individual action under the influence of multiple and often incompatible, historically-formed social institutions.

IT-enabled change in the public administration of developing countries

Despite a wealth of knowledge in the Information Systems discipline about the implication of IT in organizational change, and specifically, in the public sector in developed countries, there is less clarity on the role of IT in enabling change within the public administration in a development context.

Part of the problem is a lack of empirical clarity on patterns of native public administration practices within developing countries (McCourt 2001a, p.224; Marsden 1991; Hyden 2010; Hyden 1983), hence an overreliance on Western public administration paradigms in making sense of administration in developing countries (even granted awareness that these conflict with cultural, organizational and institutional contexts into which IT is deployed).

Compared to studies in developed countries, fewer studies in the e-government canon specifically look at developing countries (Schuppan 2009, p.118). Even beyond the development dimension, few studies look theoretically at how IT enables public administration reform. These include Fountain (2001) that discusses enactment and how it leads to institutionalization of IT, Lanzara (2009) that develops a notion of socio-technical assemblages in the public sector. While these studies are influential in understanding how IT interacts with the social elements within public administrations generally, their relevance in the development context remains to be empirically evaluated.

Disappointing outcomes of IT-enabled change in public administrations of developing countries have been attributed to the top-down approach of IT interventions and related administration prescriptions like those of New Public Management (NPM) that often neglect to consider institutional constraints of the developing country setting (Claudio Ciborra 2005; Ciborra & Navarra 2005). Ciborra (2005) critiqued such centre-periphery push approach and suggested that the NPM idea of transforming citizens in developing countries into customers is problematic and the supposed link between governance and development spurious. IT is viewed by Ciborra (2005) as a 'tool' for more powerful states to govern weaker developing countries "at a distance" and thus, doomed to meet difficulties in new socio-economic contexts given the dynamism of technology.

Scholars have further pointed to technology or social contexts of use to make sense of the challenging state of IT in developing country organizations more broadly. Design of IT, for example, has been suggested to contradict 'actuality' of developing countries thereby creating a 'design-actuality gap' and a mismatch between the context of design and that of deployment (Heeks 2002c; Heeks 2005). Social accounts have pointed to micro level factors such as user resistance (Cavalheiro & Joia 2013), inconsistent rationalities (Avgerou 2000b; Avgerou 2002), conflicting multiple rationalities (Chilundo & Aanestad 2004), lack of skills and competence (Corea 2007; Zaied et al. 2007), organizational politics and vested interests (Peterson 1998); and group level factors such as culture (Zhao & Khan 2013; Hill et al. 1998) and institutions (McGrath & Maiye 2010).

Such research has explored core themes including contextual issues in the developing country milieu, reasons for success or failure of IT and the outcomes and processes of IT enabled change. Specific contextual issues identified as obstacles to successful IT-enabled change in the public sector include infrastructure, policy, human capital development, management and organization, collaboration, strategy and leadership (Ndou (Dardha) 2004;

Nkohkwo & Islam 2013). Schuppan (2009) further suggests that context readiness in terms of factors like literacy and rural-urban inequalities are significant for design, access and adoption of IT. Hence, ‘solutions’ that are transplanted into developing contexts without sensitivity, do anything but lead to reform. This point is echoed by research on the significance of context in IS research (Avgerou 2001).

The theme of IT failure in public administration reform falls within a broader theme of widespread IT failure in developing countries (Heeks 2002c; Walsham et al. 2007). Heeks (2003) reported that most IT implementations in the public sector in developing countries fail, with 35% being total failures (IT was not implemented or was implemented but immediately abandoned), and 50% partial failures (core objectives were not achieved or the outcomes undesirable). For Heeks (2002c) the challenge in developing countries is that there is a mismatch between the current and future systems, due to ‘gaps’ in the context and design such as hard-soft gaps (difference between the IT and social context), private-public gaps (difference between private and public sectors) and country-context gaps (gap between developed and developing contexts).

Ciborra (2005) critiques the approach of IS innovation in developing countries by arguing that the notion of IT ordering the relationships between the government and citizens, the state and market, and engendering accountability and transparency, is fraught with “hurdles, risks and inner contradictions” (p.261).

Among such contradictions, Peters (2010) has called attention to the conflict between local cultures and the Weberian model of bureaucracy, a conflict that Riggs (1964, p.201) refers to as “double talk” , or a mismatch between formalized and actual practice. Peters (2010, p.41) observes that “in developing countries decisions are subject to personal bargaining and negotiation [...] formal rules merely constitute a place to begin bargaining”. In addition, informal institutions such as neo-patrimonialism and patronage are dominant means

of public allocations rather than impartial bureaucratic administration (Bratton & Van de Walle 1997).

As far as the outcomes and processes of IT enabled public reform for development, there is little theoretical elaboration on the role of IT in development in general (Avgerou 2010). This is partly because of contestation on the nature and meaning of development. Ironically, rather than promoting development, IT has been suggested to potentially exacerbate issues of development concern such as inequality between the ‘haves’ who can access it and the ‘have nots’ (the so-called digital divide) as well as lead to unintended problems such as deskilling and unemployment (Harfouch 2010; Schmeida & McNeal 2013; Lal & Haleem 2009; Leitner & Kreuzeder 2005).

Alternative Rationalities

Rationality—reason as a means to improvement in the human condition—has been considered fundamental differentiator between ‘modern’ Western society and ‘traditional’ societies (Touraine 1995). As such, developing countries, viewed as progressing from traditional to modern society, are necessarily confronted with the imperatives of Western rationality. In the context of power relations between ‘developed’ and developing countries, such rationality cannot be said to be neutral since it originated within a particular cultural and historical *milieu* of the West and then universalized (Fischer-Tiné & Mann 2004).

Weber (1968) himself notes that rationality as a mode of organizing social life has limits since value and belief conflicts are hardly reconcilable by (substantive) rational means even if actors are formally rational. Bureaucracies and administrative systems, governed by formal rationality through expert knowledge, especially technical knowledge, depersonalizes and objectifies authority for efficient control over organizational processes. Formal rationality through technology therefore results in ‘technically rational machines’.

It has been suggested that rationalities, the provenance of such rationalities and their inherent clashes, hold analytical promise for understanding characteristic IT phenomena in developing countries. Avgerou (2000b) has pointed out that,

Many of the widely-known problems faced in the so-called developing countries are constituted within the techno-economic rationality of development which stemmed from the Western societies' experience of modernity. But while in the context of developing countries the techno-economic rationality of Western modernity is instrumental in defining a series of problems and determining their solutions, it is blatantly unsuccessful in streamlining people's behaviour to the achievement of such solutions. In the development literature, it has been argued that societies in developing countries may have better chances to improve their life conditions if they recognise the limitations of the validity of the techno-economic rationality and pursue alternative rationalities stemming from their systems of value.

Review of the relevant literature on IT in developing country administrations suggests emphasis on technical rationalities relative to business organizational imperatives and within a context of modernity and its concerns (Kumar et al. 1998; Yang & Madnick 1992). Such rationalized organizational imperatives include IS development (Klein & Hirschheim 1991; Livari & Hirscheim 1996; Hirschheim et al. 1996) and IS use (Lyytinen & Hirschheim 1988; Cecez-Kecmanovic et al. 2002).

Furthermore, studies generally evaluate the rationalities of IS but do not necessarily problematize clashes inherent in interacting or competing rationalities, their implications in practice and for IT phenomena, or their relevance outside business environments and across contexts beyond organizations in non-Western contexts.

The general meaning of rationality in organizational theory and social science cuts across two levels –the logical decision-making of individual actors in accordance with pre-determined goals, and the behaviour of organizations as collectives of individuals pursuing coordinated self-serving interests (March & Simon 1958; Simon 1947; Simon 1955). However, this view of rationality—what Elster (1983) calls a ‘thin’ view of rationality—

leaves a great deal of actions unexplained within the organizations literature, particularly those based on norms, beliefs, desires etc. that appear inconsistent from a purely logical perspective.

Elster (1983) suggests a 'broader' view of rationality for both the individual and collective levels that accounts for value choices. Avgerou (2002, p.73) notes that even when political action is acknowledged in organization studies and IS research, it is ultimately subsumed under the 'thin' view of technical rationality that assumes a self-interested individual within an efficiency-seeking organization.

Avgerou (2002) further identifies rationality, specifically 'multiple situated rationalities', as one basis for the diversity in impact and implementation of IS across various contexts. Although she establishes that IS innovation is a contingent practice depending on networked actors embedded in institutional contexts, she argues "rationality itself is a cognitive state derived from the history of social relations in the context of an organization" (p.72). But while the dominant rationality for IS has been the Weberian formal rational model reinforced by technical economic rationality, little work exists on alternative rationalities and their implications especially in developing country contexts (Avgerou, 2000).

Alternative rationalities of IT

Information systems are not neutral but have been shown to be shaped by specific rationalities (Avgerou 2000b; Avgerou & McGrath 2007). Avgerou (2002, chap.3) identifies rationality, specifically 'multiple situated rationalities', as one basis for the diversity in impact and implementation of IS across various contexts. Although she shows that IS innovation is a contingent practice depending on networked actors embedded in institutional contexts, she argues "rationality itself is a cognitive state derived from the history of social relations in the context of an organization" (p.72).

Considering the conflicting rationality problem described by Avgerou (2000b), what are the implications of the (dominant) “techno-economic rationality” and how might “alternative rationalities” in developing countries be uncovered?

To uncover such “alternative rationalities” suggested by Avgerou (2000b) might require alternative lenses given a somewhat technical-rational ‘orthodoxy’. Critical and post-colonial theories, with their post-modern outlook, offer such an approach.³ The power relations underlying knowledge/rationalities has been explored within the IS literature from an organizational standpoint, for example through the work of critical theorist, Michel Foucault (Avgerou & McGrath 2007). For example, drawing on Foucault’s (1980) notion of ‘regime of truth’ –the idea of legitimating knowledge in society’s institution through power— Avgerou & McGrath (2007) have shown that the rational techniques of IT-enabled practices and the power dynamics of an organization and its social context are closely intertwined, requiring each other to be sustained.

In Foucault’s (1980) theorization of regime of truth that the authors drew upon, knowledge and power are mutually constitutive. Knowledge and power are also recursive since knowledge is a product of social discourse that can influence exercise of power that in turn can change the knowledge domain until power relations eventually reconfigure.

In such recursive processes of forming regimes of truth, some ‘knowledges’ or rationalities – reasoned actions and their technical means – are rejected or discredited. Such ‘knowledges’ or rationalities are ‘subjugated knowledges’, which despite being rejected are not eliminated but manifest as resistances to the domination of the prevailing regime of truth. Thus, through such resistance, a dominant regime of truth can be usurped by a subjugated knowledge as more acceptance of the subjugated knowledge emerges. Foucault (1980)

³ Young (2003, p.2) notes that postcolonial theory is not a coherent theory but a collection of critical works and ideas that “attempts to shift the dominant ways in which the relations between Western and non-Western people and their worlds are viewed [...] it means turning the world upside down. It means looking from the other side of the photograph, experiencing how differently things look when you live in Baghdad or Benin rather than Berlin or Boston.”

implicates power in subjugated knowledges through discourse that simultaneously has potential to transform subjugated knowledge into regime of truth through recursivity.

Deconstructing development

In a related line of critique, Escobar (1995) has shown how rather than universally advancing human well-being—the point of development—blanket application of instrumental rationalities of development and its technical ‘solutions’ in the later parts of the twentieth century impeded the capacity of the poor to shape and better their own lives.

While Escobar’s (1995) analysis critically outlines how the modern Western discourses on development came to be formed and to frame reality of developing countries, further elaboration is helpful in explaining how such dominant development discourses come to ‘take root’ in and be taken for granted as ‘common sense’ within developing countries and the effect of such ‘consented-to’ rationalities.

In paper 1 (chapter 6), Gramsci’s notions of hegemony and subalternity are presented as an analytical lens to explore such questions. The relevance of such critical constructs will be foreshadowed briefly in this section.

Although Western modern rationality’s difficulties in non-Western development contexts invites scepticism of its universalism, the analytic purpose of the concept of hegemony in this study (chapters 5.5, 6) is not to critique it *per se*, but to highlight the dualities and conflicts it encounters or perhaps induces when applied to organizational and IT phenomena in non-modern, non-Western contexts that have multiple situated alternative rationalities (Avgerou 2002).

The foundation of Gramsci’s theory of hegemony is a universal observation with which few might quibble: that humans, and social groups for that matter, are not ruled by

force alone, but also by ideas.⁴ Due in equal measure to its broad explanatory reach and its sparse treatment in Gramsci's writings, the notion of hegemony has been broadly appropriated in such diverse fields as cultural theory, media studies, postcolonial studies, politics and others. In nutshell, Gramsci argued that a social group or class' ideas, interests or supremacy is exerted in two ways—coercion or 'domination' (*dominio*) and 'intellectual and moral leadership' (*direzione intellettuale e morale*), also known as ideological domination or hegemony.⁵ Both of these modes of control or supremacy occur through the 'superstructure' within the state. Coercion, according to Gramsci, occurs through 'political society' or the state and hegemony through 'civil society' or non-state /private organizations, such as universities, the church, the trade unions, schools, etc.⁶

Hegemony may involve several ideologies of different groups that collectively express a way of seeing the world and a belief system which radiates from an elite group then becomes generally accepted as superior to alternative ways. Hegemony in this sense is the success of dominant groups in presenting their understanding of reality and their worldview in a way that makes it not only accepted but also viewed as common sense, and often the only 'proper' way. Other alternate intellectual, moral, cultural perspectives or worldviews are thereby marginalized regardless of their merit. Williams (1977) observes that hegemony implies effort to neutralize opposition, and "to control or transform or even incorporate them" (p.113). Furthermore, it can go beyond ideology and the conscious system of ideas and beliefs and encapsulates the "whole social lived process" (p.109).

But unlike other notions of hegemony such as realist political accounts that involve force and coercive subjugation of a powerful state over weaker ones (Keohane, 1984),

⁴ Despite its general influence and elaboration subsequent to his death, Bates (1975) notes that Gramsci was unable to systematically elaborate this theory before his death in 1935. The theory is fragmented and dispersed throughout his *Quaderni del carcere*

⁵ Gramsci's *Il Risorgimento* cited in (Femia 1987, p.25)

⁶ Gramsci's *Lettere dal Carcere* (1947, p.137) cited in (Femia, 1987, p.26)

Gramscian hegemony is not about force but rather consented and accepted intellectual and cultural leadership that ensures the stabilized influence of the more powerful. Femia (1987, p.25) elaborates upon the distinction and its relevance:

Social control, in other words, takes two basic forms: besides influencing behaviour and choice externally, through rewards and punishments, it also affects them internally, by molding personal convictions into a replica of prevailing norms. Such 'internal control' is based on hegemony, which refers to an order in which a common social-moral language is spoken, in which one concept of reality is dominant, informing with its spirit all modes of thought and behaviour. It follows that hegemony is the predominance obtained by consent rather than force of one class or group over other classes. And whereas 'domination' is realized, essentially, through the coercive machinery of the state, 'intellectual and moral leadership' is objectified in, and mainly exercised through, 'civil society' [...] Hegemony is attained through the myriad ways in which the institutions of civil society operate to shape, directly or indirectly, the cognitive and affective structures whereby men perceive and evaluate problematic social reality.

In Gramsci's schema, there are on one hand the dominant groups who authorize and promote ideas and behavior that accord with their interest, and on the other hand, there are dominated or subordinate groups who attempt to maintain and to validate their own reality. Hence, there is ongoing struggle between the dominant definitions of reality (or ideologies) and those that are held by other groups.

Hegemony recognizes such interplay and negotiation of ideas and worldviews and their underlying asymmetries of power and position. Williams (1977) argues that hegemony is dynamic because "it does not just passively exist as a form of dominance. It has continually to be renewed, recreated, defended, and modified. It is also continually resisted, limited, altered, challenged by pressures not all its own" (p.112).

Fiske (1987) likewise emphasizes the open, ongoing process of hegemony when he writes that "hegemony is a constant struggle against a multitude of resistances to ideological

domination, and any balance of forces that it achieves is always precarious, always in need of re-achievement. Hegemony's 'victories' are never final, and any society will evidence numerous points where subordinate groups have resisted the total domination that is hegemony's aim, and have withheld their consent to the system.” (p. 41).

Hegemonic rationality of IT in developing countries

Gramsci's notion of hegemony is suggested as a useful way to understand the consenting, largely un-coerced acceptance within developing countries of Western formal and substantive rationalities for development and its technical solutions such as IT, even at the expense of compelling native rationalities.

In this sense, it might be claimed that mainstream IS rationalities are hegemonic in the context of developing countries because developing country actors, particularly dominant elites, widely and without coercion accept them as 'taken-for-granted' and even common sense, thereby rejecting or de-emphasizing their own native rationalities.

Although there is a latent power dynamic between elite global institutions like the World Bank, IMF, WTO, multinationals etc., that promote IS into developing countries, the modality of such deployment is not sufficiently explicable by standard theorizations of power and politics in IS, most of which assume controlling, coercive, authoritative, legitimating or politically pressured dynamic (Jaspersen et al. 2002; Silva 1997; Markus 1983; Thompson 2004).

Aside the hegemony of Weberian formal rationality and its technical corollaries, the substantive rationalities of IS deployed by powerful international and multinational institutions into developing countries is also suggested to be hegemonic. The substantive rationalities of such IS might include development goals like modernization and good governance, public administration prescriptions such as NPM or neoliberal agenda such as free trade.

While such substantive rationalities come and go with international institutions depending on the latest discourse or ‘consensus’, developing countries often ‘buy into’ whichever substantive rationality is the dominant or ‘consensus’ being prescribed. From structural adjustment promoted by the Bretton Woods institutions in the 1990s to the good governance agenda of the 2000s, developing countries embrace substantive development rationalities that seldom lead to their development, and often manifest undesirable unintended consequences.

Granted that many international development programs in developing countries are tied up with binding conditionalities (Santiso 2001; Kapur & Webb 2000), conditionality alone does not sufficiently explain the willingness and sometimes fervour with which developing countries embrace substantive rationalities of developed countries and their proxy institutions and multinationals, at the expense of their native rationalities.

There is a third sense in which Gramscian hegemony is a useful lens for viewing IT, particularly ones deployed by powerful Western institutions into developing countries. This relates to the political economy and historical context of postcolonialism. If the advent of Weberian bureaucracy in developing countries was the result of Western powers’ coerced transplantation through colonial administration, its subsequent endurance can be explained in terms of Gramscian hegemony. Whereas colonialism, characterized by violent and coercive imperial domination of peripheral ‘colonies’ (a large portion of contemporary developing countries) by ‘central’ Western powers, was largely over by the 1960s (Jackson 1987; Duara 2004), the influence of Western powers lingers in various ways, beyond institutional artefacts like bureaucracy left in developing countries.⁷

⁷ Critical political theorists explain the ideology and praxis of such influence through the notion of neo-colonialism (Sartre 2001; Chomsky & Herman 1979) as well dependency theories that arose to counter modernization theories of development.

This context is critical for understanding not just the political economic provenance and interests of IT in developing countries but also the substantive rationalities within a broader context. For example, rather than viewing IT interventions in developing countries as a-historical technical projects, a broader perspective that sets IT within its context of historical and ongoing power relations might offer richer insights of situated sociotechnical phenomena. It is suggested that hegemony emanates from the global political economy within a historical context of colonial and postcolonial relations, and influences organizations and actors with regard to IT in developing countries.

Exploring 'alternative rationalities' through notion of subalternity

Gramsci first uses the term subaltern in reference to lower ranked officers in an army hierarchy. He later broadens the idea to refer to social groups that are outside the dominant class and have no well-articulated historical narrative or ideology of their group because they have no intellectuals to articulate their perspectives and champion their cause.

The concept of subalternity is more developed in the field of postcolonial studies, thanks mostly to the Subaltern Studies Group and Gayatri Chakravorty Spivak's essay, '*Can the Subaltern Speak?*' a foundational text. Guha (1983, p.8) indicates that subaltern consciousness occurs when the subaltern has "learnt to recognize himself not by the properties and attributes of his own social being but by diminution, if not negation, of those of his superiors," much like Gramsci who had theorized that "the lower classes, historically on the defensive [against hegemony], can only achieve self-awareness via a series of negations" (Gramsci 1971, p.273). Leitch (2010, p.2194) further argues that "the subaltern always stands in an ambiguous relation to power; subordinate to it but never fully consenting to its rule, never adopting the dominant point of view or vocabulary as expressive of its own identity."

For Spivak, subaltern is not just about marginalization or oppression but also about freedom and potential for self-expression. To be subaltern, in Spivak's articulation, is to be denied ability to speak for oneself without the *re-presentation* of others. While emancipatory discourses that challenge dominant discourses are not new, for example, Foucault's (1977) arguments that power operates discursively to produce the subject over which it controls, Spivak (1988a) contends that such discourse still speak for subalterns rather than allow them to speak for themselves. Discourses of postcolonial studies are no exception to this, and hence she concludes that without intervention of intellectuals, subalterns do not speak.

Gramsci's notion of hegemony clarifies why IT is often implemented, studied and analyzed with taken-for-granted assumptions that developing countries possess rationalities of modern developed countries such as the formal rationality of Weberian bureaucracy, or substantive rationalities of particular development models. With such 'taken-for-grantedness', developing countries are already 'spoken for' in terms of their assumed needs of, and rationality for IS, and hence, there is no deeper analysis to uncover native 'alternative' rationalities that might subvert dominant IT rationalities. Adopting the point of view of subalterns—i.e., allowing subalterns (developing country actors) to 'speak for themselves' from their location at the bottom of power—is a perspective from postcolonial studies that might enrich study of IS in developing countries by pointing to latent alternative rationalities of IT and development.

IT-enabled rationalization through institutional logics

In seeking to understand how and why institutionalized practices changed over time through IT intervention, our explanation relates macro level context and dynamics to those at the micro level where practices occur. Specifically, understanding the ways IT is implicated in trade processing by the Customs administration within a developing country required analysis at two levels: the micro level where sociotechnical IT-enabled practices occur and

the broader organizational, national and development context within which such practices are embedded and gain meaning.

We show with our case study that practices at the Customs administration transformed over time through the adoption of IT. These transformations happened through contradictions and resolutions of public administration logics in practice and logics of IT over time. Through the institutional logics construct, we show that the contradicting institutional logics of public administration and IT conditioned the logics or cognition of situated actors in their practices. These actors often reached resolution by combining the logics to derive new practices.

IT has been said to ‘carry’ structures and to be an ‘object’ and ‘carrier’ of institutional forces and logics (Scott 2008; Gosain 2004). Our theorization of technology is pursued through the question of how material technology and institutional logics are mutually implicated in an organizational context. How might IT carry logics; and how might IT-related logics shape and be shaped in everyday work?

By posing the question this way, we simultaneously imply connectedness and separation of the social and material. Connectedness because in everyday work practices, the materiality of IT ‘interlocks’ with the social as actors and artefacts interact in the performance of tasks; the social and material mutually shape such that talking about them as though they were entirely separate would appear to ignore their interpenetration (Jones 2014, p.920).

However, the social and material need not be considered inseparable in themselves, particularly if considered outside a context of situated practice (Leonardi 2011; Leonardi 2013). The former concern raises an epistemological question whereas the latter raises an ontological one (Faulkner & Runde 2011; Faulkner & Runde 2012; Leonardi 2013). To

accommodate such complex interactions of the material and social we adopt a sociotechnical perspective of IT-enabled practices.

A sociotechnical perspective allows us to explore interlocking of the material (IT artefacts and practices) and the social (institutional logics). We can then consider ‘design-oriented’ IT change and organizational (re)configuration where importance lies in parsing and reassembling the material and social (Leonardi & Rodriguez-Lluesma 2012). We can also then consider social and material interactions not just at the situated level but beyond; that is, not just how IT is implicated in practice but how it carries institutions logics in an organizational setting characterized by “institutional plurality” (Kraatz & Block 2008).

At the level of design, IS literature distinguishes technological artefacts (infrastructure, hardware, software etc.) from socially derived technical, symbolic and material properties consequential for structuring (Barley 1986; Kallinikos 2009; Kallinikos 2011; DeSanctis & Poole 1994). Processes by which socially derived schemas, rules and logics materially impinge upon technology have also been elaborated.

Aside the physical artefact, IT is “inscribed” with particular “vision of the world” (Akrich 1992). Such ‘world-in-miniature’ comprises processes, values, structures etc., intended to shape outcomes within organizational milieus. Inscriptions could be explicit, such as design parameters or functionalities; implicit, such as policies; or in-between, such as assumed skills and values of users and the use context. These expectations, requirements and assumptions form coherent set of “prescriptions” that technology carries (Latour 1992, p.256).

In the context of developing country IT, prescriptions are determined by networks of international development organizations, consultants, IT vendors and Western-trained bureaucrats through processes of policy-driven technology transfers (Common 1998; Korac-Kakabadse et al. 2000; Saint-Martin 2000; Hanna & Schware 1990). IT artefacts therefore

carry [Western] social context of designers and developers in the sense that prescriptions they encode are drawn from the world of designers and developers rather than users' [in developing countries] (Heeks 2005). IT may further be viewed as technical and social ensemble whose effect is institutional; enmeshing techniques and their artefacts, legislation and policy, industries, Western institutions and ideologies as well as sustaining 'rational myths' (Avgerou 2003).

Further distinction is made between "context of IT design" and "context of use" (Heeks 2005); or the different social realities shaping IT design and development and those it arrives into during implementation and use. Given minimal IT innovation and R&D in developing countries (Aubert 2004), and consequent technology inflows from Western countries, the distinction is crucial for understanding dynamics of IT-related practice in developing countries.

Fountain (2001) observes a related distinction between "objective technology" and "enacted technology"—the former related to designed systems and artefacts and the latter to ways they are meaningfully integrated in specific contexts. An important implication is that in practice, inconsistencies, contradictions and tensions exist between IT and its use. Assumptions and solutions of IT, premised on Western conceptions of rationality (Avgerou 2002; Avgerou 2000b), often do not live up to realities and problems in practice such that

While in the context of developing countries the techno-economic rationality of Western modernity is instrumental in defining a series of problems and determining their solutions, it is blatantly unsuccessful in streamlining people's behaviour to the achievement of such solutions

IT is not appropriated faithfully as designed (DeSanctis & Poole 1994) but is enacted differently (Fountain 2001; Orlikowski 2000), domesticated idiosyncratically (Silverstone & Haddon 1996; Haddon 2011), satisfied reluctantly (Addo 2016), or loosely coupled compromisingly (Berente & Yoo 2012) according to realities of use contexts.

To investigate attempts for technology-driven transformation of undesirable institutionalized practices of administration, we focus on the configurations of work practices, and in turn adjustments that result from IT-mediated work. Studies of administration (mal)practices like corruption note significant material aspects; that such materiality is consequential; and that corruption evolves in emergent and unpredictable ways (Azad 2013). Studying effects of paper map digitalization on corrupt administrative practice, Azad et al., (2013; 2015) observe how malpractice was configured through material work arrangements (i.e., poor physical map conditions and improvisational calculation) and how IT enabled change but re-materialization of corruption in new form.

Three points to anchor a sociotechnical view of IT in developing country public administrations. First, a broader view is required for IT to be appreciated in its manifest and latent material-social interlocking. This requires not taking IT ‘as is’ but probing the ways that as part of a sociotechnical system, it comes to be and gain effect. In particular, attention to contradictions between Western contexts of design and development on the one hand, and developing country context of implementation and use on the other, are essential.

Second, owing to the importance of contradictions in contexts, a situated perspective is insufficient and must be complemented with sensitivity to dynamics of broader contexts, themselves sociotechnically constituted, to better explain not just the ‘how’ but also ‘why’. Relatedly, focus on situated interactions of practices and IT provides but one entry point into understanding structuration; combination of sociotechnical and institutional logics perspectives extends insights.

Recast thus, it is suggested that artefacts, systems and ensembles of IT in developing countries acquire and reproduce institutional logics from ‘developed’ Western countries. Such logics of IT are ‘ideal types’ (Kalberg 1980; Weber 1968) because they are abstract, hypothetical conceptualizations of principles to guide action in host domains. Ideal type, a

key construct popularized through Weber's methodology “refers to the construction of certain elements of reality into a logically precise conception. The term 'ideal' has nothing to do with evaluations of any sort. For analytical purposes, one may construct ideal types of prostitution as well as of religious leaders. The term does not mean either prophets or harlots are exemplary or should be imitated as representatives of an ideal way of life” (Gerth & Wright Mills 1958, p.59).

Idealtypic institutional logics like ‘bureaucracy’, ‘managerialism’ or ‘network governance’ might be technologically rendered through hierarchy-underpinning process, monitoring, audit and control systems; enterprise resource planning or managerial decision-support systems; or multi-sided platforms and interoperable infrastructures. However, like all ideal types, logics technology carries through design are markedly different in practice.

Differences between idealtypic logics and ‘logics in practice’ (how logics are interpreted, rendered or performed) are revealed during IT-related situated practice and have been alluded to in social and political explanations of IT outcomes covered in the ICT4D literature, as well as in discussions of interaction effects such as loose coupling (Berente & Yoo 2012; Berente 2009) when logics contradict or are inconsistent.

Despite contradictions, organizations that manage to successfully implement and accommodate IT in their practices do so by integrating new idealtypic logics of IT with established ‘logics in practice’ to form evolving composites of new and old logics. When IT is embedded and institutionalized through practice, logics of IT might have lingering, or inertial effects even after such technologies are discontinued or replaced.

This point is exemplified by common observation in organizations undergoing IT enabled change, where (at least in the short run) workers might ‘stick to’ old ways of acting with previous systems despite prescriptions of a new IT system, preferring workarounds or mixing practices.

Conclusion

This chapter has presented salient theoretical themes in the literature on IT in the public administration of developing countries. Starting from general IS perspectives on IT in organizational and social settings, the chapter has highlighted relevant theoretical themes in the ISDC domain and the area of public administration in developing countries specifically.

The aim has been to highlight understandings of IT-enabled change with emphasis on the significance of context—both ‘narrowly situated’ (at the organizational level) and broader (beyond the organization to the national and beyond). It has been suggested that while context is often taken as important, several practice-based case studies that take a structuralist view of action and structures are often limited in their ability to account for broader structures and the multiplicity of institutional forces implicated in situated action.

This is especially problematic if one considers the pivotal implications of alternative rationalities of IT and development in the local *milieu* that are often unacknowledged in IT interventions. In this regard, the institutional logics construct has been suggested as an approach with utility for explaining interactions of broader and multiple, historically-formed institutional influences.

The next three chapters (papers 1-3) demonstrate the theoretical ideas discussed in the theoretical chapters with case studies from Ghana’s customs modernization.

Chapter 6: Subalternity in Information Systems in Developing Countries: A Critical Analysis of Ghana's TRADENET

Abstract

In the search for explanations of contradictory effects and its disappointing outcomes in developing countries, Information Systems (IS) have been critiqued as pursuing techno-economic rationalities of Western modernity with no recognition of alternatives. Development has also been critiqued as a Western program promoted through discourses that do not admit local conditions and histories. Through critical discourse analysis (CDA) and a case study of Ghana's trade clearance system (TRADENET), we analyse how problematizations of IS in developing countries relate with local positions and contexts. We draw on the concepts of subalternity and hegemony to evaluate TRADENET's effects vis-à-vis its problematization by powerful actors. We find that TRADENET is contradicted by historically formed behaviours, culture and traditions that were unrecognized in technical problematizations of trade, development and IS. Despite importance of unrecognized, alternative or 'subaltern' positions in shaping IS in developing countries, they remain unrecognized in dominant or 'hegemonic' problematizations. Findings suggest that uncovering subaltern positions might illuminate 'blind spots' of IS in developing countries such as peculiar contradictory effects; and hence, inform better theory and practice.

Keywords: *Information systems in developing countries (ISDC), critical theory, post-colonial theory, hegemony, subalternity, public reform, critical discourse analysis*

Introduction

Information Systems (IS) transferred into developing countries have been noted as inconsistent with the local realities (Avgerou 2002; Avgerou 2000b; Heeks 2003). It has further been suggested that IS in developing countries (ISDC) is carried out under Western universal positions with no recognition of alternative ways of perceiving it when deployed in historically formed contexts of developing countries (Avgerou 2000b). Because of this, ISDC fail to make sense of alternative positions that might complicate or challenge its ‘solutions’, leading to observation that “the techno-economic rationality of Western modernity is instrumental in defining a series of problems and determining their solutions [through IS] [but] is blatantly unsuccessful in streamlining people’s behaviour to the achievement of such solutions” (Avgerou 2000b, p.2).

Development itself has long been critiqued for being Western-centric and for promoting discourses that marginalize local cultures, histories and worldviews (Ferguson 1990; Escobar 1995). In the development context, what is included or excluded as legitimate development “may depend on specific relations established in discourse; relations, for instance, between what experts say and what international politics allows as feasible” (Escobar 1995, p.44). E.g., problematizations of poverty in developing countries construct underdevelopment as a crisis that requires ‘poverty-alleviating’ Western technical solutions (Escobar 1995; Ferguson 1990). Escobar (1995) shows how rather than advancing universal well-being, blanket application of Western rationalities in the later parts of the twentieth century impeded capacity of the poor in developing countries to shape their own discourses and to sustainably better their lives.

Distinctiveness of ISDC lies in its attention to developing countries’ context and problematization of the developmental role of IS (Avgerou 2008, p.140). Yet, problematization of ISDC—the way ‘development’ is constructed through discourse and

linked to technical IS solutions—rather than being objective or ‘neutral’, might be understood as an act of power that privileges some positions over others. Mobilization of resources and actors into networks that pursue particular technical solutions over others (Callon 1986; Latour 1991) occurs through powerful development organizations, ‘developed’ country governments and elites in developing countries.

Against such backdrop, we explore how problematization of IS in developing countries relates with local positions and contexts. Through a critical discourse analysis (CDA) and case study, we examine how Ghana’s TRADENET and its developmental effects were problematized through discourses; whether such discourses acknowledged local positions and contexts of development and administration; and the implications. We contribute by highlighting how unattended positions and contexts (subalternity) might help explain problems like contradictory effects of IS in developing countries. Recognizing subalternity can also sensitize extant approaches to ISDC that pay insufficient attention to local positions, contexts and worldviews. The paper proceeds as follows: we elaborate our theoretical framing of power in discourses of ISDC through the conjoint concepts of hegemony and subalternity. We then present our research approach, case and analysis. A discussion and conclusion follows.

Theoretical background

ISDC problematization as hegemonic

IS are not neutral but have been shown to carry politics and ideology (Gagliardone 2014), context (Heeks 2005), policy (Cordella & Iannacci 2010) and to be shaped by specific rationalities (Avgerou 2000b; Avgerou & McGrath 2007). While a dominant rationality for IS draws from rational models e.g., technical economic rationalities, little is known of alternative positions and their implications in developing countries (Avgerou 2000b). Gramsci’s notion of hegemony helps explain the consenting, largely un-coerced acceptance

within developing countries of dominant IS rationalities for development. Gramsci argued that a social group or class' ideas, interests or supremacy is exerted in two ways—coercion or 'domination' (*dominio*) and 'intellectual and moral leadership' (*direzione intellettuale e morale*) or hegemony (Gramsci's *Il Risorgimento* (Femia 1987, p.25)).

Hegemony may involve ideologies of different groups that collectively express a way of seeing the world and a belief system that radiates from an elite group then becomes generally accepted as superior. Hegemony is the success of dominant groups in presenting their understanding of reality in a way that makes it not only accepted but viewed as common sense, the only 'proper' way. Alternate intellectual, moral, cultural perspectives are marginalized.

We conceptualize ISDC as hegemonic because local actors often adopt its discourses as 'taken-for-granted' and common sense, thereby rejecting or de-emphasizing alternative realities. Although global organizations like the World Bank, International Monetary Fund (IMF), World Trade Organization (WTO), and multinationals that promote IS into developing countries exert power, ISDC phenomena are not sufficiently explained by theorizations of coercive power and politics in IS which assume control, authority, legitimization or pressure (Jasperson et al. 2002; Silva 1997; Markus 1983). Granted that many development programs are tied up with binding conditionalities (Santiso 2001; Kapur & Webb 2000), coercive institutional pressures alone do not explain willingness with which developing countries embrace Western rationalities at the expense of alternatives.

Subalternity and ISDC

According to Gramsci, subalterns are outside hegemonic structures; groups without well-articulated historical narrative or ideology. Subaltern may be defined in juxtaposition to a power or economic 'elite' and subalternity created when the subaltern has "learnt to recognize himself not by properties and attributes of his own social being but by diminution,

if not negation, of those of his superiors” (Guha 1982, p.8), much like Gramsci theorized that “the lower classes, historically on the defensive [against hegemony], can only achieve self-awareness via a series of negations” (Gramsci 1971, p.273). But while subalterns view themselves in relation to the dominant, they *stand in an ambiguous relation to power; subordinate [...] but never fully consenting [...] never adopting the dominant point of view or vocabulary as expressive of its own identity* (Leitch 2010, p.2194).

Being subaltern is equally about not having expression. To be subaltern is to be denied ability to speak directly for oneself without the re-presentation of others (Spivak 1988a). Hence without intervention of mediators like intellectuals and technical ‘experts’, subalterns, invariably, ‘cannot speak’ (Spivak 1988a). An implication is that subaltern positions remain ‘shut out’ and unable to contribute to discourses on development in developing countries.

But if subalterns ‘cannot speak’, how are their positions expressed? Postcolonial studies document subaltern counter-discourses to hegemony. They include violent forms like armed resistance, terror and insurgency (Scott 1979); as well as nonviolent everyday means that are neither organized nor chronicled in “public transcript”.

These are “the ordinary weapons of relatively powerless groups: foot dragging, dissimulation, desertion, false compliance, pilfering, feigned ignorance, sabotage, and so on” (Scott 1985). Such “Everyday forms of resistance” often “make no headlines” and escape inquiry. Other means include constructing alternate narratives as well as informal relations and institutions (Guha 1983); constructing ‘micro histories’ (Prakash 1990); deconstructing dominant narratives (Spivak 1988b); cohesion and communalism (Pandey 2006).

Subalternity manifests in different ways even if it “cannot speak” e.g., in the context of ISDC, it might manifest as conducive or subversive behaviours in relation to IS. Subalterns

either describe IS faithfully if consistent with their position or enact differently if contradicting. Example of conducive manifestation of subalternity might be when local workers use native knowledge for IS innovation.

Subversive manifestations might include manipulation, tampering and sabotage; resistance, rejection or circumventing; reliance on informal networks, social clicks or parallel channels instead of formal IS mediated processes; using micro narratives to counter technology, e.g. ‘we are more effective without IS; technology slows us down’; using IS differently from its capabilities. Subversive positions therefore produce a ‘parallel work world’ at odds with ISDC.

In contrast to hegemonic positions of ISDC, subaltern positions may be situated (rather than planned), contextual (rather than universal), historically formed (rather than ahistorical), colloquial (rather than formalized), latent (rather than taken for granted), and often associated with less powerful, ‘unrecognized’ local actors (rather than powerful elites and organizations). Table 2 summarizes such hegemonic and subaltern relations in ISDC.

Table 2. Hegemonic versus subaltern positions of ISDC

Attribute in relation to ISDC	Hegemonic position	Subaltern position
<i>Rationality and action</i>	Universal/a-contextual	Contextual
<i>Mode of phenomena</i>	Planned	Situated
<i>Nature of change</i>	Ahistorical	Historically formed
<i>Social or material articulation</i>	Formal	Colloquial
<i>Relation to power</i>	Centre/high	Periphery/low
<i>Direction of phenomena</i>	Top-down/centre-periphery	Bottom-up/local
<i>Typical manifestation</i>	Taken for granted	Latent
<i>Relevant actors</i>	Powerful elites e.g. international organizations, experts	‘Unrecognized’ less powerful actors e.g. local bureaucrats who use IS

Research Approach

Our research combines two interrelated investigations. First, we uncovered dominant problematizations of Ghana’s trade, development and TRADENET. Second, we conducted a case study of TRADENET to understand effects from point of view of users—local customs officers, declarants (freight forwarders, importers and exporters) and members of the trade

community in Ghana. Our goal was to identify contradictions between problematizations and unrecognized local positions and contexts. Our case was purposively selected as typical of IS in developing countries that have unclear or contradictory developmental effects.

To unpack how trade and development were constructed through discourse as problems and linked to TRADENET as a solution, we employed critical discourse analysis (CDA). CDA enables investigation of how discourses relate to social change (Chouliaraki & Fairclough 2010; Fairclough 2010; Fairclough 2003). It examines use of language in speech and text to reveal assumptions and power dynamics (Fairclough 1989) underlying social processes like organizing. Based on constructed corpus of key texts and text analogues, CDA links language of influential actors to claims and themes that materialize in specific change events. Data corpus consisted of World Bank project documents, reports by international organizations, government documents, audit reports, and documents from private technology and services providers (Table 3).

Our case study employed data collected during eight months of field work in Ghana between 2015 and 2016. Research site was primarily Ghana Customs Division (GCD)'s office at Tema, Ghana's main port. Open-ended formal and informal interviews were conducted with 78 informants comprising customs officers, senior officials, declarants (freight forwarders, importers, exporters) and experts on Ghana's trade and development. Other data included notes from direct observations of TRADENET related operations among exporters, importers, freight forwarders and clearing agents; transcripts from stakeholder workshops; system demos and observations of port operations; archival reports, web contents, project artefacts; news clippings and public records.

Interviews probed customs practices, uses or non-uses of TRADENET. We focused on capturing several "voices", particularly those typically unrecognized in dominant discourses e.g., local artisans and street level bureaucrats. Interviews concluded when new

insights ceased i.e., theoretical saturation had occurred (Eisenhardt 1989). Informants were drawn purposively and by snow-balling (Bryman 2001) with sensitivity to their position relative to power. Interviews were audio recorded, transcribed and analyzed—during and after the data collection phase—for key themes.

Table 3. Overview of data collection

Data corpus	Data collection site	Sources/contacts/ location	Data coverage	Dates of collection	Methodology/ analysis
World Bank documents covering GHATIG/TRADENET	Libraries, online websites, archives	Consultants and staff from World Bank, Accra/other	1998-2005	2014	CDA
World Bank reports on trade, development, TRADENET	Libraries, online websites, archives	Consultants and staff from World Bank, Accra/other (correspondence)	1990s-2015	2014	CDA
International organization documents on trade, trade facilitation e.g. WTO, WCO, OECD	Libraries, online websites, archives	Director, ministry of Trade and Industry, Accra; WCO officer, Geneva (correspondence)	1990s-2015	2014	CDA
Regional protocols on trade and TRADENET	Libraries, online websites, archives	Director, ministry of Trade and Industry, Accra	2004-2015	May-August, 2015	CDA
Customs guides, procedures and TRADENET documents	Libraries, online websites, archives	Customs officers, Team	2004-2015	May-August, 2015	CDA/ Case study/thematic analysis
GCNET documents and reports on TRADENET; notes from workshops on TRADENET	GCNET offices in Accra; other locations in Accra	GCNET officers, Accra	2004-2015	May-August, 2015	CDA/ Case study/thematic analysis
Other trade documents e.g. ports; shippers' guides	Team Harbor	Head of IT, Team Harbor	2004-2015	May-August, 2015	CDA/ Case study/thematic analysis
Ghana National Development Plan (Poverty Reduction Strategy (GPRS I&II) documents), Ghana Trade Policy	Government ministries and agencies, Accra	Officers of Ghana Development Planning Commission (GDPC), Accra	2003-2005; 2006-2009	May-August, 2015	CDA/ Case study/thematic analysis
Ghana Export Promotion Authority (GEPA) reports	Government ministries and agencies, Accra	Directors, GEPA offices in Accra	2012-2014	May-August, 2015	CDA/ Case study/thematic analysis
Interview transcripts from interviews with 78 informants	Government ministries and agencies, Accra; Team Harbor, offices and other locations in and around Accra and Team	Customs officers, government officials, declarants (freight forwarders, importers, exporters), DICs, GCNET staff, trade and policy experts, etc., Accra, Team	1990s-2015	May-August 2015; February-May, 2016	Case study/thematic analysis
Notes from 4 months of non-participant observations of TRADENET related activities	Team Harbor	Customs officers, declarants, DIC inspectors and staff, Accra, Team	2004-2015	May-August, 2015	Case study/thematic analysis
Expert reports and studies on TRADENET	Libraries, online websites, archives	Policy consultants, academics, IT consultants	2004-2015	2014-2016	Case study/thematic analysis

Case narrative

TRADENET, an electronic data interchange (EDI) was implemented to enable processing of trade clearance documents, duties, taxes and data. It was designed to automate processes and to support government of Ghana (GOG)'s revenue collections. As a business-to-government (B2G) platform, it was meant to integrate various public and private actors involved in trade. Prior to TRADENET, trade clearance and data flow was convoluted and involved replications and inefficiencies. Agencies required multiple documents that were not shared.

Processes were paper-based, labour intensive, time consuming, costly and error-prone, requiring transcriptions and data entries. 13-30 stages were required, depending on the goods. This situation created opportunities for customs officers to demand bribes to 'speed up' for anxious declarants by e.g., allowing queue jumping, or manipulating processes. GoG suffered perennial revenue losses and customs, for several years, counted among Ghana's most corrupt organizations. TRADENET was intended to change this status quo with a 'single window' system whereby declarants had to submit one document—Import Declaration Form (IDF)—to fulfil all requirements.

Problematization of Ghana's Trade and Development

International trade has been juxtaposed as superior to aid in enabling developing countries overcome poverty; a view captured with the popular slogan 'trade not aid'. As such, international trade has been promoted by international organizations as a sure route to development. Ghana's trade and development prior to TRADENET was problematized

within what could be described as neoliberal discourses.⁸ Such discourses assumed discernible patterns of ideology, policies and programs, state form, and governmentality.

Ghana's neoliberal trade and development discourse has been dominated by an elite network of policymakers, government officials, and international technical experts. As an ideological position with coherent interpretations and worldview, such neoliberal positions are generally accepted, providing a kind of 'common sense'. 'Neoliberal common sense' governed not just ideas about international trade but also the role of the state, public administration and technology. E.g., neoliberal common sense drew from neoclassical economic theory to suggest that international trade based on competitive advantage is the best means to achieve economic growth, and with it, development.

Developing countries like Ghana were to focus on advantages such as production of minerals and agricultural raw materials and to boost exports to international markets. Consequently, Ghana's developmental plans, as captured in plans and documents by government ministries and the Ghana National Development Planning Commission (GNDPC), focused on promoting traditional export commodities such as cocoa, bauxite, gold, timber as well as non-traditional exports such as cash crops like cashew, artisanal crafts etc.

Government of Ghana in conjunction with its development partners designed and pursued policies and programs aimed at strengthening Ghana's exports, improving international trade and enhancing revenue from trade-related activities. Neoliberal discourses on policy and programs focused on reforming 'frontline' trade-related government organizations such as customs, and wholly or partially privatizing key functions.

⁸ Neoliberalism has become a 'catch phrase' but remains contested (Boas & Gans-Morse 2009). Here, it suggests a collection of economic policies to reduce state intervention and promote laissez-faire capitalism or a 'free-market economy' as a means to economic efficiency, individual freedom and wellbeing. Such policies often aim to dismantle welfare or regulationist state interventions through means like privatization, deregulation, and lowered taxes for businesses and investors. There is also emphasis on free movement of capital, goods and services across state borders (Harvey 2005; Kotz 2002).

Such policies and programs endorsed a particular form of state; Ghana was required by its development partners e.g., World Bank and IMF to pursue structural transformations to become competitive among trading states as far-flung as in East Asia and as close as neighbours, Ivory Coast and Nigeria. Structural transformations involved ‘rolling back’ or reconfiguration of state capacities and functions and increased reliance on private actors. E.g., TRADENET was developed by a private provider (SGS) and implemented along with reforms at customs that outsourced functions such as destination inspection, classification and valuation to private destination inspection companies (DICs).

Despite such limits on the roles of GoG and its agents, neoliberal discourses championed a kind of governmentality where government decentred to allow effective “governance at a distance” through use of technology and innovative public administration.⁹ Rather than coercive power, such governance at a distance relied on the state’s “infrastructural power” (Mann 1984) and was enabled by information and knowledge production.¹⁰ Information and knowledge production, an intrinsic part of modern state administration enabled GoG to pursue its interests by control strategies such as quantification and revenue target setting, monitoring and management.

Problematization of Ghana’s TRADENET

TRADENET was problematized as a technological solution to inefficient and ineffective trade processing in Ghana’s trade administrations, especially customs, as part of broader global neoliberal push for increased international trade. Red tape, corruption and unlawful seizures of goods were deemed as great costs on businesses and governments. Thus, ‘trade facilitation’—defined by the World Trade Organization (WTO) as “the simplification

⁹ Defining government as the ‘conduct of conduct’ (Foucault 1982), Foucault (1991) develops the notion of governmentality to describe ways in which the state exercises control over, or governs the body of its populace.

¹⁰ Mann (1984) develops a conception of the institutional aspects of state power. Mann conceptualizes two types of power the state and its elites have –despotic power and infrastructural power. Infrastructural power is “the capacity of the state to penetrate civil society, and to implement logistically political decisions” (p.113). This is characteristic of the modern industrialized and capitalist state e.g., ability to tax incomes at source, without using physical coercion or getting consent.

and harmonization of international trade procedures” (WTO 1998)—took centre stage since the mid-90s as a critical issue with development implications.

Administrative dysfunctions were said to put businesses at a competitive disadvantage, increasing costs of providing information and fulfilling compliance with authorities like customs, as well as indirect costs of delays and opportunity costs. According to United Nations Conference on Trade and Development (UNCTAD), trade facilitation was good for development because it increased transparency and trust, increased fiscal revenues for governments, made it easier for members of informal economies to enter the formal economy, improved effectiveness and efficiency e.g. automating simple tasks thereby freeing up customs officers to do value adding tasks.

There were also pro-poor dimensions, it had been argued, which resulted from enabling small and medium-sized enterprises as well as informal cross-border traders to easily comply with regulations. Trade facilitation was also introduced to improve living standards through enhanced state revenues.¹¹ In principle, customs collections from trade was deemed important for developmental purposes such as infrastructure provision, providing public goods and services.

Discourses of problematization were produced through development ‘consensus’ by networks of technocrats who have similar Western training e.g. in neoclassical economics and engineering; form a community of practice and often affiliated with powerful organizations such as World Bank, IMF, UN, WTO. Such discourses were further ‘consumed’ and reproduced by local government officials and elites in developing countries who might be Western-trained or dependent on foreign expertise, aid and other support.

Table 4 presents vignettes from our CDA.

¹¹ African states, through their customs, collect 20 to 60 per cent of revenues as international trade-related duties, levies and taxes (Cantens 2012, p.1). E.g., Ghana’s 2011 figure was nearly 40 percent, roughly equal all direct domestic tax receipts (Bank of Ghana 2012, p.3).

Table 4: Illustrative findings from CDA

Discourse theme	Sub themes	Illustrative text
<i>Trade and development</i>		
Ideology of a powerful elites	<ul style="list-style-type: none"> • International trade key to development • Economic growth based on exports and comparative advantage • Globalization and external integration good for developing countries 	<ul style="list-style-type: none"> • <i>The need for a radical transformation of Ghana's internal production and foreign trade is one of the most widely-shared beliefs among intelligent laymen, [...] as well as the professional and political lenders. In the face of widening development opportunities [...] this universal ideology informs the decision to re-focus policy</i> (Ghana National Development Planning Commission 2007, p.ii) • <i>Attainment of [...] rapid growth rates require structural transformation of the productive sectors of the economy. Ghana needs to move away from a heavy dependence on exports of a limited number of primary commodities to create competitive advantage on a more diversified range of products with higher levels of value-addition. In international trade, competitive advantage is increasingly less a function of cost or price and more a function of quality, design and logistics management, leading to timely sales and after sales service</i> (Ministry of Trade and Industry 2005, p.4)
Policy and programs	<ul style="list-style-type: none"> • Developing countries must structurally adjust and reform e.g. Reform 'front line' trade related institutions • Private sector 'engine' of economic growth with government as enabler 	<ul style="list-style-type: none"> • <i>When the capacity of the public sector to manage the economy and deliver public services is weak, the prospects for development are poor. The public sector in many developing countries has been characterized by uneven revenue collection, poor expenditure control and management, a bloated and underpaid civil service, a large parastatal sector that provides poor returns on the scarce public funds invested in it, and weakness in the capacity of core agencies to design and implement policies that would address these problems [...] [a situation that] progressively erodes the capacity of the state to provide economic and social services</i> (World Bank, 1992,p.12) • <i>It is imperative that both the private sector and supporting public sector institutions understand and are able to respond to the demands and requirements of the marketplace. This necessitates policy interventions geared towards complementing rather than supplanting the market, as elaborated in the Ghana Trade Policy</i> (Ministry of Trade and Industry 2005, p.4)
State form	<ul style="list-style-type: none"> • Reduce/'roll back' state in key areas by privatizing functions 	<ul style="list-style-type: none"> • <i>Few government activities are more prone to corruption than customs and procurement. Some countries try to correct the mismanagement of their customs service by contracting it out to a wholly independent private enterprise [...] private inspection and supervisory services can play a valuable role</i> (World Bank Group 1992, p.44)
Governmentality	<ul style="list-style-type: none"> • Decentred government reliant on information, management controls 	<ul style="list-style-type: none"> • <i>The basic strategy for modernizing customs...is straightforward: establish transparent and simple rules and procedures [] and foster voluntary compliance by building a system of self-assessment buttressed by well-designed audit policies. Implementing this, however, requires addressing a range of issues, involving links with trade policy, organizational reform, the use of new technologies, the appropriate nature and extent of private sector involvement, designing incentive systems to overcome governance issues—and many others</i> (Ter-Minassian 2003)
<i>TRADENET and customs</i>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Modernization	<ul style="list-style-type: none"> • IT modernizes public sector i.e., promotes efficiency and effectiveness when used properly • IT enables transformation of undesirable practices 	<ul style="list-style-type: none"> • <i>"The challenges of the 21st Century are placing massive demands on Customs administrations. Now, more than ever before, there is a need for Customs administrations to be more responsive. An understanding is required of issues such as globalization, the dynamics of international trade, the technicalities of the trade supply chain, emerging policy directions and the complexities of the global landscape"</i> (Gordhan 2007) • <i>"CEPS [later renamed GCD] is now ISO 9000 certified on its</i>

	and shift to managerial rationalism <ul style="list-style-type: none"> • Enhance state revenues by reducing corruption and 'leakages' 	<i>administrative procedures. The Gateway Project [TRADENET precursor] was able to reengineer the institution with a new mission and vision. As a result, the simplification of its procedures enabled Ghana to be recorded as one of the top ten reformers in the Africa in 2007 and 2008. The GCNet system for CEPS, it has enabled flow of information among institutions" (World Bank Group 2010, p.29)</i>
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Contradictory local positions on trade and development

There is uneasy tension between promises of international trade and realities of Ghana's economic development. Ghana's Poverty Reduction Strategy (GPRS) laments that, "in the forty years since the days of Nkrumah [Ghana's independence leader], economic policy-making in Ghana has had to contend with a popular sense of grievance over an arrested national development still blocked by an unfair international trading system" (Ghana National Development Planning Commission 2007, p.ii).

The promise of export-led growth remains a mirage for Ghana. Ghana's exports, mostly low value-added raw materials and agricultural products which employ majority of the country's labour, face disfavorable terms of trade, cascading tariffs, stiff international markets and abnormally high quality requirements whose net effects deter exports. Ghana's trade balance as of 2014 was negative, with \$4.62 billion in net imports, mostly high value-add goods from import sources like China, India and USA. During the five years prior to 2014, Ghana's imports outgrew its exports significantly, at an annualized rate of 13.7% compared to 9.8% (OEC 2016).

Many exporters, importers and local manufacturers interviewed complained about worsening prospects in Ghana and the international economy that made their trade untenable. E.g., handicraft and garment exporters complained about cut-throat competition and counterfeiting from lower-cost countries like Vietnam and China; increasingly prohibitive regulatory and technical restrictions from main markets like the EU; and lack of financing facilities.

Importers complained about hidden costs, intransparency, and excessive rent seeking (high duties and taxes, fees, bribes etc.) on the part of government and customs officers who viewed them as source of ‘easy’ revenues. Local manufacturers such as furniture makers also complained about lack of government and policy support, excessive rent seeking, competition from cheap Chinese imports, and rising production costs (as they had to internalize non-core costs like utilities and access roads given deficits in government provisioning).

Contradictory effects of TRADENET

A decade after TRADENET was implemented, several administration dysfunctions it sought to transform persisted. Rent-seeking behaviours of customs officers such as bribery, extortion and corruption were reconfigured rather than eliminated (Addo 2016). While clearance practices improved, the system was not used as planned and was functioning below capability as a ‘single window’. E.g., despite TRADENET’s affordance to fully automate and integrate IDF processing, processes still involved redundant paper-based steps that required declarants to print out the electronic

IDF and present to officers face-to-face. The face-to-face opportunities created by such paper submissions could be viewed as attempts by officers to re-intermediate the now automated and integrated process that had physically disintermediated them by design. Several officers interviewed complained about diminished influence of customs and ‘loss of control’ to outsourced private companies such as Destination Inspection Companies (DICs) that performed previously core customs functions like valuations and classification.

The resulting mode of IDF processing at GCD, rather than fully reflecting planned capabilities of TRADENET, maintained aspects of pre-TRADENET manual clearance procedures that took place in the ‘long room’. Prior to IT automation at GCD, the ‘long room’ was where customs clearance occurred. It was a hallway where officers sat behind adjoining glass- partitions (multi-windows) to interact with declarants and process

declarations. Long room process was tightly coupled with various interdependent steps and hence highly prone to errors and inefficiencies as well as officers' coercion and discretion. Furthermore, at various stages, the IDF was prone to tampering and falsification to evade taxes and duties.

Despite such known limitations of manual, paper-based steps, many officers preferred paper-based to full electronic IDF processing. This contradiction had no obvious justification and was puzzling to senior officials who unsuccessfully encouraged officers to use TRADENET fully. As one administrator lamented, "customs officers have so much confidence in paper [...] you don't need the physical receipt but they still want to see it."

The issue of corruption at customs was indirectly explored in our research through narratives of declarants and informal discussions with bureaucrats.

Corruption was found to involve both formal, state-sanctioned practices and informal private practices such as bribery, extortion or pilfering. Corruption remained a topical issue in Ghana and most Ghanaians perceived the government and bureaucrats as corrupt (Afrobarometer 2014). In the formal sense, a consequence of several GoG agencies mandated in customs clearance by law was that such agencies charged rents like 'inspection fees' or 'levies' autonomously and without coordination. The Ghana Museums and Monuments Board (GMMB), for example, were to charge handicraft exporters 50 Ghana pesewas per item,¹² to issue supporting documents to an IDF.¹³

Such practices caused tensions between traders who felt extorted from, and bureaucrats who failed to acknowledge that various 'small fees' created burdensome hidden costs (the author witnessed a verbal feud between traders and bureaucrats at a TRADENET

¹² 50 pesewas, or about 13 US cents as of October 2015. E.g., a cargo container with 1000 woodcarvings would cost an exporter 1000*0.13, or \$130 for 'inspection fees' to one of several agencies in charge of regulating woodcarvings. These payments were not 'official', meaning while legal, they were not payments collected by GCD into national treasury.

¹³ In the example of GMMB, the document was to confirm that export-bound items were not national relics. Handicraft exporters complained against such inspection because they dealt in new decorative artefacts.

workshop). GoG-sanctioned rent-seeking did not only have historical roots, but were also attributable to perennial budget deficits and poor public finance which meant that under-funded agencies were pressured to generate funds.

Aside such issues, various traditional and cultural behaviours undermined Ghana’s TRADENET e.g., local lackadaisical attitudes towards time and time management naturally undermined Western-assumptions underlying automation and efficient clearance. This was captured by a local pidgin phrase “go and come, go and come” that many declarants complained about as the typical perfunctory response from customs and other bureaucrats whenever declarants made critical enquiries. During fieldwork, it was common for customs officers and government officials to repeatedly miss or be extremely late for various pre-scheduled appointments and meetings; a fixture of life in Ghana that ordinary Ghanaians have come to take for granted.

Table 5: Summary of findings

Area of discourse	CDA findings (on problematization)	Fieldwork findings (on local positions)	Implications
Trade and development	<ul style="list-style-type: none"> International trade key to development Economic growth based on exports and comparative advantage Private sector ‘engine’ of economic growth Government as enabler of private sector 	<ul style="list-style-type: none"> Unfavourable international trade climate for developing countries Many developing countries like Ghana are net importers given lack of industrial base for manufacturing, among other reasons. Import substitution discredited in dominant discourses. Ghana is market/ ‘dumping’ ground for imports and international trade stifles domestic industrialization Government rent seeking, lack of public infrastructure and favourable policy intervention stifles private sector development 	<ul style="list-style-type: none"> International trade-driven development questionable in practice. Net effects of international trade on Ghana’s development debatable Alternative policy and practical options inhibited ‘Non-technical’ ‘solution’ e.g. behavioural change; and long term fundamental transformations unexplored
IT and public administration rationalization	<ul style="list-style-type: none"> IT modernizes public sector i.e., promotes efficiency and effectiveness IT enables transformation of undesirable bureaucratic practices and shift to managerial rationalism 	<ul style="list-style-type: none"> Personalization of public office i.e. neopatrimonialism, means that formal rules are subject to negotiation Historically formed behaviours such as rent-seeking and corruption materialized through paper processing Cultural and traditional behaviours e.g. subjective notions of time and informal interactions inimical to goals of TRADENET 	<ul style="list-style-type: none"> Contradictory effects of IT e.g., persistence of paper use (“fetishization of paper”) and historically formed behaviours

Discussion

Subaltern positions on Ghana's Trade and Development

Our findings indicate that the neoliberal problematizations of trade and development as well as TRADENET were frequently at odds with local realities or ignored context and history. Indeed, political structures and institutional arrangements governing neoliberal international trade remain intransparent, disfavorable to developing countries, and often inimical to socioeconomic development (Easterly 2009; Gore 2000; Wade 2004; Wade 2003).

It has been pointed out that the promise of neoliberal reforms to deliver developmental outcomes for developing countries remains dubious (Chang 2003; Chang 2010; Wade 2004). E.g., policies of powerful international trade actors like the WTO have been said to limit the options of developing country governments thereby shrinking not only their “development space” but also “self-determination space” (Wade 2003).¹⁴

Based on observation that export is not a principal source of economic growth, it has been argued that developing country economies should follow “internal integration” rather than “external integration” (Wade 2003, p.635).¹⁵ Developing countries like Ghana might be well of building up regional-level organizations and embedding their markets not only nationally but also in regionally distinct configurations that provide tailored policy solutions for vulnerabilities of different countries and regions (Wade 2003, p.638).

¹⁴ We take a relaxed view of subaltern positions that is limited within contemporary global structures like capitalism. A more radical interpretation might reject any ‘Western’ structures and discourses as a starting point. E.g. scholars have investigated if developing countries like those in Africa had/have indigenous/non-Western administrations or rationalities (Stout et al. 2010; Amoah 2012).

¹⁵ ‘Integration’ often implies integration into the world economy, with an assumption that more integration is always developmental. Wade (2004, p.635) argues an internally integrated economy has better developmental thrust since it has dense input–output linkages, and a structure such that a high proportion of domestic production is sold to domestic wage earners.

Nonetheless, neoliberal discourses of influential organizations like WTO, and contemporary development theory generally hold that comparative advantage and international trade are to be preferred to alternatives such as import substitution or regional trade, no matter how appropriate they might be in particular contexts.¹⁶

Subaltern positions on TRADENET enabled administration modernization

Contradictory outcome of TRADENET postimplementation such as the ‘fetishization of paper’ as well as corruption, bribery and rent-seeking behaviours might be best understood through a historical and contextual lens that considers institutional peculiarities of customs administration. Considering these and their underlying power dynamics illuminates subaltern positions in relation to IS use and effects. E.g., contrary to principles of Weberian bureaucracy, in administrations around the world, particularly in developing countries such as Ghana, decision-making rarely emanates from rational-legal authority but is subject to negotiation (Minogue 2001, p.5).

In Africa, neopatrimonialism has been widely used to describe public administration (Chabal & Daloz 1999; Bratton & Van de Walle 1994; Van de Walle 2001a). It is defined as organization in which “relationships of a broadly patrimonial type pervade an administrative system which is formally constructed on rational-legal lines” and where officers hold “powers which are formally defined, but exercise those powers [...] as a form [...] of private property” (Clapham 1985, p.48). It has been further claimed that neopatrimonialism distinguishes African institutions from others (Medard 1982; Englebert 2000), and the argument has been made that “the distinctive institutional hallmark of African regimes is neopatrimonialism” (Bratton & Van de Walle 1997, p.277).

¹⁶ It has been suggested that despite import substitution going awry in Latin America, Africa, South Asia etc., this no more discredits it as a principle than the failures of democracy discredits the principle of democracy (Wade 2003, p.234). Policy response might be to do import replacement better, not less (Bruton 1998).

In the African context, separation between private and public spheres—the basis of modern state and public administration—is said to be thin or non-existent (von Soest 2006). Such blurring has deep cultural and historical roots. E.g., local ideas of administration and work are personalized in fundamental ways: from subjective notions of time, to modes of accountability, interaction and (in) formality. The term ‘African time’ has come to characterize a cultural tendency in African societies to keep a relaxed, slow-paced, nonchalant attitude toward time (Howes et al. 2006; Rosaldo 1993).

Such historically and culturally formed behaviours further sustained rent-seeking. Rent seeking elaborates another important aspect of the political economy of Africa’s underdevelopment (Mbaku, 1998; Herbst, 2000; Mkandawire, 2013). Rents occur when non-market forces such as politics or corruption, distort mechanisms of a free market and arise from “politically mediated opportunities for obtaining wealth through non-productive economic activity” (Boone 1990, p.427). Lewis (1994, p.438) similarly notes a “mutually reinforcing pattern of neopatrimonial governance and a rentier economy.” Neopatrimonialism and rent seeking are underpinned by informal structures where formal ones might exist.

Rent-seeking and corruption at Ghana’s customs could be viewed in broader historical context from the organization’s inception over 150 years ago when the country was a colony of Britain (Ghana Customs 2006; Chalfin 2010). Early customs enforced collections of taxes and duties in line with Britain’s doctrine of self-sufficiency of colonies, whereby Africans had to finance their own domination to lower the cost of imperialism to Britain’s treasury (Gardner 2012; Young 1994).

Given that direct taxation on colonial subjects was prone to rebellion and was extremely costly for overstretched colonial administrations, indirect trade rents were preferable (Waijenburg 2015). Peculiar patterns established by colonial administrators were adopted by post-colonial countries after independence (Gardner 2012; Acemoglu et al. 2005).

Reliance on customs as a major and preferred channel for extractive rents outlasted the colonial period and continued into modern Ghana.

Conclusion

Dominant problematizations of Ghana's TRADENET— (1) international trade as solution to poverty and under-development (2) IS-enabled customs administration rationalization as a technical solution to dysfunctions of traditional administration that impede efficient international trade—do not consider historically shaped local positions and contexts that contradict their appropriateness. As a net importer, Ghana derives less direct benefit from the promise of export-led economic growth through international trade facilitated by TRADENET.

The government rather views the primary benefit of TRADENET as the efficient collection of rents in the form of taxes, fines and fees. Similarly, administration modernization potential of TRADENET is impeded by neopatrimonial rent-seeking behaviours like bribery, extortion, corruption etc., and institutionalized practices like “African time” constituted through informal face-to-face negotiations and materiality of paper.

Historical and ongoing power relations and their manifestation through discourse are important for uncovering biases of development and its interventions (Escobar 1995; Ferguson 1990). Such perspective is useful for critically assessing implications of IS in developing countries. E.g., by problematizing development in technical rational terms that require programmatic interventions, development discourse conveniently neglects history, politics, traditions and other ‘messy’ phenomena it has no obvious explanations for, nor ready ‘solutions’ to (Ferguson 1990).

Furthermore, development discourse marginalizes local positions not only through political and economic power, but also through intellectual and moral leadership or

hegemony. These clarify why alternative positions to IS remain unrecognized and under-explored while universalist positions dominate despite their inadequacy in situated contexts (Avgerou 2000b; Avgerou 2002).

Subalternity is not only about marginalization but also the extent to which subalterns ‘speak for themselves’ or own their discourse without re-presentation by others (Spivak 1988a). Our contribution is to show how it provides a window into understanding ‘wicked’ ISDC problems that sociotechnical accounts struggle against such as our ‘fetishization of paper’ example.

Recognizing subalternity in ISDC offers emancipation by negotiating values and objectives of IS with positions and contexts of developing countries. A methodological implication is that ISDC should venture beyond typical case studies with technical rational assumptions. Ethnographic and anthropological methods might hold promise for uncovering subaltern perspectives in relation to ISDC.

Chapter 7: Explaining ‘Irrationalities’ of IT-Enabled Change in a Developing Country Bureaucracy: Case of Ghana’s TRADENET

Abstract

Through a case study of Ghana’s TRADENET, a business-to-government (B2G) Electronic Data Interchange (EDI) implemented to automate and integrate customs clearance, this article investigates ‘irrationalities’ of IT-enabled change in the context of a developing country bureaucracy. Our data revealed that despite TRADENET’s potential for full automation and integration, bureaucrats sometimes preferred manual, face-to-face, paper-based practices. We explain such outcome—often depicted in the literature as a kind of ‘irrationality’—by drawing upon the theoretical notion of institutional logics to trace underlying logics of TRADENET-enabled change. We investigate two specific TRADENET-enabled practices—Import Declaration Form (IDF) processing and risk controls—and show that where ‘irrationality’ was present (IDF processing), the managerial logic of TRADENET contradicted existing bureaucratic logics. We therefore interpret ‘irrationality’ as ‘good enough’ or compromising outcome when new logics of IT and old bureaucratic logics contradicted. Our findings move beyond success or failure interpretations typical in Information Systems in developing countries (ISDC) and ICT for development (ICT4D) research. We also enhance knowledge of IT-enabled change in developing country bureaucracies by moving beyond the organizational milieu to emphasize broader institutional forces in developing countries such as neopatrimonialism. Such theorization advances ISDC/ICT4D research where reconciling micro with macro accounts remains daunting.

Keywords: *institutional logics; neopatrimonialism; rent seeking; managerialism; bureaucratic reform; IS in developing countries; trade facilitation; TRADENET; ICT4D*

Introduction

Background

Information technology has long been deployed in developing countries as a means of modernizing bureaucracies by rationalizing their practices—that is, by making them more efficient and effective. Developing countries, however, have been notably problematic environments for information technologies (Avgerou 2008; Heeks 2002b; Walsham & Sahay 2006; Danish 2006). For example, Heeks (2003) reported that most IT implementations in the public sector in Developing Countries fail, with 35% being total failures (IT not implemented or implemented but abandoned), and 50% partial failures (core objectives were not achieved or the outcomes undesirable).

On the problems of IT in developing countries, a common narrative in ISDC and ICT4D research is that IT users in developing countries tend to have peculiar practices or behaviours that go against IT's rationality assumptions (Avgerou 2000b). Avgerou (2000b, p.2) poignantly observes about developing countries that “the techno-economic rationality of Western modernity is instrumental in defining a series of problems and determining their solutions [but] is blatantly unsuccessful in streamlining people's behavior to the achievement of such solutions.” Such peculiar behaviours and practices of IT users in developing countries that IT is ‘unsuccessful in streamlining’ have been poorly understood and thus, presented as ‘irrationalities’, from the perspective of rationalization goals of IT (Avgerou 2000b).

To explain such ‘irrationalities’, scholars have focused on technology or social aspects of use. Design of IT, for example, has been suggested to contradict ‘actuality’ of developing countries thereby creating a ‘design-actuality gap’ (Heeks 2002a; Heeks 2005). Avgerou and Land (1992, p.38), similarly questioned the “appropriateness” of IT in developing countries where “rigid norms and structures” of “traditional societies” contradict fundamental tenets of IT's socio-technical design such as ‘user participation’.

Social accounts have pointed to micro (individual) level factors such as user resistance (Cavalheiro & Joia 2013), incongruent alternative rationalities (Avgerou 2000b; Avgerou 2002), conflicting multiple rationalities (Chilundo & Aanestad 2004), lack of skills and competencies (Corea 2007; Zaied et al. 2007), micro politics and vested interests (Peterson 1998); or macro (group) level factors such as culture (Zhao & Khan 2013; Hill et al. 1998) and institutions (McGrath & Maiye 2010).

Research Problem

Notwithstanding insights provided by extant approaches, some theoretical challenges exist. One is how to reconcile accounts of ‘irrationalities’ at the individual level with institutional factors at the social level while escaping the determinism trap (see e.g., Leonardi and Barley, 2008). For example, purely structural accounts of IT-enabled phenomena might be accused of downplaying agency, that is, cognitive capacity of actors for planned or situated action (see e.g., Volkoff, Strong and Elmes, 2007); whereas, purely agent-based accounts might be accused of ignoring macro structural fields within which actors are embedded, and which they draw upon for action (Giddens 1984; Berger & Luckmann 1967).

A second challenge is to elaborate how IT itself is implicated in observed ‘irrationalities’ of bureaucratic rationalization in developing countries, in light of admonition by scholars of institutions that “[existing] institutionalized practices are rarely ever completely extinguished but continue albeit weaker in scope (extent of diffusion) or potency” (Dacin & Dacin 2008, p.327).

Objectives

In this article, we pursue a different line of explanation that tries to overcome the noted theoretical concerns. We argue that ‘irrationalities’ of IT-enabled bureaucratic rationalization in developing countries may be traced to underlying contradicting institutional logics. Furthermore, such ‘irrationalities’ during IT rationalization—rather than being

interpreted in straightforward terms of failure—might be better understood as a compromising or ‘good enough’ outcome of contradicting old bureaucratic institutional logics and new managerial rationalism of IT.

Unlike micro approaches that emphasize agency and cognition to the neglect of broader social structures, or macro approaches that do the obverse, institutional logics integrates agency and cognition with broader socially constructed institutional patterns and rule structures (Thornton & Ocasio 2008, p.101). Furthermore, by tracing contradictions between institutional logics of bureaucracy and that of IT, our approach emphasizes interaction between the social and technical and tries to overcome social or technological determinism.

Our theorizing is instantiated with a case study of Ghana’s TRADENET-enabled rationalization, principally involving Ghana Customs Division (GCD) and other public and private organizations such as TRADENET’s management company, Ghana Community Network (GCNET), destination inspection companies (DICs) and Government of Ghana (GoG) regulatory agencies. Primary data for this article was collected over several months as part of doctoral fieldwork in Ghana. The main research site was GCD’s field office at Ghana’s largest port, Tema Harbour, a hub for key trade actors. The rest of the article proceeds as follows. The next section outlines theoretical framework of the research: institutional logics, managerial rationalism of IT and neopatrimonial rent seeking logics of African bureaucracies. We then describe the research methodology followed by the case. We discuss findings and conclude with implications.

Theoretical framework

Institutional logics

Friedland and Alford (Friedland & Alford 1991) in their examination of the relation between society, organizations and individuals, considered institutions as patterns of activity

beyond the organizational level that are rooted in symbolism and material practices. Such symbols and practices provide resources for individuals, groups, or organizations to draw upon, elaborate or manipulate. Organizations and individuals draw upon such symbolic and material resources to shape their actions and give their experiences meaning; and in the process, reproduce such institutions. Institutional logics are thus the organizing principles that underpin individual practices, consistent with a given institution (Friedland and Alford 1991). Aside providing organizing principles, institutional logics also give motive and sense of self to social actors who in turn reproduce it through their action (Friedland & Alford 1991).

Friedland and Alford (Friedland & Alford 1991) defined institutional logics as “a set of material practices and symbolic constructions which constitutes its organizing principles and which is available to organizations and individuals to elaborate.” Thornton and Ocasio (1999, p.804) similarly defined institutional logics as “the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality.” In this way, institutional logics are consistent with the structuralist view of new institutional theory with regard to the recursive interaction between structure and human action. For example, Powell and DiMaggio (1991, p. 23) suggested that a structuralist account such as that of Giddens (1984) “provides a cognitive theory of commitment to scripted behaviours” that help explain how institutions reify through action.

By connecting individual agency and cognition with broader socially constructed institutional patterns and rule structures (Thornton & Ocasio 2008, p.101), institutional logics contrast with both rational choice theories that are narrowly individualistic and cognitivist and structural accounts that overlook situated agency. The institutional logic construct therefore, advances upon, and is distinguishable from new institutionalist accounts where

institutions—historically developed patterns of social actions and relations, which have acquired a taken-for-granted meaning, value, and significance—are not subject to individual cognitive considerations (Powell & DiMaggio 1991).

Jepperson's (1991, p.143) definition of institution as “an organized, established, procedure” further stresses the structural, historical and taken-for-grantedness of institutions (Powell & DiMaggio 1991, p.23). As such, in contrast to the general institutional view that actors are passively subject to institutional scripts, institutional logic suggests that actors act based on their own cognition but that cognition is consistent with goals and taken-for-granted assumptions that are situated within a particular institutional context—a notion described as “embedded agency” (Thornton & Ocasio 2008, pp.103–104).

Through the notion of embedded agency, institutional logics stresses that humans are not nonrational recipients and performers of taken-for-granted institutional scripts but act upon rationality embedded in an institutional context. Humans therefore navigate institutional structures in accordance with particular logics. Institutional logics influence mindful, rational behaviour of individual actors in an organization who in turn shape institutional logics (Thornton 2004). By providing a link between broader institutions and individual action, the institutional logics approach bridges macro, structural perspectives of institutional theorists like DiMaggio and Powell (DiMaggio & Powell 1983) and micro, processual approaches of others like Zucker (1977). Situated action is further tied to beliefs and practices from wider institutional environments thereby overcoming critiques of diffusion and isomorphism studies such as Hasselbladh and Kallinikos' (Hasselbladh & Kallinikos 2000).

Four aspects of institutional logics and their interplay are especially salient to this study. First, institutional logics provide organizing principles for action based on values and objectives of the institution (Thornton & Ocasio 2008; Friedland & Alford 1991) . Second, they contain assumptions about “means-ends relationships” (Thornton & Ocasio 2008,

p.112). Third, institutional logics enable identity formation for individuals and organizations (Thornton & Ocasio 2008; Friedland & Alford 1991). Finally, institutional logics are domain specific and multiple institutional logics might exist within an organization (Thornton & Ocasio 2008; Friedland & Alford 1991; Powell & DiMaggio 1991).

Managerial rationalism

Managerial rationalism, among other things, stresses efficiency, effectiveness, control and accountability—attributes typically associated with business. In developing countries, external coercive pressures toward organizational isomorphism have increasingly bore on states to become more managerial than bureaucratic. Since the 1980s, when the public administration paradigm of New Public Management (NPM) began to take hold in many developed countries, mimetic, coercive and normative influences (Powell & DiMaggio 1991) from international development donors have mounted on developing countries to similarly emphasize managerial rationales such as efficiency, market mechanisms and transparent practices (Minogue 2001, p.6; McCourt 2001b; Hood 1995; Sulle 2010).

Along such lines of donor-driven managerial rationalism, Minogue (2001, p.6) draws attention to the regime of ‘good governance’ being promoted by international development organizations, sometimes incorporating elements of public managerial reform (DFID, 1997; The WorldBank Group, 1994; UNDP, 1998). This approach of packaging good governance initiatives and conditionalities with requirements for public managerial reform is suggested as a recipe for more responsive public services and ultimately for development (see e.g., The World Bank Group, 1997).

The uptake of such managerial rationalism in developing countries varies according to the particular element being considered. Some of the more common elements have been privatization and downsizing of bureaucracies as a core part of structural adjustment programs championed by the World Bank and International Monetary Fund (IMF) (Polidano

2001, p.46). In addition, many developing countries have experimented with other aspects of managerial rationalism such as corporatization (converting civil service departments into free-standing agencies within or outside the civil service) (Polidano 2001, p.47).

Ghana and several other African countries, for example, have merged their customs and income tax departments into corporate-like national revenue authorities to promote effectiveness of internal revenue mobilization (Polidano 2001, p.47). Various other examples of managerial rationalism have been promoted by international development donors in Ghana and other African countries' bureaucracies (see e.g. de Merode and Thomas, 1994; Dodoo, 1997; Christiansen, 1998; McCourt, 1998; Polidano, 1999).

In the context of Ghana's TRADENET implementation, managerial rationalism was pursued through training of bureaucrats in new ways of performance and management as well as TRADENET-enabled rationalization of customs clearance practices by automation and integration. For example, as part of managerial rationalism championed by the World Bank and IMF in Ghana, the GCD became an ISO 9000 certified organization (World Bank Group 2010).¹⁷

Unsurprisingly, we found during our research interviews that several customs officers and government bureaucrats generally spoke in jargons consistent with logic of managerial rationalism such as "revenue targets", "performance review", "turnaround time". "KPI (key performance indicator)" etc. As an artefact meant to enable rationalization of customs clearance processes, TRADENET was inscribed (Heeks 2005; Akrich 1992) with such managerial rationalism to accomplish rationalization objectives.

¹⁷ ISO 9000 is a management standard that prescribes quality guidelines to increase business efficiency and customer satisfaction. It aims to embed a managerial quality system within an organization, increase productivity, reduce costs, and ensure output quality.

Bureaucratic logic of neopatrimonial rent seeking

Neopatrimonialism, an established concept in political science and political economy, has been widely applied to shed light on the nature of institutions in developing countries, particularly those in Africa (Chabal & Daloz 1999; Bratton & Van de Walle 1994; Van de Walle 2001a). Clapham (1985, p.48) defines it as “a form of organization in which relationships of a broadly patrimonial type pervade an administrative system which is formally constructed on rational-legal lines. Officials hold positions in bureaucratic organizations with powers which are formally defined, but exercise those powers [...] as a form [...] of private property”.

Neopatrimonialism is therefore understood as a hybrid institutional arrangement that combines an apparent formal, modern, rational-legal administrative apparatus (the “neo”), with a patrimonial system wherein elites control public offices for private gain (Bratton & Van de Walle 1997). It is a co-existence of Weber’s (1968) two ideal types of patrimonial and rational-legal domination (Eisenstadt 1973; Clapham 1985, p.48; Bratton & Van de Walle 1997, p.62). Social and political structures, as a result, differ fundamentally from the formalized modalities of official conduct in a rational-legal system (Erdmann & Engel 2006).

Van de Walle (2001b) has suggested that states vary in degree of neopatrimonialism from ideal types of completely patrimonial to completely rational-legal. Scholars like Bratton and van de Walle (1997), Chabal and Daloz (1999), show how in classic neopatrimonial states, institutional decision-making can be personalized by actors and their personal networks within and without the state structure.

Such actors act upon a logic of personal, rather than national interest, and may exist at all levels from the top right down to the street-level bureaucracy. Cammack (2007, p.600) notes that “policy decisions about development and governance are subordinated to that single, overriding [personal] goal.” In the African context, separation between the private and

public realms—the basis of modern conceptions of the state and public administration—is said to be thin or non-existent (von Soest 2006).

Proponents have contended that neopatrimonialism distinguishes African institutions from others (Medard 1982; Chabal & Daloz 1999; Englebert 2000; Bratton & Van de Walle 1997). Bratton and van de Walle (1997, p.277) for example, argue that “the distinctive institutional hallmark of African regimes is neopatrimonialism”. Opponents have however cautioned against such tendency of “overgeneralization about Africa” (Degrassi 2008, p.110).

Sensitized by such positions, this study does not seek to ascribe neopatrimonialism to African states or developing countries as an intrinsic feature. Rather, it is posited that as in the case of Ghana, several characteristics of the bureaucracy are consistent with neopatrimonialism and rent seeking models—and that these define an institutional logic that helps explain ‘irrationalities’ in TRADENET rationalization. Such characteristics of neopatrimonial states include systematic concentration of power, personalization of official resources, corruption and rent seeking (Kelsall 2012; Kelsall 2011; Mbaku 1996; Mbaku 1998; Bratton & Van de Walle 1997, pp.63–65).

Rent seeking, a related concept developed within neoclassical economic theory (Krueger, 1974), elaborates another important aspects of the political economy of Africa’s underdevelopment (Mbaku, 1998; Herbst, 2000; Mkandawire, 2013). Rents are defined as a “premium above opportunity costs for a given set of resources” (Lewis 1994, p.440) and occur when non-market forces such as politics or corruption, distort mechanisms of a free market. Rent seeking behaviours often arise from “politically mediated opportunities for obtaining wealth through non-productive economic activity” (Boone 1990, p.427).

Lewis (1994, p.438) has similarly noted a “mutually reinforcing pattern of neopatrimonial governance and a rentier economy.” Both neopatrimonialism and rent seeking are therefore underpinned by informal structures where strong formal ones might exist.

Boone (1994) in her study of state-business relations during trade liberalization reforms in two West African coastal countries similar to Ghana, found that “liberalization failed to suppress commercial rent seeking” and that “trade-centered renteering is rooted in structural features of the West African economies. Kellsall (2011, p.3) also observed that, “when it comes to state-business relations, there are significant disincentives to [...] making regulation transparent [...] because markets in most African countries are poorly developed political power is often the easiest route to wealth.”

Regarding the link between rent seeking and bureaucratic corruption, Mbaku (1998, p.209) argues that developing countries are “characterized by weak, inefficient and nonviable constitutional rules and economies” and hence, “civil servants [...] are able to extort bribes from entrepreneurs seeking favours.” Bureaucratic corruption, in this view, is “primarily rent-seeking behaviour and is directly related to government intervention in private exchange.” For example, corruption remained a topical issue in Ghana and most Ghanaians perceived their government and bureaucrats as corrupt (Afrobarometer 2014).

The issue of corruption at customs was indirectly explored in our research through interview accounts of customs declarants and informal discussions with bureaucrats. Corruption was found to involve both formal, state-sanctioned practices and informal personal practices such as bribery, extortion or pilfering by some bureaucrats.

In the formal sense, a consequence of several GoG agencies mandated in customs clearance by law was that such agencies charged rents like ‘inspection fees’ or ‘levies’ autonomously and without coordination. The Ghana Museums and Monuments Board (GMMB) for example, were to charge handicraft exporters 50 Ghana pesewas per item,¹⁸ to issue supporting documents to an IDF.¹⁹

¹⁸ 50 pesewas, or about 13 US cents as of October 2015. E.g., a cargo container with 1000 woodcarvings would cost an exporter 1000*0.13, or \$130 for ‘inspection fees’ to one of several agencies in charge of regulating woodcarvings. These

Such practices caused tensions between traders who felt extorted from, and bureaucrats who failed to acknowledge that their various ‘small fees’ created additional hidden costs (we witnessed feuding between traders and bureaucrats at a TRADENET workshop). GoG-sanctioned rent-seeking did not only have historical roots,²⁰ but were also attributable to perennial budget deficits and generally poor public finance which meant that under-funded GoG agencies were pressured to generate external funds.

The theoretical constructs presented are briefly summarized in Table 6 below.

Table 6: Overview of theoretical constructs

	<i>Institutional logic</i>	<i>Instantiations/ example of institutional logics</i>	
		Managerial rationalism	Neopatrimonial rent seeking logic
<i>Operational definition</i>	The socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality (Thornton & Ocasio 1999, p.804)	Administrative logic based on business-like or ‘managerial’ principles such as efficiency, effectiveness, accountability etc.	Administrative logic based on private misuse or abuse of public office for personal benefit e.g. through rents that arise from “politically mediated opportunities for obtaining wealth through non-productive economic activity” (Boone 1990, p.427)
<i>Applicable domain</i>	Most organizations have multiple and/or dominant logics	‘New’ IT interventions and administrative reform paradigms such as NPM meant to reform ‘old’ public administration (bureaucracy)	Public administrations (bureaucracies), especially in developing countries like those in Africa with weak formal state institutions and strong informal arrangements.
<i>Significance</i>	Stresses that humans are not nonrational recipients and performers of taken-for-granted institutional scripts but act with rationality embedded in an institutional context. Institutional logics influence mindful, rational behavior of individual actors in an organization who in turn shape institutional logics (Thornton 2004)	Since the 1980s, when NPM began to take hold in many developed countries, mimetic, coercive and normative pressures from international development agencies and others have mounted on developing countries to similarly emphasize managerial rationales leading to a kind of global institutional isomorphism (Powell & DiMaggio 1991)	Articulates how dysfunctional administration practices like rent seeking and corruption—typical in developing countries, though not exclusive to them—emanate from or are related to the ‘hybrid’ formal (bureaucratic)/informal (traditional/patrimonial) institutional arrangements.
<i>Key actors/ champions/ associated mostly with</i>		“Saints” –powerful elites who champion reforms (Peterson 1998, pp.44–47) e.g. International organizations such as World Bank, state agents such as ‘reformist’ government officials; “Wizards” –technical experts who advocate for technology (Peterson 1998, pp.50–52) e.g. IT staff	“Demons” –people who undermine an information system reform (Peterson 1998, pp.47–50) e.g. Public officials (bureaucrats) often resistant to change and adept at ‘traditional’ practices even if riddled with dysfunctions.

payments were not ‘official’, meaning while legal, they were not part of the payments collected by GCD into national treasury.

¹⁹ In the example of GMMB, the document was to confirm that inspected export-bound items were not antiques of national significance. Handicraft exporters interviewed complained they did not need such inspection because they dealt in new decorative artefacts with no antique value.

²⁰ African states, through their customs administrations historically collect between 20 to 60 per cent of national revenues in the form of trade-related duties, levies and taxes (Cantens 2012, p.1). Ghana’s 2011 figure was nearly 40 per cent, roughly the same as all direct domestic tax receipts to the state (Bank of Ghana 2012, p.3). Aside that, the customs administration in Ghana has been a primary instrument of state revenue collection since colonial times (see e.g., Chalfin, 2010).

Methodology

To understand *how* and *why* of ‘irrationalities’ occurred in IT-enabled rationalization in a developing country bureaucracy, case study approach was deemed appropriate (Yin 2009). The study was interpretive and sensitized by theoretical concerns from extant literature (Walsham 2006; Walsham 2010). The case of Ghana’s TRADENET-enabled customs clearance rationalization was chosen because it is neither a straightforward success nor failure. Although TRADENET had a noticeable impact on certain performance indicators and has been widely cited as successful IT rationalization (Asuliwonno 2011; World Bank Group 2010; De Wulf 2005; Adaba & Rusu 2014), it has not achieved its design and implementation goal as a ‘single window’ platform.

The research relied on several data sources with constant interplay between data and sensitizing theoretical constructs. Primary data was collected over an intensive three-month period spent mainly within GCD’s field office at Ghana’s main port, Tema Harbour. It consisted chiefly of open-ended formal and informal interviews with 65 informants in total, comprising street-level bureaucrats, senior officers, customs declarants (freight forwarders, importers, exporters) and others involved in customs clearance and Ghana’s trade sector generally.

Additional data analysed were field notes and memos from participant observations of the trading operations of exporters, importers, freight forwarders and clearing agents; transcriptions from TRADENET workshops; systems demonstrations and observations of TRADENET use, trade processing and port operations at Tema Harbour; archival data in the form of reports, filed documents, website contents, project documents and artefacts; newspaper clippings and other records from credible public sources.

The interviews aimed at understanding the nature and justifications for informants’ customs clearance practices and everyday use of TRADENET. Attention was paid to

capturing a host of “voices” pertinent to the phenomenon (Myers & Newman 2007) while probing tensions, inconsistencies and ‘irrationalities’ that emerged (Avgerou 2000b). Interviews were concluded when it became apparent that theoretical saturation had been reached and no additional insights were being identified (Eisenhardt 1989).

Informants were chosen through combination of purposive and snow-balling techniques (Bryman 2001). For example, at the onset of data collection, while interviewing a key informant at the Ghana Export Promotion Authority (GEPA) for background on Ghana’s exports and TRADENET, the informant invited me, impromptu, to attend an ongoing workshop to brief exporters on TRADENET.

The workshop quickly devolved into a protracted feud between the exporters—mostly small business owners struggling within the country’s ailing economy—and organizers, over what the exporters perceived as “extortionate fees” pushed on them through TRADENET. It was at this chance workshop that the institutional contradictions of Ghana’s TRADENET first came to my attention. It was also at this workshop that I met (and later interviewed) several key informants who referred me to other well-placed informants.

Most interviews were audio recorded, transcribed and analyzed—during and after the data collection phase—for themes, patterns and processes (Yin 2013), with aid of qualitative analysis software (Atlas.ti). Despite assurances, few respondents were reluctant to be recorded; and in such cases, I took detailed notes. The duration of interviews varied from thirty minutes to three hours.

Following the methodological suggestions of Robey and Boudreau (1999), analysis focused on discrepancies evident in data both during and after collection; in our specific case such discrepancies related to perceived ‘anomalies’ or ‘irrationalities’. Interview data was analysed with three broad objectives in mind (Oates 2005): to provide directly relevant insight into the phenomenon of study; to build a rich description of the research phenomenon

and its organizational and historical context; and to explore alternative understandings, issues and questions beyond what is directly elicited through the sensitizing theoretical framework.

Case study

Background

In the 1990's the government of Ghana (GoG) undertook trade policy reforms as part of neoliberal economic policies that the World Bank (WB) and International Monetary Fund's (IMF) championed during structural adjustments in many developing countries (see e.g., Kraus, 1991). Because of Ghana's strategic geography and seaport access, GoG and its donors were guided by a vision to 'open up' Ghana to the rest of the world by supporting export and enterprise development to boost private sector competitiveness and attract foreign direct investment (FDI).

But a decade after structural adjustments, intended outcomes had failed to reach desirable levels. Hence, after policy reviews, Ghana's donors, chiefly WB, recommended a series of additional measures intended to eliminate constraints to trade and investments (De Wulf 2005). Core to these measures were reforms of GoG 'front line' agencies involved in trade and investment such as the Customs Excise and Preventive Services (CEPS).²¹

To that end, GoG and WB, implemented the Ghana Trade and Investment Gateway (GHATIG) project, a reform program that ran from 1999-2005 then extended until 2009. GHATIG's goal was to make Ghana a 'Gateway to West Africa' and to "attract a critical mass of Export oriented FDI into Ghana to accelerate export-led Growth of the National Economy" (The World Bank Group, 2010, p. 50).

GHATIG, it was hoped, would not only improve competitiveness of local private enterprises but also make Ghana the most competitive investment destination among its peers

²¹ CEPS was later renamed Ghana Customs Division (GCD) after organizational reforms in 2004 that combined it with three other major revenue agencies to form the Ghana Revenue Authority (GRA). The renaming was in part to signal a shift from CEPS' original core enforcement functions to a more service oriented modern organization.

in the West African sub-region. These objectives were in line with GoG's neoliberal developmental agenda to become a middle-income country by 2020 through its Poverty Reduction Strategy (GPRS) that called for the country to develop "competitive advantages", cater to export markets and to make the private sector an 'engine of growth' (World Bank Group 2010, pp.9–10).

Trade facilitation was central to GHATIG and automating and integrating customs clearance became an important agenda. After a GoG delegation had visited countries with good trade facilitation programs, e.g. New Zealand, Singapore, Mauritius, and Malaysia, the Singapore and Mauritius models were deemed most desirable. These two models indicated that aside benefits of speeding up trade flows; there was great potential for government revenue mobilization.

For example, Mauritius had become a leading textile and garment exporter partly because of technology deployed to facilitate trade, whereas Singapore's TRADENET, developed at a cost of about USD 11 million in 1987, eventually saved around USD 1 billion per year in productivity (Yasui & Engman 2005, p.16). Consequently, GoG selected Crimsonlogic, a Singaporean company that developed Singapore's TRADENET and transferred the technology to Mauritius, to provide a similar system for Ghana. By 2003, TRADENET began fully operating at Ghana's main seaport, Tema Harbour, and subsequently at all ports in the country.

TRADENET postimplementation

TRADENET was designed to enable processing of customs clearance documents, duties, taxes and data on Ghana's imports and exports. It also allowed centralization of steps in the import and exports clearance process and served a dual purpose of facilitating trade and supporting GOG's revenue mobilization. As a business-to-government (B2G) platform, it was meant to integrate several public and private actors in the trading community such as the

Ministry of Finance and Economic Planning (MOFEP), Ministry of Trade and Industry (MOTI), banks, over twenty GoG regulatory agencies, shippers, freight forwarders, etc.

Prior to TRADENET, customs clearance and data flow between members of the trading community was convoluted and involved duplications and inefficiencies. Such processes were mostly paper based, labour intensive, time consuming, costly and error-prone, requiring multiple transcription and data entries. For consignments to be cleared, between 13-30 steps had to be completed over several weeks, depending on the nature of goods.²²

Trade data were also manually compiled from paper records, thereby causing delays, inaccuracies and costs. These inefficiencies created opportunities for bureaucrats to command ‘facilitation fees’ (bribes) to ‘speed up’ for anxious declarants, e.g. by allowing queue jumping or manipulating the process altogether. GoG annually suffered revenue losses because the system's inefficiencies enabled private profiteering by creating an informal, intransparent facilitation economy (demand and supply for efficient service). Thus, customs, for several years, had been counted among the most corrupt bureaucracies in Ghana (see e.g, SOAS, 2001).

TRADENET integration and automation which was carried out under an ‘organizing vision’ (Swanson & Ramiller 1997) referred to as a ‘single window’ and was meant to reduce transaction costs for declarants, make GoG’s regulatory operations effective and efficient and to enhance revenues. For example, declarants were to electronically submit one online document, the IDF, to fulfil all regulatory, taxation, exemptions, permit and other requirements.

However, ten years after implementation, the 'single window' vision was not fully realized. The next two sections present two TRADENET-enabled practices meant to illustrate

²² GCNET, the public-private administering company of TRADENET reports that after TRADENET implementation, 75% of clearance at Tema port now takes 1-5 days with only 11% taking more than 5 days

mixed outcomes of IT toward the two broad objectives of Ghana's customs clearance reforms, trade facilitation and revenue mobilization.²³ The first practice, IDF processing, illustrates 'irrational' outcome and the second, risk controls, an outcome consistent with rationalization goals of IT.

TRADENET implication in trade facilitation: IDF processing

The customs clearance process involved the following simplified steps:²⁴ (1) A declarant completed the IDF online via the TRADENET interface (2) GCD through its outsourced private agents, the destination inspection companies (DICs) classified and valued the goods, assessed applicable duties and taxes and issued a final valuation and classification report (FCVR) electronically (3) Declarant paid applicable duties and taxes at bank and physically submitted payment receipts, along with paper copies of IDF and supporting documents to customs (4) Customs bureaucrats undertook compliance steps that included paper document verification (5) If documents were approved, notification was relayed electronically to declarant via TRADENET and the declarant was sent for a physical inspection of the goods to fulfil security, compliance and regulatory requirements before final clearance (5b) Declarant undergoes physical checks by port guards and other GoG agents before exiting the port.

As described, important steps remained paper-based, requiring declarants to print out the electronic IDF and present to bureaucrats face-to-face. This was despite TRADENET's affordance to fully automate and integrate IDF processing into a single electronic step for declarants. The resulting mode of IDF processing at GCD may be viewed as a compromise between the 'single window' organizing vision of TRADENET and pre-TRADENET manual clearance procedures that took place in the 'long room'.

²³ Given constraints of this article, only two customs clearance practices from the case study are illustrated. In reality, customs clearance process is highly complex and involves several specific 'customs regimes' with varying practices

²⁴ The steps represent a standard case where no special steps apply and the IDF is approved

Prior to IT automation at GCD, the 'long room' was where customs clearance was mostly carried out. 'Long room' is an elongated hallway where bureaucrats sat behind a row of adjoining glass-front partitions (multi-windows) to interact with and assist declarants to process declarations. The overall process was tightly coupled, with each step highly dependent on the next and hence highly susceptible to the discretion of bureaucrats, and easily prone to errors and inefficiencies.

Furthermore, at the various stages of face-to-face interaction, the IDF was prone to tampering and falsification to evade taxes and duties. Despite such known limitations of manual, paper-based steps, several bureaucrats preferred paper-based to full electronic IDF processing with TRADENET. This 'irrationality' was puzzling to senior customs officials who routinely encouraged officers to use TRADENET's electronic IDF capabilities fully. As an administrator lamented:

[Customs] officers have so much confidence in paper that even at times the receipt that has been issued [...] it is connected [to TRADENET] so once you click on the declaration, you will see that payment has been done. So you don't really need the physical receipt for anything. But [...] they still want to see it though it doesn't add anything.

To be clear, some steps such as payment of duties and taxes were constrained by lack of supporting infrastructure like reliable third-party online payment options while steps like physical inspection of goods by customs bureaucrats or their proxies were mandated by law. But customs bureaucrats' preference for paper documentation—when a simple IDF number sufficed to electronically access and process clearance documents—was puzzling and had less clear justifications.

TRADENET implication in 'revenue mobilization': Risk controls

One practice that was effectively rationalized through TRADENET was risk control. This refers to measures taken by customs to minimize "revenue risks" to GoG. "Revenue

risks” was a term officials used to describe losses through such means as non-payment of duties and taxes or evasion via under-reporting, falsification, misclassification or undervaluation of goods, money laundering etc. Through aggregation of large and accurate data, as well as back-end tools for data analytics, monitoring, evaluation and reporting, bureaucrats were able to create dynamic risk profiles for declarants, spot unusual consignments, flag high-risk consignments and coordinate their responses for curtailing such risks.

Furthermore, via integration with receiving banks, TRADENET enabled real-time and periodic monitoring, reporting and reconciliation of revenues. This allowed officials to track performance relative to annual targets set by the GoG and daily targets set by senior management; and hence, to pre-empt and rectify potential shortfalls.²⁵

Finally, TRADENET allowed tracking of outstanding duties and taxes in the case of declarants with goods in bonded warehouses,²⁶ or for established declarants whom, in the interest of facilitating trade, had been granted waivers for future payment. A hold could be automatically placed so that they were unable to clear additional consignments until they had settled outstanding debts. The relevance of TRADENET for controlling revenue risks was described by a customs officer:

Now we are able to capture a lot of data for post clearance [...] Formerly, these bulky sheets [points to stack of papers], you can't go through and check [...] we have another regime we call the permit regime, where if your documents are not ready, you can apply, take the goods out and when the documents are in, you come back to perfect the permit. When the system was not in place declarants could come and beg, "oh please I have some goods to clear" and the customs officer will tell you the amount to pay, and we [customs] also need the revenue so we say "ok, let me do this for you [release a consignment without full payment]. Go and pay later." When the declarant went they did not return. Now [with TRADENET], if you

²⁵ Meeting GoG revenue targets was the sole performance criteria for GCD and repeated failure to meet targets could have serious professional and organizational consequences.

²⁶ A bonded warehouse is a customs-secured warehouse for withholding imports until owed duty and taxes were paid.

don't pay, the system flags it and then you cannot send any more declarations [...] there is no human intervention.

Another senior official further discussed the value of TRADENET in risk controls as follows:

Any information we want we get. And during facilitation, we must have a system to check whether we overlooked something in the pursuit of speed [...] another aspect is communication. So if you are a boss in your office and you chance on a document that has high risk, you can immediately put in a remark and whoever is working on it will be cautioned [...] And then we also have the bank reconciliation. Before this, we did manual reconciliation [...] because banks were not connected, declarants took money to the banks and got receipts [...] they came and customs also gave them receipts. So at the end of the period, we had to reconcile the payment at the bank to our receipts

As illustrated, TRADENET not only reformed risk control practices, but afforded customs bureaucrats' novel capabilities, as in the case of the permit regime, to negotiate conflicting goals of trade facilitation (with its need for speed) and revenue mobilization (with its need for accurate data and control).

Discussion and conclusion

Rather than seeing the IDF processing and risk controls examples of TRADENET outcomes as purely driven by individual cognition such as resistance or appropriation, or purely the result of structures like institutions and culture, we suggest that for 'irrational' outcomes as in IDF processing, the managerial logic of TRADENET contradicted the bureaucratic logic of neopatrimonial rent seeking.

Hence, electronic IDF processing, rather than rationalizing manual paper-based human interventions, co-existed with it. On the other hand, for risk controls where TRADENET effectively enabled rationalization there were no observed contradictions between managerial rationalism and neopatrimonial rent seeking logic. Consequently, we interpret 'irrationality'—the existence of manual practices despite IT affordance for full

automation and integration—as a ‘good enough’ outcome when managerial and neopatrimonial rent seeking logics contradicted.

Guided by the four aspects of institutional logics highlighted earlier—organizing principles, causal means-ends assumptions, identity formation, and domain specificity—we elaborate four implications of contradicting institutional logics in ‘irrationalities’ of IT rationalization, as summarized in Table 7. In terms of guiding principles, the managerial principles of efficiency, effectiveness, control and accountability of formal processes appeared to sometimes contradict the principles of neopatrimonial rent seeking where formal (bureaucratic) and informal (personal) authority co-existed while their interests and values conflated.

As a ‘resolution’ of such contradicting principles, bureaucrats tended to generally adhere to both, leading to instances of ‘irrationalities’. As a senior TRADENET specialist admitted “officers are used to face to face contact, such that even if you send the thing [IDF] online and there is no paper, they will still be in the long room [expecting to see hardcopies].”

Relatedly, the managerial causal means-ends assumption of TRADENET—that automation and integration leads to better outcomes for declarants—contradicted the assumptions of neopatrimonial rent seeking logic of customs bureaucrats that the clearance process was solely to generate customs revenues, and that IT’s usefulness or otherwise could be judged against this primary goal.

This contradiction led to perceived tensions between the two design objectives of TRADENET—trade facilitation and revenue collections. This sentiment was captured by a senior customs officer who suggested that automation sometimes came at the expense of effective revenue collections: “during facilitation,” he explained, “we must have a system of falling back, to check whether we overlooked something in the pursuit of speed”.

In addition, contradictions in neopatrimonial rent seeking logic and managerial rationalism manifested as inconsistency in the ‘internal’ and ‘external’ identities of bureaucrats i.e. how they saw themselves versus how declarants/others perceived them. For example, hierarchic orientation of bureaucrats contrasted with the market orientation of TRADENET managerialism; enforcement orientation and customs officers’ primary identity as revenue collectors was contrasted with the service orientation they assumed for TRADENET facilitation; revenue ‘target driven’ mindset of customs bureaucrats was also inconsistent with the client (declarant) focus of TRADENET managerialism; finally, the high sense of discretionary power that came with traditional bureaucratic logic was seen as undermined by the disintermediating effects of TRADENET in IDF processing.

Because of such changing identities and attendant tensions, customs roles and practices appeared to be in flux. “For a long time, we have just been working; going and coming [...]” a senior bureaucrat remarked in relation to her new role, “we had an idea [...] but it wasn’t structured. We are now coming up with a job evaluation to get an organogram.”

Finally, as institutional logics are domain specific and multiple institutional logics might exist within a given organization, technology’s effectiveness in rationalizing depended on the compatibility of logics. We illustrated this point with the two TRADENET related practices presented, IDF processing and risk controls.

Even though bureaucrats drew upon both managerial rationalism and neopatrimonial rent seeking logics in their performance of both practices, TRADENET encountered ‘irrationality’ and was generally less effective in IDF processing than in risk controls because the two logics contradicted more for IDF processing than for risk controls.

Despite being unable to clearly explain differences in effective use of TRADENET, senior officials were admitting of the discrepancy, “overall, TRADENET appears to have been more effective with revenue mobilization [risk controls] [...] we have some way to go

with facilitation [IDF processing]” (A senior TRADENET specialist, quoted from interview transcript).

Notwithstanding the potential of our theorizing to shed some new light on ‘irrationalities’ of IT-enabled bureaucratic rationalization in developing countries, our approach has limitations. For example, while the institutional logics lens provides a useful way to theorize multiple logics and contradictions sometimes underpinning IT enabled bureaucratic rationalization, the conditions under which such contradictions lead to ‘irrationalities’ or less-than-intended outcomes remains to be explored. Furthermore, the question of why neopatrimonial rent seeking logic in developing country bureaucracies like in Ghana ‘resists’ reform into a ‘pure’ logic of managerial rationalism might similarly be probed.

Ultimately, the tensions and contradictions that manifest as ‘irrationalities’ during IT enabled rationalization of developing country bureaucracies are not solely idiosyncrasies of individual users but might implicate broader social structures. Furthermore, bureaucrats are not limited to a single logic in the course of their IT-enabled practices. They draw upon different, sometimes contradicting logics that co-exist and reproduce in practice.

In this view, ‘innovative’ institutional logics such as managerial rationalism of IT may not necessarily reform ‘old’ logics such as neopatrimonial rent seeking, although the latter might be weakened as actors seek ‘good enough’ ways to accommodate both logics. This finding is consistent with Dacin and Dacin’s (2008, p.327) observation that “[existing] institutionalized practices are rarely ever completely extinguished but continue albeit weaker in scope (extent of diffusion) or potency”. Our findings however differ from ‘amplification theories’ of IT and development which suggest that rather than enabling transformation, technology simply “magnifies” or “amplifies” existing human and institutional forces (Toyama 2011b; Toyama 2011a).

We suggest that by embodying an institutional logic of managerial rationalism, technology might make a difference for developing countries, although not independently of other powerful logics such as neopatrimonialism or rent seeking. ICT4D professionals and scholars will do well to identify and appreciate ‘old’ existing local institutional logics and how they counteract (or sometimes enable) ‘new’ logics introduced by IT.

Such recognition of multiple institutional logics within the organization and the nature of their interaction might inform better design and implementation of ICT4D projects, motivate complementary non-ICT-related organizational interventions, as well as aid sensemaking of idiosyncratic ICT4D outcomes when even the best plans and implementations do not completely go as expected.

Table 7: Contradicting institutional logics and their implications in Ghana's TRADENET-enabled customs rationalization

Aspect of Institutional Logic	Managerial Rationalism of TRADENET	Neopatrimonial Rent Seeking Logic of Bureaucracy	Implication of Contradiction
Guiding Principle	Efficiency, effectiveness, control and accountability of formal processes	Informal (personal) and formal (bureaucratic) authority co-exist with interests and values conflating	Co-existence of new TRADENET and old bureaucratic principles
Representative quotation	<i>"CEPS is now ISO 9000 certified [...] with a new mission and vision [...] The system [TRADENET] has enabled flow of information [...] clearance of goods has improved tremendously"</i> (World Bank Group 2010, p.29)	<i>"When you go to the port now somebody [bureaucrat] will tell you 'give me 500 cedis, give me 200 cedis.' I have a copy of receipts here I can show you [...] all these charges are 'unofficial'. It doesn't make sense! And now that they realize we are making noise about it they [GMMB] are trying to put it in the TRADENET and try to charge 50p per item. So if they are able to implement it is going to be a cost that will remain there that every year they will increase. So at the end of it they are [...] going to put a lot of burden on us."</i> (Handicraft exporter, interview transcript)	<i>"Some officers are used to face to face contact, such that even if you send the thing online and there is no paper, they will still be in the long room"</i> (Senior TRADENET specialist, interview transcript)
Causal Means-Ends Assumption	IT automation and integration lead to better customs clearance outcomes for declarants	Customs clearance exists to mainly generate customs revenues. Therefore IT's usefulness or otherwise judged against this goal	Perceived tension between trade facilitation and revenue collections
Representative quotation	<i>"[TRADENET] improved clearance dramatically, I must say. And if we all are interested and use it to the maximum, I think we will reap a lot of benefit"</i> (Senior customs IT officer, interview transcript)	<i>"Our performance is measured by our ability to meet government revenue targets"</i> (customs officer, policy and programs, interview transcript)	<i>"And during facilitation, we must have a system of falling back, to check whether we overlooked something in the pursuit of speed"</i> (senior customs officer, interview transcript)
Bureaucrats' Identity	<ul style="list-style-type: none"> - Market orientation of bureaucrats - Service orientation of bureaucrats - Client/declarant focus - Low sense of power because of elimination of personal discretion 	<ul style="list-style-type: none"> - Hierarchic orientation of bureaucrats - Enforcement orientation e.g. as revenue collectors and rule enforcers - 'Target driven' mind-set e.g. for revenues - High sense of power through personal discretion 	Inconsistent identities of bureaucrats between 'internal' (how they see their role) and 'external' (how declarants/others perceive their role)
Representative quotation	<i>"Initially because it [TRADENET] was a new thing, officers didn't know where they would be found wanting so people were kind of complying, but with time, I mean the smart ones study it and know where the loop holes are and do their own thing"</i> (Senior customs officer, interview transcript)	<i>"[Thanks to TRADENET] Right now I can tell you how much revenue we have collected since morning up to this time. So when we come to the office, early in the morning, like 7 o'clock, you have to produce your first report, every day. Revenue for the previous day, you submit them to the commander, and probably the commissioner will call you and then they will relay it to the ministry [...] we can't miss our target even for a single day"</i> (Senior customs officer, collections, interview transcript)	<i>"For a long time we have just been working; going and coming [...] We had an idea [...] but it wasn't structured. We are now coming up with a job evaluation to get an organogram"</i> (senior officer explaining her new role and ongoing streamlining of roles, interview transcript)
Relevant practice domain	IDF processing	Risk controls e.g. post clearance	Technology's effectiveness in enabling change depended on the compatibility of logics irrespective of practice domains
Representative quotation	<i>"We have rationalized—cut down the number of steps that people had to go through [...] but we could still automate more, go paperless"</i> (senior officer, interview transcript)	<i>"TRADENET has enhanced our revenue mobilization capability by allowing us to do things that were not possible before [...] audits, controls, analytics and so on"</i> (customs officer, interview transcript)	<i>"Overall, TRADENET appears to have been more effective with revenue mobilization [...] we have some way to go with facilitation"</i> (Senior TRADENET specialist, interview transcript)

Chapter 8: IT-Enabled Public Administration Rationalization in Developing Countries: Evidence from Ghana's Customs Modernization

Abstract

In many developing countries, IT adoption has been expected to enable the rationalization of public administration to reduce or eliminate red tape and various endemic malpractices. Against a backdrop of widespread sceptical reports and contradictory evidence of IT contributing such outcomes, we demonstrate that IT indeed has potential to enable rationalization but that change happens cumulatively over long periods of IT innovation and concomitant organizational interventions. We construct this argument by advancing an institutionalist perspective that considers change as driven by the interaction in practice of ideal types of administration inscribed in IT with existing institutional logics of public administration. We draw empirical evidence from a longitudinal case study of two successive IT systems that underpinned rationalization of foreign trade administration at Ghana's customs organization over a thirty-year period. We find that idealtypic administration logics introduced through IT cumulatively blended with pre-existing patrimonial logics of administration, resulting in incremental weakening of patrimonial practices and strengthening rationalization. The case study instantiates the capacity of IT to enable rationalizing effects and suggests that such change should not be expected to occur as radical transformation but as gradual shift towards service-oriented practices.

Keywords: *Public administration rationalization; developing countries; institutional logics; institutionalized practice change; IT for development (IT4D); patrimonial practices, neopatrimonialism; public management*

Introduction

In recent decades, significant IT investments have been made in public administrations in developing countries on the expectation that computerization would enable service improvements and developmental objectives (World Bank Group 2011; United Nations 2016). A major objective of IT in this context is to reduce established administration deficiencies such as red tape, and malpractices like corruption. Such change is often referred to as rationalization or modernization (Drori et al. 2006; Margetts et al. 2010; Introna et al. 2010).

Despite commonplace failures of systems development and implementation, computerized functions such as benefits processing, financial management, and customs clearance, are now the norm in public administrations of nearly all developing countries (World Bank 2016). Yet, it is unclear whether and how IT adoption contributes such improvements and, more broadly, whether Western results-oriented development and public administration reform programs that IT is expected to support are effective in non-Western contexts (Ho & Im 2015).

Successes have been identified (Krishna & Walsham 2005), but disappointments are widespread in scholarly literature (Andrews 2012; Andrews 2013; Heeks 2003; Berman & Tetley 2001; Heeks 2002c). Unmet expectations for public administration reform are also reported by development donors who sponsor the implementation of IT in the public sector of developing countries (World Bank Group 2011). Of 145 countries that undertook donor-sponsored public administration reforms between 1998 and 2008—most of which had a significant IT component—half were reported to have declined rather than improved in indicators of government effectiveness (Andrews 2013, p.15).

Theoretically, the ability of IT to bring radical change in public administration is contested in the literature of IS (Holden et al. 2003; Norris 2003; Norris & Reddick 2013;

Danziger et al. 1982). More specifically, research on information systems in developing countries (ISDC) - often referred to as IT for Development (IT4D) – has put forward contradictory propositions. On one hand, it has been argued by ‘amplification theories’ of IT and development that rather than enabling change, technology merely “amplifies” underlying human and institutional forces (Toyama 2011b; Toyama 2011a).

On the other hand, there is some evidence of IT enabled “deinstitutionalization” (Oliver 1992), that is, the discontinuity of institutionalized practices and behaviours (Sahay et al. 2010). Moreover, the literature suggests that public administrations follow peculiar historical traditions; are institutionally distinctive despite structural similarities; and that their distinctiveness persists notwithstanding convergence pressures (Painter & Peters 2010; Meyer & Rowan 1977; Castles & Mitchell 1993). If administrative traditions in developing countries persist and defy rationalization goals of IT adoption, then there is a need to explain dynamics of both persistence and change.

In this paper, we address the question of whether IT can have rationalization effects in the public sector of developing countries by studying the change of administration practice following IT implementation and concomitant re-organization interventions. We investigate processes of IT-enabled change from the clientelistic and patronage-based administration historically established in developing countries to efficient, results-oriented service administration necessary for a modern development-oriented state (Bell & Hindmoor 2009; United Nations Department of Economic and Social Affairs 1995).

Institutional theories offer much in that respect, although better at explaining persistence than change (King et al. 1994; Orlikowski & Barley 2001; Powell & DiMaggio 1991; Robey & Boudreau 1999). To explain change, we need a perspective that accounts for action in relation with social structure. We therefore draw from a stream

of research that develops the institutional logics perspective (Thornton & Ocasio 2008; Thornton et al. 2012b; Friedland & Alford 1991). Institutional theories are silent on technology, however. To expound the implication of technology for organizational change, we draw from IS sociotechnical approaches.

We view IT-enabled rationalization as the formation of sociotechnical practices of administration, occurring with institutional influences from national and global development contexts. Our research therefore involves layered theorizing concerning (a) institutional persistence and change through the institutional logics perspective (b) the way technology is implicated in organizational change through a sociotechnical perspective, and (c) rationalization of public administration as a matter of change of ideal administration types. We weave these strands to form a theoretical narrative of how public administration in a development context is changed through IT adoption.

We instantiate this theoretical perspective through an investigation of the adoption of IT systems intended to rationalize Ghana's customs administration. We conducted an interpretive longitudinal case study involving two types of IT for customs clearance - an information management system (ASYCUDA) and an inter-organizational digital platform (TRADENET) - adopted successively over a thirty-year period (1986-2004, 2004-2015). Rationalization was pursued against a backdrop of longstanding efforts by international development organizations, governments and networks of actors such as consultants and IT vendors to promote and spread 'best practices' from the West (Saint-Martin 2000; Ferguson 1990; Escobar 1995; Korac-Kakabadse et al. 2000; Common 1998).

The paper develops in three parts. We first explicate our theoretical strands, namely the institutional logics perspective, a sociotechnical view of technology as an enabler of change, and an ideal types perspective of public administration in developing

countries. This frames the second part where we present and analyse changes of administration practices associated with ASYCUDA and TRADENET, from which we then draw general insights for IT-enabled rationalization of public administration in developing countries.

Theoretical foundations

IS in developing countries require special research attention when processes through which they unfold and effects they produce differ from expectations of IS innovation and its organizational or socio-economic consequences in mainstream IS research. A distinctive feature of such studies is tracing of at least part of the explanation of IS phenomena in a country's social context (Walsham & Sahay 1999; Barrett et al. 2001; Sahay 1997).

The search for explanation of action and effects that appear paradoxical focuses on relationships between observed interactions with IT systems in the organizational setting and various broader conditions from the countries historically formed circumstances. Such contextual research extends the scale of here-and-now situated analyses to identify social origins of values, meanings and mental frames that actors draw upon in the course of IS innovation.

In this section, we elaborate a theoretical basis for context-specific analysis of IS innovation in public administration. We first justify our choice of institutional logics (Thornton & Ocasio 2008; Thornton & Ocasio 2005; Thornton et al. 2012b; Friedland & Alford 1991) as an approach that guides explanation of change by considering action of individuals under the influence of multiple and often incompatible social institutions. We then complement the institutional logics perspective with a theoretical position about IT as material and digital entities endowed with functionalities to serve the enactment of specific institutional logics.

From this view, IS innovation entails enactment of new sociotechnical configurations at the encounter of institutional logics inscribed in IT systems with local institutional logics. Sociotechnical configuration refers to the heterogeneous ensemble of material and social artefacts, techniques and processes that realise particular institutional logics in practice. We then consider theories of public administration in developing countries to specify the underlying institutional dynamics.

Institutions and institutional logics

The crux of institutional approaches is a shift from acontextual, ahistorical, and assumed universally rational action towards a view of action as embedded within, and conditioned by both immediate and broader social, political, cultural and historical forces. In this vein, institution has been conceptualized as an organized, established, procedure (Jepperson 1991, p.143), or pattern of activity that is rooted in symbolism and material practices (Friedland & Alford 1991).

Many institutional theorists adopt a view of institutions as structuralist (Powell & DiMaggio 1991; Greenwood et al. 2008), that is, as enduring social realities recursively linked with and reinforced or subverted by human action (Berger & Luckmann 1967; Giddens 1984; Bourdieu 1977). A stream of institutional theory further develops such a structuralist view by elaborating the concept of institutional logics (Thornton et al. 2012b; Friedland & Alford 1991), defined as “socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to social reality” (Thornton & Ocasio 1999, p.804).

The institutional logics perspective suggests that actors act based on cognition but that cognition draws upon historically formed collective logics - a notion described as “embedded agency” (Thornton & Ocasio 2008, pp.103–104). These logics influence

mindful behaviour of actors who in turn shape institutional logics (Thornton 2004). By providing a link between broader institutions and action, institutional logics is said to bridge macro, structural (DiMaggio & Powell 1983) and micro, processual institutional approaches (Zucker 1977); thus, overcoming critiques of diffusion and isomorphism (Hasselbladh & Kallinikos 2000).

The institutional logics perspective explains change based on three assumptions. First, that institutions and their related practices have both material and ideational or symbolic characteristics (Friedland & Alford 1991). For example, ideas of family and religion, while not explicitly considered within the economic sphere, are entangled with material practices of production, marketing and consumption (Becker 1976). Similarly, markets and culture, despite their seeming distinction are mutually embedded as exemplified in trust-based exchange networks, and relational modes of coordination (Granovetter 1985; Avgerou et al. 2011; Fafchamps 2004).

A second assumption of institutional logics is historical contingency in shaping organizing principles of individual and organizational actions. For example, the contemporary dominance of market logics in spheres of organizing such as government (Box 1999; Dunleavy & Hood 1994; Hood 1995), higher education (Thornton & Ocasio 1999; Thornton 2004), healthcare (Scott et al. 2000), and financial services (Marquis & Lounsbury 2007; Smets et al. 2014) is understood to be the product of historical circumstances and processes rather than universally valid rational choices of decision makers (Thornton 2004).

Third, it is assumed that actors are nested within multiple levels of context. For example, organizational phenomena are explained by considering influences at the organizational, as well as the national level, such as political and market ideologies of development (Friedland & Alford 1991; Thornton et al. 2012b). Combining levels of

analysis attends to cross-level contradictions that give insights into mechanisms of stability and change (Thornton et al. 2012b). These elements are summarized in Table 8.

Table 8: Core attributes of institutional logics perspective

Aspect	Proposition	Significance
Structure and action	<ul style="list-style-type: none"> Individual agency and cognition are connected with broader socially constructed institutional patterns and rule structures (Thornton & Ocasio 2008, p.101). Actors navigate institutional structures in accordance with particular logics. Institutional logics influence mindful, rational behavior of individual actors in an organization who in turn shape institutional logics (Thornton 2004) 	<ul style="list-style-type: none"> Contrasts with both rational choice theories that are narrowly individualistic and cognitivist and structural accounts that overlook situated agency. Bridges macro, structural perspectives (DiMaggio & Powell 1983) and micro, processual approaches (Zucker 1977) Situated action is further tied to beliefs and practices from wider institutional environments thereby overcoming critiques of diffusion and isomorphism studies (Hasselbladh & Kallinikos 2000)
Material and symbolic elements	<ul style="list-style-type: none"> Both material and symbolic elements of institutions such as practices and ideas interplay to shape each other (Friedland & Alford 1991) 	<ul style="list-style-type: none"> Integrates material or symbolic dichotomy of previous institutionalist ideas
Historical contingency	<ul style="list-style-type: none"> Individual and organizational actions are shaped by broader forces over time (Thornton 2004) 	<ul style="list-style-type: none"> Opposes universal views of agency and action by drawing attention to contingency of history and context
Multiple levels of analysis	<ul style="list-style-type: none"> Phenomena occur across multiple levels from the individual, organizational, field to society. Actors embedded and operate from within levels (Friedland & Alford 1991; Thornton & Ocasio 2008) 	<ul style="list-style-type: none"> Recognizes the tensions, conflicts and contradictions inherent in various levels actors are embedded. Helps explain why institutions might be in conflict while simultaneously constraining or enabling action (Friedland & Alford 1991; Thornton et al. 2012b).

Transformations of institutional logics:

Institutional logics, while relatively stable, display dynamism. Changes result from the encounter of contradictory institutional logics in practice (Seo & Creed 2002; Greenwood & Suddaby 2006). Logics external to the organization are critical for transforming prevailing logics within organizations (Fligstein 1997; Marquis & Lounsbury 2007). They are often not imported wholly but adapted or translated to fit the host context (Zilber 2006; Boxenbaum 2006).

Patterns of change in institutional logics include replacement, where one logic replaces another (Rao et al. 2003); blending, where dimensions of different logics combine (Glynn & Lounsbury 2005); segregation, where logics from a common origin are distinguished (Purdy & Gray 2009); assimilation, where elements of an original logic

remain with new additions (Murray 2010); elaboration, where logics reinforce through development (Shipilov et al. 2010); expansion (Nigam & Ocasio 2010) and contraction (Reay & Hinings 2009), where the scope of prevailing logics change; or loose coupling, where logics co-exist in partial dependence (Berente & Yoo 2012; Berente 2009).

We emphasize three dimensions of institutional logics for our analysis of change, as in similar studies of IT-enabled organizational logics (Berente & Yoo 2012). First, institutional logics provide *organizing principles* in the form of rules, vocabularies, ideas, constructs, beliefs and patterns of activity of individuals, groups or organizations (Thornton & Ocasio 2008; Friedland & Alford 1991). Second, they contain assumptions about *means-ends assumptions* that motivate action (Thornton & Ocasio 2008; Ocasio 1999). Third, institutional logics enable *identity formation* as a sense of self and roles for individuals and organizations (Thornton & Ocasio 2008; Friedland & Alford 1991). This is an important mechanism for collective action and organizational cooperation (March & Olsen 1989). Table 9 summarizes these dimensions.

Table 9: Summary of institutional logics dimensions

Dimension of institutional logic	Definition	Significance
Organizing principles	Rules, vocabularies, ideas, constructs, beliefs or patterns to guide individuals, group or organizational action (Thornton & Ocasio 2008; Friedland & Alford 1991)	Provides historically formed and contextually embedded templates for individual and group action and reaction
Means-ends assumptions	Assumptions of organizational goals (ends) and how (means) to achieve them	Provides motivation for individuals in aligning their tasks and goals in everyday practices (Thornton & Ocasio 2008; Ocasio 1999)
Identity formation	Sense of self and roles for individuals and organizations (Thornton & Ocasio 2008; Friedland & Alford 1991)	Important for collective action, organizational coordination and cooperation (March & Olsen 1989)

Noticeably missing from the institutional literature is elaboration of the role artefacts like IT applications play in forming, sustaining and changing institutions. Despite recognizing the significance of material practices, the institutional logics perspective has not elaborated a view on the way technology is implicated in maintaining

or transforming logics and organizations. Next, we address this deficiency by drawing upon sociotechnical conceptions of technology and social change in IS research.

Technologized institutional logics

A foundational assumption of IS research is that sociotechnical entities form organizations and institutionalized practices rather than by purely social or purely technical entities and processes. But although technologies are constitutive of organizations, the consequences of the design and adoption of IT systems cannot be explained as direct effects of the functionality or materiality of technology (Orlikowski & Iacono 2001; Kallinikos 2012).

IT artefacts have the potential to change organizational practices, but the extent and form of the change are enacted in practice (Fountain 1999; Orlikowski 2002; Suchman 1985). Anchored on this conceptual view, the theorization of IS phenomena tends to privilege a situated view of technology where it interpenetrates local practices. But a narrow-situated perspective is inadequate for explaining the broad-ranging processes of IT-enabled change in the public administration of developing countries.

We need a broader perspective that will allow us to associate technologies with the institutional logics underpinning their construction and their enactment. We adopt the view that, by design, IT is 'inscribed' with a particular 'vision of the world' (Akrich 1992). Such 'world-in-miniature' inscriptions, comprise processes, values, structures and are intended to shape outcomes within organizational milieus.

Inscriptions could be explicit, such as design of functions to be performed; implicit, such as policy outcomes to be achieved; or in-between, such as assumed skills and values of users and the use context. Taken together, they form coherent sets of 'prescriptions' that technology carries (Latour 1992, p.256). Inscriptions of IT do not by themselves produce change. Fountain (2001) observes a distinction between 'objective

technology’ and ‘enacted technology’: the former relating to designed systems and artefacts and the latter to ways they are integrated in specific contexts.

IS theory suggests that IT may not be appropriated faithfully as designed (DeSanctis & Poole 1994); it may be enacted differently (Fountain 2001; Orlikowski 2000), domesticated idiosyncratically (Silverstone & Haddon 1996; Haddon 2011), or loosely coupled compromisingly (Berente & Yoo 2012) according to realities of context. The question to be addressed is how inscriptions of IT are formed and come to affect public administration in developing countries, given the indications that planned organizational improvements from IT adoption often fail to be realised.

Research on IT in developing countries has highlighted the distinction between the ‘context of IT design’ and the ‘context of use’ to convey the different social realities shaping IT design and development and those it arrives into during adoption (Heeks 2005). IT artefacts carry norms from the social context of designers and developers, which often differ from those of the social context of use.

Given that most IT systems in developing countries are transferred from Western countries (Aubert 2004), this distinction is critical for understanding IT phenomena in developing country organizations. Inscriptions built into the IT used in developing countries are determined by networks of international organizations, aid donors, technical consultants and experts, IT vendors and Western-trained managers and administrators (Common 1998; Korac-Kakabadse et al. 2000; Saint-Martin 2000; Hanna & Schware 1990). Moreover, adoption of IT in developing countries is often accompanied by organizational interventions, processes and structures that emulate ‘best practice’ from Western countries.

Recast thus, we suggest that IT adoption in developing countries involves acquisition and reproduction of technologized institutional logics from ‘developed’

Western countries. Such logics, conveyed through IT enabled rationalization projects, can be seen as ‘ideal types’ (Kalberg 1980; Weber 1968), that is, hypothetical conceptualizations of best practice principles to guide action in given domains (Gerth & Wright Mills 1958, p.59).

Idealtypic institutional logics like ‘bureaucracy’, ‘public management’ or ‘network governance’ are inscribed in software such as monitoring and reporting systems (Cordella & Tempini 2015), decision-support systems (Janssen & Cresswell 2005; Andersson et al. 2012), multi-sided platforms and interoperable infrastructures for government agencies (Avgerou & Addo 2017; Holder & Pidduck 2008; Adaba & Rusu 2014). By supporting functioning according to such idealtypic logics, IT has the potential to bring about organizational re-configuration towards effective service-oriented public administration.

However, assumptions about IT resulting in effective courses of action premised on Western best practice (Avgerou 2002; Avgerou 2000b) do not always live up to existing realities: ‘[W]hile in the context of developing countries the techno-economic rationality of Western modernity is instrumental in defining a series of problems and determining their solutions, it is blatantly unsuccessful in streamlining people’s behaviour to the achievement of such solutions’ (Avgerou 2000b, p.2).

Tensions between idealtypic logics inscribed in IT and institutional logics of established practices within IT adopting organizations have been alluded to in explanations of contradictory outcomes found in the literature on IT for development. Examples include user resistance (Cavalheiro & Joia 2013), conflicting rationalities (Chilundo & Aanestad 2004), skills gaps (Corea 2007; Zaied et al. 2007), politics and vested interests (Peterson 1998), culture (Zhao & Khan 2013; Hill et al. 1998), and local institutions (McGrath & Maiye 2010).

We posit that it is through these tensions between institutional logics inscribed by design in IT systems and the logics of existing, institutionalised, practices that IT innovation produces effects. To develop an appropriate research frame for the study of such encounters of institutional logics, in the next section we describe the idealtypic institutional logics that IT innovation has sought to transfer in the public sector of developing countries.

Public administration in developing countries

After World War II, many developing countries gained independence from Western colonial powers at a time when they had barely developed the administration structures to be effective modern states (Mosher et al. 2009; Jackson & Rosberg 1982). The picture varied, however, with powers like Britain bequeathing relatively viable administrative set-ups in former colonies like Ghana and India; compared to Belgium that left the Congo without trained administration or technical staff (La Palombara 1967; Mosher et al. 2009).

Since this period, development plans and programs have been considered the remit of the state; and competent administration in developing countries deemed *sine qua non*, albeit lacking (United Nations Department of Economic and Social Affairs 2009). But in many countries in Africa, the bureaucratic model initially introduced was combined with existing patrimonial regimes and resulted in practices known as neopatrimonial (Chabal & Daloz 1999; Bratton & Van de Walle 1994; Van de Walle 2001a; Eisenstadt 1973; Erdmann & Engel 2006).

Neopatrimonialism is understood as a hybrid arrangement that combines an apparent formal, rational-legal apparatus, with a patrimonial system where elites control public office for private gain (Bratton & Van de Walle 1997), and ‘officials hold

positions in bureaucratic organizations with powers which are formally defined, but exercise those powers [...] as a form [...] of private property' (Clapham 1985, p.48).

States vary in degree of neopatrimonialism from completely patrimonial to completely rational-legal (Van de Walle 2001a). Hence, unlike ideal types, neopatrimonial administration is not a definite organizational form but a context-specific and dynamic hybrid that involves systematic concentration of personalized power and rent seeking (Kelsall 2012; Kelsall 2011; Mbaku 1996; Mbaku 1998; Bratton & Van de Walle 1997, pp.63–65). Administrative decisions are routinely taken by powerful individuals with regard to personal interests and without recourse to procedures. In the African context, separation between private and public realms - the basis of modern state and public administration - is said to be thin or non-existent (von Soest 2006).

While fusion of the organizing principles of bureaucracy and patrimonialism has given rise to various forms of neopatrimonial administration, bureaucracy itself has been challenged in advanced industrialised countries. Failings and distortions of the bureaucratic model motivated efforts to recast public administration (Aucoin 1990; Pollitt 1990; Hood & Lodge 2004). Since the 1980s, several variants of results-oriented public management have been tried (Clarke & Newman 1997; Pollitt 1990; Kouzmin et al. 1997) and the model usually designated as 'new public management' (NPM) began to take hold in many countries.

NPM places emphasis on professional management and private sector ethos such as reliance on market mechanisms like performance incentives and efficiency through entrepreneurialism (Minogue 2001, p.6; McCourt 2001b; Hood 1995). NPM's underlying thesis of best use of resources in pursuit of organizational goals stood in contrast to administration concerned primarily with regulation and legal enforcement of public/state powers in relation to citizens (Dunleavy & Hood 1994).

Despite differences in context between countries like New Zealand where NPM was successfully applied and developing countries, international development organizations believed that the latter could adopt NPM to create efficiency and effectiveness (Bale & Dale 1998; Wallis & Dollery 2001; Sulle 2010). Many developing countries experimented with items in the NPM bundle, such as corporatization, which is the conversion of civil service departments into free-standing agencies or enterprises within or outside the civil service (Polidano 2001, p.47). For example, a noteworthy trend in Africa has been the merging of customs and income tax departments into corporate-like national revenue authorities to promote effectiveness of revenue collections.

Besides NPM, reform of public administration in developing countries was also affected by a model of 'good governance' associated with the 'Washington consensus' approach to development, which focused on economic restructuring based on neoliberal ideas (McCourt 1998a; Stiglitz 1999; Williamson 2004; McCourt 1998b). A public administration reform agenda focusing on privatization, unfettered markets and minimal government was championed by international development organizations and promoted as part of donor programs (DFID, 1997; The WorldBank Group, 1994; UNDP, 1998).

The NPM model for administration and the Washington model of good governance provided normative influences on public administration. These were idiosyncratically combined with existing neopatrimonial practices through local power struggles (McCourt 2001b). As a result, public administration in developing countries displays significant diversity and a lack of single dominant logic. Table 10 shows the ideal types of public administration that, with varying degrees of success, were introduced in developing countries. It indicates their key attributes that contribute to the formation of variations of neopatrimonial administration.

Table 10: Main public administration types in developing countries

Idealtypic models	<i>'Traditional' administration</i>		<i>'Modern' results-oriented administration</i>	
	Patrimonial	Bureaucracy	Public management	
			NPM	Washington model
Attributed to	<ul style="list-style-type: none"> • Early/ pre-modern societies 	<ul style="list-style-type: none"> • Modern industrial societies 	<ul style="list-style-type: none"> • Neoliberalism • Most prominently US/UK during Thatcher and Reagan years 	<ul style="list-style-type: none"> • Neoliberalism/ economic globalization • International Development orthodoxy e.g. World Bank, IMF
Attributes	<ul style="list-style-type: none"> • Domination through fear/ arbitrary and personalized power 	<ul style="list-style-type: none"> • Division of labour • Rational-legal domination/ rules and regulations • Hierarchy of authority • Technical expertise • Impartiality/ Fairness 	<ul style="list-style-type: none"> • Efficiency ('Doing more with less') e.g. through tight managerial controls and focus on outcomes • Economy or Market principles e.g. competition, outsourcing functions • Effectiveness e.g. through decentralized authority 	<ul style="list-style-type: none"> • Fiscal and economic stimulation for economic growth and reduction of perceived undue influence of government e.g. by trade liberalization and fighting corruption
Comingling of ideal types		Combinations of bureaucratic and managerial principles with patrimonial traditions		
Period of uptake and dominance	<ul style="list-style-type: none"> • Pre-20th century 	<ul style="list-style-type: none"> • 19th century onward 	<ul style="list-style-type: none"> • 1980s and 1990s 	<ul style="list-style-type: none"> • 1990s onward

Conceptualizing IT-enabled change as sociotechnical reconfiguration

We suggest ideal types of public administration – patrimonialism, bureaucracy and public management - constitute institutional logics that influence practices of administration. Each has guided development of a range of IT systems that carry their organizing principles for delivery of public services. For example, since the 1950s, bureaucracies in most countries have been sustained with back office, rule-based information systems translating regulation into streamlined, effective service (Dunleavy et al. 2006; Danziger et al. 1982).

NPM reforms involved process redesign and cross-agency integrated system infrastructures (Weerakkody et al. 2011; Kamal et al. 2008; Aydinli et al. 2009). The Washington model, congruent with NPM principles, fostered private-public-partnership for the development of inter-organizational IT infrastructures to streamline multi-stakeholder processes and promote transparency (Staple 2002; De Wulf 2005).

In developing countries, the succession of these technologized institutional logics periodically introduced new norms and IT-supported practices. Often, the most visible manifestation of the new logic was a new IT system that inscribed novel ideal principles. In practice, each new technology-inscribed logic confronted the taken-for-granted legitimacy of existing practices and the logics that underpinned them.

Unlike idealtypic logics that are ‘pure’, universal prescriptions that are artefactually inscribed through stable designs and programs meant to introduce change, the ‘logics in practice’ concept refers to composite, negotiated, situated, and open to emergent change organizing principles of action (Table 11). Logics in practice underpin specific sociotechnical configurations of public administration.

Table 11: Distinctions between idealtypic logics and logics in practice

Analytical focus	Idealtypic logics	Logics in practice
<i>Characteristic of logics</i>	‘Pure’	Composite
	Strict prescriptions	Flexible and negotiated
	Standard/universal	Idiosyncratic/ situated
<i>Sociotechnical configurations</i>	‘best practice’ inscribed in artefacts through designs and programs	Configured and reconfigured through practice
	Stable/ closed	Evolving/open
<i>Mode of change</i>	Planned	Emergent

In our empirical study, we identify periods and their prevailing or dominant institutional logics of administration. For each period, we examine the inflow of IT systems and the encounter in practice of the ideal type of administration they inscribe with existing norms and established organizing principles. We thus identify the resulting sociotechnical configuration of administration practice.

Method

We conducted interpretive case studies of two IT systems, ASYCUDA and TRADENET, deployed successively over thirty years (c.a. 1986-2004; 2004-2015) to

'modernize' Ghana's customs. A longitudinal approach was taken because change within public administration takes long to unfold (Schacter 2000, p.10; Chang 2001). We selected Ghana customs after an exploratory study indicated that although the currently used TRADENET system had noticeable effect on certain performance indicators and had been cited as a successful IT rationalization (Asuliwonno 2011; World Bank Group 2010; De Wulf 2005; Adaba & Rusu 2014), it had not fulfilled its design objective as a *Single Window* platform for the administration of foreign trade (Addo, 2016). Our study set out to probe how the two systems were enacted and what were the resulting practices.

Fieldwork unfolded in two stages: an exploratory study of TRADENET examined whether IT was enabling rationalization, and a follow-on study aimed to elaborate and extend insights on the processes of change. Data was collected by one of the co-authors during two field trips to Ghana over a total of eight months. The primary research site was the Ghana Customs Division (GCD)'s field office at Ghana's largest port, the Tema Harbour. Given that GCD is a government organization, special permission and approval was acquired from relevant officials for research access (Appendix 1). Similar permission was sought for related organizations such as the Ghana Ports and Harbours Authority (GPHA) (Appendix 2). Data included open-ended formal and informal interviews with 78 informants, comprising street-level bureaucrats, public officials, senior officers, declarants (freight forwarders, clearing agents, importers, exporters), and others involved in clearance and trade (Appendix 3).

Additional data included field notes, memos from non-participant observations of the operations of declarants; transcriptions from workshops, system demonstrations and observations of TRADENET use, clearance and port operations at Tema Harbour; archived reports, documents, website contents, project documents and artefacts; news clippings and credible public records (Appendix 4).

Having identified customs practices and their justifications through the TRADENET study, and having uncovered how some institutional logics of public administration contradicted the logics conveyed by IT, we sought to deepen our findings by studying ASYCUDA, the IT preceding TRADENET. This posed peculiar methodological challenges. Given that adoption of ASYCUDA had concluded over a decade prior, we relied on retrospective analysis or historical method (Saunders & Kim 2007; Bryant et al. 2013; Mason et al. 1997), which enables ‘wide-ranging efforts that seek to relate or explain broad sweeps of IS activity’ (Bryant et al. 2013, p.3).

The historical method involves narrative accounts associated with a chronology of events, actions and their perceived, reported or documented effects. It aims to elucidate the how and why of IS phenomena in relation to unfolding organizational, social, political, and economic circumstances (Mason et al. 1997, p.308). The historical approach proved suitable because customs practices during ASYCUDA adoption were openly carried out and well documented, so we found a trail of rich, verifiable data.

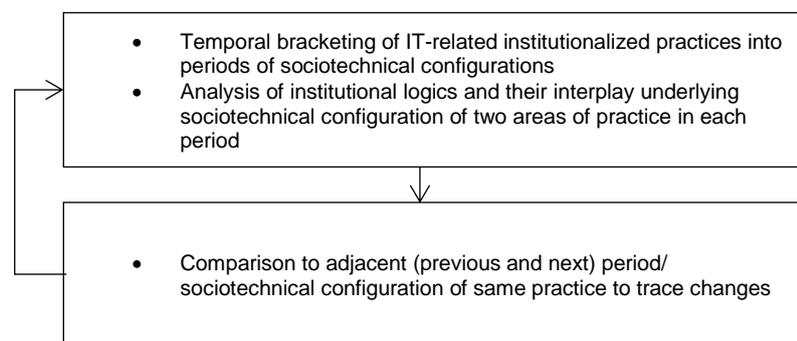
We relied on semi-structured interviews with senior officials, administrators, declarants, consultants, and experts who had been involved with ASYCUDA and therefore had first-hand knowledge. This cohort of twenty informants was recruited from a subset of informants interviewed earlier with additional informants recruited by snowballing. Interviews were corroborated with published accounts, secondary and archival data.

Explanation was developed through abduction between data and theory to arrive at a ‘best fit’ (Abbott 2004; Timmermans & Tavory 2012). In the analysis, we sought to identify changes in the IT-enabled practice of customs’ tasks and associate them with pre-existing and in-coming institutional logics of administration. In constructing a narrative of the unfolding processes in the case, we apply the sense-making technique of ‘temporal

bracketing’, which decomposes events into periods of comparable units of analysis for exploration and replication of theoretical ideas (Langley 1999, p.703; Barley 1986).

Bracketing helps to expose how introduction of a new institutional logic with the adoption of a new technology system interacted with the sociotechnical practice of trade administration of an earlier period and gave rise to practices of the next period. We iterated data analysis to trace change within and across periods (Figure 1).

Figure 1: Analysing IT-related practice change iteratively within and across periods



In the following sections, we describe events that led to IT-related institutionalized practices in two periods, 1986-2004 and 2004-2015. We then identify sociotechnical configurations emerging in practice for each period and trace the encounter of technologized logics that gave rise to them. Finally, we compare the configurations of the same practices of trade administration of adjacent periods to trace changes over time.

We trace changes of the sociotechnical configurations of two areas of practice: document processing and revenue collections, across the two periods of IT adoption, with the pre-IT period as a ‘base line’. As shown in Table 12, our analysis involves the tracing of synchronic sociotechnical reconfigurations of the two areas of practice in the same period, as well as the tracing of diachronic sociotechnical reconfigurations of each of these areas of practice across periods.

Table 12: Tracing of IT-related sociotechnical configurations and practices over time

	Temporal brackets	<i>Diachronic</i>		
		Period 0 (pre-IT, before mid-1980s)	Period 1 (ASYCUDA, 1986-2004)	Period 2 (TRADENET, 2004-2015)
<i>Synchronic</i>	Trade administration practice 1: customs document processing	<u>Sociotechnical Configuration 0:</u> Manual paper processing	<u>Sociotechnical Configuration I:</u> Single Administrative Document (SAD) processing	<u>Sociotechnical Configuration III:</u> Import Declaration Form (IDF) processing
	Trade administration practice 2: Revenue collections (e.g. post-clearance risk controls)	<u>Sociotechnical Configuration 00:</u> Manual collections and risk controls	<u>Sociotechnical Configuration II:</u> ASYCUDA revenue collections and risk controls	<u>Sociotechnical Configuration IV:</u> TRADENET revenue collections and risk controls

Sociotechnical configurations of Ghana's customs practices

Three periods –pre-IT (Period 0), ASYCUDA (Period 1) and TRADENET (Period 2) –are distinguishable by their sociotechnical configurations and prevailing logics. In the pre-IT period, practices were paper-based and with minimal computerization, exclusively at central offices where mainframe systems were kept. Oversight was difficult and customs practices personalized with lax monitoring. While paper copies were reliable, easy to use and authenticate via official stamps and signatures, they were bulky and cumbersome, error-prone and slow to process.

Manual processing encouraged face-to-face interactions between customs officers and anxious declarants, and with this, patrimonial rent-seeking behaviours like bribery and extortion. Manual processing also enabled tightly coupled interactions as paperwork moved from desk to desk, station to station and one agency to another. This increased hold-ups, thereby allowing coercion and discretionary use of power by officers.

Without standardization and controls, official revenue collections suffered ample scope for malpractices such as tampering with accounts, falsification of debts and fraud. IT adoption was intended to usher in system-wide transformation away from such patrimonial practices. Appendix 5 shows a case timeline. Appendix 6 adds essential

historical background to Ghana's customs, its traditional practices, and the broad context of IT-enabled rationalization.

Period 1: ASYCUDA - bearer of bureaucratic logics (1986-2004)

ASYCUDA was a standard data management and statistical package developed in the early 1980s by the United Nations Conference on Trade and Development (UNCTAD) to “assist customs authorities all over the world to automate and control core processes and obtain timely, accurate and valuable information to support projections and planning” (Mansaray 1992, p.345; ASYCUDA 1981). Used in Ghana from 1986-2004, it underpinned regional and international involvement in the standardization of international trade data collection and processing.

It was deployed in the context of Government of Ghana's (GoG's) structural reforms to boost bureaucratic capacity and rationalize revenue collections. It was intended to strengthen bureaucratic standardization, hierarchy, monitoring and control across various functions, and to generate data for GoG's Ministry of Trade and the Statistical Service (Tettey 1997, p.343; Castonguay 1999).

Sociotechnical configuration I: Single Administrative Document (SAD) processing

Before ASYCUDA there were different paper forms for different commodities. A single declarant processed bulky paperwork to import or export assorted goods. Customs officers painstakingly reviewed all forms leading to severe backlogs, high error rates, delays, and high likelihood of missing documents as paperwork transferred across desks and from one warehouse or station to another.

ASYCUDA's SAD subsystem enabled declarants to assess their duties and tax obligations, saving officers time. Entries were then checked against harmonized item codes to tally duties payable. However, declarants still had to submit replicate copies to several agencies mandated in trade processing, for example, regulatory agencies, shippers

and banks (Appendix 7). At customs, SAD was processed in the ‘long room’ - a hallway where officers sat behind rows of glass partitions (multi-window) to interact with declarants (Figure 2).²⁷

Figure 2: The long room in the GCD office at Tema Harbour



Paper copies of SAD used at various steps were later entered manually into ASYCUDA. Overall, processing at the long room was tightly coupled, each step dependent on precedent steps, susceptible to coercion and discretion of officers, and prone to errors and inefficiencies. It took 13-30 steps depending on various factors, and could last weeks to months (Appendix 8). ASYCUDA was used in clearance of import and export, but several steps like numbering of entries, punching, detachment, strike-offs and some reconciliation remained manual.

Sociotechnical configuration II: ASYCUDA revenue collections and risk controls

ASYCUDA enabled electronic storage and retrieval of clearance and payment data. It allowed cashiers to input receipts when payments were made thereby increasing monitoring and reducing incentives for tampering with daily accounts, formerly in ledger books. The system also provided information on pending transactions. Such seemingly rudimentary benefits of computerization made significant improvements to the collection of state revenue because documentation that was previously lost, stolen or required excessive time and labour to retrieve could now be accurately processed.

²⁷ In August 2015, when the picture was taken, the long room was merely a waiting area for declarants because several manual actions of the ASYCUDA period were automated with TRADENET

This meant less delay, less frustration and cost savings for anxious declarants. Importantly for revenue collections, ASYCUDA linked declarants to transactions, thus allowing easy revisits to their accounts for post-clearance ‘risk controls’. Risk controls are measures taken by customs to minimize ‘revenue risks’ or losses through non-payment of duties and taxes or evasion via money laundering, misinvoicing, falsification, misclassification or undervaluation of goods.

ASYCUDA supported harmonization of item codes for classification and valuation, so that duties could be consistently applied without discretionary assessments, thus reducing reliance on declarants to honestly declare correct rates. Finally, ASYCUDA had a randomization feature for assigning officers to transactions and inspection of goods. This was meant to reduce collusion, especially among longstanding declarants who had relationships with officers to dupe the state. Overall, ASYCUDA partially automated selected steps in document processing and revenue collections. Paper SAD still had to be filled out, submitted, processed, and manually entered. Revenue risk controls also had to be done semi-manually.

Period 2: TRADENET - bearer of managerial logics (2004-2015)

TRADENET is a business-to-government (B2G) electronic data interchange (EDI) platform, which attempts to integrate trade clearance under an “organizing vision” (Swanson & Ramiller 1997) referred to as a *Single Window*. With its modular, configurable, business intelligence functionalities, the TRADENET web-based platform is used by various stakeholders involved in foreign trade administration.

The TRADENET period is best understood against a backdrop of globalization and related institutional reforms in developing countries championed by international organizations like the World Bank, World Trade Organization (WTO) and World Customs Organization (WCO). Multinational technology and consultancy companies

influenced a new IT-based trade clearance regime to foster global economic integration. Arrangements like public-private-partnerships (PPP) that mix markets and hierarchies were implemented by GoG as a means of improving customs with managerial ethos from the private sector.

IT enabled the re-organization of relations and processes across contexts, involving international bodies, regional trade blocs like ECOWAS, GoG state agencies, multinationals and local firms. TRADENET emerged from the Ghana Trade and Investment Gateway (GHATIG) project, a GoG and World Bank development program that ran from 1999-2009.

GHATIG aimed to make Ghana the ‘Gateway to West Africa’ and to ‘accelerate export-led Growth’ (The World Bank Group, 2010, p. 50). It was in line with plans for Ghana to become middle-income by 2020 through the Ghana Poverty Reduction Strategy (GPRS) which aimed to develop ‘competitive advantages’, boost exports, and make the private sector an ‘engine of growth’ (World Bank Group 2010, pp.9–10).

Modernization of trade administration was central to GHATIG and digitizing, automating and integrating customs clearance became a priority. TRADENET aimed to fundamentally reorganize and to streamline processes to reduce replications. After a GoG delegation visited countries with ‘best practice’ modernization programs, the Singapore and Mauritius models were adopted because in addition to speeding up trade flows they helped increase government revenues.

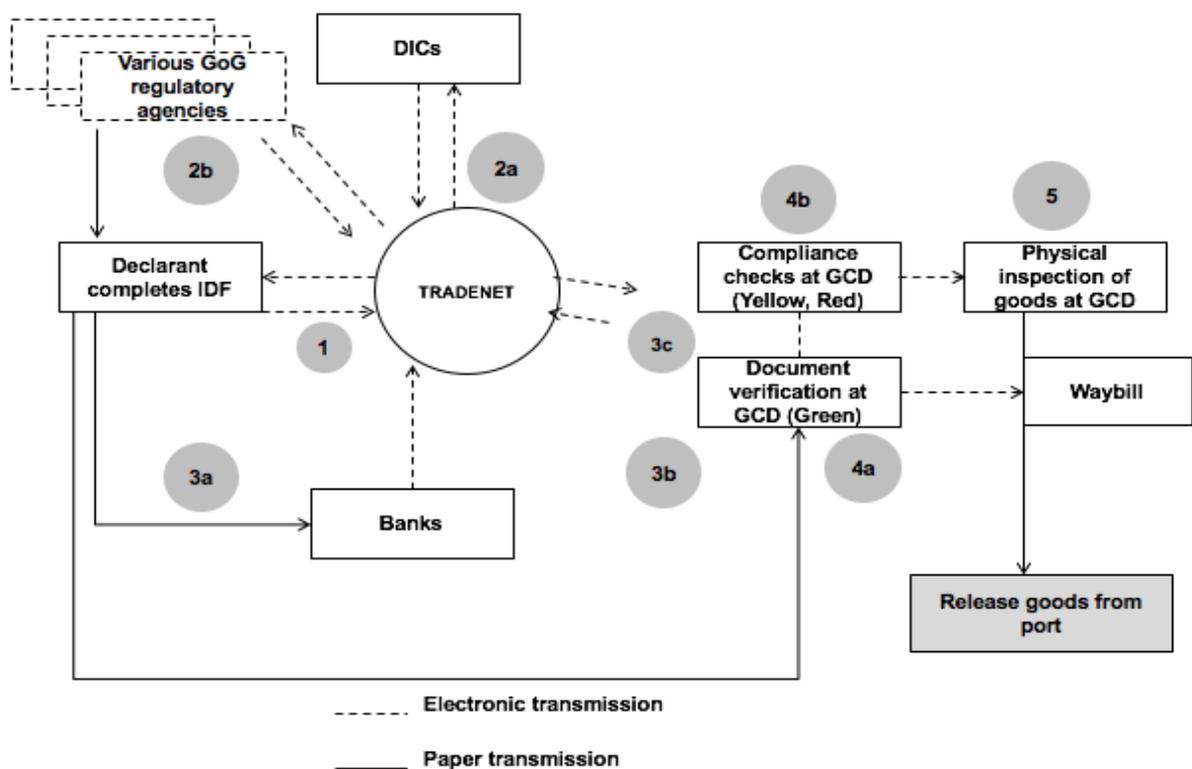
It was suggested that Mauritius became a leading textiles exporter after they deployed IT to facilitate trade, whereas Singapore’s TRADENET contributed about one billion US dollars per year in productivity (Yasui & Engman 2005, p.16). GoG therefore, sourced TRADENET from Crimsonlogic, a company that developed Singapore and Mauritius’ systems.

By 2003, TRADENET operated at Ghana's Tema Harbour and subsequently at all ports. The Ministry of Finance and Economic Planning (MOFEP), the Ministry of Trade and Industry (MOTI), banks, GoG regulatory agencies, shippers, declarants, and others were digitally networked in trade administration (Appendix 9). Instead of the 13-30 steps required during 'multi-window' processing in the 'long room' (Appendix 8), TRADENET declarants were to submit one electronic form, the import declaration form (IDF). But over ten years after adoption, the *Single Window* was not fully realized.

Sociotechnical configuration III: Import Declaration Form (IDF) processing

TRADENET was administered by the Ghana Community Network (GCNET), a public-private organization jointly owned by GoG, international and local firms. Figure 3 illustrates a typical imports clearance.

Figure 3: Illustration of TRADENET-enabled clearance process



Critical functions of valuation and classification were outsourced from customs to five private destination inspection companies (DICs), which independently assessed duties and taxes. Customs was limited to oversight, inspection of goods, and reconciliation of steps undertaken by auxiliaries like banks and DICs. Import/export clearance involved the following steps: (1) Declarant completes IDF online via TRADENET interface. (2a) DICs classify and value goods, assess duties and taxes and electronically issue final classification and valuation report (FCVR). (2b) If special permits, waivers or exemptions are required from GoG regulatory agencies, these are obtained, entered into TRADENET and printed as attachments. (3a) Declarant pays applicable duties and taxes at bank; and (3b) submits receipts, IDF paper copies and attachments to customs. (3c) Documents are screened and electronic notification relayed to declarant via TRADENET to update them on next steps. (4a) If documents are screened as low-risk (green), declarants obtain waybill, complete process and exit port. (4b) If documents are screened as medium to high risk (yellow or red), declarants undergo compliance checks and additional physical inspections of goods, before (5) waybill is issued and the process is completed.

Sociotechnical configuration IV: TRADENET revenue collections and risk controls

After TRADENET and accompanying reorganization and regulatory measures, there was noticeable revenue increase and malpractices were also said to decline (Ofori 2013; De Wulf 2005; World Bank Group 2010). At the Tema Harbour for instance, there was a 33% increase in revenue (International Trade Center 2009). Risk controls was also improved. Aggregation of accurate data, as well as business intelligence functionalities such as analytics, auditing, and forecasting, enabled officers to have risk profiles for declarants, spot suspicious consignments, flag risky declarations and coordinate timely responses.

Via integration with receiving banks, TRADENET enabled real-time and periodic monitoring, reporting and reconciliation, forecasting, and forensic auditing. This allowed officers to track the GCD's performance relative to annual GoG revenue targets and daily management targets; and hence, to pre-empt and rectify shortfalls. Meeting GoG targets became a primary criterion for GCD performance; failure to meet them had serious professional and organizational consequences.

Finally, TRADENET allowed tracking of outstanding payments for declarants with withheld or seized goods, and identified declarants whom, in the interest of facilitating trade, had been granted tentative waivers. A hold could be automatically placed so they were unable to clear consignments until debts were settled. Table 13 shows key technology features and inscribed functionality of ASYCUDA and TRADENET. It also shows resulting changes in the two practices of document processing and revenue collections.

Table 13: Artefacts and sociotechnical configurations of practices over time

Changes of practices over time			
	Period 0 (paper)	Period 1 (ASYCUDA, paper)	Period 2 (TRADENET, paper)
Features of artefacts	<ul style="list-style-type: none"> • Hard-copy • Manually processed e.g. authenticated by official stamps, signature etc. 	<ul style="list-style-type: none"> • Digital/hard-copy assemblage • Mixed manual/ automated steps • Standard, off-the-shelve features • Located exclusively at customs for their use 	<ul style="list-style-type: none"> • Digital, hard-copy assemblage • Less paper/more digitization • Modular and configurable • Multi-user platform accessible by all stakeholders through web interface
Inscribed functionality	<ul style="list-style-type: none"> • Reliability e.g. not dependent on fallible infrastructure like electricity, internet • Ease of use e.g. viewable 'on demand' • Security e.g. signatures/stamps 	<ul style="list-style-type: none"> • Data aggregation, tracking, reporting for government • Automation • Standardization and controls e.g. harmonization codes • Enhanced security e.g. digital trail harder to falsify than paper 	<ul style="list-style-type: none"> • Streamline data flow for trade players • Integration and de-duplicating steps • Data sharing and transparency • Increase digitization and automation • Enhanced security e.g., audit and complex forensic features
Document processing (Sociotechnical configurations 0, I, III)	<ul style="list-style-type: none"> • Manual encourages face-to-face interactions and behaviours like bribery, extortion • Tightly coupled interactions increases hold-ups, delays, coercion and discretion • Delays and high transaction costs encourage malpractices 	<ul style="list-style-type: none"> • Digital-paper combination encourages face-to-face interaction at paper interface • Strengthened bureaucratic capabilities like standardization and control but hierarchical steps within customs increases hold-ups, collusion and delays • Fragmented and tightly coupled interactions between trade players enables coercive and discretionary influence by officers • Overall high transaction costs encourage malpractices 	<ul style="list-style-type: none"> • Face-to-face interactions diminish with paper reduction and disintermediation • Managerial capabilities enhance efficiency, effectiveness, transparency • Network configuration increases transparency, reduces hold-ups, collusion and delays by loosening tight couplings through data sharing • De-duplication, process streamlining enhances efficiency/reduces transaction costs • Disintermediation reduces exposure for malpractice by officers
Revenue collections/ risk controls (Sociotechnical configurations 00, II, IV)	<ul style="list-style-type: none"> • Manual processing increases errors and makes risk controls ineffective and inefficient 	<ul style="list-style-type: none"> • Data aggregation and tracking improves revenue target setting • Standardization and controls aid classification and valuation which enhance collections • Manual paper use still constrained overall process 	<ul style="list-style-type: none"> • Complex audit, forensic and risk flagging functionalities aid controls • Increased data transparency reduces incentives for corruption, fraud • Paper reduction enhances efficiency and effectiveness

IT-enabled institutionalized practice change at Ghana's customs

From our narratives of ASYCUDA and TRADENET periods, changes are discernible occurring *synchronically* in the two practice areas of document processing and revenue collections/risk controls, and *diachronically* from the period of one technology to another, as outlined in Table 12. To examine the rationalization effects of IT adoption, we focus our analysis on changes relating to the curbing of high levels of discretion and coercion, known to be at the root of malpractices by customs officers. We present a

process view of sociotechnical reconfigurations formed in the practices of document processing and revenue collections/risk controls in the two IT periods of our study.

Period 1: interacting bureaucratic and patrimonial logics in practice

During the ASYCUDA period there were some transformations of practices towards formal rule-based administration but also persistence of manual, paper-based patrimonial practices. For example, ASYCUDA made it

less possible, and therefore less enticing, for cashiers to tamper with daily account receipts in their cash books, because as payments were effected they were put into the computer, thereby making monitoring instantaneous (Tettey 1997, p.344).

Coercive and discretionary powers of officers remained, though more curtailed than before. Malpractices such as misinvoicing, fraud, bribery and extortion occurred but under different guises or by circumventing ASYCUDA. GoG audits and the media routinely reported on these. For example, a GoG audit in 1994 found,

[...] the same cheque number had been quoted to support duties stated to have been paid by two or more importers...Furthermore, cash payments made by some importers which were duly supported with cash slips were recorded in the revenue cash books as cheque payments with cheque numbers quoted against them, strongly suggesting that the cash involved had been embezzled (Government of Ghana 1994b, pp.30–31).

The audit further reported that several bills of entry had not been supported by relevant documentation thereby making it impossible to determine balances on the government's ledger. This led to situations where declarants could clear goods in excess of their payments with collusion of officers (Government of Ghana 1994b, p.32).

Though ASYCUDA was meant to help customs officers correctly classify and value goods based on the harmonized codes, the process remained a source of evasion and fraud. A customs internal committee for the examination of transactions discovered that vast sums were denied the state through under-reporting (Government of Ghana

1994a). Some officers even falsified ASYCUDA entries and faked tax receipts as reported by the national daily,

[...] Two customs officials attached to the state warehouse at Tema have been dismissed for conniving with an Accra-based trading company in an attempt to dupe the state of customs duties [...] employees keyed the information on the transaction into the computer and gave out computer receipts without examining or demanding the necessary documents from the importer (Daily Graphic 1994).

Also, ASYCUDA's randomization feature was undermined in practice. Officers described tight-knit camaraderie that ensured collusion even when an officer was not assigned a case he was 'interested in'. Collegiality and informality among officers often trumped formal constraints of ASYCUDA. Longstanding declarants, with connivance of confederates at particular stations, continued to 'cheat the system' (Tettey 1997, p.351).

Overall, by the end of the ASYCUDA period, informal and formal actions, rooted in patrimonial and bureaucratic logics respectively, comingled. The principles of these two idealtypic administration logics underpinned practices of a neopatrimonial administration. As explained by a handicraft exporter interviewed,

Those days when I went to Tema Harbour, an officer would insist, "give me 50,000 cedis, or X amount of your goods" [trying to extort]. I would protest, "I have official receipts here I can show [...] these your demands are 'unofficial'. It doesn't make sense!" [...] At the end of the day, they put burden on us. Failure to comply only added to your woes [...]

Formation of neopatrimonial logics in practice through ASYCUDA

We trace the formation of hybrid, neopatrimonial logics in practice along the three dimensions of institutional logics we identified in our outline of the concept of institutional logics: organizing or guiding principles, causal means-ends assumptions and identity formation. The organizing principles conveyed by ASYCUDA were the same for

document processing and revenue collection/risk controls, but causal means/ends assumptions and identity formation differed (Table 14).

Core *organizing principles* of ASYCUDA drew on idealtypic bureaucratic principles such as adherence to rules, standardization, fairness and hierarchical oversight. These principles were antithetical to high levels of personalized power, coercion and discretion present in traditional patrimonial practices at customs that thrived upon variability of processes, befuddling complexity and red tape.

Through ASYCUDA use, officers formed practices that blended erstwhile coercion and discretion with selective rule-following during interactions with declarants.

A veteran officer observed,

ASYCUDA standardized how we did things like classifying and valuing goods, as well as collating data for government [...] but officers could still 'game the system' or 'hassle' declarants for money on the side if they felt they won't be caught.

Thus, while ASYCUDA did not completely achieve regulation-based standardised administration practice, it enabled change over the previous patrimonial status-quo where corruption was bald and extreme. A veteran customs officer recalled,

Before ASYCUDA, corruption by powerful revenue collectors was brazen! Some senior collectors had two large trunks in their office. And they will tell you, "this box is for the government, and that one is mine." At the end of the day their trunk will overrun while the government's was barely halfway. Some even ran loan schemes for traders from illicit gains. This went unchecked so long as they met revenue quotas (which was undervalued based on under-reported previous years' 'official' collections).

Table 14: Blending of patrimonial logics in practice with bureaucratic ideal logics of ASYCUDA to form neopatrimonial logics in practice

	Period 0: Before IT introduction	Period 1: ASYCUDA adoption	
Dimensions of logics	Patrimonial rent seeking logics	Bureaucratic logics of ASYCUDA	Neopatrimonial logics in practice
<i>Organizing/ Guiding Principle</i>	Personal power, coercion and discretion drive administration	IT supported bureaucratic rules, standards, fairness and hierarchical oversight	Practices of partial use of the system's functionality, in which discretionary personal power and the bureaucratic principles inscribed in IT comingle
Document processing			
<i>Causal Means-Ends Assumption</i>	Declarants' document processing as an opportunity for officers' rent seeking	Document processing aiming at service effectiveness and efficiency	Document processing to achieve 'good enough' outcomes for declarants while still allowing officers to claim rents
<i>Customs officers' Identity</i>	Powerful enforcers with absolute discretion over clearance. Officers doing declarants a 'favour' by processing documents	Officers as impersonal administrators using a system that inscribes regulation	Officers as administrators, but with power for discretion
Revenue collections/risk controls			
<i>Causal Means-Ends Assumption</i>	Discretionary procedures to collect maximal rents for officers and the state	Standardized procedures for efficient and fair revenue collection for the state	Blending automated with discretionary procedures to still allow opportunities for rent seeking
<i>Customs officers' Identity</i>	Officers as revenue collectors with discretion for applying controls	Officers as administrators applying fair rules, in standardized procedures	Officers negotiating state interests with declarants through IT

In the practice area of document processing, *causal means-ends assumption* concerned ASYCUDA's effects on effectiveness and efficiency through standardization measures such as harmonized item codes and published rates. The assumed goal of efficiency and effectiveness contradicted with pre-IT patrimonial logics whereby slow, inefficient document processing allowed for rent seeking because it inconvenienced declarants to the point of being willing to pay any extortionate sums of money demanded by customs officers. ASYCUDA was perceived by officers as useful only insofar as it did not frustrate their traditional 'pocket-enrichment' mechanisms. A World Bank report noted,

Entry processing was very labour intensive and slow. Numerous manual records were kept and ASYCUDA was grossly under-utilized and maintained, bringing little value

added to procedures [...] operations were not consistent amongst the different clearance stations (De Wulf 2005, p.9)

The users of ASYCUDA enacted an uneasy reconciliation of the tensions between demands of effectiveness and efficiency versus old ‘pocket enrichment’ mechanisms such as face-to-face negotiations and extortion from declarants. For example, by blending automated steps with paper-based manual steps in SAD processing at the ‘long room’, customs officers formed practices that reflected lingering patrimonial logics.

Also in document processing, as ASYCUDA necessitated the administration of various standardized rules and procedures, customs officers took on a new ‘administrator’ *identity*, separate from the powerful security uniform-wearing ‘enforcer’ identity of the previous patrimonial system. The ‘enforcer’ identity harkened back to customs history as a paramilitary organization, part of an armed border guard unit which was a law enforcement arm of the Customs Excise and Preventive Service (CEPS) (Appendix 6).

ASYCUDA use moderated coercive and discretionary tendencies of the enforcer identity as officers adopted a new blended ‘enforcer-administrator’ identity. A retired officer explained:

Before ASYCUDA there were a lot of general guidelines that we just enforced with common sense [...] even things like published tariff rates were not easy for declarants to obtain [...] we arrived at decisions through discussions and discretion [...] ASYCUDA brought many specific guidelines and rules that we had to administer

In the practice area of revenue collections, control measures like electronic payment entries, monitoring and reporting to improve efficiency and effectiveness did not necessarily conflict with *causal means-ends assumption* of revenue collections/risk controls to primarily maximise rents and enforce cross-border laws.

However, ASYCUDA was faithfully appropriated only insofar as it eased menial, laborious collections/risk controls work, such as reviewing declarations for errors, inconsistencies and suspicious entries. But the degree to which IT could be beneficial was hampered by paper features such as bulkiness, which made manual steps the bottleneck in the overall digital-paper ensemble. A senior officer recounted,

ASYCUDA became an integral part of the way we did things [...] we could not ignore it entirely. But many of the problems from manual remained because we still had to 'feed' paper into the system, and deal with paper for all risk control functions.

Finally, in the practice of revenue collection, ASYCUDA provided occasion for customs officers to negotiate multiple interests –declarants', governments' as well as their own. This required blending previous patrimonial *identity* as revenue collectors as rent seekers with ASYCUDA enabled identity as administrators whose goal was to meet government revenue targets in a fair, rule-based and standardized way.

Different effects in document processing and revenue collections

While the blending traditional patrimonial and bureaucratic logics in the ASYCUDA period is found in the practices of document processing as well as revenue collections/risk controls, the extent of change towards standardised bureaucratic practice varied in these two areas. ASYCUDA had more rationalization effects in revenue collections/risk controls than in SAD processing. A senior officer observed that,

We still had many document processing steps to clear a single declaration. Paperwork had to be manually entered and several copies submitted to various stakeholders. ASYCUDA automated pre-existing processes rather than re-engineering the entire scheme. Declarants were constantly frustrated and some officers benefited as before.

This contrasted with revenue collections/ risk controls where a customs commissioner reported that,

ASYCUDA helped keep records that we could revisit. It also enhanced government data collection for planning purposes. It brought us many significant improvements in how we were realizing and accounting for revenues. This was a big benefit!

Period 2: interacting managerial logic of TRADENET and neopatrimonial logics in practice

In period 2 we found cumulative rationalization effects in administrative practices through the enactment of TRADENET. IT adoption underpinned significant organizational changes. A World Bank report hailed,

CEPS (GCD) is now ISO 9000 certified [...] with a new mission and vision [...] The system [TRADENET] has enabled flow of information [...] clearance of goods has improved tremendously (World Bank Group 2010, p.29).

The reorganised customs administration processes increasingly constrained discretionary and coercive powers of officers. For example, information sharing across a network of organizations reduced discretion-related malpractices like misinvoicing. Anyone with access to the system could now audit. Key functions like classification and valuation were outsourced to DICs.

While outsourcing does not always improve public services, the five DICs whose profits were tied to total revenues realized for government, were often praised for performing an efficient, transparent, arms-length, back-end operation. By having an economic incentive to maximize revenues collected, the DICs put in place managerial practices and checks that customs lacked. Their operations effectively disintermediated customs and reduced face-to-face opportunities for rent-seeking and relational malpractices like collusion.

But despite interactions and processes being better integrated, important steps remained paper-based, requiring declarants to print, get ‘officially stamped’ and present in person (Appendix 10). This impeded TRADENET’s capability to automate and

integrate processing into a single step. The resulting IDF processing at GCD was a compromise between the *Single Window* concept and pre-TRADENET ‘multi-window’ procedures in the ‘long room’. Processes were still coupled, although less tightly than with ASYCUDA, with steps occasionally susceptible to coercion and discretion, and prone to errors and inefficiencies. Senior officials unsuccessfully encouraged officers to use digital functionalities of TRADENET fully.

An administrator lamented,

Officers have so much confidence in paper that at times the receipt that has been issued [...] it is digitized [via TRADENET] so once you click on the declaration, you will see that payment has been made. You don't need the physical receipt. But [...] they [customs officers] still want to see it [paper] though it doesn't add anything.

To be clear, manual steps like payment of duties and taxes continued to be needed because of lack of supporting infrastructure, such as reliable third-party online payment options, while others like physical inspection of goods by customs officials were mandated by regulation. But officers’ ‘fetishization’ of paper, when only an IDF number sufficed to access and digitally process documents, had less clear justifications.

Formation of neopatrimonial managerial logics in practice with TRADENET

The neopatrimonial logics of administration sociotechnically formed in the ASYCUDA period were reconfigured through the managerial logic inscribed in TRADENET, leading to a further blending of logics and practices that we describe as ‘neopatrimonial managerial’. In the TRADENET period too, the organizing principles conveyed by the technology and the re-organization that accompanied its implementation were the same for document processing and revenue collection/risk controls, but causal means/ends assumptions and identity formation differed (Table 15).

Managerial *organizing principles* of a results-oriented service through professional management, private sector ethos and transparency contradicted principles of

neopatrimonial rent seeking where bureaucratic and personal authority comingled into selective rule-following and persistent coercion and discretion of officers. As a senior TRADENET specialist noted,

Officers are used to face to face contact. Even if you send IDF online with no paper [as is possible with TRADENET], they will still be in the 'long room' expecting to see hardcopies. Without paperwork, some officers refuse to work and send declarants back.

Such behaviours could be seen as an attempt by officers to re-intermediate document processing by affording themselves opportunities for face-to-face interactions. Indeed, several officers interviewed lamented that classification and valuation of goods were historically core functions of customs and should not be sole remit of outsourced parties like the DICs.

Despite these tensions, TRADENET use drove fundamental restructuring that moderated opportunities for coercion/ discretion of officers and constrained rule-flouting as well as previously 'invisible' or unchecked malpractices.

Table 15: Blending of neopatrimonial logics in practice with managerial logics of TRADENET to form neopatrimonial managerial administration

	Late Period 1/Early Period 2	Period 2: TRADENET adoption	
Dimensions of logics	Neopatrimonial logics in practice	Managerial logics of TRADENET	Neopatrimonial managerial logics in practice
<i>Organizing/ Guiding Principle</i>	Practices of partial use of the system's functionality, in which discretionary personal power and the bureaucratic principles inscribed in IT comingle	Results-orientedness through professional management and private sector ethos such as incentive mechanisms	Blending of professional management, selective rule-following, coercion and discretion IT in practice moderates coercion/ discretion of officers and constrains rule-flouting as well as previously 'invisible' or unchecked malpractices
Document processing			
<i>Causal Means- Ends Assumption</i>	Document processing to achieve 'good enough' outcomes for declarants while still allowing officers to claim rents	IT networked integration, digitization and enhanced managerial functionalities to improve services for 'clients' (declarants)	IT mediates 'client service' provisioning and traditional customs mandate to provide an improved effective/efficient service
<i>Customs administrators' Identity</i>	Officers as administrators, but with power for discretion	Declarant as 'client' and customs officers as service managers that are like, and liaise with auxiliary private providers like banks and DICs	IT mediates flux identities of customs officers as enforcers-administrators-service managers
Revenue collections/risk controls			
<i>Causal Means- Ends Assumption</i>	Blending automated with discretionary procedures to still allow opportunities for rent seeking	IT enabled managerial functionalities like forensic auditing, risk flagging to improve revenue collection for the state	IT use to lessen previously laborious paper/manual tasks are digitized. Inadvertently, new functionalities constrain old malpractices
<i>Customs officers' Identity</i>	Officers negotiating state interests with declarants through IT	Customs officers as service managers with mainly procedural and coordinating functions	Customs officers experience diminished power which shifted to new network players like DICs, GCNET through IT mediation

In the practice area of document processing, the managerial *causal means-ends* assumption of TRADENET— that networked integration, digitization and enhanced managerial functionalities are meant to improve services for 'clients' (declarants)—was at odds with neopatrimonial logics to reconcile effectiveness and efficiency for 'good enough' outcome e.g. through laborious, SAD processing in the 'long room'. In the practice of TRADENET, a 'client service' orientation was compromised by customs' continuing longstanding assumption of a mandate centred on officers' interests.

The sentiment for the transition to a service oriented practice was captured by a senior officer,

Even before we fully established changes of ASYCUDA, TRADENET came and was compounding things with new ways of doing things [...] all these ISO and GCNET trainings we had to undergo and so on, just to improve services for declarants

Contradictions further manifested in *identities* as customs officers took on responsibilities as ‘service managers’ in addition to previous identities as ‘enforcers’ and ‘administrators’ in the ASYCUDA period. The ‘service manager’ identity reflected customs officers’ new roles as liaisons with auxiliary private providers like banks and DICs. Officers were no longer limited to dealing solely with declarants in enforcement or administration roles but now co-managed a bundle of TRADENET services provided through a network of public and private players with shared data access.

In the practice area of revenue collections, the *causal means-ends assumption* of TRADENET was the harnessing automation in a redesigned process to achieve efficiency and managerial functionalities like forensic auditing. This brought substantial improvements over previous bottlenecks created by the impediments of continuing paper use in ASYCUDA related tasks. Enhanced TRADENET features continued to improve previously laborious paper/manual tasks that were now fully digitized. And inadvertently, such new functionalities as forensic auditing, risk flagging, real-time reporting etc., constrained previous malpractices further.

Finally, TRADENET entrenched a new *identity* of customs collectors as service managers with essentially procedural and coordinating functions. This contrasted with neopatrimonial identities as empowered revenue collectors (rent seekers) who used IT as a means of negotiating personal, declarant and government interests.

Such changes created a sense of diminished power among officers who protested the shift of power to non-government actors like the DICs and GCNET through IT mediation. An officer protested by claiming,

It makes no sense that DICs should be doing valuations and classification [...] You know? This is a core customs function everywhere around the world [...] It has always been one of our core responsibilities [...] and even if you look at the bottom of the IDF form it says in fine print that customs is the statutory authority for that function [...] this whole outsourcing and restructuring business [...] it's all political

Continuing differences of effects in document processing and revenue collections

In this period, the discrepancy between the rationalizing effects of IT in the two areas of document processing and revenue collection/risk controls became more pronounced. Although officers combined managerial and neopatrimonial logics in both document processing (IDF processing) and revenue collections/risk controls, TRADENET, was less effective in rationalizing IDF processing, where neopatrimonial logics strongly contradicted managerial logics.

IDF processing was guided by the managerial logics captured in the WTO discourse of trade facilitation whereby officers were to adopt 'client orientation' and meet high service level standards. For example, GCD's ISO 9000 certification specified particular quality standards to be met that were not amenable to bureaucratic ethos of strict procedures, hierarchical controls and rule-following previously pursued by GCD. Managerial arrangements belied conflicts with historically formed logics of GCD as an enforcement agency whose *raison d'être* was to seek rents both formally, as duties, taxes etc., and informally, as bribes, extortions etc., through coercion and discretion.

TRADENET adoption struggled to curb neopatrimonial impulses in IDF processing. But the risk controls capabilities of TRADENET were generally enacted for improvement. Despite being unable to clearly explain such differences in effects of TRADENET adoption, officials knew and openly conceded discrepancy. A senior TRADENET specialist admitted,

Overall, TRADENET appears to have been more effective with revenue collections/risk controls [...] we have some way to go with facilitation [IDF processing].

An officer extolled the relevance of TRADENET for controlling risks, *Any information we want we get. And during facilitation, we must have a system to check whether we overlooked something in the pursuit of speed [...] So if you are a boss in your office and you come across a document that has high risk, you can immediately put in a remark and whoever is working on it will be cautioned [...] And then we also have the bank reconciliation. We did manual reconciliation before [...] because banks were not connected, declarants banked money and got receipts [...] they came and customs also gave them receipts. Many aspects have improved now.*

Cumulative transformations in institutionalized practices over time

Overall, computerization and concomitant reorganization had more significant rationalization effects for revenue collections than for document processing. At the Tema Harbour, there was a 31% year-on-year increase in revenue collections since TRADENET adoption (Appendix 11), despite fluctuating cargo volumes that increased by only 6% (Appendix 12). In other words, formally collected revenues grew at 5 times the rate of growth in cargo volume for the same period.

On the other hand, 11% of documents took more than 5 days to process, with about 45% taking up to 5 days, and only 14% completed on the same day (GCNET 2015). By comparison, port efficiency benchmark countries like Canada, Austria, Singapore, and Germany have fully automated customs operations that clear nearly all goods within a day. Although revenue and clearance metrics are neither equivalent nor conclusive evidence of differential effects of IT by practice, they provide *prima facie* support for dramatic improvements to revenue collections/ risk controls relative to document processing.

Our tracing of emergent sociotechnical configurations of document processing across periods 0, 1 and 2 shows *cumulative* blending of existing practices with the functionalities of new technology. For example, document processing changed from paper-based towards a largely electronic process with fewer but peculiar paper-based steps. The tracing of sociotechnical configurations of revenue collections across periods 0, 1 and 2, was more *radical*.

Risk controls became almost entirely electronic via detection, risk flagging and other digital features of TRADENET. The enactment of such features of TRADENET, coupled with data sharing with other agencies and improved audit trails, helped curb discretion. Furthermore, enhanced digitization reduced human intervention, and with that, officers' coercion. Table 16 highlights the case study findings.

Table 16: Key sociotechnical transformations of institutionalized practice over time

Practice	Cumulative rationalization effects (outcomes of sociotechnical reconfigurations over 30 years)
Document processing	<ul style="list-style-type: none"> ○ Emergence of new practice by period 2 (TRADENET) that showed cumulative blending of previous practices and logics e.g. a largely electronic process with fewer but peculiar manual paper-based steps requiring several 'official stamps' for completion, and occasional attendance at the 'long room' ○ Increasing constraints over precedent discretionary powers of customs officers e.g. reconfiguring previously tightly coupled steps into networked steps with standardized, shared data reduced 'hold ups', enhanced transparency ○ Increasing constraints over precedent coercive powers e.g. disintermediation of customs officers through measures like declarant self-service (electronic inputting and tracking) and outsourcing ○ Average number of steps reduced from over 20 to 5-10; average clearance times reduced although not to level of top Western/Asian benchmark countries
Revenue collections/ risk controls	<ul style="list-style-type: none"> ○ Emergence of new practice that showed radical change from previous types e.g. risk controls nearly entirely electronic using forensic audit, risk flagging and other enhanced functionalities ○ Increasing constraints over precedent discretionary powers of officers e.g. real-time reporting coupled with shared data improved audit trails, managerial oversight ○ Increasing constraints over precedent coercive powers e.g. enhanced digitization, audit and financial controls reduced likelihood of unwarranted intervention/corruption by officers ○ Over 30% year-on-year improvement in revenues collected despite only small increase in cargo volumes

We suggest that the differential extent of IT-enabled rationalization in the case of the computerization of Ghana's customs relates to (I) the extent of consistency or contradiction between the logics inscribed in the new IT system and the logics

underpinning existing practice and (II) the task structure of a given practice. We develop these two points below.

(I)

Patrimonial and neopatrimonial logics that underpinned slow, manual, malpractice-ridden document processing were inconsistent with the bureaucratic logic of ASYCUDA and the managerial logic of TRADENET. In both periods customs officers sought to maintain tradition, which retained considerable legitimacy, while grappling with new IT norms or trying to subvert them.

However, risk controls occurred after data entry when key information such as item classification codes, assessed values, payments and applicable exemptions had already been captured in the system. The risk controls tasks offered diminishing opportunities and incentives for informal manipulations because these could be discovered in routine audits, or in the case of TRADENET even flagged automatically. Consequently, with malpractice and ‘pocket enrichment’ opportunities curtailed, patrimonial and neopatrimonial logics of maximizing state revenues were no longer as opposed to, and sometimes were even amenable to IT logics.

In fact, even prior to IT adoption, risk controls had been a least favoured practice by officers, and was considered a ‘punishment’ or ‘demotion’. There was less potential for ‘pocket enrichment’, given the diminished face-to-face opportunities with anxious declarants, and involved a mountain of painstaking, menial, back-office desk work. Officers perceived IT in this area of practice as an enabler to make processes ‘less painful’

(II)

By task structure we refer to the degree to which a task is clearly defined and detailed in procedures and job descriptions. This relates to possibilities for interpretation

or discretion that could cause undesirable outcomes or failures (House 1971; House 1996). Document processing, with highly complex procedures, relational and interactive steps, judgement calls, and contingent routines required experience and discretion of customs officers, and therefore afforded opportunities to circumvent logics inscribed in the IT systems.

Risk controls involved less complex, less relational, less contingent, and clearer steps that minimized interpretation and discretion. These characteristics, which made risk controls tasks *routine*, had two discernible implications. First, most risk controls tasks were easily automatable and amenable to digital algorithms, such as those for forensic auditing and risk flagging. Second, officers had less opportunity and justification to ‘get involved’ in cases where their intervention was patently ‘not needed’; and to the extent that they did, their activities could easily arouse suspicion, be audited and queried.

Cumulative rationalization effects of IT adoption

In Ghana’s customs computerization history, ASYCUDA enabled more bureaucratic (or less patrimonial) logics in practice resulting in a *neopatrimonial* administration which had lingering effects from progenitors. The neopatrimonial logics that took shape in ASYCUDA practices subsequently blended with the TRADENET managerial logics to form *neopatrimonial managerial* configurations that resulted in more efficient and effective administration overall. Idealtypic logics blended with existing practices with idiosyncratic effects, such as continuing ‘fetishization’ of paper despite digital capabilities.

To the extent that the historical context of Ghana’s administration is representative of widespread institutional conditions of public administration in other African countries, and perhaps in other geographic regions, our study suggests how IT adoption may gradually change institutionalized administration practices. Our case

typifies IT transfers championed by international organizations in developing countries (World Bank Group 2000; Kulshreshtha 2008; Barbone et al. 1999; Staple 2002; World Bank Group 2011).

Also typical are post-colonial dynamics of patrimonial and neopatrimonial rent seeking that persist in many developing countries (Jackson & Rosberg 1982; Jackson 1987), and which are implicated in IT-related rationalization (Berman & Tetley 2001). A vast literature confirms historical roots for dysfunctions of administration in developing countries (Acemoglu et al. 2001; Acemoglu 2005; Bratton & Van de Walle 1994; Gardner 2012; Mkandawire 2013; Young 1994).

While caution is needed against overgeneralization about developing countries (Degrassi 2008, p. 110), we maintain that in many developing countries, characteristics of public administration are consistent with neopatrimonialism. The adoption of IT systems, intended to produce rationalization effects, gradually alters patrimonial and neopatrimonial practices rather than eliminating them.

From the analysis of our case study, we conceptualize the rationalization effects of IT as the outcome of the encounter in practice of technologized institutional logics of administration with existing institutionalised logics in a country's administration. IT adoptions, accompanied by reorganization programs, introduce institutional logics of ideal type administration intended to force out of practice existing behaviours rooted in patrimonial and neopatrimonial logics.

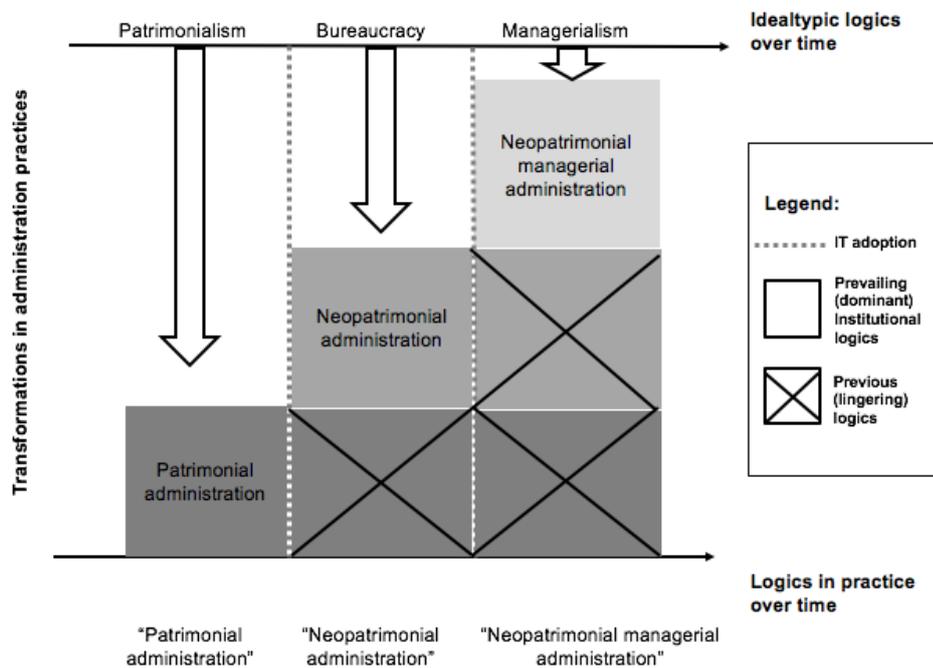
A given IT period has prevailing or dominant logics consisting of the new principles being introduced. Previous idealtypic logics, however, do not vanish after the IT systems that supported them are discontinued or replaced. Rather, they linger and interact, blending with prevailing logics conveyed by the IT intervention to form hybrid and evolving logics in practice.

Figure 4 presents the cumulative transformations occurring from sociotechnical reconfigurations achieved with a succession of IT adoptions and concomitant organizational restructuring. It depicts IT-enabled change unfolding in time by the comingling of idealtypic logics of administration - patrimonialism, bureaucracy and managerialism – and logics underpinning current ongoing practice.

‘Rationalizing’ or ‘modernizing’ logics (bureaucracy and managerialism), introduced through IT adoption that was meant to drive the transformation of patrimonial practices, are thus moderated and form practices underpinned by context-specific hybrids of administrative logics. Thus, distinct *sociotechnical configurations* are formed by blending technologized idealtypic logics in practice. Our research shows that the encounter of technologized bureaucratic and patrimonial logics in practice may produce *neopatrimonial bureaucracy*, an ensemble of material artefacts, techniques and processes, realizing administrative practices that are distinct from primordial ideal typifications of patrimonialism or bureaucracy.

Similarly, a sociotechnical reconfiguration of neopatrimonial administration into *neopatrimonial managerial administration* occurs when managerial logics are incorporated. Hence, rationalization occurs incrementally to the extent that sociotechnical configurations of a patrimonial administration shift towards neopatrimonial versions with more prevalent managerial characteristics.

Figure 4: IT-enabled practice change as sociotechnical (re)configuration



The ambivalent and often contradictory findings of research on the impact of e-government in developing countries that we mention in the introduction are likely to reflect the varying positions of the resulting administration practice along the patrimonial-managerial dimension. They may also reflect the differential effects of IT adoption on different administration tasks, as shown in our synchronic analysis.

Our study suggests that the degree of practice rationalization achieved by an IT-enabled intervention depends on the extent to which idealtypic logics of IT and logics in practice contradict. It also depends on the task structure of a given practice which relates with the extent to which it can be automated.

Conclusion

Our research contributes a view of public administration rationalization in developing countries as a process that has so far unfolded along the spectrum of the interacting institutional logics of patrimonialism, bureaucracy and managerialism. In this view, IT carries organizing principles of ideal types of administration and enables

sociotechnical reconfiguration of administrations through practice. Change results from the collision and resolution in practice of the idealtypic logics inscribed in IT and historically established idiosyncratic administration logics. Such a process of change forms neopatrimonial hybrids with increasing features of managerial logics.

By showing how and why idealtypic logics inscribed in IT and logics underpinning existing practice blend to drive new practice, our findings cast doubt on IS projects and studies that assume that IT innovation is capable of ‘eliminating’ traditional institutionalized malpractices. Consequently, expectation failures of IT in developing country administrations often reported in the literature need to be recast through an understanding of the process of change as the collision of contradictory institutional logics in specific historical and social contexts. Such reported failures may manifest misguided expectations of radical reform rather than ineffectual IT innovation.

Nevertheless, our theoretical view of incremental IT-enabled rationalization does not imply that IT implementation always leads to improvement of administration. Although not a small achievement in developing countries, successful IT implementation does not determine the extent of resulting rationalization. Improvements of efficiency and effectiveness of services emerge from the specific way IT artefacts and the organizational activities they were designed to support are enacted in practice. The resulting sociotechnical arrangements may vary substantially—from resisting and rejecting the incoming technologized logics and further entrenching existing forms of neopatrimonial administration, to moving substantially towards rationalizing logics.

Our case study suggests that the resulting administration may indeed shift towards practices that accommodate aspects of the incoming modernizing logic. Thus, traditional practices may weaken over time by cumulatively blending new idealtypic logics with lingering logics. This finding refutes ‘amplification theories’ of IT and development

which claim that rather than enabling enduring change, technology merely “amplifies” underlying human and institutional forces (Toyama 2011b; Toyama 2011a).

While we did not find evidence of deinstitutionalization, that is, the complete discontinuity of patrimonial practices through IT adoption (Sahay et al. 2010), we suggest that technology can make a difference by enabling the formation of hybrid administrative practices that bear characteristics of the logics inscribed in IT artefacts. Our view of sociotechnical transformation through blending is consistent with prior findings in organizational institutionalism that “[existing] institutionalized practices are rarely ever completely extinguished but continue albeit weaker in scope (extent of diffusion) or potency” (Dacin & Dacin 2008, p.327).

Methodologically, we suggest that a long-term perspective is critical for uncovering rationalization effects of IT in public administration given the protracted nature of change processes, as well as the path-dependence of interventions. As such, IT-enabled change in developing country public administration is essentially long term rather than episodic, emergent rather than plan-determined, situated rather than universal, contextual rather than acontextual, cumulative rather than reductive or substitutive.

Our proposed view should be understood as a partial explanation of IT-enabled rationalization of public administration in developing countries. It does not explain why traditional patrimonial and neopatrimonial logics resist new logics. Research is needed to understand the causes of resistance to the rationalizing institutional logics conveyed by IT innovation. This question might be further probed with research that considers the broader socioeconomic context of a country.

Our research studied public sector practice as a self-contained domain. We did not consider the interaction with citizens and other collective economic and political actors such as business organizations and social movements. Explanatory theory of IT and

public administration change will be strengthened by research that extends the contextual domain and explore the links of administration practice with the dynamics of the encounter of modernizing and traditional institutional logics in the broader economy and society of developing countries.

Chapter 9: Discussion

This chapter highlights and discusses key findings from the three studies reported in chapters 6-8. This is done in relation to the theoretical and empirical problems raised in the introduction (chapter 1) and theoretical foundation chapters (chapters 2-5). Important goals of this chapter are to connect ideas and themes across the papers presented, to elaborate answers to our research questions, and to empirically substantiate the central arguments laid out in the thesis introduction. The chapter will also draw out broader implications of the thesis for theory, methodology and practice.

Next, we recap what has been done so far, elaborate the key findings, discuss them as outlined above and then conclude the chapter.

Research highlights

Through the case studies of IT-enabled modernization initiatives at Ghana's customs organization, chapters 6-8 have explored different facets of the theme of IT-enabled rationalization in the public administration of developing countries. While the papers presented in the chapters are standalone in their specific questions, approach and analysis, they are connected by an engagement with a core theme of rationalization and implications of the broader context in relation to situated IT-enabled institutionalized practice change.

Motivated by the question of whether and how IT enables rationalization of institutionalized practices in the public administration of developing countries given reports of contradictory effects, the three papers have probed related aspects of the question in the following order: (1) how are information systems problematized in a developing country public administration context? (chapter 6) (2) Why are there contradictory effects of IT adoption in the context of developing country administration [e.g. 'irrationalities' of IT-enabled rationalization]? (chapter 7) (3) How does IT-enabled

rationalization of public administration in a developing country context unfold? (chapter 8)

These questions have been pursued through an analysis of how Ghana's TRADENET was problematized *contra* evidence of its post-implementation developmental and customs modernization outcomes (chapter 6); a single case study of the effects of TRADENET adoption on institutionalized practices, and especially on contradictory effects (chapter 7); and a longitudinal case study of rationalizing effects in both TRADENET and the previous system, ASYCUDA, over a period of 30 years (chapter 8).

As we suggested in our theoretical framing of rationalization presented in chapters 2, 3, and 4, empirically investigating the effects of broader context on IT-enabled rationalization in developing county public administration (the object of this thesis) requires attention to both structural (Weber 1946; Weber 1968; DiMaggio & Powell 1983; Boxenbaum & Jonsson 2008; Meyer & Scott 1992) and constructivist considerations as argued by Hasselbladh and Kallinikos (2000).

Findings from our case study have therefore shed light on the following constitutive themes of the thesis' approach to investigating rationalization.

- Historical unfolding of change at organizational, national and broader levels (Avgerou 2001; Avgerou 2002; Pettigrew 1985; Pettigrew 1990), as depicted by multi-actor efforts from the global to national and organizational levels, to rationalize Ghana's customs organization over its hundred-year history (30 of which involved significant IT application and were considered in our study)
- Multiple institutions and macro structures that drive change (Kraatz & Block 2008), from global level economic and political pressures for international trade efficiency and effectiveness to national and organizational level isomorphic pressures meant to

drive formal and substantive organizational transformation to meet ‘modern’ service-oriented standards.

- General values, rationalities and cultural perspectives of situated actors (individuals, organizations and even the state) (Kalberg 1980; Weber 1946; Avgerou 2000b; Avgerou 2002). These range from traditional understandings of time and (informal) relations at the personal level (chapter 6), to neopatrimonial notions of conduct at the organizational level, to rent-seeking logics of the state and its agents at the national and organizational levels (chapters 7,8).
- Discourses at the organizational, societal, national, global levels related to (1) (2) and (3) above and might be translated into techniques and processes of control that shape reality (Foucault 1982; Foucault 1980; Berger & Luckmann 1967; Bonina 2012). Findings identified technical-rational discourses of administration and development that provided formal rationalities to guide IT-enabled rationalization (chapter 6).

Furthermore, various normative rationalities were discernible through discourses –from neoliberal rationalities at the global level to modernization rationalities at the national level and managerial rationalities at the organizational levels. It was further suggested that native discourses (subaltern discourses) were largely suppressed by dominant, taken-for-granted technical-rational discourses (hegemonic discourses) of powerful actors.

- The processes by which discourses (point 4 above) are materialized or embodied in practice through objectifying and subjectifying means, i.e., the operations, techniques and artefacts connected to establishing specific domains of action for actors to act upon (Foucault 1980; Foucault 1982; Hasselbladh & Kallinikos 2000). Findings uncovered the logics inscribed in various IT systems and sociotechnical configurations meant to drive rationalization and how these interacted with pre-

existing logics in practice leading to transformations in practices and organizational actors' logics (chapter 8).

Specific findings from the three papers related to the general themes above are now outlined below.

Research findings

Paper 1 (chapter 6): Subalternity in information systems in Developing Countries: A Critical Analysis of Ghana's TRADENET

Findings reveal a technical-rational problematization of both TRADENET and TRADENET-enabled foreign trade as 'solutions' to socioeconomic underdevelopment. Such problematization occurred through a neoliberal discourse that simultaneously provided guiding ideology, policies and programs, state form, and governmentality for trade and development as well as modernization of customs administration.

It is shown that such neoliberal discourses, by reflecting the view of powerful, dominant elites, often failed to consider lesser-regarded local 'subaltern' positions or 'alternative rationalities' regarding trade, development and public administration. In this way, historical global power structures reproduce power through IT and its developmental meanings. Such power is however not coercive since it does not employ forceful, violent or even explicitly political mechanisms.

Rather, it manifests through acquiescence of less powerful developing country groups to the shared 'common sense' of an established elite. Gramsci's notions of hegemony and subalternity, developed upon in critical and post-colonial studies, are employed to conceptualize and vocabularize such latent power relations underlying IT in developing countries. It is suggested that by ignoring local historically formed subaltern positions, IT in developing countries ignore 'messy' realities of developing countries that it cannot readily provide technical-rational solutions for. Such 'messy' realities such as

neopatrimonial rent-seeking behaviours, lackadaisical cultural attitudes to time and the ‘fetishization of paper’ within public administrations reflect complex, historically formed institutional logics that are resistant to change and poorly understood.

This might help explain contradictory effects of IT as well as the challenges faced by development-oriented, IT-enabled rationalization programs. Furthermore, insofar as hegemonic positions of IT and development dominate over locally appropriate but lesser-regarded subaltern positions, the developmental and rationalization potential of IT remains limited. For example, it remains debatable the extent to which Ghana’s TRADENET, by underpinning a net-imports, neopatrimonial economic system might lead to socioeconomic development and improved livelihoods for average Ghanaians; or completely transform cultural, traditional and affective organizational behaviours such as informality (non-conformity to formal rules), personalization of official power (neopatrimonialism) and ‘fetishization of paper’.

In addition, global political structures and institutional arrangements governing neoliberal international trade remain unfavourable to developing countries like Ghana, and are often inimical to socioeconomic development (Easterly 2009; Gore 2000; Wade 2004; Wade 2003). As such, despite whatever potential IT might have for rationalizing the public administration, the overall development implication of IT-enabled change would appear subordinate to fundamental macro political, economic and institutional structures.

Paper 2 (chapter 7): Explaining ‘Irrationalities’ of IT-Enabled Change in a developing Country Bureaucracy: Case of Ghana’s TRADENET

The study finds that TRADENET-enabled organizational actions and their outcomes have a combination of micro-level cognitive and macro-level institutional aspects, rather than being entirely explicable by perspectives such as appropriation or

resistance that assume individualistic rational choice, or by macro-level structures like institutions and culture that assume passive top-down influences on actors. It is shown that the institutional logics perspective is helpful for explaining TRADENET-enabled practices generally, and peculiar contradictory outcomes in particular.

Such peculiar contradictory outcomes of IT have been viewed as ‘irrationality’ from the point of view of technical-rational objectives and expectations of IT rationalization (Avgerou 2000b; Avgerou 2002). But our findings suggest that they are rational situated responses to multiple contradictory institutional logics that are sociotechnically ‘comingled’ in practice through ‘good enough’ compromises.

Through instantiations with two IT-enabled practices at Ghana customs—IDF processing and revenue collections/risk controls—findings show the contradiction or consistency of institutional logics of practice and those of IT matter for outcomes. Specifically, it is shown that ‘irrationalities’ such as the existence of manual practices despite TRADENET affordance for full digitization, automation and integration represents ‘good enough’ outcomes when managerial and neopatrimonial rent seeking logics contradict in practice. By the sociotechnical ‘resolution’ of contradicting institutional logics and logics of IT, bureaucrats tended to maintain aspects of old traditional and new modernized practices over time.

Paper 3 (chapter 8): IT-Enabled Public Administration Rationalization in Developing Countries: Evidence from Ghana’s Customs Modernization

Despite evidence that IT adoption at Ghana’s customs has not gone exactly as planned, e.g. the Single Window vision not being achieved, we find that over a three-decade period there has been significant IT rationalization effects of the customs administration and foreign trade clearance practices through successive ASYCUDA and TRADENET adoptions.

Rationalization effects of IT are conceptualized as the outcome of the encounter in practice of technologized institutional logics of administration with existing institutionalised logics in a country's administration. Such rationalization effects have been incremental and have tended to blend institutional logics and practices from successive IT periods. ASYCUDA enabled more bureaucratic (or less patrimonial) logics in practice resulting in a *neopatrimonial* administration which had lingering effects from progenitors.

The neopatrimonial logics further blended with the TRADENET managerial logics to form *neopatrimonial managerial* configurations that showed more efficiency and effectiveness. The blending of idealtypic logics of IT with pre-existing institutional logics in practice, produced idiosyncratic outcomes such as continuing 'fetishization of paper' despite capabilities of IT to fully digitize, automate and integrate processes. These findings suggest how IT adoption may gradually change institutionalized administration practices of developing countries with historical and structural contexts like Ghana's.

It is argued that in many developing countries, characteristics of the institutionally plural public administration are consistent with neopatrimonialism and that the adoption of IT intended to produce rationalization effects gradually and incrementally alters patrimonial and neopatrimonial practices rather than radically eliminating them.

IT adoptions, accompanied by reorganization programs, introduce institutional logics of ideal type administration intended to force out of practice existing behaviours rooted in patrimonial and neopatrimonial logics. A given IT period has prevailing or dominant logics consisting of the new principles being introduced. Previous idealtypic logics, however, do not vanish after the IT systems that supported them are discontinued or replaced. Rather, they linger and interact, blending with prevailing logics conveyed by the IT intervention to form hybrid and evolving logics in practice.

IT-enabled rationalization in developing country administrations

Having outlined our empirical findings in relation to the research questions, this section weaves together the evidence and themes from our findings to substantiate our central theoretical arguments. The connecting thread is a conceptualization of IT-enabled rationalization as driven by context in terms of the micro-level cognitive foundations underlying IT-related practices (logics) and the broader, multiple, historically-formed institutional structures within which public administration and its practices are embedded.

With regard to micro-level cognitive foundations underlying IT and its related practices, we have critiqued mainstream technical-rationalities of IT and development, and highlighted a need to accommodate ‘subaltern positions’ and ‘alternative rationalities’ in developing countries. Dominant technical-rational understandings of IT and development are often at odds with multiple complex, historically formed, local positions and “alternative rationalities” (Avgerou 2000b; Avgerou 2002), many of which are ironically not recognized because they are rather ‘messy’ and do not present obvious ‘solutions’ (Ferguson 1994; Escobar 1995).

The institutional logics perspective is presented and developed as a means to explore the ‘logics’ of situated practices, particularly the ‘alternative’ logics of public administration in developing countries, and to bridge these to broader, multiple, historically-formed institutional and structural forces of rationalization. The institutional logics perspective allows investigation of both the local ‘alternative’ logics underlying institutionalized practices and their broader historically-formed institutional context.

For example, neopatrimonial rent-seeking logics that were identified in the case study were found to have institutional bases that were traceable through the history of customs administration in Ghana, dating back to its origins as a rent-seeking, paramilitary border enforcement unit during colonial times (Appendix 6).

Through theoretical combination with sociotechnical perspectives from IS, particularly the theorization of IT as a “carrier” of institutions (Scott 2008; Gosain 2004; Heeks 2005), the institutional logics perspective also enables a conceptualization of the ‘technologization’ of logics, that is, the way IT—as a sociotechnical system—comes to acquire, ‘carry’ and transmit idealtypic logics. Such processes are understood to occur through inscriptions, not just within IT artefacts themselves but also through entire sociotechnical systems and organizational arrangements that accompany IT adoption and underpin its embedding.

As well as idealtypic logics carried by IT, multiple, local, historically-formed ‘alternative’ logics underlie and shape practices in the public administration. Interactions of such multiple institutional logics occur in IT-enabled practices of public administration. The ‘resolution’ in practice of consistent or contradictory logics of pre-existing institutional logics and IT logics manifests as congruent or contradictory IT outcomes (‘irrationalities’).

Over time, IT might enable rationalization effects, although under the influence of countervailing local institutions. Such change occurs through the ‘blending’ of old institutional logics of public administration and new logics of IT through sociotechnical practices. Change is incremental rather than substitutive (new logics replacing old), and is gradual rather than radical. Rationalizing effects also depend on attributes such as task structure, as well as the degree of consistency or contradiction of institutional logics of administration and those of IT.

These findings differ from previous findings in the literature relating to amplification theories (Toyama 2011a; Toyama 2015; Toyama 2011b) and deinstitutionalization (Sahay et al. 2010; Oliver 1992). It lends support to previous findings on the importance of local situated rationalities, as well as broader context in

developing country IT-enabled practices (Avgerou 2001; Avgerou 2002; Walsham et al. 2007). Such contextual arguments are further developed through elaboration of the implication of multiple, historically-formed institutional forces on situated IT-related practices.

Based on the foregone discussion, we argue that contrary to technical-rational problematizations of IT in developing country public administrations that provide Western-centric formal and substantive rationalities for rationalization; IT adoption in the public administration of developing countries enables rationalizing effects, although not independent of countervailing, historically formed local institutions that provide logics for situated actors to act upon. Such position clarifies the all-too-common reports of contradictory effects, ambiguous outcomes and disappointments of IT in the public administration of developing countries.

The steps of IT-enabled rationalization are suggested as follows.

Through discourses at the global, regional, national and organizational levels that are inscribed into IT and related sociotechnical and organizational arrangements during IS design and development, IT comes to ‘carry’ institutional structures in the form of idealtypic prescriptions that are introduced into public administration to provide new organizing principles (logics) and to underpin organizational reform arrangements that might ‘force out’ dysfunctional institutionalized practices and their related old logics.

Such new organizing principles or logics introduced through IT adoption enter the public administration, which is an ‘institutionally plural’ organization, meaning that it is subject to multiple broader institutional forces that influence practices by providing specific guiding logics for given action domains. Such institutional plurality reflects the institutional orders characteristic of the broader society within which public administration and its constituent actors are embedded.

Once adopted within the public administration of developing countries, IT therefore encounters multiple, historically-formed institutional logics that have persisted over time to drive the various institutionalized practices carried out by local situated actors who draw upon such logics in their daily sociotechnical practices.

During IT use, rather than displacing dysfunctional practices and replacing them with IT driven ones, i.e. forcing out ‘old’ logics with ‘new’ IT ones, the two sets of incompatible logics are ‘comingled’ in practice through a process identified as ‘blending’. Blending reflects a hybridization of the often-acknowledged subaltern rationalities with rationalization logics carried by IT into distinct idiosyncratic logics that themselves institutionalize over time.

Such rationalizing effects of IT vary by practice type according to the task structure, as well as the degree of consistency or contradiction of interacting logics.

Blending results in distinctive hybridized sociotechnical practices that reflect novel logics of IT while retaining properties of previous lingering logics. As such, change is incremental rather than substitutive and occurs over long time horizons.

Towards a model of IT-enabled rationalization

While the thesis does not aspire to develop a generalized model of the process of IT-enabled rationalization in developing countries, several potential components of such model have been explored—idealtypic logics of public administration, rationalities and their power dynamics, technology and its structural and sociotechnical capacities for enabling institutional change, institutionalized practices and institutionalization—that might aid progress toward such endeavour.

In this regard, the process through which IT enables transformation of dysfunctional institutionalized practices, viewed in this thesis as “IT-enabled

rationalization”, might be understood to be a structural and ongoing cycle that involves three broad processes as follows:

(a) stabilizing processes—where multiple structures or ideal type institutions manifested and advanced through discourses are made durable by being embodied through sociotechnical carriers like IT and related organizational artefacts, systems and arrangements by means such as inscriptions

(b) de-stabilizing processes –where stabilized structures and idealtypic institutions carried by IT and related sociotechnical arrangements are de-scripted (or not), or otherwise enacted idiosyncratically in ways that might disrupt situated institutionalized practices in an organization and put their generative pre-existing sociotechnical configurations in flux

(c) re-stabilizing processes—where because of contradictions and comingling between IT-carried ideal types, and pre-existing logics in practice, new hybridized institutionalized practices emerge (and form a basis for further transformations).

These three broad processes are succinctly elaborated upon below.

(a) Stabilizing processes

This involves means by which certain macro-level ideal structures and institutions of the broader context (rather than others) become ‘objectified’ into ‘reproducible, durable and communicable’ form (Hasselbladh & Kallinikos 2000) through the mediation and embodiments of sociotechnical ‘carriers’ such as IT artefacts, systems and organizational arrangements that can impinge upon and influence situated practices.

Stabilization may also be viewed as the means by which the ‘objective’ technology (Fountain 2001) and its planned organizational arrangements emerge. Stabilization conditions the ‘cognitive infrastructure’ that defines the ‘object side’ of

institutionalization in terms of not only what is to be done but how (Hasselbladh & Kallinikos 2000).

Typical phases of the IT cycle pertinent to stabilization are the planning, design, development and early implementation stages where ideal prescriptions (generated through discursive, political and conflictual processes of variation, selection and retention of ideals) are ‘hard coded’ by such means as inscriptions into IT and related systems and organizational arrangements.

From a research point of view, focal issues that emerge are the multiple broader institutional structures from various layers of context and how they come to influence IT design and development; underlying rationalities of IT and related arrangements and their inherent tensions and conflicts; latent power dynamics driving stabilization and the general political and socioeconomic context of IT design.

These issues are manifest through discourses at various levels, chosen artefacts and their capabilities and affordances, as well as associated organizational techniques of control.

(b) De-stabilizing processes

Relates to the unfolding processes of IT adoption and use in institutionalized practices whereby stabilized structures and ideal institutions carried through IT are de-scripted (or not), or otherwise enacted in ways that might disrupt existing institutionalized practices and put pre-existing sociotechnical configurations—as well as incoming designed IT functionalities and associated sociotechnical arrangements—in flux.

Enacted technology that emerges in the course of IT implementation, adoption and use in situated practices is different from the objective technology introduced by design (Fountain 2001). The idealtypic institutions and structures that are ‘carried’ by ‘objective’ technology are thus ‘de-stabilized’—that is, interpreted differently, interrogated or

challenged and brought into negotiation and conflict with pre-existing ideals and logics through situated practices.

Local alternative rationalities, contradictory outcomes and important aspects of the context of use at the meso and micro levels, come into stark focus. These important phenomena are rendered knowable by investigating the use of artefacts over extended periods, the related transformations in practices and any resulting sociotechnical (re)configurations of the work system and institutionalized practices.

(c) Re-stabilizing processes

This refers to the emergence of new IT-enabled practices and sociotechnical configurations that reflect resolutions of idealtypic structures and institutions introduced by IT and those ideals and logics that were pre-existing in practice.

Introduction of new ideal types and their related technological processes and techniques creates a flux within the organization as such new idealtypes encounter old practices and their related sociotechnical configurations. During re-stabilization, flux created mostly during de-stabilization, becomes sedimented in the form of comingled (e.g. blended or loosely coupled) IT-enabled institutionalized practices that maintain characteristics of previous old and new forms.

This represents a new, relatively stabilized organizational and practice state (a kind of punctuated equilibrium) that might form the starting point for further IT-enabled rationalization. Focal phenomena during such re-stabilization period include the processes of resolution such as blending (hybridization), loose-coupling etc., and the rationalizing effects that might result in institutionalized practice change and the (re)configuration of sociotechnical practices.

Table 17 summarizes these three broad processes

Table 17: General processes of IT-enabled rationalization

IT rationalization process	Related IT cycle	Characteristic modus	Epistemological basis	Relevant focus	Locus of action/ level of analysis
Stabilizing (Objectification of ideal institutions/ structures)	IT planning, design, development, implementation	Hard-coding inscriptions of idealtypes	Discourses, artefacts, techniques of control e.g. systems of measurement and evaluation, standard operating procedures	Underlying rationalities, conflicting rationalities; power; context of design	Macro-> meso
De-stabilizing (subjectification of ideal institutional structures)	IT implementation, adoption, use in IT-enabled practice	De-descriptions or enactments with interpretive flexibility; flux of new prescriptions and old practices in conflict	Artefacts, practices, sociotechnical configuration	Local alternative rationalities; contradictory outcomes; context of use	Meso-> micro
Re-stabilizing (resolution of conflicting ideal institutional structures and old logics through practice)	IT adoption, use, outcomes, re-design/re-tuning	Resolution of contradictions, hybridization and routinization of new IT-enabled forms	Artefacts, practices, sociotechnical configuration	Processes of resolution e.g. blending; rationalization effects	Micro -> meso -> macro

It is important to note that these three generalized processes are interdependent but not necessarily sequential. For example, de-stabilization and re-stabilization processes might be concurrent rather than sequential, or even both concurrent and sequential, as technologies are phased in and out or are in simultaneous use irrespective of temporal sequencing. As such the proposed generalized account cannot be rightly described as a stage model of change since change is emergent, contingent, non-linear, and only partially determined if at all.

Furthermore, the three generalized processes together describe a spiralling structural process of change that is at once recursive (mutual interactions between IT-enabled structures and actors in the ‘here and now’ of situated practice) and

progressive (cumulative sociotechnical interaction effects over long periods of time and successive versions of IT and its related organizational configurations).

Implications

The thesis' theorizations have implications for theory, methodology and practice. These are noted as follows.

Implications for theory

We have shown that limitations of a technical-rational view of IT—which struggles to explain contradictory effects in organizational domains of developing countries—might be overcome through an institutional logics perspective that explains IT-related action at both the micro level of situated sociotechnical practices and the macro level of broader, multiple, historically-formed institutional influences. Such an institutional logics perspective on sociotechnical change offers advantages by reconciling complex phenomena at the micro (individual), meso (organizational) and macro (broader institutional) levels. Furthermore, institutional logics perspective offers opportunity to reconcile structural considerations with constructivist phenomena related to rationalization, thereby overcoming an important critique of the new institutionalist view of rationalization (Hasselbladh & Kallinikos 2000), and also acknowledging Weberian concerns for *verstehen*—or an actor-centric interpretive understanding of rationalization.

Broader institutions and structures are significant not just for institutionalized practices of organizational domains like public administration, but also for the development and implementation of IT systems in developing countries. The consistency or contradiction between the logics in practice of the organizational domain and the idealtypic logics of an IT intervention might be considered as an important driver of sociotechnical outcomes. While such consistencies and contradictions are not always apparent, predictable or amenable to *a priori* planned or design-oriented interventions,

they can be uncovered and their implications for existing micro-level practices considered. This can be achieved by tracing underlying motivations (logics) of IT-enabled practices and connecting these to broader, macro-level institutional forces within the domain and beyond.

Conceptualizing the organizational and broader institutional context in relation to IT, requires attention to local ‘alternative rationalities’ as well as the historical setting of the organization and its practices. For example, to gain a rich understanding of the organizational and practice settings, the thesis reviewed published ‘thick’ ethnographic and anthropological accounts of customs practices in Ghana and Africa that have established clear patterns of institutionalized practices and their underlying rationalities (Chalfin 2003; Chalfin 2010; Chalfin 2008; Chalfin 2004; Cantens 2013a; Cantens 2013b; Cantens 2012). The thesis was also sensitized by studies from diverse fields like political economy that have explicated peculiar institutional dynamics of public administration in developing countries at the broader level (Bratton & Van de Walle 1994; Brobbey 2014; O’Neil 2007).

Furthermore, such shift from dominant assumptions of universalistic, a-historical, acontextual techno-rationality requires sensitivity to critical perspectives that uncover latent power dynamics and their unintended or oppressive influences through taken-for-granted processes such as discourse and problematization. IT is not neutral (Avgerou 2000b; Avgerou & McGrath 2007; Latour 1991; Klein & Kleinman 2002), and it might be a disservice to adopt or study them as though they were; particularly in the context of developing countries that are often removed from global processes and formative contexts of IT innovation (Aubert 2004).

Critical perspectives offer alternative lenses to re-interpret IT and its implications from the situation of local actors in developing countries. Critical theories, as argued by

Horkheimer (1982), require explanatory, practical and normative adequacy. The application of Gramsci's notions of hegemony and subalternity in this thesis (chapter 6) attempts to highlight such practical and normative aspects of IT in developing countries in explanations.

While critical theories have been criticised for being fatalistic (Bohman 2010), they go beyond instrumental technical-rational explanations to question fundamental assumptions and offer alternative explanations whose goal is 'emancipation' and freedom (Horkheimer 1982). Such emancipatory considerations are important if public administration in developing countries is to escape Weber's predictions of an 'iron cage' and to be conformed to its own aesthetics of existence (Avgerou & McGrath 2007), rather than borrowed Western models with little local relevance.

Implications for methodology

The benefits of multiple approaches to understanding IT-enabled rationalization in developing country public administration domains have been demonstrated. The thesis has employed critical discourse analysis (CDA), single case study, and a longitudinal case study that was implicitly comparative. These have allowed probing of diverse sources of evidence and phenomena relevant to the central problematic.

In terms of theory building, the benefits of longitudinal, processual explanations of rationalization have also been shown (chapter 8). Given that organizational and institutional change, particularly in the public sector, takes long to unfold (Schacter 2000; Goodman & Dean 1982; Chang 2001); such longitudinal, processual approaches to theorizing are not only desirable but imperative if we are to understand complexities of path dependence and the unfolding of causal sociotechnical mechanisms of rationalization over time (Avgerou 2013).

While variance-based theoretical accounts are useful for understanding situated interactions of factors and complex variables, they are limited by often being a-historical, nomothetic and insufficiently accommodating rich context and its contingencies. Idiographic accounts like what we have provided, on the other hand, offer rich, historically-sensitized and contextual explanations of IT-enabled change. This is not to be interpreted as a critique of variance-based explanations *per se*, but to suggest room for complementarity and to highlight strengths of idiographic, processual approaches to explaining IT-enabled rationalization.

Along such lines of encouraging rich idiographic approaches that privilege context of local practices and ‘alternative’ understandings of IT, ethnographic and historical methods are valuable for data collection. While these might often be more time consuming than typical case studies, deep immersion in the local context yields valuable pay-offs in terms of unanticipated insights into phenomena that might not be uncovered otherwise (Miscione 2007; Mason et al. 1997).

While this thesis was not ethnography, it was sensitized by ethnographic approaches to the study of customs practices. This meant that I not only spent a significant amount of time in the field (about 8 months) ‘immersing’ myself in the social context of the phenomena, but I also undertook significant direct observations of IT-related practices and activities at Ghana customs, the Tema Harbour and related organizations to generate ‘thick’ descriptions that could be drawn upon to inform a detailed process theorization. In addition, my data collection and organizational anthropological stance was sensitized by several prior ethnographic studies of Ghana’s customs and its practices (Chalfin 2003; Chalfin 2010; Chalfin 2008; Chalfin 2004; Cantens 2013a; Cantens 2013b; Cantens 2012).

Implications for practice

Our finding that IT-enabled rationalization unfolds over a long period of time implies that expectations of short-term, radical IT transformations that are tied to IT and administrative reform project cycles are unrealistic in the public administration of developing countries. IT-enabled change in the public administration of developing countries appears incremental (rather than substitutive). This implies that rationalization effects might improve over time as successive IT adoptions occur, with each delivering incremental amounts of transformation.

While not explicitly probed, it would follow that previous IT adoption experiences enhance subsequent adoptions and their rationalizing outcomes. For example, the ASYCUDA adoption experience of Ghana customs, enabled the organization to learn and improve on several organizational aspects that enhanced the subsequent TRADENET adoption and its effects. Literature on organizational memory and its implications for improvisation, technology management and organizational process improvements, support such expectation (Moorman & Miner 1998; Walsh & Ungson 1991; Jennex & Lorne 2004; Cross & Baird 2000). Whether and how such cumulative organizational learning and improvements occur remain to be further studied.

Another important implication of the thesis for practice is that sociotechnical rationalization outcomes of IT interventions are not directly correlated with the capabilities of IT systems, their affordances, or the accompanying organizational interventions. Similar points have been repeatedly made in the IS literature but bears repeating because technological determinism remains a significant assumption in many IT projects in developing countries. Complexities of situated and broader contexts of IT adoption impose contingencies on the realized effects of IT adoption, no matter how well planned and executed such IT adoptions. Understanding such complexities and their

organizational implication is key to improving IT-enabled rationalization outcomes in the public administration of developing countries, and organizational implications of IT generally.

Conclusion

This chapter has presented findings from the studies reported in chapters 6-8, relating to varied, and often contradicting rationalities or ‘logics’ of IT action and their situated and broader underpinnings in multiple, historically-formed institutions. These findings have been discussed with regard to our broader research questions and theoretical issues raised in chapters 1-5, in an effort to theorize the implications of broader context on situated IT-enabled rationalization.

Our discussion and substantiation of the central arguments of the thesis have been further extended toward an attempt at finding regularities that might form the basis, in further work, of a more generalized model of IT-enabled rationalization in developing countries.

We have also highlighted implications of our findings for theory, methodology and practice. In the concluding chapter that follows, contributions, limitations and problems for further research will be discussed.

Chapter 10: Conclusion

Recapitulation

The thesis began with the anecdote of the *Cashgate* scandal—a catastrophic IT-enabled rationalization initiative in the public administration of Malawi that resulted in systematic looting of public funds, and an administration that was worse off than before the IT system which was meant to help control government spending was introduced. The story not only illustrated broad themes of IT and public administration rationalization pursued in this thesis but also served to introduce the empirical motivation for the research: the widespread evidence of contradictory IT effects despite significant investments in IT for public administration rationalization in developing countries.

While IT-enabled rationalization experiences differ across developing countries and administrative domains, we suggested the anecdote as a cautionary tale of developmental IT-implementations that are done based on a sub-optimal, often problematic theorization of the complex dynamics of public administration in developing countries. Furthermore, commonplace assumptions and expectations of IT interventions in the public administration of developing countries remain narrowly technical-rational, with little regard for the situated and broader contexts of IT-enabled change.

Against this backdrop, the thesis has theorized the implication of the broader context on situated IT-enabled practice change in the public administration of developing countries. Specifically, we have explained, through the institutional logics perspective, the implication of broader, multiple, historically-formed institutional forces on IT-enabled rationalization of the public administration in developing countries. Such explanatory goal of the thesis has attempted to grapple with various related theoretical problems as well as empirical puzzles, such as the contradictory IT effects, ambiguous outcomes and

disappointments reported in the relevant literature (from the point of view of planned technical actions and intended IT outcomes).

Through a series of three papers that report findings from different but related studies on Ghana's customs modernization, the thesis has explored questions of IT problematization in the public administration of developing countries, contradictory effects ('irrationalities' of IT-enabled rationalization), as well as the overall problem of whether and how IT might enable rationalization in such context. The papers have demonstrated the distinctiveness of context in developing countries, both in terms of alternative rationalities underlying IT interventions and the broader multiple, historically-formed institutional forces that influence IT-related practices and their outcomes.

The thesis has shown the capacity of the institutional logics perspective to help address various theoretical problems related to rationalization; as well as theoretical and empirical puzzles related to situated IT-enabled change in the developing country context.

Contributions

The individual papers make specific contribution to their issue domain and relevant literature. Paper 1 (chapter 6) advances the notion of 'subalternity' as a way of refocusing technical-rational understanding of IT in the development context toward often-unacknowledged, historically-formed local positions and 'alternative rationalities' that shape practices and IT-enabled outcomes, and are shaped by them. The paper sensitizes a need to venture beyond typical case studies with technical-rational assumptions to adopt ethnographic, historical, longitudinal and other approaches that might enable the uncovering of alternative perspectives on IT in developing countries.

Paper 2 (chapter 7) contributes an approach to understanding the idiosyncratic and often contradictory outcomes of IT-enabled rationalization in the public administration domain of developing countries. It develops the notion of institutional logics as an

approach for understanding aspects of stability and change in IT-enabled institutionalized practices under conditions of multiple institutional forces, such as is found in institutionally plural organizations like the public administration. In this way, a path is suggested for bridging observations at the micro and meso levels with their institutional drivers at the macro-level.

Paper 3 (chapter 8) develops the central arguments of the thesis and contributes a process theorization of the implication of broader, multiple, historically-formed institutional forces on situated IT-enabled practices in the public administration of developing countries through application of the institutional logics perspective. It further adds to the institutional logics literature by contributing an understanding of the significance of IT in sociotechnically (re)producing and transforming institutional logics and their related practices during rationalization.

Overall, these contributions add to our understanding of processes through which broader context influences situated IT-enabled rationalization, particularly in developing country public administration settings.

Significance and reflections

(I)

As a new graduate student encountering the research area of information systems in developing countries (ISDC) for the first time, I was fascinated by arguably its most central puzzle: the widespread contradictory effects and disappointments reported in the literature (from the point of view of planned technical interventions and their expected outcomes); despite significant IT investments intended to drive developmental reforms. What about developing countries accounted for this? Or was it something about IT itself? Or perhaps the assumptions of the typical single case studies predominant in this area?

This thesis is a culmination of attempts to probe these questions as it relates to the most important, yet functionally-constrained organization in developing countries—the public administration. An overarching assumption of the thesis has been that IT-enabled change in developing countries, and the public sector in particular—insofar as they attempt to transform traditional practices and behaviours of developing country actors into modern or rational ones—is intrinsically linked with a broader project of rationalization. The project of rationalization, broadly considered, has always been more than just situated change and its underlying rationalities, however.

Weber's seminal work makes this clear by rightly placing rationalization on a broader social, economic and historical trajectory—where generative structural drivers of change at the societal and organizational levels could be identified. Weber's concern with *verstehen* further emphasized the need to root such structural explanations of rationalization in actor-centric cognitive motivations derived from interpretation of the social world.

While Weberian rationalization might be critiqued on grounds of its universalizing assumptions, in terms of the substantive rationalities of capitalist economic efficiency underpinning bureaucracy (the alternative rationalities argument); as well as on the basis of its limited view of general institutional mechanisms within organizational fields (the new institutionalism argument)—it provides a good starting point for understanding how idealtypes and their related rationalities organizationally embed.

New institutionalist perspectives, particularly the institutional logics perspective, has provided further theoretical opportunity to advance upon Weber's foundational framing of rationalization and to elaborate and integrate various outstanding concerns and puzzles. In this vein, the thesis has sought to explain IT-enabled rationalization in developing country public administration by focusing attention on peculiarities of the

developing country domain in terms of the motivating cognitive elements driving IT-enabled practices, the situated unfolding of IT-enabled change, and the broader institutional context within which IT-enabled practices are embedded.

While each of these three aspects had been suggested to characterize a distinguishing approach to understanding IT in developing countries (Avgerou & Addo 2017; Avgerou 2008; Sahay & Walsham 1995; Walsham et al. 2007), their connection and integration had not been theoretically made in explaining IT-enabled rationalization in the public sector.

Many ISDC studies on IT-enabled public sector rationalization have for various reasons—methodological and theoretical, chief among them—treated rationalization narrowly as situated sociotechnical change (Avgerou & Madon 2004); as though IT-enabled sociotechnical change occurred in an institutional and historical vacuum, and possible to explain without considering the broader socioeconomic, political and historical context. And even ISDC studies of IT-enabled change that attempt to bridge the micro-macro level divide by problematizing structural associations and local context (Njihia & Merali 2013; Miscione 2007), have been also limited by considering phenomena as embedded without explicitly theorizing broader multiple institutions and structures and their articulation with actors' cognitive motivations.

Actor-centric approaches such as the rationality view, have highlighted the inadequacy of a universalistic, technical-rational understanding of IT and suggested a need to uncover poorly-understood 'alternative rationalities' of IT in developing countries and their implications (Avgerou 2000b; Avgerou 2002). This view has placed emphasis on the motivational cognitive aspects of actors' situated IT practices and advocated a sociological view of embedded rationality rather than 'narrow' individualist understandings of rationality (Elster 1983; Avgerou 2000b; Avgerou 2002).

While this approach has been promising, it remains to clarify how rationality of developing country actors is embedded within their organizational and institutional contexts. That is to say, by not making explicit structural connections to the broader institutional environment, it has not connected the micro-level rationality accounts of IT-enabled action to the (nested) broader structures and institutional forces that are known to also influence and be influenced by action (King et al. 1994; Avgerou 2000a; Orlikowski & Barley 2001).

Those studies that attempted to problematize broader context, obversely, struggled to relate them back to micro-level actors and their cognitive motivations. In particular, studies that have drawn on new institutionalism in understanding IT-enabled processes and outcomes in developing countries (McGrath & Maiye 2010; Avgerou 2003; Avgerou et al. 2009), have tended to privilege structural considerations over constructivist aspects of institutionalization (the Hasselbladh and Kallinikos (2000) critique).

This thesis has shown that the institutional logics perspective has capacity for reconciling situated micro-level motivational accounts of action (logics), organizational level interactions and practices (structuration), as well as broader historically-formed macro-level structures (multiple institutions beyond the organization, at societal level and beyond). By applying the institutional logics perspective to explain IT-enabled rationalization within the institutionally plural public administration context of developing countries, the thesis has not only explained the implication of broader multiple institutional context on situated IT-enabled practices but also provided a partial explanation for IT-enabled rationalization and the contradictory effects that might attend its unfolding.

(II)

To return full-circle to my early motivations for the research: what about developing countries account for the widespread contradictory IT effects and disappointments? Is it something about IT itself? Or perhaps the assumptions of the typical single case studies predominant in this area? The short answer is that all three lines of inquiry contribute to an explanation. An accomplishment of this thesis has been to expose the rich tapestry that is IT-enabled rationalization in the public administration of developing countries, by interweaving insights along these three broad narrative strands to explain key issues and theoretical puzzles.

Developing countries represent a distinctive domain for IT intervention primarily because of their unique historically-formed, multiple broader institutions and structures that condition characteristic rationalities of local situated organizational actors in relation to IT. These unique, historically-formed, institutional structures and rationalities of developing countries often conflict with the presumed or implicit universalistic structures and rationalities introduced through technical-rational IT interventions.

However, due to latent power dynamics—a vestige of historical political relations and hegemonic discourses intrinsic to the social construction of ‘developing countries’ as an antipole to the ‘West’ or ‘developed countries’—local alternative or subaltern rationalities of developing countries are often unrecognized, disregarded or suppressed in mainstream technical-rational approaches that frame both IT interventions and related research efforts.

As such, rather than being ‘irrational’—from the point of view of technical-rational assumptions—contradictory behaviours, values and motivations of developing country actors might be understood as consistent with their institutional and organizational milieu, and hence rational, alternative to mainstream technical rationalities.

For example, administration dysfunctions manifest as rent-seeking, bribery, corruption and the sabotaging of constraining IT functionalities in their pursuit by local actors, might be understood as rational when viewed from the standpoint of historically-formed neopatrimonial structural influences from the societal and organizational domains that provide legitimation and guiding principles for such outcomes.

This is not to defend or assert moral legitimacy for maladministration, corruption or any other perceived dysfunctions of developing country administrations. Rather, the suggestion is that any normative shift and rationalization attempted through IT ought to first acknowledge the entrenched local understandings of perceived dysfunctional behaviours in relation to their formative context.

Such contextualist position on IT in developing countries, of course, necessitates a shift from prevalent assumptions of IT as a 'neutral' technical system that has deterministic effects when faithfully appropriated by developing country actors. Despite decades of painstaking IS research that contradicts such assumptions of IT, the technical determinist view, in its various shades, remains *de facto* with broad segments of development practitioners and scholars who are perhaps unfamiliar with the sociotechnical tradition in IS research and its advancing contributions.

One such advancement in this thesis to the sociotechnical view of IT has been the attempt to go beyond extant structural explanations of IT-enabled action as a narrowly situated accomplishment, to include effects of broader context through the institutional logics perspective. A sociotechnical analysis through the institutional logics perspective has allowed understanding of not only contradictory IT effects at the situated level of practices but also broad cumulative effects of stability and change over long periods and across successive IT implementations.

Investigating such long-term unfolding of IT-enabled change in developing countries further requires a methodological shift from variance-based, episodic single case analysis to longitudinal, multiple case processual analyses that can reveal complex interactions and sociotechnical transformations over time. This is not to suggest a preference for one over the other but to highlight the potential benefits of more longitudinal and multiple case analysis of IT in developing countries (despite their relative complexity and inherent challenges).

Limitations

Despite the contributions of the thesis some limitations remain. For example, while it is found that certain old institutional logics of the public administration in developing countries such as patrimonial and neopatrimonial logics resist the new logics of IT, further investigation is needed to explain why such traditional logics resist new logics and endure over time. This question might be explored with recourse to the broader socioeconomic context of the country as well as broader institutional order of the society and its value systems. That is to say, a wider perspective is needed beyond the organizational domain of public administration which is considered in this thesis as ‘institutionally plural’ and embedded in society but treated as standalone for practical research purposes.

Furthermore, the implications of IT in (re)configuring institutionalized practices and their underlying logics can be further probed. For example, the specific capabilities of IT and the affordances they present can be more closely related to the everyday routines that constitute institutionalized practices. In this way, the materiality of IT is related to the social and material aspects of practices to provide a richer micro account of institutional logic transformation through IT-enabled practice. Aside ‘blending’ which we observed in this study, other types of ‘resolutions’ of institutional logics and IT logics in practice

(such as loose coupling, substitution etc.) could be identified and investigated with other cases and their sociotechnical mechanisms elaborated and compared.

In addition, the study only looks at the case of Ghana customs. Further work could be done by investigating cases of customs modernization in other developing countries in order to establish any institutional regularities and common institutional logics that underlie processes of IT-enabled change within specific administration domains, in this instance foreign trade clearance. Such a comparative approach might yield more consistent, if not more generalizable claims about the processes of IT enabled rationalization in developing country public administrations. For example, while neopatrimonialism has been suggested as a regular institutional feature of developing countries and their administrations (O'Neil 2007; Bratton & Van de Walle 1994), it is unclear whether it has the same dynamics and effects across countries and administrative domains.

Finally, more could be done to clarify the nature and pace of the incremental rationalization effects observed. For example, while change was evident across the observations covering a period of 30 years, it remains to be explored whether prior IT adoption hastens the pace, or improves processes and outcomes of subsequent IT rationalization, and how such process unfolds. Initial evidence from an ongoing IT-related intervention at Ghana customs that is aimed at improving upon TRADENET processes, suggests that this might be the case. While this IT intervention happened after the fieldwork for the thesis was conducted, and hence falls outside the thesis's scope, initial data from informants indicates that despite widespread expectations for problematic adoption and effects, rationalization is occurring at a much quicker pace than was observed with TRADENET and ASYCUDA before it. The next sub-section outlines some further studies that arise from the limitations discussed.

Further research

Various research questions could be explored to further develop the findings from the thesis.

In attempts to develop a generalized model of IT-enabled rationalization in the public administration of developing countries, it is worth exploring how IT-enabled rationalization **across** contexts unfolds. That is to say, what regularities exist in the processes by which broader context comes to matter for IT-enabled rationalization? Such research might elaborate upon some of the ideas presented in the discussion in regard to general (a) **processes of stabilization** (new rationalization discourses and broader institutions being stabilized during IT design, development and implementation as inscriptions into artefacts and techniques of control); (b) **processes of destabilization** (new inscriptions and prescriptions being de-described, or not, and enacted in relation to old logics and principles of situated organizational contexts during IT adoption); (c) and **re-stabilization** (emergent, 'resolution' outcomes and effects of IT-enabled action that mixes old and new ways in situated practices, which then drive further stabilization efforts for incremental change).

Through such rationalization processes of stabilization, destabilization and re-stabilization – the recursive and progressive structural implications of IT (a kind of spiral process of change) might be studied across the lifecycle of IT, from design, development, implementation, adoption and use through its situated effects. Structural effects might then be considered beyond situated practice (recursive interactions) to include broader context (cumulative effects through progressive interactions).

Empirically, the question might be pursued through comparative analysis and synthesis across studies that have investigated similar phenomena of IT-enabled foreign

trade rationalization at different levels of analysis e.g. Bonina's (2012) study of the Mexican Single Window for Foreign Trade, where she explored national-level discourses on public values and their enactment and operationalization through technology over time.

In addition, a meta-analysis of existing studies on IT-enabled rationalization might help to identify, categorize and integrate different related aspects of IT-enabled rationalization along the lines of a general process model such as the simplified framework of stabilization, destabilization and restabilization suggested; or to incorporate insights from variance-based accounts of aspects of IT-enabled rationalization process.

Other questions to explore are:

- Why are old traditional and dysfunctional institutionalized practices and their logics resistant to IT prescriptions and logics?
- How do the properties or affordances of IT enable (re)configuration of institutionalized practices and their underlying logics? How might sociotechnical aspects of IT-enabled practices be empirically linked to broader rationalization so that IT is shown to be generative of such phenomena rather than merely an enabler?
- Do the multiple institutions and logics of developing country public administrations follow a discernible pattern (e.g. neopatrimonialism); and if so, how might this be implicated in IT-enabled rationalizations across national contexts?

Given the unrelenting advancement of IT in developing countries, the question is much less whether IT can make a positive difference in bringing socioeconomic improvements and developmental outcomes (Walsham et al. 2007); in this case by enabling rationalization of dysfunctional public administration. The balance of evidence

suggests IT can indeed enable improvements (granted various caveats presented in the extensive body of work in the area). A bigger question relates to how and why.

As may be seen from the above outstanding questions, the theoretical path and general approach adopted in this thesis to investigate IT-enabled rationalization in developing country administrations has potential to yield further insights on various aspects of the 'how' and 'why' of change.

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Appendices

Appendix 1: Permission letter for access to customs



 THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Information Systems & Innovations Group
Department of Management
Houghton St, WC2A 2AE
Phone: +44 (0) 20 7955 7634
Email: c.avgerou@lse.ac.uk

To: **Assistant Commissioner**
Ghana Customs Division, Tema Port

From: **Prof. Chrisanthi Avgerou**

Date: 24 July 2015

REGISTRY
24 JUL 2015

CUSTOMS DIVISION

Dear Sir,

Introducing Atta Addo for PhD research at your organization

I write to introduce Atta Addo, a PhD candidate in the Information Systems and Innovation Group of the Department of Management, London School of Economics, who seeks to do empirical research on trade facilitation in furtherance of his doctoral thesis.

Atta's research explores a very important area where academic research is much needed: the role of Information and Communication Technology (ICT) in enabling organizational reforms in the public administration in developing countries. The case of trade facilitation initiatives in Ghana is a visible example of ICT's potential to bring about transformations in the public sector, and provides a rich opportunity for academic study that will not only benefit academics but ICT, development, and public administration practitioners as well.

The empirical component of the research, which should last a few months in summer 2015, will mainly consist of interviews with management and staff of your organization that were/are involved in development, deployment and governance of the Ghana TradeNet intervention and related interventions. The study has no organizational or reputational risk and hopes to make significant contribution to the research on ICT enabled reforms in developing countries.

Several academic colleagues have produced similarly influential studies on Ghana in the past that have highlighted Ghana's position at the forefront of innovation and reform in trade facilitation within the WCO e.g., Luc De Wulf of the World Bank's work (2005), and Prof. Brenda Chalfin of University of Florida's work (2003,2010) etc. We hope we can count on your collaboration to build upon this tradition of scholarship and research.

Yours faithfully,



Chrisanthi Avgerou
Professor of Information Systems and PhD Supervisor

(3) CRO Admin

(3) cc/sy...
M...
27.07.15

CUSTOMS DIVISION, TEMA
GENERAL DUTIES
24 JUL 2015
ASSISTANT COMMISSIONER

London School of Economics and Political Science is a School of the University of London. It is

Appendix 2: Permission letter for access to GPHA



GHANA PORTS AND HARBOURS AUTHORITY

PORT OF TEMA

P.O. Box 488
Tema, Ghana
Telephone: (233) 22 - 202631-8 / 22 204395-8
Fax: (233) 22 - 204136
Website: www.ghanaports.gov.gh
Email: tema@ghanaports.net

OUR REF.: DP.TM/T90/01.3/3081

JULY 23, 2015

THE PROFESSOR OF INFORMATION SYSTEM &
PHD SUPERVISOR
THE LONDON SCHOOL OF ECONOMICS &
POLITICAL SCIENCE
HOUGHTON ST, WC2A 2AE

ATTN: PROF. CHRISTANTHI AVGEROU

Dear Sir/Madam,

RE: PhD RESEARCH – MR. ATTA ADDO

We make reference to your letter dated 16th July, 2015 on the above subject.

We wish to inform you that approval has been given for Mr. Atta Addo, a PhD student of your institute to take information from our organization as part of his academic research on "**The role of Information and Communication Technology (ICT) in enabling organizational reforms in the public administration in developing countries**".

By copies of this letter, the Senior I. T. Officer is kindly requested to give Mr. Addo the necessary assistance.

In addition, the Port Security Manager is kindly requested to allow him entry into the Port from 23rd July to 31st August, 2015 to conduct his research work.

Yours faithfully,

FOR: GHANA PORTS & HARBOURS AUTHORITY

ROBERT O. DARKU
PORT PERS./ADMIN. MANAGER
FOR: DIRECTOR OF PORT, TEMA

cc: General Manager – Admin., HQ
Port Security Manager, Tema
P/Copy
Snr. I.T. Officer, Tema

Appendix 3: Details of interviews

Interviews aimed at understanding customs practices in everyday interactions of officers with TRADENET. Attention was paid to capturing various ‘voices’ while probing tensions, inconsistencies and anomalies (Myers & Newman 2007). Interviews concluded when theoretical saturation had been reached and additional insights were not forthcoming (Eisenhardt 1989). Informants were chosen purposively and by snow-balling (Bryman 2001). For example, while interviewing a key informant at the Ghana Export Promotion Authority (GEPA) for background on Ghana’s exports and TRADENET, the informant invited the researcher, impromptu, to attend an ongoing workshop for exporters. The workshop devolved unexpectedly into heated dispute between the exporters—most were small business owners struggling within Ghana’s troubled economy—and government officials, over what the exporters called “extortionate fees” and “illicit monies” extracted through TRADENET. Through this serendipitous interaction, institutional contradictions of Ghana’s TRADENET ‘earned its way’ as an important piece of our puzzle. At this workshop, the co-author also met key informants who referred him to others. Interviews varied from thirty minutes to three hours. They were audio recorded, transcribed, coded and analysed—during and after data collection—for themes, patterns and processes (Yin 2013), with aid of qualitative analysis software (Atlas.ti). Despite assurances, some respondents were reluctant to be recorded; in such cases, the researcher took detailed notes. A list of key informants is provided below.

Trade actor	Type of actor	Description of actor	Description of actors interviewed	Interviews at theoretical saturation
Exporters	Traders/customs declarants	Entrepreneurs and businesses that sell goods and services outside Ghana. Case study focused on non-traditional exports like handicrafts	Leaders of four main handicraft export trade groups as well as active handicraft exporters	12
Importers		Entrepreneurs and businesses that buy and move goods and services into Ghana. Case study focused on rice importers	Leaders of main trade groups and active traders of economically significant imports like rice and cars	5
Ghana Community Network (GCNet)	IS innovator/ Government enforcement/implementation agency	Public-private organization formed to design, develop and implement IT systems for trade facilitation and revenue mobilization (TRADENET)	Senior management and technical staff involved with system	10
Ghana Customs Division		Focal organization of IS innovation	Senior management and field officers involved with trade facilitation	10
Freighters/ Clearing agents	Intermediary/customs declarants	Connects traders, IS innovator and related stakeholders	Leaders of trade group and heads of freight companies	4
Shippers and logistics providers	Service provider	International transport and logistics operators	Leaders of trade group and heads of freight companies	4
Destination Inspection Agencies (DICs)	Contractor/ Service provider	Contractors dealing with inspection and valuation of goods. This function was previously performed by customs	Senior management and technical staff	5
Ghana Ports and Harbours Authority	Government enforcement/implementation agency	Management and operators of port facilities and related infrastructure	IT Director and other senior management	5

Ministry of Trade and Industry (MOTI), Ghana Export Promotion Authority	Government policy/implementation agency	Sets and implements policy related to trade	Director and other senior management	10
Regulatory agencies e.g. Ghana Museums and Monuments Board (GMMB), Forestry Commission and Environmental Agency	Government enforcement/implementation agency	Sets and implements national and international standards related to various aspects of trade	Field officers involved with trade facilitation	4
Other players e.g. banks and financial institutions	Service provider	Facilitate sundry activities related to trade	Management and operations staff	4
Experts e.g. academics, World Bank consultants, policy analysts, business journalists	Analyst	Outside perspectives on trade and development regime, IT and organizational change		5
Total interviews				78

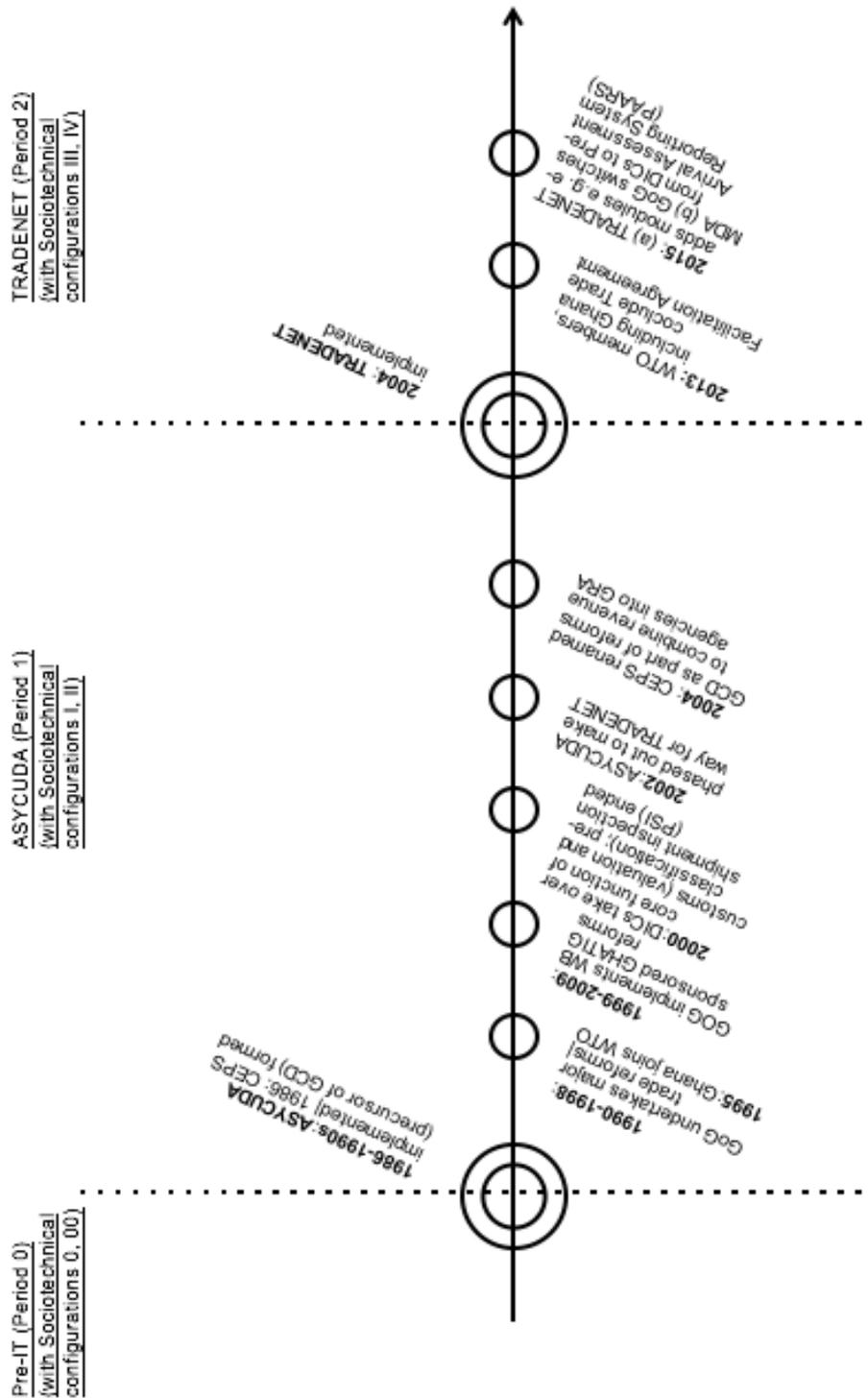
Appendix 4: Secondary, archival and web data sources consulted

Level	Type	Organization	Abbreviation	Website
National	Non-Governmental Organization (NGO)	Centre for Democratic Development	CDD	http://www.cddgh.org/
		Centre for Policy Analysis	CEPA	http://www.cepa.org.gh/
		IMANI Ghana	IMANI	http://imanighana.com/
		Institute of Economic Affairs	IEA	http://ieagh.org/
		Integrated Social Development Centre	ISODEC	http://www.isodec.org.gh/
	Private Contractor	Bureau Inspection Valuation Assessment Control	BIVAC	http://www.bureauveritas.com/home/about-us/our-business/international-trade
		Computerized Risk Management System	CRMS	
		Destination Inspection Companies	DICs	
		Gateway Services Limited	GSL	http://www.cotecna.com/
		Ghana Link	GL	
		Inspection and Control Services	ICS	http://www.icsinspections.com/
		Logistics Service Providers	LSPs	
		Meridian Port Services	MPS	http://www.mps-gh.com/index.php
		Meridian Port Services Limited	MPS	http://www.mps-gh.com/index.php
		Webb Fontaine	WF	https://webbfontaine.com.gh/
		West Blue Consulting	WC	http://westblueconsulting.co.uk/index.php
	Professional Body	Association of Ghana Industries	AGI	http://www.agighana.org/
		Federation of Association of Ghana Exporters	FAGE	http://www.fageportal.com/
		Ghana Chamber of Commerce and Industry	GCCI	http://www.ghanachamber.org/website/
		Ghana Institute of Freight Forwarders	GIFF	http://www.ghanafreightforwarders.org/
		Ghana Shippers Authority	GSA	http://www.shippers.org.gh/
		Trades Union Congress	TUC	http://www.ghanatuc.org/
	State agency	Customs Excise and Preventive Services	CEPS	
		Driver and Vehicle Licensing Authority	DVLA	http://www.dvla.gov.gh/
		e-Ghana Project	e-GP	http://www.eservices.gov.gh/SitePages/Portal-Home.aspx
		Export Development Fund	EDAIF	http://www.edaifgh.org/
		Forestry Commission of Ghana	FCG	http://www.fcghana.org/index.php
		Ghana Revenue Authority	GRA	http://www.gra.gov.gh/
		Ghana Customs Division	GCD	http://www.gra.gov.gh/index.php/divisions/customs
		Ghana Customs Management System	GCMS	
		Ghana Export Promotion Authority	GEPA	http://www.gepaghana.org/
		Ghana Free Zones Board	GFZB	
		Ghana Investment Promotion Council	GIPIC	http://www.gipcghana.com/
		Ghana Maritime Authority	GMA	http://www.ghanamaritime.org/en/posts/national-workshop-on-maritime-safety-opens3.php

	Ghana Museums and Monuments Board	GMMB	http://ghanamuseums.org/	
	Ghana National Development Planning Commission	NDPC	http://www.ndpc.gov.gh/	
	Ghana Ports and Harbours Authority	GPHA	http://www.ghanaports.gov.gh/	
	Ghana Standards Authority	GSA	http://www.gsa.gov.gh/	
	Ghana Trade	GT	http://www.ghanatrade.gov.gh/	
	Ghana Trade and Investment Gateway Project	GHATIG	http://documents.worldbank.org/curated/en/docsearch/projects/P000970	
	Government of Ghana	GoG	http://www.ghana.gov.gh/	
	Ministry of Finance and Economic Planning	MOFEP	http://www.mofep.gov.gh/	
	Ministry of Trade and Industry	MOTI	http://www.ghanatrade.gov.gh/	
	National IT Agency	NITA	http://www.nita.gov.gh/	
	Technology Provider	Electronic Ministries Departments and Agencies	eMDA	
	Ghana Community Network	GCNET	http://www.gcnet.com.gh/home/	
	Ghana Integrated Customs Clearing System	GICCS		
Multinational/International	Bilateral Development Partner	Department for International Development	DFID	https://www.gov.uk/government/world/organisations/dfid-ghana
		United States Agency for International Development	USAID	https://www.usaid.gov/ghana
	International Standard	International Shipping and Port Facility Code	ISPS Code	http://www.ghanamaritime.org/en/about-us/programmes/maritime-security.php
		Vessel Turnaround Time	VTT	http://unctad.org/meetings/en/Presentation/dtl_ttl_2012d18_Brooks.pdf
	International trade-related agreement	Africa Growth and Opportunities Act	AGOA	http://trade.gov/agoa/
		Doha Development Agenda	DDA	
		Economic Partnership Agreements	EPA	http://ec.europa.eu/trade/policy/countries-and-regions/development/economic-partnerships/
		General Agreement on Tariffs and Trade	GATT	https://www.wto.org/english/thewto_e/gattmem_e.htm
		Trade Facilitation Agreement Facility	TFAF	
	Multinational Organization	International Centre for Trade and Sustainable Development	ICTSD	http://www.ictsd.org/bridges-news/bridges-africa/news/west-africa%E2%80%99s-new-common-external-tariff-and-the-individual-wto
		International Finance Corporation	IFC	http://www.ifc.org/wps/wcm/connect/region_ext_content/IFC_External_Corporate_Site/Sub-Saharan+Africa
		International Maritime Organization	IMO	http://www.imo.org/en/Pages/Default.aspx
		International Monetary Fund	IMF	http://www.imf.org/external/country/gha/
		International Standards Organization	ISO	http://www.iso.org/iso/about/iso_members/iso_member_body.htm?member_id=1747
		International Trade Centre	ITC	http://www.intracen.org/
		Organization for Economic Cooperation and Development	OECD	http://www.oecd.org/tad/facilitation/Ghana_OECD-Trade-Facilitation-Indicators.pdf
		United Nations Conference on Trade and Development	UNCTAD	http://unctad.org/en/Pages/Home.aspx
		World Bank Group	WBG	http://www.worldbank.org/
		World Customs Organization	WCO	http://www.wcoomd.org/en.aspx

		World Trade Organization	WTO	https://www.wto.org/
	Research and Advocacy Group	Third World Network	TWN	http://twnafrica.org/indexx.html
	Technology Provider	Automated System for Customs Data	ASYCUDA	http://www.asycuda.org/
		Crimson Logic	CL	http://www.crimsonlogic.com/index.html
		Mauritius Network Services Limited	MNSL	http://mns.mu/
		SGS Group	SGS	http://www.sgs.com/
		Singapore TRADENET	TRADENET®	http://www.customs.gov.sg/leftNav/trad/TRADENET.html
Regional	Regional block	African Caribbean and Pacific Group of States	ACP	http://www.acp.int/
		Economic Community of West African States	ECOWAS	http://www.ecowas.int/
	Regional Trade Agreement	Economic Community of West African States Common External Tariff	ECOWAS-CET	http://ecdpm.org/great-insights/multiple-dimensions-trade-development-nexus/initial-reflections-ecowas-common-external-tariff/
		Economic Community of West African States Trade Liberalization Scheme	ECOWAS-TLS	https://www.customs.gov.ng/Guidelines/etls.php
		West Africa Transport and Transit Facilitation Project	WATTFP	

Appendix 5: Timeline of key events in Ghana's customs modernization



Appendix 6: A brief history of Ghana customs administration

Ghana's customs administration has a long and varied history that goes back over hundred and fifty years. Its roots can be traced to when the country—then known as the Gold Coast—was a colony of the British Empire (Ghana Customs 2006; Chalfin 2010). In the colonial period, the organization enforced payments of colonial taxes and duties from trade, in line with Britain's doctrine of self-sufficiency of its colonies, which meant that African subjects had to finance their own domination to lower the cost of imperialism to the British treasury (Gardner 2012; Young 1994).

Given that direct taxes from colonial subjects were prone to political rebellion and extremely costly to raise for the thin and overstretched colonial administrations, indirect taxes from trade were much preferable (Waijenburg 2015). While colonial fiscal systems were not uniform but contingent on various factors of the particular colony (Frankema 2011), the peculiar pattern established by colonial administrators in a given country was often adopted by the country's governments after independence (Gardner 2012; Acemoglu et al. 2005). Thus, the reliance on customs as a major and preferred source of state revenues outlasted colonial rule and continued to be critical for the survival of post-colonial Ghana.

In 1986 the Customs, Excise and Preventive Service (CEPS) was created by law as a semi-autonomous institution outside the civil service and mandated to "collect and account for all duties, taxes, revenue and penalties" owed to the state (Government of Ghana: Provisional National Defence Council (PNDC) 1986; Government of Ghana: Provisional National Defence Council (PNDC) 1993). Further reforms merged all the main revenue bodies into an autonomous authority in 2004, the Ghana Revenue Authority (GRA). The GRA comprised a domestic tax revenue division made up of Internal Revenue Service (IRS), Value Added Tax (VAT) and others tasked with domestic revenue, as well as CEPS—renamed the Ghana Customs Division (GCD) to reflect a new scope. Our research focused on practices at the GCD.

Nature of traditional clearance practices in Ghana

In Sub-Saharan African (SSA) countries like Ghana, customs administration remains a cornerstone of the state's revenue apparatus. They are considered critical administrations for the life of countries that heavily depend on foreign trade, both imports and exports (Cantens 2013a). SSA countries, through their customs administrations historically collect between 20 to 60 per cent of national revenues in the form of trade-related duties, levies and taxes (Cantens 2012, p.1). E.g., Ghana in 2011 collected nearly 40 per cent of national revenues through its customs administration, roughly the same as all direct domestic tax receipts to the state (Bank of Ghana 2012, p.3).

In view of the strong state interest in the customs administration, their practices are characterized by strong legally sanctioned coercion and discretionary bureaucratic power. Coercion is systematic in customs practices and involves the monitoring, classification, valuation, assessment for duties and taxes and control of goods until complete clearance. Movement of all goods into and out of the country are monitored and made liable for payment to the state. Customs has legal power to hold up all goods until full payment has been made and this represents their most basic coercive power. Failure to pay or an unapproved delay in completing clearance procedures can result in seizure and auctioning of goods, thereby abrogating any ownership rights held by the declarant (Cantens 2013a; Ghana Revenue Authority 2011).

While customs practices are legally sanctioned in both prescriptive and prohibitive ways, interpretation and application is often contingent and subject to varied technical assessments. Due to the contingent, case-by-case nature of customs procedures, transactions are highly negotiated, with such negotiations taking place around money and the value of declared goods (Cantens 2013a; Raballand et al. 2012; Chalfin 2008). Hence, there is significant leeway and discretion afforded to customs officials in the application of their coercive powers. E.g., declarants such as large importers who had 'gained trust' through recurring transactions with customs could be given significant privileges to enable self-compliance, whereas declarants like petty traders and individuals often had to "jump several hoops" as one embittered declarant lamented, at great inconvenience and inefficiency.

Taken together, customs clearance practices could be characterized as a process of "negotiated coercion" (Cantens 2013a, p.4) sustained from the very top at the level of the state to the street-level bureaucrat who interacts with declarants daily. At the state level, government measures customs performance by their ability to meet annual "revenue targets". These targets are calculated on the basis of the previous year with some adjustments for growth and other factors, and represent an often-stringent commitment between the developing country and its foreign donors and development partners such as the IMF who support its national budget with aid. These revenue targets are negotiated with high-ranking customs officials who give their input before passing along the targets in increasingly granular form to various customs offices and stations.

Dysfunctionalities of Ghana's traditional clearance practices

Unlike in customs administrations in Europe and America where customs procedures are targeted, selective and hence shorter, in SSA countries like Ghana, customs officials typically monitor and control all transactions either through documentation or by physical inspection. Due to such extensive involvement with valuable transactions and anxious declarants, and coupled with their coercive and discretionary powers, the customs administration traditionally been plagued by serious dysfunctionalities such as corruption, pilfering and theft, red tape,

ineffectiveness, secrecy, among others (Chalfin 2008; Chalfin 2010).

While corruption remains a general problem across the public sector in many developing countries (Olken & Pande 2012; Rose-Ackerman 1999; World Bank Group 1998), the customs administration in Ghana has been routinely fingered as particularly corrupt. According to a survey commissioned internally, the business community and the Ghanaian public regarded GCD as one of the least trusted state agencies, with some 93.6 per cent of haulers interviewed claiming to have experienced corruption with customs officials. A further 60 and 47 per cent of traders and freight forwarders reporting the same, and 24.5 per cent of customs officers admitting to witnessing corruption over the past year (Abbey 2015).

Believed to be at the heart of such dysfunctions is the way customs captures and processes trade related information for the purposes of regulatory compliance and collections of state revenues. Customs formalities had historically relied on paper and its “fetishization” (Cantens 2013a, p.4). Similar to other bureaucracies elsewhere around the world, in developing countries, customs administration practices were chiefly constituted through the materiality of paper. Such extensive reliance on paper and its trail occurred for substantive and idiosyncratic reasons (Hull 2012b; Hull 2012a).

Several paper-based texts are involved in customs functions. E.g., the standard customs declaration form with several pages and dozens of boxes is “merely the visible face of an enormous number of different texts that are not in evidence at the time of customs clearance: international agreements laying down rules for calculating the value of goods, rates based on the ‘Harmonized System’ which is a universal classification system for the codification of all goods, community customs codes applicable in economic and monetary unions, departmental memos signed by the director-general and senior managers” (Cantens 2013a, p.4).

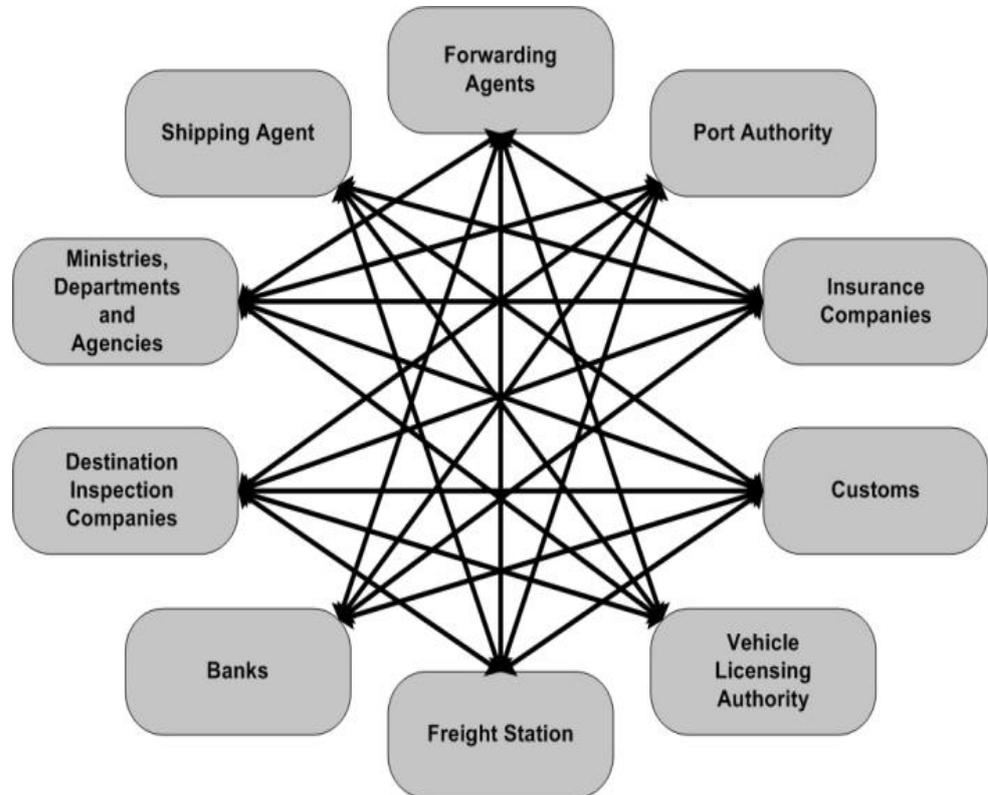
A consequence of the customs administration’s heavy reliance on paper has in many countries been red tape—a colloquial term describing excessive number of seemingly pointless administrative constraints that slow down workings of government administrations (Kaufman 1977; Bozeman 2000). At Ghana’s customs red tape created opportunities for some customs officers to command ‘facilitation fees’ (bribes) to ‘speed up’ for anxious declarants, e.g. by allowing queue jumping or manipulating the process altogether by means such as misinvoicing and document falsification (Interview with senior customs officers, 2015). Government of Ghana (GoG) annually suffered significant revenue losses because the system’s inefficiencies enabled private profiteering by creating an informal, intransparent facilitation economy (demand and supply for efficient service). This was a recurrent theme mentioned by various traders, trade intermediaries such as freight forwarders and government officials during our research.

Broader context of IT enabled trade clearance rationalization since the 1990s

Beyond national level ‘pull’ factors underlying IT rationalization of customs practices, various global ‘push’ factors characterized the broader context of Ghana’s trade clearance reforms. The phrase, “stuck at the border” is used often to describe inefficient and costly logistics processes that irk importers and exporters alike. Delays, red tape, corruption and unlawful seizures of goods are all outcomes that impose great costs on businesses and governments (Grainger & McLinden 2013). OECD (2003) estimates that a 1% reduction in trade related transaction costs results in a worldwide benefit of \$43 billion. Given such costly inefficiency in trade flows, ‘trade facilitation’—defined by WTO as “the simplification and harmonization of international trade procedures” (WTO 1998)—took center stage as a critical international trade issue with socio-economic and development implications. Various international organizations such as WTO, WCO, World Bank, IMF, OECD etc., took varying degrees of interest in promoting efficient trade as part of development programs.

The benefits of trade facilitation were deemed important in the context of the global economic system that is characterized by fierce market competition for both countries and businesses (Dicken 2003; Levitt 1983). As such, country-level red tape and bureaucratic inefficiencies were viewed as huge drawbacks since they put businesses at a disadvantage by increasing the direct costs of providing information and fulfilling compliance with public administration authorities like customs as well as indirect costs of delays and its attendant opportunity costs resulting from time delays and missed business opportunities. On the other hand, countries that had effective trade facilitation regimes were seen as more globally competitive (The World Bank Group, 2014). According to UNCTAD trade reform was good for development because it increases transparency and trust, improves effectiveness and efficiency e.g. by automating simple tasks thereby freeing up customs officials to do value adding tasks like planning, increase fiscal revenues for governments and make it easier for members of the informal economies to enter the formal economy (Kituyi 2013). There are also pro-poor development dimensions, it was argued, which stem from enabling small and medium-sized enterprises as well as informal cross-border traders to easily comply with trade regulations (ibid, p.9). Furthermore, trade facilitation was said to lower transaction costs of trading thereby reducing the margin between domestic and international prices to benefit consumers and producers (Milner et al. 2005, p.5). Aside the case for improving trade flows for the benefit of economic actors in the trading and business communities; trade facilitation was suggested as a stepping-stone to the improvement of the standard of living of citizens through effective use of accrued revenues to the state.

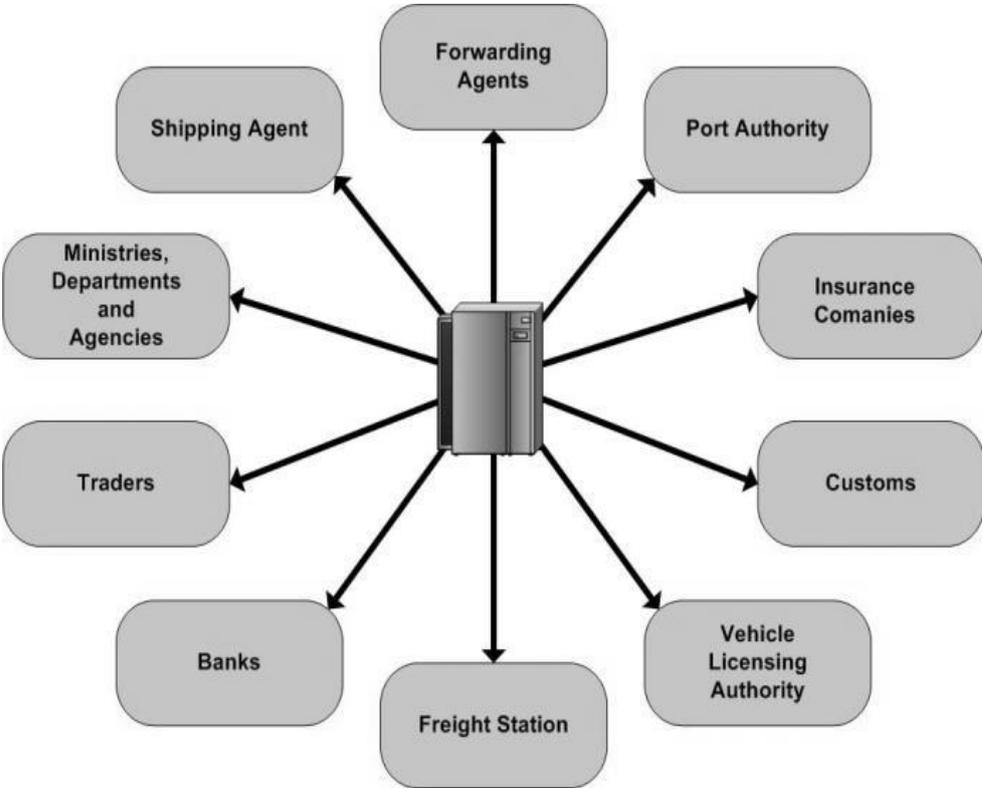
Appendix 7: Convoluted data flows during ASYCUDA (De Wulf 2005)



Appendix 8: Steps in ASYCUDA import clearance (De Wulf, 2004, p.21)

1. Shipping Agent submits shipping manifest in 12 copies
2. Obtain Shipment Notifications
3. Declarant purchases Import Declaration Form
4. Declarant submits documents for Destination Inspection
5. Declarant buys Customs Declaration Form in 13 copies
6. Declarant submits Final Classification and Valuation Report from Inspection Company
7. Declarant pays self-assessed duties at bank (only 1 Bank accepts payments, located at point of entry- (usually overcrowded and delays)
8. Bank issues payment receipts and passes it on to CEPS (located at same point of entry)
9. Declarant submits Declaration with supporting documents to CEPS
10. CEPS reviews declaration (Face Vet)
11. CEPS enters Declaration into ASYCUDA (takes a minimum of 24 hours)
12. CEPS prints ASYCUDA form and confirms or alters the tax liability
13. CEPS "numbers" the Declaration and affixes a date and hologram seal on the paper
14. CEPS "detaches" the copies and "dispatches" them to the various intended recipients
15. CEPS Verification Unit receives its copy of the declaration.
16. An Examination officer is allocated the particular shipment
17. Results of the inspection are entered in the "Landing Accounts Book"
18. "Landing Accounts Book" is signed and given to the Declarant
19. Declarant pays handling charges to Port Authority and/or Shipping agent as required.
20. Port Authority issues Waybill
21. Goods are moved to the Gate, where they are frequently re-inspected, before the release can take place.
22. Manifest is jerked (strike of)
23. Agents report monthly to CEPS on their activities.

Appendix 9: TRADENET's Single Window vision (De Wulf 2005)



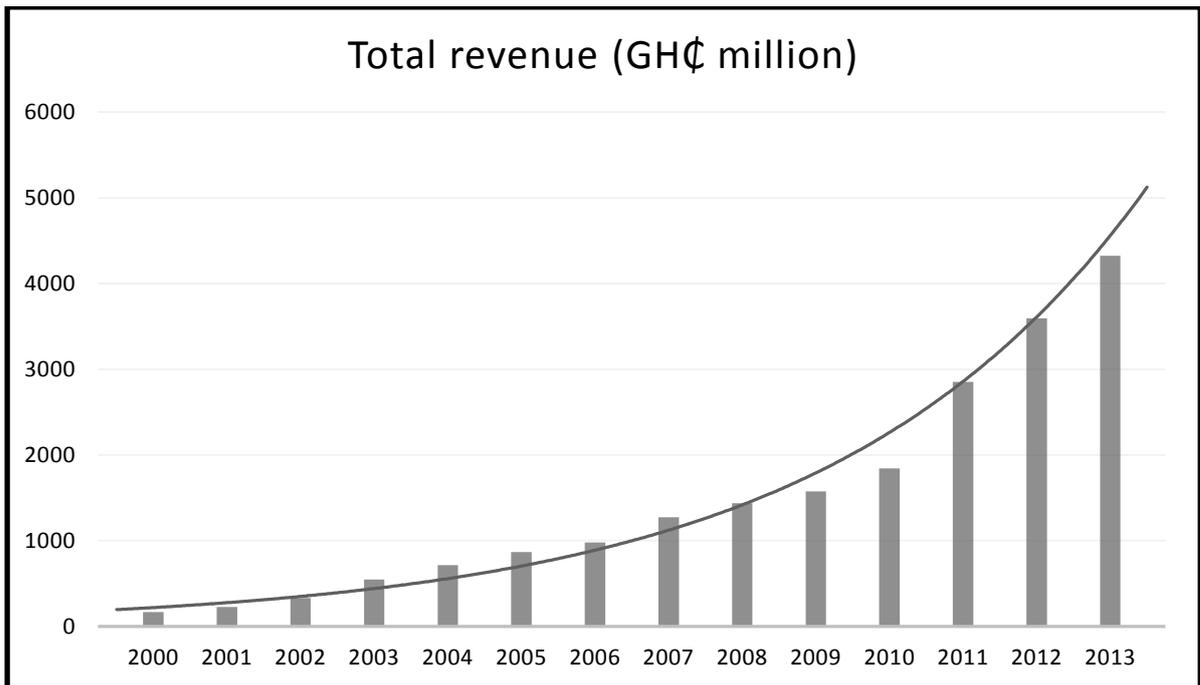
Appendix 10: Paper copy of IDF indicating official signatures and stamps

REVENUE AUTHORITY (GRA) CUSTOMS DIVISION

DECLARATION FOR CUSTOMS USE ONLY
(LOCAL CURRENCY - GHANA CEDI)

2 Exporter & Address No. _____ DOIMO INTERNATIONAL GROUP SRL VIA MONTEGRAPPA N 90-MOSINGO 31010MORIAGO DELLA BATTAGLIA		1 Declaration Regime 40 3 Gross Mass Kg 6115.34 4 Items 79 5 Total Package 319 6 Reference number 1506231440GTNPAG02																																																																																											
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40 Tax <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Tax</th> <th>Tax Base Amt</th> <th>TBC</th> <th>Rate</th> <th>Amount Exempted</th> <th>Amount Payable</th> </tr> </thead> <tbody> <tr><td>01</td><td>10,684.98</td><td>24</td><td>20.000000</td><td>0.00</td><td>2,137.00</td></tr> <tr><td>02</td><td>12,821.98</td><td>30</td><td>15.000000</td><td>0.00</td><td>1,923.30</td></tr> <tr><td>03</td><td>12,821.98</td><td>30</td><td>0.000000</td><td>0.00</td><td>0.00</td></tr> <tr><td>04</td><td>10,684.98</td><td>24</td><td>0.000000</td><td>0.00</td><td>0.00</td></tr> <tr><td>05</td><td>10,684.98</td><td>24</td><td>0.000000</td><td>0.00</td><td>0.00</td></tr> <tr><td>06</td><td>10,684.98</td><td>24</td><td>0.500000</td><td>0.00</td><td>53.42</td></tr> <tr><td>07</td><td>10,684.98</td><td>24</td><td>0.500000</td><td>0.00</td><td>53.42</td></tr> <tr><td>32</td><td>9,989.81</td><td>25</td><td>0.400000</td><td>0.00</td><td>39.96</td></tr> <tr><td>33</td><td>39.96</td><td>33</td><td>15.000000</td><td>0.00</td><td>5.99</td></tr> <tr><td>47</td><td>12,821.98</td><td>30</td><td>2.500000</td><td>0.00</td><td>320.55</td></tr> <tr><td>48</td><td>39.96</td><td>33</td><td>2.500000</td><td>0.00</td><td>1.00</td></tr> <tr><td>56</td><td>10,684.98</td><td>24</td><td>1.000000</td><td>0.00</td><td>106.85</td></tr> <tr><td>78</td><td>10,684.98</td><td>24</td><td>2.000000</td><td>0.00</td><td>213.70</td></tr> <tr><td colspan="4" style="text-align: right;">Total</td><td>0.00</td><td>4,855.19</td></tr> </tbody> </table>		Tax	Tax Base Amt	TBC	Rate	Amount Exempted	Amount Payable	01	10,684.98	24	20.000000	0.00	2,137.00	02	12,821.98	30	15.000000	0.00	1,923.30	03	12,821.98	30	0.000000	0.00	0.00	04	10,684.98	24	0.000000	0.00	0.00	05	10,684.98	24	0.000000	0.00	0.00	06	10,684.98	24	0.500000	0.00	53.42	07	10,684.98	24	0.500000	0.00	53.42	32	9,989.81	25	0.400000	0.00	39.96	33	39.96	33	15.000000	0.00	5.99	47	12,821.98	30	2.500000	0.00	320.55	48	39.96	33	2.500000	0.00	1.00	56	10,684.98	24	1.000000	0.00	106.85	78	10,684.98	24	2.000000	0.00	213.70	Total				0.00	4,855.19	26 Item No 0001 27 Commodity Code 9403709000 29 Zone GEN 30 CPC 40D01 31 Concess _____ 32 Net Wt/kg 361.02 33 FOB Fcy 2074.34 EUR 35 Freight Ncy 9,989.81 36 Insurance Ncy 92.68 38 Supp U1 3.00 39 Supp U2 0.00 41 Licence No _____ 42 Customs Value Ncy 10684.98 43 Qty _____	
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I. ABAKAH JR do hereby declare that the information and particulars herein entered electronically are true and correct and have been obtained from the original of the documents required for the purpose of this entry. The information and particulars on this document are for use by the Ghana Customs, Excise and Preventive Service only. Date This 30TH Day of JUNE 2015 Signature BEACH & PORT AGENCIES P. O. Box 292 Community II TEMA		43 Previous Declaration _____ 44 ACCOUNTING DETAILS Receipt Number: _____ Bank Guarantee: _____ BG Amount: _____ 45 Taxes <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Code</th> <th>Amount Payable</th> </tr> </thead> <tbody> <tr><td>01</td><td>0.00</td></tr> <tr><td>02</td><td>0.00</td></tr> <tr><td>03</td><td>0.00</td></tr> <tr><td>04</td><td>0.00</td></tr> <tr><td>05</td><td>0.00</td></tr> <tr><td>06</td><td>854.10</td></tr> <tr><td>07</td><td>854.10</td></tr> <tr><td>32</td><td>638.84</td></tr> <tr><td>33</td><td>95.87</td></tr> <tr><td>42</td><td>1,708.18</td></tr> <tr><td>45</td><td>9.00</td></tr> <tr><td>47</td><td>5,123.39</td></tr> <tr><td>48</td><td>15.93</td></tr> <tr><td>56</td><td>1,846.21</td></tr> <tr><td>72</td><td>5.00</td></tr> <tr><td>73</td><td>870.80</td></tr> <tr><td>78</td><td>3,416.36</td></tr> <tr><td colspan="2" style="text-align: right;">Total</td><td>80,095.83</td></tr> </tbody> </table>		Code	Amount Payable	01	0.00	02	0.00	03	0.00	04	0.00	05	0.00	06	854.10	07	854.10	32	638.84	33	95.87	42	1,708.18	45	9.00	47	5,123.39	48	15.93	56	1,846.21	72	5.00	73	870.80	78	3,416.36	Total		80,095.83																																																			
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Appendix 11: Annual revenues at Tema Harbour (GRA 2015)



Appendix 12: Cargo volumes at Tema Harbour (GPHA 2015)

