A comparative analysis of development theories in ICTD research from developed and developing countries

by

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Abstract

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The field of Information and Communication Technologies and Development (ICTD) examines the relationship between contemporary information and communication technology (ICT)s and societal development. By definition, such inquiry requires not only a deep understanding of the ICTs as artefacts and systems themselves, but also direct engagement with the nature of development. An initial review of ICTD literature indicates that there is a lack of explicit engagement with the nature of development, and with existing development theories from other fields, in ICTD literature. Rather, development is often treated as a "black box" that can be incorporated into an ICTD study without much further interrogation. This is problematic in light of (i) the rich and complex historical discourse surrounding development, (ii) the persistently contested nature of development in contemporary academic and policy debates (particularly in the context of developing countries), and (iii) the potentially pervasive practical and policy ramifications of differing conceptions of development. Furthermore, conflicting theories of development are to be expected in the field of ICTD itself, given its diversity in terms of (i) the disciplines from which its scholars originate, (ii) sectors involved in the field, and most importantly, (iii) the geographical spread of its scholars. Failing to explicitly interrogate the development theories underlying ICTD studies renders discourses in ICTD vulnerable to conceptual muddling, misinterpretation, incommensurability, and most importantly, diminished relevance in a world where there is undoubtedly diversity in how 'development' is understood.

The present study seeks to address the above-mentioned problematique by examining engagement with development in ICTD literature against the

backdrop of its scholars' geographic diversity. This is done by comparatively analysing the occurrence of development theories (drawn from broader discourses on development) in ICTD literature from Global North (developed) and Global South (developing) countries, respectively. A general pool of literature is constructed from papers published in three leading ICTD journals — Information Technology & International Development (ITID), the Electronic Journal of Information Systems in Developing Countries (EJISDC), and Information Technology for Development (ITD) — between 2008 and 2015. From this pool, samples of literature from the Global North and literature from the Global South are drawn. Directed content analysis is then employed to qualitatively study the occurrence of development theories in the papers in either sample. Finally, patterns arising within and across the two samples are identified and discussed.

The results reveal that conceptions of and engagement with development in ICTD are dominated by ideas from development economics, Keynesian economics, and neoliberal economics — i.e. conventional theories of development — generally, and Sen's capability approach (focussing on expanding people's freedoms), new growth theory (focussing on the centrality of the knowledge economy), and the Millenium Development Goals (MDGs) specifically. Further findings include a general lack of critical perspectives on how development is defined, incoherency in authors' conceptions of development, and the general latency of modernist ideas of development. Global South authors were also found to engage less with development than their counterparts from the Global North. The study contributes to a growing body of literature on the 'D' in 'ICTD' and supports the conclusion there is an urgent need to promote greater engagement with development theory in ICTD.

Uittreksel

'n Vergelykende analise van ontwikkelingsteorieë in IKTO-navorsing uit ontwikkelde en ontwikkelende lande

("A comparative analysis of development theories in ICTD research from developed and developing countries")

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Die veld van die Inligtings- en Kommunikasietegnologieë en Ontwikkeling (IKTO) ondersoek die verhouding tussen hedendaagse inligtings- en kommunikasietegnologieë (IKTs) en menslike ontwikkeling. Per definisie vereis so 'n ondersoek nie net 'n deeglike begrip van IKTs as artefakte en stelsels self nie, maar ook diep nadenke oor die aard van ontwikkeling. 'n Aanvanklike ondersoek na IKTO-literatuur dui daarop dat daar in IKTO 'n gebrek bestaan aan eksplisiete ingesprektreding met die aard van die ontwikkeling en met bestaande ontwikkelingsteorieë vanuit ander velde. Inteendeel word ontwikkeling dikwels as 'n "black box" beskou wat geredelik in 'n IKTO-studie geïnkorporeer kan word, sonder veel verdere ondervraging. Dit is problematies in die lig van (i) die ryk en komplekse historiese diskoers rondom ontwikkeling, (ii) die voortdurende omstredenheid rondom ontwikkeling in hedendaagse akademiese en beleidsdebatte (veral in die konteks van ontwikkelende lande), en (iii) die potensieel-uiteenlopende praktiese en beleidsgevolge waartoe verskillende ontwikkelingsopvattings kan lei. Verder kan botsende ontwikkelingsteorieë te wagte wees in die IKTO-veld self, gegewe die diversiteit daarvan in terme van (i) die dissiplines waaruit die veld saamgestel is, (ii) sektore betrokke in die veld en (iii) die geografiese verspreiding van IKTO-navorsers. 'n Versuim om uitdruklik vrae te stel oor die ontwikkelingsteorieë onderliggend aan IKTO-studies, maak diskoerse in IKTO kwesbaar vir konsepsuele verwarring, waninterpretasie, onsaammeetbaarheid en, ten diepste, verminderde relevansie

in ‘n wêreld waar daar ongetwyfeld diversiteit bestaan in hoe ‘ontwikkeling’ verstaan word.

Die huidige studie poog om die bogenoemde problematiek aan te spreek deur ingesprektreding met ontwikkeling in IKTO-literatuur te ondersoek teen die agtergrond van die geografiese verspreiding van IKTO-navorsers. Dit word gedoen deur ‘n vergelykende bestudering van die voorkoms van ontwikkelingsteorieë (uit breër diskoerse oor ontwikkeling) in IKTO-literatuur, onderskeidelik vanuit die Globale Noorde (ontwikkelde lande) en die Globale Suide (ontwikkelende lande). ‘n Algemene literatuurpoel word saamgestel uit studies gepubliseer in die drie voorste IKTO-joernale — Information Technology & International Development (ITID), die Electronic Journal of Information Systems in Developing Countries (EJISDC) en Information Technology for Development (ITD) — tussen 2008 en 2015. Vanuit hierdie poel word steekproewe van literatuur vanuit die Globale Noorde en literatuur vanuit die Globale Suide getrek. Gerigte inhoudsanalise word dan gebruik om die voorkoms van ontwikkelingsteorieë in beide steekproewe kwalitatief te bestudeer. Ten slotte word patrone wat vanuit die twee literatuursteekproewe verrys, identifiseer en bespreek.

Die resultate dui daarop dat sienings oor en ingesprektreding met ontwikkelingsopvattings in IKTO oorheers word deur idees uit ontwikkelingsekonomie, Keynesiaanse ekonomie, en neoliberale ekonomie — d.w.s konvensionele ontwikkelingteorieë — oor die algemeen en Sen se vermoënsbenadering (gefokus op die uitbreiding van mense se vryhede), nuwe groeiteorie (gefokus op die rol van die kennisekonomie), en die Millennium Ontwikkelingsdoelwitte in die besonder. Verdere bevindinge sluit in dat daar ‘n algemene gebrek bestaan aan kritiese perspektiewe op die definisie van ontwikkeling, onsamehangendheid is in navorsers se ontwikkelingsopvattings en dat modernistiese ontwikkelingsidees wydverspreid onderliggend te bespeur is. Daar word ook bevind dat navorsers uit die Globale Suide minder met ontwikkeling in gesprek tree as hul eweknieë uit die Globale Noorde. Hierdie studie dra by tot ‘n toenemende versameling literatuur gefokus op die ‘O’ in ‘IKTO’ en ondersteun die gevolgtrekking daar ‘n dringende behoefte is daaraan om groter ingesprektreding met ontwikkelingsteorieë in IKTO te bevorder.

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"Do good to them. Wonder. Hope."
— Mrs. O'Brien, *The Tree of Life*

Contents

Please note that, for the reader's convenience, this document has been prepared to be an interactive PDF. In-text references to chapters, sections, figures, tables, abbreviations, and bibliographic entries can be clicked to jump to the target content.

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List of Abbreviations

EJISDC Electronic Journal of Information Systems in Developing Countries

FDI foreign direct investment

GDP gross domestic product

GNI gross national income

HDI Human Development Index

HIV human immunodeficiency virus

ICT information and communication technology

ICT4D Information and Communication Technologies for Development

ICTD Information and Communication Technologies and Development

IDC international development co-operation

IMF International Monetary Fund

IS information systems

IT information technology

ITD Information Technology for Development

ITID Information Technology & International Development

KO kiosk operator

LEDC less economically developed country

MDGs Millenium Development Goals

MEDC more economically developed country

NGO non-governmental organisation

SMEs small and medium enterprises

UK United Kingdom

UML Unified Modeling Language

UN United Nations

UNDP United Nations Development Programme

USA United States of America

WB World Bank

Chapter 1

Introduction

1.1 Background and problem statement

The interdisciplinary field of ICTD is broadly focused on how contemporary technologies such as the world wide web and mobile phones, that have become pervasive and deeply significant in developed countries, can be brought to bear on development in poorer countries[1] (Toyama and Dias, 2008:23). By definition, to understand this relationship, one needs a deep understanding not only of the technologies themselves, but also of the meaning of development (Unwin, 2009:7; Heeks, 2010*a*:634; Kroeze and Van Zyl, 2014:7). While there has been wide engagement in the literature in the former domain, the latter domain has not received the same attention (Avgerou, 2010:2; Thompson and Walsham, 2010:112).

The lack of engagement with 'development' in ICTD is particularly problematic when one considers the lengthy theoretical discourse that has surrounded the term, as well as the fact that a pluralism of perspectives persists to the present day (Peet and Hartwick, 2009; Unwin, 2009:7; Avgerou, 2010:1). In Avgerou's (2010:1) words,

> [d]evelopment is a contested notion [...] and it has been subject to a long theoretical debate. Moreover, development policy and action are entangled with conflicting interests and power relations in contemporary global and national politics, and the international development agencies' policies for economic growth and institutional reform are widely contested in developing countries.

Conflicting theories of development are also to be expected within the field of ICTD itself. Given the inherent transdisciplinarity, complexity and contemporary relevance of the question ICTD seeks to answer, it is unsurprising that ICTD is diverse not only in terms of the disciplines from which its scholars

[1] To be sure, while the field's primary focus is the Global South, it takes a secondary interest in poorer regions and communities in otherwise 'developed' countries.

originate, but also in terms of the sectors involved in the field: academia, industry, the public sector and civil society, amongst others (Toyama and Dias, 2008; Avgerou, 2010:1) A further facet of ICTD's pluralism is the geographic spread of its scholars (Toyama and Dias, 2008:23-24). Although the biggest concentrations of ICTD scholars are found in developed countries such as the United States of America (USA) and the United Kingdom (UK), there is a growing community of ICTD researchers in developing countries. This facet of ICTD's pluralism is arguably the most pertinent one, as it has the potential to fundamentally transform the field's traditional 'North aiding the South' narrative to one where developing countries take centre stage in setting the ICTD agenda for their own development.

In broader terms, then, it is evident that ICTD is pluralistic in a multifaceted manner and that this makes a perfect consensus regarding the meaning of development highly unlikely. Herein lies the danger for the field: if scholars are to treat development as a black box, which can readily be incorporated into ICTD research without much further interrogation of potentially diverging theories, then the discourse within ICTD is prone to conceptual muddling, misinterpretation, incommensurability, and most importantly, diminished relevance in a world where there is undoubtedly diversity in how 'development' is understood. On the basis of, on the one hand, the broader discourse on development and the plurality of the ICTD field itself and, on the other hand, the lack of engagement with 'development' in ICTD, there is a need for studies interrogating the development theories present in ICTD literature, to identify potential conflicts and study their implications. As has been pointed out, ICTD is a pluralistic field and the most important facet of this plurality is arguably the geographic spread of ICTD scholars. Therefore, there is a specific need for studies comparing the development theories underlying developed and developing country ICTD research. This constitutes the main rationale for the present study.

1.2 Research questions

The present research will seek to answer the research question: *Are there meaningful trends in the occurrence of development theories in ICTD literature from developed and developing countries*? The logical prerequisites for answering this question are (i) to formulate a working definition for 'development theory' and clarify the distinction between 'developed' and 'developing' countries, (ii) to explore frameworks that delineate and describe existing development theories (as they occur in broader discourses on development), (iii) to select an unbiased sample of ICTD literature comprising suitable numbers of studies from developed and developing countries, (iv) to describe the occurrence of development theories in this sample using the selected framework and an appropriate meta-analysis methodology, and (v) to analyse and compare

trends in the occurrence of development theories in the subset of the sample from developed countries and in the subset from developing countries.

1.3 Structure of the study

Having laid the groundwork for the remainder of the study in this chapter by sketching its background and problem statement and, on the basis thereof, formulating a coherent research question, the rest of the study is structured as follows.

Chapter 2 details the insights gained from a literature review. Firstly, relevant working definitions are formulated for two key concepts: (i) that of development theory, and (ii) the terminology of and distinction between developed and developing countries. Secondly, frameworks for the identification of development theories are discussed. Thirdly, to provide additional context for the investigation that will follow, the field of ICTD's historical development is discussed with reference to its narrative and body of literature. Lastly, engagement with development in ICTD is surveyed to determine (i) to what an extent ICTD scholars agree on the importance of explicit engagement with development theory, and (ii) the nature and scope of existing attempts to study the occurrence of development theory in ICTD literature.

Chapter 3 elaborates on the methodology to be followed in addressing the research question. It examines the broader choice between a qualitative and a quantitative approach, whereafter it discusses content analysis as a strategy for analysing ICTD literature. Following this, a suitable sampling strategy is identified, devoting attention to the composition of a general pool of ICTD literature, various alternatives for the choice of sampling strategy, and considerations in setting the size of the samples. On the basis of these discussions, a sampling process to select suitable samples of Global North and Global South literature is constructed and presented. Lastly, a framework to inform the content analysis process is selected and operationalised.

Chapter 4 presents the results of the qualitative content analysis process defined in Chapter 3. Findings are presented in three groups, as arising from the execution of the sampling strategy, the individual analyses of the Global North and Global South samples, and from a review of broader observations made in, and across, the two samples.

In Chapter 5, conclusions drawn from the abovementioned three sets of findings are discussed, with a view to answering the original research question. In closing, the contribution and implications of these conclusions specifically, and the study more generally, are discussed. Finally, limitations are identified and prospects for future study are noted.

1.4 Chapter conclusion

This chapter introduced the problematique of defining development within the field of ICTD, and argued that, owing to pluralism within ICTD and in contemporary society more generally, the lack of engagement with this matter is highly problematic. Furthermore, it has identified the geographic spread of ICTD scholars as the most pertinent dimension of pluralism in the field, and argued that there is a need to study the occurrence of development theory in ICTD literature in this dimension. A research question to coherently capture these concerns and address the aforementioned problematique, was formulated. A logical outline for addressing the research question was presented. Lastly, against this backdrop, the structure of the study was set out. The next chapter will begin to address the prerequisites for attending to the research question, by laying an appropriate theoretical foundation for the investigation that will follow.

Chapter 2

Literature review

2.1 Formulating relevant working definitions

As explained in the previous chapter, it is a logical prerequisite for the thesis constructed during the remainder of this study to formulate working definitions of two key concepts: (i) the notion of *development theory* and (ii) the distinction between 'developed' and 'developing' countries. These are discussed in turn in this section.

2.1.1 Development theory

The remainder of the present study will rely heavily on the concept of *development theory*, first by identifying frameworks that differentiate between various theories and their specific claims, and then by trying to identify the occurrence of those theories in ICTD literature. As should be evident to the critical reader, such discussions regarding the extension of *development theory* can only be meaningful if there is a clear understanding of the term's intension. The present discussion seeks to generate such an understanding by turning to relevant discussions, treated in chronological order of publication.

Preston (1996) conceptualizes development theorizing as a form of social theorizing. Social theorizing involves "package deals" of related claims regarding ontology (specifically: whether the social world is understood as "essentially a realm of material facts" or as "essentially a realm of cultural meanings and understandings"), epistemology (specifically: whether knowledge describes and explains the "material facts" of the social world, or whether it is "interpretive and critical" of the "cultural meanings and understanding" of the social world), methodology (specifically: whether knowledge is derived through the objective study, measurement and explanation of the material social world, or whether it is derived from the "interpretive and critical" study of meanings), and practice (for which purpose knowledge is created and used: "scholarship", "policy analysis" or "political life") (Preston, 1996:3-4). By inference, for Preston (1996),

a development theory therefore entails related claims or assumptions in each of these areas of concern.

Sumner and Tribe (2008:83) problematize the fact that a range of "theories, conceptual and analytical frameworks and approaches" exist in discussions on development, "each [with] their own components, foci, emphases and limitations", and that there is a lack of consensus on what actually constitutes a "development theory". In addressing this ambiguity, they refer to Martinussen's (1997:14-15) distinction between a development *theory* (being "a hypothesis about promoting and obstructing conditions to development"), a development *concept* (being "a development objective") and a development *strategy* (being "a set of actions or interventions to promote development"); for Martinussen (1997), the last two are usually associated with a specific instance of the first.

Proceeding from Martinussen's (1997) tripartite classification, Sumner and Tribe (2008:85) present their own distinction, focusing mainly on the level of analysis. They distinguish between "grand" theories and "context-specific" theories of development: the former refers to "meta-narratives", associated with a specific world view and focused on large-scale societal change in the long run, whereas the latter refer to small-scale theories aimed at "[guiding] empirical inquiry and policy analysis" to "provide a deeper understanding of a small piece of the world" (Sumner and Tribe, 2008:85). Sumner and Tribe's (2008) distinction is related to Martinussen's (1997) in that both grand and context-specific theories may encompass development concepts and strategies.

Sumner and Tribe (2008:86) conclude their discussion by asserting the centrality of assumptions, that is: that in the process of abstraction from phenomena for the purposes of understanding, development theories make specific "simplifying assumptions" — emphasizing certain aspects of phenomena, whilst understating or excluding others — and that these should be regarded as a core part of such theories.

For Pieterse (2010:2), theory in general is "the critique, revision and summation of past knowledge in the form of general propositions and the fusion of diverse views and partial knowledges in general frameworks of explanation". Whereas Sumner and Tribe (2008) argue that *development theory* can refer to both grand and context-specific theories, Pieterse (2010:2) seems to locate *development theory* specifically at the level of "grand theories [and] broad explanatory frameworks". Other "mid-range or micro theories" may still address what he terms "development problems" (e.g. "rural development, industrialization, urbanization [and] trade policy"), but are not termed *development theories* as such (Pieterse, 2010:2).

Pieterse (2010:2) then proceeds to the question of whether development theory should be viewed as social science — wherein it is located within the broader narrative of "classical economic and social thought", as is Preston's (1996) point of departure — or simply as ideology — wherein the role of politics ("setting agendas, framing priorities, building coalitions, justifying policies") is regarded as more important than "theoretical considerations". Pieterse

(2010:3) assumes the middle ground, arguing for a "contextual approach to development theory" which acknowledges the role of both "political contexts and influences" and "influences from social science". He later revisits this point in a discussion on the relationship between knowledge and power, concluding that "each development theory can be read as a hegemony or challenge to hegemony" and that theories are therefore often not first and foremostly intended to explain, but rather to fulfil the functions mentioned above in the description of theory as ideology. However, his concerns in this regard are arguably already captured in Preston's (1996:3-4) discussion of the *practical* component of social theorizing, specifically: whether a theory is created to be employed primarily towards the end of scholarship or political life.

Lastly, Pieterse (2010:9) argues that development theories are multidimensional, encompassing (i) a historical and political "context", (ii) an "explanation" (making "assumptions about causal relationships"), (iii) "epistemology" (making claims about the nature of knowledge), (iv) "methodology" (formulating rules regarding what qualifies as valid "indicators and research methods"), (v) "representation" ("articulating or privileging particular interests and cultural preferences"), (vi) "imagination" (linking specific "images, evocations, symbols of development, [and] desire"), and (vii) "future" (envisioning an ideal – or better – state).

Willis (2011), too, identifies multiple dimensions to development theories. For her, four dimensions are of pertinence: (i) a theory's definition of 'development' (that is: whether it is understood as a vision or process, and what such a vision or process entails), (ii) those actors that are tasked with promoting or realising 'development' as it is defined by the theory, (iii) the level of analysis, and (iv) the location of development (mainly: where the theory situates the vision or processes of development, and whether the theory focuses on the experience of the Global North or Global South).

The above authors highlight several important considerations related to the intension of development theory. These can be summarized with the following set of statements: (i) development theories are focused on desirable social or societal change; (ii) development theories are embedded within the broader discourse and thinking of social theory; (iii) development theories are premised, often implicitly, on ontological, epistemological and methodological claims — to identify and understand these claims, development theories must be contextualized within the broader discourse and thinking of social theory; (iv) development theories are created for different purposes and represent different interests — the politics of development theories are of particular pertinence; and (v) development theories adopt varying foci and levels of analysis; these are a core part of the theory, which is closely related to the actors and locations that the theory chooses to study.

Taking into account these nuances, the present study regards the following as a suitable working definition of 'development theory': *a theory regarding desirable social or societal change, containing ontological, epistemological and*

methodological assumptions, serving specific purposes and interests, and operating at a specific level of analysis, often focusing on specific actors and locations. This definition will be employed in the remainder of the study.

A final disclaimer is required regarding Pieterse's (2010:2) notion that the extension of development theory should be limited to "grand theories [and] broad explanatory frameworks": while it is certainly important to be aware of the fact that theories focused on development problems work at different levels of analysis, it seems unnecessarily restrictive to exclude small-scale theories from the discussions that will follow in the remainder of this study. The author ventures to argue that such small-scale theories may be highly relevant when later on attempting to classify ICTD studies that are focused on the grassroots level. The present study will therefore cautiously include such small-scale theories in the extension of development theory, but with a keen awareness of Pieterse's (2010:2) concern.

Furthermore, scholars in ICTD often examine technology in a particular socio-economic/geographical setting. There are, consequently, particular contextual dynamics at play which in part dictate the notion of *development* in such studies. The risk of adopting grand theories only is that they lack the granularity/detail that are [preferable] in the particular context of the study considered. It is accepted, of course, that not all studies concern this level of analysis.

2.1.2 The terminology of and distinction between developed and developing countries

The present study relies heavily on the distinction between developed and developing countries. However, on the basis of Willis's (2011:16) argument that using terms like "developed" and "developing" as basis for classification "can tell us a great deal about who has the power to decide what should be valued and what denigrated", it is useful to include a brief interrogation of the terminology and its alternatives.

A number of alternatives exist in this regard. Sumner and Tribe (2008:2) distinguish between "developing" countries (referring to "'poorer' countries") and "industrialized" countries ("higher-income countries"). Willis (2011) offers a number of additional descriptions: (i) the United Nations Development Programme (UNDP)'s Human Development Index (HDI) categories (low, medium, high or very high human development), (ii) the World Bank's gross national income (GNI) per capita categories (low, middle or high income), (iii) the "Global North" (Australia, Canada, Europe, Japan, New Zealand and the USA) versus the "Global South" (describing the "remaining countries of Africa, Asia, Latin America, the Caribbean and the Pacific"), (iv) the "Third World" versus the "First World", stemming from the outdated Cold War era classification of the capitalist West (the "First World"), the communist bloc (the "Second

World") and the non-aligned "Third World", (v) "developed" (referring to the countries of the Global North) versus "developing" countries (referring to the remaining countries); (vi) "more economically developed country (MEDC)s" versus "less economically developed country (LEDC)s", and (vii) the "Majority World" (Africa, Asia, Latin America and the Caribbean) versus the "Minority world" (the rest) (Peet and Hartwick, 2009:6; Willis, 2011:16-17).

It is clear that some of the above distinctions offer more precise descriptions than others. For example, the UNDP's HDI categories and the World Bank's GNI per capita categories are rooted in quantitative measurements and can therefore classify a specific country based on its performance in terms of relevant indicators[1]. Other distinctions, for example between First World and Third World countries, are less precise. Outside of precision, there are other issues to consider in the choice of terminology. Willis (2011:17) explains, for example, that the developed versus developing country dichotomy may imply that development is an endpoint, already achieved by those countries understood as "developed". As a further example, the MEDCs-LEDCs distinction is useful because it explicitly limits its description to *economic* development, but conversely, it obscures other dimensions of development (Willis, 2011:17).

While Sumner and Tribe (2008:2) prefer the developing-industrialised dichotomy for its simplicity, Willis (2011:16) prefers the Global North-Global South distinction. Based on the discussion above, the present study will adopt Willis's (2011:16) distinction — paraphrasing developed versus developing countries — in the chapters that follow. Where clarification on the classification of a specific country is required — i.e. where it is not easily classifiable using Willis's distinction — the International Monetary Fund's (2015:150-153) list of countries classified as "Advanced Economies" (developed countries, or Global North) and "Emerging market and Developing Economies" (developing countries, or Global South) will be used as reference.

2.2 Frameworks for the identification of development theories

A logical prerequisite for identifying which development theories occur in ICTD literature, is to have a firm understanding of the *delineation between* and *respective features of* development theories in general. In order to fulfil this prerequisite, the present section identifies a number of frameworks that could possibly be employed as 'viewfinder' for identifying development theories in ICTD literature. By matching the claims made implicitly and explicitly in an ICTD study to the claims made by a development theory, the occurrence of that specific development theory in the specific ICTD study can be ascer-

[1]The logical critique here would of course focus on the choice of indicators and what conception of *development* they presuppose.

tained. A useful framework will therefore adequately describe the claims made by various development theories, such that these claims can be identified in ICTD literature[2]. As a disclaimer, it should be noted that the summaries presented below are intended to offer only a broad overview of the structure and constituent sections of each framework. The specific parts of a framework that are used to describe the occurrence of a particular development theory in a particular ICTD study, will be clarified as part of the latter's analysis.

What precisely 'development' is and how it should be achieved, has implicitly been the subject of inquiry since the Industrial Revolution and culminated, during the post-World War II years, in the birth of explicit attempts to find answers to what became an increasingly urgent question. Since that time, a variety of development theories have been put forward by different minds at different times. The frameworks introduced below identify, group, contextualize and describe these theories.

2.2.1 Thomas (2000)

Thomas (2000) provides a basic framework in which he categorises contemporary development theories in terms of development *of*, *alongside* or *against* capitalism, or a complete rejection of development[3]. The first category consists of neoliberalism; the second, of interventionism (subdivided into two schools: "market efficiency" and "governing the market"); the third, of structuralism and people-centered ("alternative") development; and the fourth, of so-called "post-development" (Thomas, 2000:780). Each development theory is described in four dimensions: its vision (what it views as a "desirable 'developed' state"), its theory of social change, how it views the role of 'development', and finally, who it regards as the agents of development (Thomas, 2000:780).

The vision of *neoliberalism* is "liberal capitalism" (a combination of "modern industrial society" and "liberal democracy") and this is effected by the "internal dynamic of capitalism" itself (Thomas, 2000:780). In this context, development is an "immanent process within capitalism" and the main agents thereof are "individual entrepreneurs" (Thomas, 2000:780).

The vision of neoliberalism is shared by both the "market efficiency" and "governing the market" schools of *interventionism*, although it is augmented with the achievement of "basic social [and] environmental goals" (Thomas, 2000:780). For "market efficiency" interventionism, this vision requires that "barriers to modernization" be removed, whereas the "governing the market" school believes that "change can be deliberately directed" (Thomas, 2000:780). Both schools view development as a rectification of the "disordered faults of [capitalist] progress", driven by states, non-governmental organisation (NGO)s and other international organisations (Thomas, 2000:780).

[2]The selection of a specific framework will, however, only be done as part of the research design process later on.

[3]For a tabular summary, please refer to Table A.1 in Appendix A.

For *structuralism*, the vision of a developed state is a "modern industrial society", though not capitalist, and social change is characterised by "struggle between classes (and other interests)" (Thomas, 2000:780). Development — viewed as "comprehensive planning [or the] transformation of society" — is driven by "collective action", mainly taking the form of the state (Thomas, 2000:780).

People-centred development has the vision of enabling humans to "reach their potential", but its theory of social change is unclear (Thomas, 2000:780). Development is therefore equated with the empowerment of groups and individuals, and its agents are individuals and social movements.

Finally, *post-development* rejects the very notion of development and therefore does not have a vision for a 'developed' state or a description of how it is to be achieved. To post-development, development is a "hoax" which strengthened the global hegemony of the United States of America, and its main perpetrators were development agencies (Thomas, 2000:780).

2.2.2 Peet and Hartwick (2009)

Peet and Hartwick (2009:ix-xiii,21) divide their comprehensive treatment of development theory into two broad groups: 'conventional' development theories (premised on the inherent value of a capitalist society and mainly focused on economic growth) and 'nonconventional, critical' theories (challenging the very foundations of capitalist society and shifting the focus to other conceptions of development). In the former group, they distinguish between (i) classical and neoclassical economics, (ii) Keynesian, structuralist, developmental and neoliberal economics, and (iii) development as modernization. Under the banner of nonconventional, critical theories, they distinguish between (i) the range of Marxist and socialist theories, (ii) poststructuralism, postcolonialism and postdevelopmentalism, and (iii) feminist development theories. They add their own development theory, termed 'critical modernism', to stand alongside these two groups (Peet and Hartwick, 2009:275).

In Peet and Hartwick's (2009:14) description, *classical economics* produced modern theories of growth and development and equates development with "a certain kind of economic growth founded on capitalist efficiency". Adam Smith, perhaps the most prominent among the classical economists, asserted the necessity of capital accumulation for economic growth, showed the benefits of specialisation, and argued that competition arising from "free trade organized through networks of markets" was the "invisible hand" that lead to effecient outcomes in the economy and that transformed "private self-interest into public virtue" (Peet and Hartwick, 2009:14-33). He saw little use for the state's intervention in this mechanism. By contrast, Jeremy Bentham argued that the state did have a role to play, but that this was limited to "creating rights that are conferred on individuals: rights of personal security, rights of protection for honor, rights of property, [and] rights of receiving aid in case of

need" (Peet and Hartwick, 2009:34). To this theoretical body, David Ricardo contributed the idea that "producing in accordance with comparative advantage and trading freely across borders generated economic growth" (Peet and Hartwick, 2009:37). Finally, John Stuart Mill emphasised the centrality of individual liberty and promulgated the idea that "governmental action was legitimate only when it was demonstrably necessary for the protection of other citizens from direct harm caused by any human conduct" (Peet and Hartwick, 2009:37-40). Together, these thinkers created the theoretical body that came to be regarded as classical economics.

Neoclassical economics shifted the focus of economics from "political economy", incorporating the study of social issues, to "economic science", favouring quantitative and mathematical approaches (Peet and Hartwick, 2009:45). In Peet and Hartwick's (2009:48) words, "the central theme of economics changed from the growth of national wealth to the role of margins in the efficient allocation of resources". In neoclassical economics, capitalism is accepted to be the best practicable economic system, creating growth through self-regulating markets, devoid of government interference.

Keynesian economics demonstrated the shortcomings of free markets, showing that "free markets do not spontaneously maximize human well-being" and that there are cases where it is appropriate — if not required — for the state to stimulate demand through monetary and fiscal policy. Keynesian economics shifted the conversation in economics by legitimising state intervention in markets (Peet and Hartwick, 2009:58).

Structuralist economics promoted the idea that Third World economies — specifically those in Latin America — were unique, due to structural factors such as "high levels of rural unemployment, low levels of industrialization, more obstacles to industrialization, and disadvantages in international trade", and therefore required a different approach than that dictated by neoclassical economics (Peet and Hartwick, 2009:65-68). The focus was on affecting structural changes in these economies by "removing the obstacles to growth specific to [Third World countries]"; such changes included "land reform, import substitution [...], education, and improved fiscal systems" (Peet and Hartwick, 2009:65).

Development economics saw a clear role for the state to play in the development of a country (Peet and Hartwick, 2009:68). It did not argue for the inapplicability of neoclassical economics to Third World development, but rather argued for its extension, to include a focus on "income distribution, poverty and basic needs", and unemployment not explained by traditional Keynesian economics (Peet and Hartwick, 2009:68).

Neoliberal economics constituted a reappreciation of the virtues of the free market and marked a return to the idea that state intervention in free markets should be minimised (Peet and Hartwick, 2009:84). Originally, it prescribed a range of policy types, including "fiscal discipline", reductions in spending by the state, efforts to broaden the tax base and cut tax rates, market-determined

interest rates (as opposed to state-determined), "competitive exchange rates", "trade liberalization", "encouraging foreign direct investment", "privatization", "deregulation", and "securing property rights" (Peet and Hartwick, 2009:85-86). Peet and Hartwick (2009:91-92) argue that, in response to strong pressure in the early 2000s, contemporary neoliberalism has evolved to become "augmented by so-called second-generation reforms that are highly institutional in nature". Citing Rodrik (2006), they list these as: "corporate governance", "anticorruption measures", "flexible labor markets", "World Trade Organization agreements", "Financial codes and standards", "'Prudent' capital-account opening", "Nonintermediate exchange rate regimes", "Independent central banks and inflation targeting", "Social safety nets", and "Targeted poverty reduction" (Peet and Hartwick, 2009:93). Furthermore, they describe the MDGs and the notion of "debt relief" as being at the centre of this new neoliberalism (Peet and Hartwick, 2009:95).

The theory of *development as modernization* focused on the differences between 'modern' and 'traditional' societies and posits that development entails the "rationalisation of the world"; that is, that "developed societies carry out their social and economic functions in highly rationalized ways to achieve development" (Peet and Hartwick, 2009:16). W.W. Rostow's influential "stages of growth" model typified this understanding of development, namely as a linear process with "technological development in the context of social, cultural, and political conditions suited to modernization" as main impetus (Peet and Hartwick, 2009:129). Normatively, the theory of development as modernization leads to policy prescriptions that change the social, cultural and political conditions in 'traditional' societies such that "the diffusion of innovation from the advanced modern societies" is encouraged and internationally-oriented free markets are created. To this end, in Peet and Hartwick's (2009:131) words, "progress means replicating the experience of the West".

Shifting the attention to the second broad section of Peet and Hartwick's (2009:131) analysis, *Marxist and neo-Marxist approaches* took the notion that "class struggle forms the basis of the societal dynamic (including the economic development process)" as point of departure. Although they valued modernity as material progress — believing in "social progress and the perfectability of humankind" and viewed science (i.e. rationalism) as an appropriate vehicle for this purpose — they asserted that it was nevertheless controlled by the elite and therefore delivered unequal benefits to different parts of society (Peet and Hartwick, 2009:17,143). Marxist and neo-Marxists thinking informed a wide range of theories, of which three are discussed in detail by Peet and Hartwick (2009). Dependency theory is premised on the idea that "European and U.S. development was predicated on the active underdevelopment of the non-European world", through conquest, exploitation and unequal economic relations (Peet and Hartwick, 2009:166). It focuses on the relationship between the centre (First World countries) and periphery (Third World countries) and posits that for a Third World country to develop, it needs to restructure its

interaction with the centre (Peet and Hartwick, 2009:172). World systems theory posits that the history of the world gave rise to a "geographic entity with a single division of labor" – a single 'world system' – with "structural-spatial parts (center, semiperiphery, periphery)" which "evolve through stages of alternating expansion and contraction" (Peet and Hartwick, 2009:173-175). In Peet and Hartwick's (2009:175) words, "world systems theory places regional development dynamics in a global context". Lastly, regulation theory examined those "cultural habits and institutional rules related to each period of capitalist development" (Peet and Hartwick, 2009:177).

Poststructuralism problematizes the core of progress in modernity: reason (viewed as "a mode of social control"), truth ("rejected as practically impossible but also dangerously motivated") and accuracy (crippled by language). It criticizes the "essentializing and totalizing pretensions" of modern theories and interprets conceptions of what is 'good' for society in terms of power relations (Peet and Hartwick, 2009:17).

Similarly, *postcolonialism* critiques Western hegemony and Eurocentrism in thinking about development and agitates for "a radical rethinking of knowledge and social identities authored and authorized by colonialism and Western domination" (Prakash, 1994, as cited in Peet and Hartwick, 2009:209).

Peet and Hartwick (2009:17) use '*postdevelopmentalism*' to describe the interrelated set of intellectual positions predicated on a "complete rejection of modern development rather than its modification or democratization". Instead, postdevelopmentalists propose such principles as "radical pluralism" ("thinking locally rather than globally"), "simple living" (reducing material consumption) and "reappraising noncapitalist societies" (Peet and Hartwick, 2009:17,229).

Feminist development theories assert the centrality of women in society and therefore want to counteract the exclusion of women from development theory, by reinterpreting it from "critical gendered perspectives that value the experiences and wishes of women as well as men" (Peet and Hartwick, 2009:279). Peet and Hartwick (2009) identify and discuss five different perspectives grouped under this heading: (i) women in development, (ii) women and development, (iii) gender and development, (iv) women, environment and development, and (v) postmodernism and development.

Finally, in the last section of their discussion, Peet and Hartwick (2009:275) add their own development theory, termed 'critical modernism'. Theirs is a reinterpretation of development to address the many criticisms thereof, and argues for a cautious recognition of the virtues of modernity ("democracy, emancipation and development"), whilst criticizing the specific capitalist form of modernity that has dominated contemporary history (Peet and Hartwick, 2009:18).

2.2.3 Willis (2011)

Willis (2011:225) discusses pertinent issues in development, and identifies a number of development theories[4]. These can be grouped in five broad categories: (i) theories centred on the market as vehicle for economic progress (classical economic theory, modernization, Keynesianism and neoliberalism), (ii) theories relying strongly on the state to drive development (classical Marxism, structuralism and dependency theory), (iii) theories focused on the social and cultural dimensions of development (ethnodevelopment, gender and development, rights-based development), (iv) environment and development theory (sustainable development), and (v) post-development theory.

In a high-level schema, Willis (2011:255) describes each theory in terms of its conception of development, main approach, main actors, and level of analysis. The first group of theories all operate on a national level of analysis. *Classical economic theory* equates development with economic growth, argues that free markets are "the most efficient way of organizing economies" and believes that businesses are the key actors in creating growth. *Modernization theory* conceptualises development as economic growth, but also as "increased complexity in social and economic organization" (Willis, 2011:255). To promote development, the historical path followed by 'developed' countries from the Global North to reach 'modernity', should be followed by 'underdeveloped' countries in the Global South; to this end, the state and market are key actors. *Keynesianism*, too, understands development as economic growth, but with specific reference to full employment. To this end, some intervention in the free market by the state is required to "help regions and groups that are disadvantaged"; the state and market are therefore the key actors. For *neoliberalism*, economic growth — coupled with liberal democracy — constitutes development; it represents a return to the idea that economic growth is best promoted through the free market, wherein the state's role should be limited to basic regulation. In neoliberalism's view, businesses, NGOs and individuals should take centre stage.

In the second group of theories, *Classical Marxism* understand development as "economic growth, industrialization, urbanization, [and the] increased' complexity of societies" and argues that is best promoted by a powerful state that can ensure that resources are used effectively (Willis, 2011:225). *Structuralism* equates development with economic growth and believes that development is promoted by states (specifically in the Global South) protecting their own industries against competition in an unequal global market. The state is therefore the most important actor in promoting development. For *dependency theory*, too, development is economic growth. Development in the Global South (the "global periphery") is promoted through withdrawal from global markets, which are viewed as a vehicle for exploitation by the Global North; the state is the key actor in this regard (Willis, 2011:225). Like the first group, the

[4]For a tabular summary, please refer to Table A.2 in Appendix A.

three aforementioned theories regard the national level as appropriate level for analysis.

Moving to the third group of theories, *ethnodevelopment* conceptualises development as a "recognition of ethnic diversity", which is promoted when the "requirements of different ethnic groups" are balanced (Willis, 2011:225). The state and ethnic groups fulfil the main roles in this regard, and the analysis of their roles is located at the national and sub-national levels. For *gender and development* theories, the promotion of gender equity and equality stand central to the idea of development. Different perspectives dictate different main actors and approaches, although there seems to be a general preference for grassroots participation, and analysis at the national and sub-national levels. *Rights-based development* understands development as "individuals and groups [being] able to live fulfilled lives" (Willis, 2011:255), with their approaches varying from "very small-scale awareness-raising activities to large-scale transnational campaigns" (and the level of analysis varying accordingly). The state, NGOs and individuals fulfilment key roles in this regard.

Turning towards the fourth group of theories, *sustainable development* assert the centrality of protecting the 'natural environment' to the idea of development, encompassing a variety of approaches drawing from neoliberalism (i.e. advocating the economic commodification of the environment), to anti-consumerist and anti-materialist perspectives. The main actors and level of analysis in sustainable development vary based on the specific perspective.

Finally, *post-development* rejects development as "a dangerous, Eurocentric concept which destroys local cultures and environments", instead opting to loosely advocate for "grassroots activities [and] local-level participation". In this regard, the main actors are "grassroots organizations" and individuals, with post-development advocating a very small-scale level of analysis.

2.3 A brief history of ICTD

To understand engagement with 'development' in ICTD, it is useful to understand ICTD's evolution over time. The present section seeks to develop such an awareness by briefly detailing the field's history and elucidate some of the key attributes of, and trends in, its body of literature.

2.3.1 The ICTD story

Heeks (2009:28), "one of the earliest scholars to apply an academic lens to information technology for development" (Toyama and Dias, 2008:24), describes the history of ICTD in terms of three evolutionary phases: Information and Communication Technologies for Development (ICT4D) 0.0 (the precursor to the ICTD field — originating in the 1960s and continuing into the mid-1990s),

ICT4D 1.0 (running from the mid-1990s to the latter half of the 2000s), and ICT4D 2.0 (from the mid/late 2000s to present).

In ICT4D 0.0, the early focus was the application of computers in the "internal administrative functions of the public sector in developing countries"; in the 1980s, this shifted to the application of computers to business problems, in service of private sector economic growth (Heeks, 2009:3). For Heeks (2009:3), two drivers led to the emergence of ICT4D 1.0 in the 1990s: the birth of the internet in public life and the construction of the MDGs. The excitement regarding new possibilities for ICTs ("new tools in search of a purpose"), coupled with a resurging interest in international development ("new targets in search of a delivery mechanism"), led to the birth of ICTD as field (Heeks, 2009:3). Accordingly, the main focus shifted to how ICTs could be applied in the quest to fulfilment the MDGs, an endeavour which remained pertinent well into the first decade of the 21st century. However, "with timescales short and pressure to show tangible delivery", ICTD actors fell into the trap of attempting hasty replications of existing developed country solutions, most notably the telecentre[5] (Heeks, 2009:4). The low success rates of ICTD projects became increasingly well publicised (Heeks, 2010*a*). In the process, a number of high-profile ICTD initiatives suffered a fatal loss of political and financial support: Heeks (2010*a*:629) notes the 2006 closure of the Information for Development group in the United Kingdom's Department for International Development as example.

The end of ICT4D 1.0 was marked by the gradual emergence of a reflective attitude in ICTD research, increasingly focused on the lessons learned from the unfulfilled hopes and disillusioning experiences of ICTD's first decade. In Heeks's (2009:4) terms, this new attitude could be characterised by three keywords: sustainability (attempting to overcome the high failure rate of earlier ICTD projects), scalability (attempting to find ways to grow the potential impact of a project, in contrast to the relatively small scale of telecentres), and evaluation (attempting to replace "hype and uncorroborated, self-interested stories" with rigorous, objective measures to assess project success). While, for Heeks (2009), this constitutes a clear break from ICT4D 1.0, the exact details of this new phase — which he terms ICT4D 2.0 — are as of yet unclear.

Approached differently, the historical development of ICTD can also be interpreted in terms of the "perceived contribution of ICTs to development" by actors inside and outside the field (Heeks, 2009:25). Understood through this lense, ICT4D 0.0 was marked by *ignorance* about ICTs' role in development and then the *isolation* of ICTs "away from the mainstream of development into separate policies and ministries" (Heeks, 2009:25). While the sidelining of ICTs in development policy and practice continued in some quarters in the 1990s, a growing movement began to view ICTs as a quasi-panacea for the de-

[5] A telecentre is "a room or building with one or more Internet-connected PCs" (Heeks, 2009:4).

velopment problems of the day. This *idolisation* of ICTs was intertwined with the increasing popularisation of the notion of "digital divide": that the lack of access to ICTs in developing countries, contrasted with the rich and pervasive access to ICTs in developed countries, was a core issue in development.

Marking the end of ICT4D 1.0, the idolisation of ICTs in development gave way to a more subdued, mainstream drive for the *integration* of ICTs in existing developmental frameworks: as one tool amongst many available in the development actor's toolbox. ICTs came to be viewed as "a means not an end" and "a tool not a goal" (Heeks, 2009:26). Heeks (2009:26) argues, however, that this process has lost sight of ICTs' capability to be a "cross-cutting, linking technology", able to bridge "individual development goal silos", and has diminished the sense of excitement around the potential of ICTs (and the accompanying access to funding).

Concluding his analysis, Heeks (2009:25) argues that in ICT4D 2.0, the attitudes to the role of ICTs in development would be best described with *innovation*: exploring new possibilities for ICTs by appreciating technological possibilities, understanding the feasibility of these possibilities, and then determining the desirability of such possibilities.

2.3.2 Key attributes of and trends in the ICTD body of literature

Taking the above as a high-level overview of ICTD's historical development, it is useful to briefly consider the characteristics of ICTD literature. To this end, Gomez *et al.*'s (2012) review of ICTD research between 2000 and 2010 (i.e. capturing, in Heeks's terms, the latter half of ICTD 1.0 and the birth of ICTD 2.0) is of particular interest. Gomez *et al.* (2012) identify the main domains of research, objects of study, levels of analysis, and types of contributions to the field in the selected sample (each indicated in non-exclusive categories). Their findings indicate that the *main domains of ICTD research* are business, empowerment, education and e-government, and that there seems to be a "dynamic tension between a focus on business and economic development and a focus on empowerment and community development" — a trend that remains largely unchanged across the sample's time frame (Gomez *et al.*, 2012:8-9).

Furthermore, Gomez *et al.* (2012) find that the most common ICT *object of study* in ICTD research is "ICT in General" (present in 48% of the sample), denoting ICT as a fuzzy object not clearly limited to one of the technological objects in the authors' comprehensive list of possibilities. The two nearest rivals are Information Systems (at 26%) and software (14%). Taking a temporal view of the study, they note, from 2006, a rapidly-growing interest in mobile phones, away from information systems and software (Gomez *et al.*, 2012:5). The authors rather ominously compare the excitement around mobile phones to the early interest in telecentres.

Turning their focus to the level of analysis in ICTD research, Gomez *et al.* (2012) find single countries to be the most prevalent (41%), followed by organisations (26%), multiple countries (22%), and neighbourhoods (16%). The remaining levels — individuals, cities, social networks, and families — each have prevalence rates of 10% or less. Gomez *et al.* (2012:9) warn that those studies conducting their analysis on the level of single countries seem to be prone to unwarranted overgeneralization, moving rapidly from the insights gained from a lower-level case to conclusions about the country, showing "very little evidence of research that aims at being representative of the diversity and richness of the country as a whole.".

Lastly, looking at the types of contributions in ICTD, Gomez *et al.* (2012:7) name best practices, field experience, policy recommendations and theory as most prevalent, with each present in between 24% and 31% of studies. Design, testing theory and methods have a much lesser presence in the literature. Nevertheless, in temporal terms, theory-focused studies ("generating new or validating existing theory") seem to be on the rise, whilst studies focused on case descriptions from the field seem to be in decline (Gomez *et al.*, 2012:9).

2.4 Engagement with development in ICTD

In the background to the present study (as set out in Chapter 1), it was argued that understanding 'development' should be a fundamental component of ICTD research. A cursory review of ICTD literature revealed, however, that there seems to be little *explicit* engagement with development theory in ICTD literature. As explained, this lack of explicit engagement is problematic given the wider theoretical discourses surrounding the concept, on the one hand, and expected diversity in understanding development within the field of ICTD itself, on the other. Expanding on this initial assessment, and as a precursor to the analysis that will be conducted in the remainder of the study, the present section seeks to provide a wider review of engagement with development in ICTD literature. The purpose of this discussion is (i) to establish to what an extent ICTD researchers agree that explicit engagement with development theory is important; and (ii) to examine previous attempts at studying the occurrence of development theory in ICTD literature, in order to identify insights relevant to the present study's investigation.

2.4.1 Agreement on the importance of explicit engagement with development theory

There seems to be agreement amongst at least some ICTD scholars that is important to clarify one's conceptions of development through explicit engagement with development theory.

Prakash and De' (2007:263) show how the development context — "what different people in different places understand as development and how technology fits into their overall scheme of things" — in which an ICTD project is set, influences its outcomes. They note, for example, that "the choice of technology design is influenced by notions of development and unless these notions are consistent with the contextual dimensions, the desired consequences might not ensue" (Prakash and De', 2007:263). On the basis of a case study of the introduction of ICTs into land reform processes in India, they conclude that explicit attention should be paid to ensuring congruency between an ICTD project's conception(s) of development, and the conception(s) embedded in its operating context. To this end, they advocate for a broadening of perspective regarding the nature of development, amongst those driving the aforementioned projects.

Thompson (2008) examines the nature of engagement between ICTD practice and development studies. On the basis of the challenges presented to ICTD by development studies at the levels of policy and practice, he contends that deeper reciprocal engagement between the two disciplinary foci is imperative.

In seeking to answer the question "Do ICTs contribute to development?", Heeks (2010*a*:634) offers perhaps the most effusive support for the notion that development theory should play a key role in discourses on ICTs and development. He describes the small role of development studies in ICTD as "clearly problematic" and states that

> "[a]n impoverished understanding of development is likely to be utilised. Indeed, one can surely argue that discussion of ICTs' contribution to development in the absence of development studies' ideas to define and understand development may make little sense." (Heeks, 2010*a*:634)

In their introduction to a special issue of *Information Technology for Development*, Andersson *et al.* (2012:1) note mounting opposition to "mainstream neoliberal development discourse" and a move away from "traditional theories of development" in ICTD literature. This shift, they argue, has however not been accompanied by sufficient explicit engagement with what development outcomes ICTD project should seek to achieve, and how this might be done and measured. Proceeding to initiate the discourse that they seek in ICTD literature, they advocate for the exploration of Sen's capability approach, within a human development paradigm, as a suitable theoretical foundation for ICTD projects, i.e. dictating the outcomes that such projects should seek to address. This constitutes the binding element for the papers in the said issue of *Information Technology for Development*: each of the five studies (Hatakka and Lagsten, 2012; Johri and Pal, 2012; Kleine *et al.*, 2012; Thapa *et al.*, 2012; Wresch and Fraser, 2012) clearly articulates its conception of development — as expanding capabilities in the Senian sense — and related outcome(s), and details

how its case study contributes to the fulfilment of these outcomes. Hatakka and Lagsten (2012:23) use the capability approach to evaluate "what capabilities and functionings Internet resources can enable for students in higher education"; Johri and Pal (2012:61) design and test a framework for "capable and convivial design" — combining the capability approach with Ivan Illich's (1973) idea of 'conviviality' — on the case of "multiple input shared computing"[6]; Kleine *et al.* (2012:42) operationalise the capability approach to study the introduction of ICTs for information provision in "Fair Trade value chains"; Thapa and Sæbø (2014) link the capability approach with social capital and collective action in communities, and conduct a case study to determine how ICTs might contribute to the resulting outcomes; and finally, Wresch and Fraser (2012) study the economic component of expanding freedoms, examining the intricacies and difficulties of how Caribbean small businesses use ICTs to gain access to additional markets. In the most pointed illustration of ICTD scholars agreeing that is important to engage explicitly with development theory, Hatakka and Lagsten (2012:37) assert that

> "[a]s ICT4D researchers, our aim is to study how ICT can foster development. By using the Capability Approach, we are forced to do just that – we have to be explicit about what we mean by development and what we are measuring."

Thapa and Sæbø (2014:10) argue that there is a gap in ICTD literature, in that "there is a need to clarify and explore the concept of development in the ICT4D research area", because (i) if researchers make their conception of development (i.e. their understanding of the desired change to which they wish to contribute with their project) explicit, comparisons between different studies become possible, and (ii) it is not yet clear how development conceptions influence ICTD projects.

The above examples indicate that there are at least some ICTD scholars who agree that it is important to clarify development conceptions through explicit engagement with development theory. However, it is noteworthy that these authors present their scholarship as fresh, and away from the mainstream — for example, *Information Technology for Development* publishing a special issue "because *we have longed* for a debate about how ICTs can contribute to development with an explicit focus on the development outcomes" [emphasis added] (Andersson *et al.*, 2012:1) —and that nearly all of them point out the lack of existing explicit engagement with development. This seems to indicate that their concerns are not echoed widely in ICTD literature, and that there is not yet a sufficient awareness of and agreement about the importance of explicit engagement with development theory.

[6]"Multiple input shared computing" refers to several users each using their own input device(s) to interact with the same computer, e.g. four school children, huddled around a computer screen, each using a computer mouse (Johri and Pal, 2012:68).

2.4.2 Existing attempts to study the occurrence of development theory in ICTD literature

There have been some attempts to analyse and describe the occurrence of development theory in ICTD literature. Schech (2002:13) links the conception of development found in ICTD literature by "those who enthusiastically embrace ICTs" to modernisation theory, and the conception of development of those who criticise these attempts, as "influenced by dependency and post-colonial discourses of development". She employs a critical analysis of the *World Development Report* (World Bank, 1998) to illustrate the former category, finding in the report's ideas "some striking continuities with the modernization school's way of thinking" (Schech, 2002:15). As an example in the latter category, she cites Sardar (1995) and his contention that the Internet represents a "new phase in a long history of the West's attempt to colonize not only the territory and the body but also the mind of the Third World 'other"' (Schech, 2002:18).

Avgerou (2003) examines four prominent ICTD publications and identifies the development theories underlying the arguments set forth in the documents, on the basis of the claims made in the latter. She argues that the arguments and resulting recommendations presented in the documents are based on "a narrow economic perspective of human action which ignores recent socio-economic theory of development", which she links to neo-classical and new institutional economic theories of development (Avgerou, 2003:3). She then proceeds to highlight the shortcomings of and controversies surrounding these theories, and, by proxy, critiques the arguments put forth in the four publications. She concludes with an indictment of "the misguided nature of the universalist visions of economic and institutional development that currently accompany efforts to promote the diffusion of the technology" (Avgerou, 2003:12).

Thompson and Walsham (2010:112) focus specifically on ICTD in Africa, terming as a paradox the "unprecedented level of interest in the use of ICT for developmental aims", but small amount of "IS literature that actually engages with 'development' in any explicit way". They argue that ICTD research needs to include a much greater emphasis on the fulfilment of specific development outcomes — what they call a "strategic developmental focus" (Thompson and Walsham, 2010:112) — and set out to study to what an extent such a focus is found in existing African-orientated ICTD literature. Drawing on the understanding of development found in the 2003 *Human Development Report* (UNDP, 2003) and the MDGs, as well as that found in Sen's *Development as Freedom* (Sen, 1999), the authors identify four dimensions (institutional infrastructure, governance, accountability, and civil society) in which they believe ICTD can make an important contribution to development in Africa. They use these dimensions to construct a model with which the "[explicit] 'developmental relevance' of ICT research" can be studied, and then proceed to conduct a meta-analyses of the papers identified in three previous meta-

analyses (Thompson and Walsham, 2010:113). They ultimately find little or no "explicit discussion of the 'developmentally enabling' contribution of the ICT-based initiative" (Thompson and Walsham, 2010:116) in their literature sample.

Kunst (2014) seeks to establish, through a review of ICTD literature, to what an extent existing ICTD projects can be linked to modernization theory. She (2014:18) takes modernization theory as starting point on the basis of claims by previous authors that ICTD had "brought about its revival". She finds that the manner in which ICTs have been introduced into developing countries — as a transfer of Western knowledge and economic ideas — "has frequently been led by the mindset of Modernization" (Kunst, 2014:18).

While the examples above do indicate a level of engagement with the occurrence of development theory in ICTD literature, they are subject to some important limitations in the context of the present study's research problem:

1. Existing studies have tended to focus on the occurrence of one or two development theories in ICTD literature. To the author's best knowledge, there has not been an attempt to concurrently describe the occurrence of multiple development theories, using a broad framework of such theories as viewfinder.

2. While Thompson and Walsham's (2010) study did include a geographic focus in its analysis (looking specifically at African ICTD literature), there have not been attempts to perform comparative analyses on the broader categories of literature from the Global North and literature from the Global South.

It is in light hereof that the present study's research question becomes relevant. These limitations delineate the scope in which the present study hopes to contribute to studying engagement with development in ICTD.

2.5 Chapter conclusion

This chapter has begun to fulfil the prerequisites for addressing the research question. Firstly, appropriate working definitions for development theory, as well as the terminology of and distinction between developed and developing countries, were formulated. For the former, "a theory regarding desirable social or societal change, containing ontological, epistemological and methodological assumptions, serving specific purposes and interests, and operating at a specific level of analysis, often focusing on specific actors and locations" will be employed for the remainder of the paper. For the latter, the Global North-Global South distinction will be used, informed by quantitative metrics from the IMF, where necessary. Secondly, three frameworks for the identification of development theories were presented and discussed. These will be used later on

in the study to aid the process of analysing the occurrence of such theories in ICTD literature. Thirdly, the present study was contextualized within ICTD, by constructing a brief overview of the history and high-level characteristics of the field, as well as by examining existing attempts to study the occurrence of development theories in the field. Using these discussions as theoretical frame for the remainder of the study, it is now possible to begin the construction of an appropriate approach to and design for the analyses that will follow. The next chapter will focus on these aspects.

Chapter 3

Research approach and design

3.1 The suitability of a qualitative approach to the research question

As introduced in Chapter 1, the present study seeks to contribute to explicit engagement with the meaning of development in the field of ICTD, by examining the occurrence of development theories in ICTD research from the Global North and Global South, respectively. The previous chapter provided the theoretical foundations for this investigation, and the insights derived from this process played a key role in the choice of approach and methodology, as detailed in this chapter. The key considerations arising from Chapter 2's literature review were:

1. *The issue of differing levels of analysis:* This concern was raised during the discussion regarding an operational definition for 'development theory' (Section 2.1) and became more apparent during the deliberations on frameworks for the identification of development theories (Section 2.2) and the key characteristics of the ICTD body of literature (Subsection 2.4.1). Whereas Gomez *et al.*'s (2012) study indicated that a large part of ICTD literature works at the level of analysis of single or multiple countries which, *prima facie*, may be congruent with the broad societal focus of many of the development theories detailed in the frameworks, there is also a sizeable part of ICTD literature that is focused on lower levels of analysis, such as organisations and neighbourhoods. The potential incongruence between the level of analysis presupposed by the 'grand' development theories and the level of analysis at which a particular ICTD study is conducted, may bias the identification of development theories towards those theories that are focused at lower levels.

2. *The selection of time frame:* Heeks's (2009) overview of ICTD's historical development as field revealed that the field had experienced major shifts in the mid-1990s and the late-2000s. Specifically, the latter shift —

> from ICTD 1.0 to ICTD 2.0 — was accompanied by the emergence of a more reflective attitude amongst ICTD researchers. As part of this attitude, one might expect research emanating from the period after the late-2000s to exhibit greater awareness of the importance of engaging with development theory[1]. In selecting a sample for the present study's investigation, it is therefore important to select ICTD papers from either ICTD 1.0 or ICTD 2.0 and avoid overlap, such that the comparative analysis of literature from the Global North and Global South is not clouded by broader temporal trends in the field.

These led to the high-level question of which research approach would be most useful for the purpose of answering the broader research question. However, prior to proceeding to such an evaluation, a clear understanding of possible research approaches was needed. Creswell (2013:3) defines research approaches as "plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation" and distinguishes between three main approaches in social science research: qualitative, quantitative and mixed methods. The first refers to

> an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data (Creswell, 2013:4).

Echoing this understanding, Berg (2004:3,7) describes the focus of qualitative research as "the meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions of things" and explains that

> [q]ualitative research properly seeks answers to questions by examining various social settings and the individuals who inhabit these settings. Qualitative researchers, then, are most interested in how humans arrange themselves and their setting and how inhabitants of these settings make sense of their surroundings through symbols, rituals, social structures, social roles and so forth.

By contrast, quantitative research is

[1]Incidentally, although completely anecdotal, this was illustrated in the results of the survey of agreement on the importance of explicit engagement with development theory (Subsection 2.4.1): all of the papers discussed, as sourced using Google Scholar and with no conscious bias towards more recent work, were published in the aforementioned period and are therefore part of ICTD 2.0.

> an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures (Creswell, 2013:4).

Mixed methods research refers to the integration of both approaches in a single study, with a view to attain "a more complete understanding of a research problem than [can be attained through] either approach alone" (Creswell, 2013:4). Importantly, the distinction between qualitative and quantitative research is not a binary, but a continuum, with mixed methods lying in the middle of this continuum (Newman and Benz, 1998, as cited in Creswell, 2013:3).

For Creswell (2013:4-6), each approach rests on three legs: (i) a philosophical worldview ("a general philosophical orientation about the world and the nature of research"), (ii) research strategies or designs, and (iii) those methods through these designs are implemented. In terms of the first, Creswell (2013:6-11) distinguishes between four main worldviews: postpositivism (focused on "determination", "reductionism", "empirical observation and measurement", and "theory verification"), constructivism (emphasising "understanding", "multiple participant meanings", "social and historical construction", and "theory generation"), transformation (being "political", "power and justice oriented", "collaborative", and "change-oriented") and pragmatism (focused on the "consequences of actions" and being "problem-centred", "pluralistic", and "real-world practice oriented"). Qualitative approaches tend to be based mainly on constructivist and transformative worldviews, whereas quantitative approaches tend to be based on a postpositivist worldview, and mixed methods on a pragmatic worldview (Creswell, 2013:18).

In terms of research strategies or designs, Creswell (2013:11-16) distinguishes between quantitative designs (e.g. survey research numerically describing "trends, attitudes, or opinions of a population by studying a sample of that population", or experimental research that "seeks to determine if a specific treatment influences an outcome"), qualitative designs (e.g. "narrative research", "phenomenology", "grounded theory", "ethnographies", and "case study" designs), and mixed method designs (e.g. "convergent", "explanatory sequential", "exploratory sequential", and "transformative, embedded, or multiphase" designs).

Lastly, in terms of specific methods, Creswell (2013:16-17) characterises quantitative methods as being "pre-determined", using "instrument based questions", focused on "performance data, attitude data, observational data, and census data", conducting "statistical analysis" and drawing conclusions based on "statistical interpretation". By contrast, qualitative methods are "emerging methods", using "open-ended questions", focused on "interview data, observation data, document data, and audiovisual data", conducting "text and image analysis" and drawing conclusions based on the interpretation of "themes" and "patterns" (Creswell, 2013:16-17). Finally, as the midpoint between the afore-

mentioned two sets of methods, mixed methods combines "predetermined and emerging methods", utilises both "open- and closed-ended questions", collects "multiple forms of data drawing drawing on all possibilities", and relies on both "statistical and text analysis" to engage in "across databases interpretation" (Creswell, 2013:16-17).

Having established the distinction between qualitative, quantitative and mixed methods research approaches, the focus returned to the question of which of these approaches would be best suited to answering the research question at the heart of this study. On an introductory note, Patton's (2002:12) comment that "[a]ny given [research] design inevitably reflects some imperfect interplay of resources, capabilities, purposes, possibilities, creativity and personal judgments by the people involved", bore heeding. Creswell (2013:20), too, agrees that the choice of research approach is a multifaceted one. In his words, in addition to preferences in terms of the already-mentioned factors of "worldview, design, and methods", other factors that contribute to the choice of approach include "the research problem, the personal experiences of the researcher, and the audience(s) for whom the report will be written".

He places particular emphasis on the research question, arguing that the approach selected should be appropriate for the type of question. In this regard, he states that

> [i]f problem calls calls for (a) the identification of factors that influence an outcome, (b) the utility of an intervention, or (c) understanding the best predictors of outcomes, then a quantitative approach is best. It is also the best approach to test a theory or explanation (Creswell, 2013:20).

By contrast, for exploratory research, wherein "a concept or phenomenon needs to be explored and understood because little research has been done on it" and "the researcher does not know the important variables to examine", a qualitative approach is more appropriate (Creswell, 2013:20). Finally, if the research question is of such a nature that neither of the aforementioned approaches can yield a comprehensive answer, a mixed methods approach is more appropriate (Creswell, 2013:20). The choice of a research approach, then, should be based on which research approach would foreseeably yield the richest insight into the research problem.

Against the criteria for the choice of research approach provided above, the specific characteristics of the present study that influenced the choice of approach, could be considered in turn:

1. At the highest level of the study, the research question ("Are there meaningful trends in the occurrence of development theories in ICTD literature from developed and developing countries?") was interpreted by the author in the following manner: (i) "the occurrence of development theories in ICTD literature" was understood not as a binary, but as a

matter of degree or quality: the object of interest here was not simply *whether* development theories would occur in a specific ICTD paper, but more importantly, *how* they would occur; (ii) consequently, "meaningful trends" refer to rich and multifaceted patterns observed in the *quality of* the occurrence of development theories in the sample, that is: in the "meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things" (Berg, 2004:3). Given the facts that, generally, there has been insufficient engagement with the meaning of and theory around development in ICTD (as established in Chapter 1 and Chapter 2), and specifically, that to the author's best knowledge, there are no existing attempts to study the occurrence of development theory in ICTD literature comparatively on a geographic dimension (i.e. distinguishing between literature from the Global North and literature from the Global South), the present study's investigation would necessarily be of an exploratory nature.

2. At the level of individual papers, both the assessment of *whether* a development theory occurs in a paper and *how* it occurs in the paper, required a qualitative approach. In terms of the former, analysing papers quantitatively would conceivably entail measuring the frequency and combination of key words and phrases that could be linked to development theories and generating a score indicating the relevance of each development theory to the particular ICTD study. However, to reliably assess whether a particular development theory occurs in an ICTD study, one needs to examine the claims and arguments made in the study, in order to match them to those associated with a particular development theory; these claims and arguments cannot easily be reduced to key words or phrases. Furthermore, the literature review in the previous chapter revealed the lack of explicit engagement with development in ICTD. This implied that many ICTD papers will not make explicit reference to specific development theories or, where they do explicitly reference a development theory, it could conceivably be a case of paying lip service, such that the specifics and outcomes of the study could imply an understanding rooted in a development theory different than the one to which the author makes explicit reference. These two considerations led to the conclusion that reliably assessing the occurrence of development theories in a specific ICTD paper would be an interpretative process, in which a purely quantitative approach, assuming verbatim text as the only source of insight into the development theories adopted by a particular study, would be insufficient. The same was true for assessing *how* a development theory occurs in a paper: its "meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things" can clearly only be meaningfully captured in a qualitative analysis.

Interpreting the considerations above in terms of the previously-discussed criteria for research approach, it became evident that the present study's research question would be best served by a qualitative approach. At this point, it must be noted that it may be possible to augment the main, qualitative investigation with an auxiliary quantitative study drawing on sources separate from actual ICTD literature, such a wide, questionnaire-based survey of ICTD researchers or experts in the field, to assess their understanding of which development theories occur in ICTD literature. Quantitative data obtained through such a survey — assuming that a large, representative set of ICTD researchers could be surveyed — could provide high-level, albeit indirect insight into the occurrence of development theory in ICTD literature.

While there may be some benefit in the mixed methods approach described above, the focus of the current study is to attain a *deep* — rather than *wide* — understanding of the occurrence of development theory in ICTD literature from the Global North and Global South. Given the additional considerations that the author's skills and experiences lie in qualitative research, and that the scope and time frame of a Master's thesis renders a comprehensive mixed methods approach infeasible, a qualitative approach to the research question was accepted to suffice for the purposes of the study[2].

3.2 Directed qualitative content analysis as appropriate research design

Having established that a qualitative approach to answering the present study's research question would be most appropriate, the focus shifted to the selection of a specific strategy, or "design", in Creswell's (2013:4-6) terms. The sections that follow explain the choice of qualitative design to be employed. The remaining sections in this chapter detail practical issues arising in the execution of the methodology.

3.2.1 Qualitative content analysis: an overview

As has already been established, the present study's research question ("Are there meaningful trends in the occurrence of development theories in ICTD literature from developed and developing countries?") would be addressed by using ICTD literature as data source. This stands in contrast with methods of analysis not directly based on the literature, for example: surveying ICTD researchers on their understanding of the occurrence of development theories in the literature. The benefit of treating the literature as primary data source, is that it allows for direct insight into how development theories occur in the

[2]The limitations of the present study, as well as future prospects for understanding its research question, are discussed in more detail in Chapter 5.

literature, removing the additional layer of interpretation present when, for example, surveying ICTD researchers.

The present study's sample would comprise of two parts: one sub-sample of literature from the Global North and another sub-sample of literature from the Global South. Each sub-sample would contain an appropriate number of ICTD papers[3]. These samples would be studied comparatively to determine whether there are *meaningful trends in the occurrence of development theories* therein. To draw such broader insights, the content of each ICTD paper in the sample would need to be analysed in a structured manner to determine whether development theories occur in a paper and if so, how they occur in the said paper. In qualitative research, this widely-used process is referred to as "content analysis" (Berg, 2004:265; Hsieh and Shannon, 2005:1277)[4]. Content analysis allows researchers to condense the information contained in text data and make it "systematically comparable", through the application of "[a]n objective coding scheme" (Berg, 2004:265). Hsieh and Shannon (2005:1278) define qualitative content analysis as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns". The key objective of content analysis is therefore to increase the "trustworthiness or validity of [a] study" by imposing a rigorous structure on the process whereby the researcher interprets "the characteristics of language as communication with attention to the content or contextual meaning of the text" (Hsieh and Shannon, 2005:1278-1286).

Hsieh and Shannon (2005:1285), drawing on Kaid (1989), explain the general flow of qualitative content analysis as follows:

> All approaches to qualitative content analysis require a similar analytical process of seven classic steps, including formulating the research questions to be answered, selecting the sample to be analysed, defining the categories to be applied, outlining the coding process and the coder training, implementing the coding process,

[3]The sample composition and selection strategy is discussed in Section 3.3.

[4]Whilst the term 'content analysis' can refer to both quantitative and qualitative methodologies, depending on its specific form and application, it is used in this context in specific reference to its qualitative flavours. Whether content analysis is more effective in its quantitative or qualitative form is the subject of some debate; Berg (2004:268) offers an introductory overview in his discussion on the subject. Ultimately, he opts to advocate for a combinatorial approach, stating that his "descriptions of quantitative analysis show how researchers can create a series of tally sheets to determine specific frequencies of relevant categories", whereas his deliberations on qualitative forms of content analysis "show how researchers can examine ideological mind-sets, themes, topics, symbols, and similar phenomena, while grounding such examinations to the data" (Berg, 2004:269). This echoes Smith's (1975:218) contention, as cited by Berg (2004:268), that "qualitative analysis deals with the forms and antecedent-consequent patterns of form, while quantitative analysis deals with duration and frequency of form". These reflections would be taken into consideration in the selection and execution of a specific content analysis methodology.

determining trustworthiness, and analysing the results of the coding process.

They distinguish between three forms of qualitative content analysis: "conventional", "directed" and "summative" (Hsieh and Shannon, 2005:1277). Each is now discussed in turn.

3.2.2 Three forms of qualitative content analysis

Conventional content analysis is used to describe a phenomenon by delineating and categorising its particulars. It is suitable "when existing theory or research literature on a phenomenon is limited" (Hsieh and Shannon, 2005:1279). The distinguishing feature of this type of content analysis is the fact that categories are constructed completely inductively, that is: "[r]esearchers avoid using preconceived categories [...] instead allowing the categories and names for categories to flow from the data" (Hsieh and Shannon, 2005:1279). The process starts with the researcher immersing herself in the text through repeated reading. She would highlight the exact words or phrases that "appear to capture key thoughts or concepts", adding these to a list of codes (Hsieh and Shannon, 2005:1279). Following this initial code generation, the researcher "approaches the text by making notes of his or her first impressions, thoughts, and initial analysis", in order to clarify and expand the set of labels, so that gradually, labels that capture multiple thoughts start to emerge (Hsieh and Shannon, 2005:1279). Codes are then categorised based on their relation to one another and the resulting categories can be restructured, made hierarchical and simplified where appropriate Having established categories and codes, "definitions for each category, subcategory, and code are developed" (Hsieh and Shannon, 2005:1279). Finally, the final set of categories are reported in the research's findings, augmented with examples that epitomise and clarify the category from the text data. The benefit of such a conventional qualitative content analysis is that it allows the researcher to "[gain] direct information from study participants without imposing preconceived categories or theoretical perspectives" (Hsieh and Shannon, 2005:1279-1280). However, researchers require a "complete understanding of the context" to be able to develop a comprehensive set of categories capturing the nuance of the context; this requires deep analysis (Hsieh and Shannon, 2005:1280).

Directed content analysis is used to "validate or extend conceptually" existing theory about a phenomenon (Hsieh and Shannon, 2005:1281). Its distinguishing feature is that the initial set of codes is informed by or drawn up based on existing theory. The process of analysis begins with the identification of "key concepts or variables" in existing research. These are used as "initial coding categories" — and "operational definitions for each category are determined using the theory" . Within directed content analysis, there are two possible strategies for coding: on the one hand, the researcher can

start by reading the text data to search for any instances of the more abstract phenomenon and seeing whether these can be coded using the preset codes. If instances of the phenomenon are encountered that cannot be coded with the initial codes, then new codes are added. On the other hand, the researcher may choose to immediately start coding the text data using the preset codes (Hsieh and Shannon, 2005:1282). In this case, any instances of the phenomenon that cannot be classified using the existing codes is set aside for later analysis, to see if they fit into the existing coding scheme as a subcategory, or whether they warrant the creation of a new category or subcategory (Hsieh and Shannon, 2005:1282). The goal of the research determines which strategy is more appropriate: if it is to identify all possible instances of the phenomenon, then the first strategy may be more appropriate. Otherwise, "if the researcher feels confident that initial coding will not bias the identification of relevant text, coding can begin immediately" (Hsieh and Shannon, 2005:1282). Hsieh and Shannon (2005:1283) note that "[n]ewly identified categories either offer a contradictory view of the phenomenon or might further refine, extend, and enrich the theory." The main benefit of directed content analysis is therefore that it can support or extend existing theories. However, it is complicated by the facts that using existing theory as starting point means that "researchers approach the data with an informed but, nonetheless, strong bias", and that "an overemphasis on the theory can blind researchers to contextual aspects of the phenomenon" (Hsieh and Shannon, 2005:1283). These challenges can, however, be mitigated if the researchers details her assumptions and process as explicitly as possible, thereby leaving an "audit trail" (Hsieh and Shannon, 2005:1283).

Summative content analysis is focused on the meaning of terms; it is used not "not to infer meaning but, rather, to explore usage" (Hsieh and Shannon, 2005:1283). Whilst being primarily focused on how words are used in text data (referred to as "manifest analysis"), summative content analysis nevertheless includes an element of "latent analysis", where "the focus is on discovering underlying meanings of the words or the content" (Hsieh and Shannon, 2005:1283-1284)[5]. The initial step in summative content analysis is to generate "frequency counts" for each of the terms being studied, potentially coupled with several synonyms or related terms (Hsieh and Shannon, 2005:1285). These frequency counts are augmented with information about the source of the term (e.g. its author). This combined data allows the researcher to link word usage patterns (e.g. which words were most used) with their context (e.g. the characteristics of their author) to perform comparisons and thereby draw conclusions. The strength of such an approach is that it represents "an unobtrusive and nonreactive way to study the phenomenon of interest" (Babbie, 1992, as cited in Hsieh and Shannon, 2005:1285). However, Hsieh and Shan-

[5]The distinction between and issues surrounding manifest analysis and latent analysis are discussed in Subsection 3.2.3.

Type of Content Analysis	*Study Starts With*	*Timing of Defining Codes or Keywords*	*Source of Codes or Keywords*
Conventional content analysis	Observation	Codes are defined during data analysis	Codes are derived from data
Directed content analysis	Theory	Codes are defined before and during data analysis	Codes are derived from theory or relevant research findings
Summative content analysis	Keywords	Keywords are identified before and during data analysis	Keywords are derived from interest of researchers or review of literature

Table 3.1: Summary of the three forms of qualitative content analysis in Hsieh and Shannon (2005:780).

non (2005:1285) warn that the "findings from this approach are limited by their inattention to the broader meanings present in the data". The trustworthiness of summative content analysis, then, rests on a study's credibility and relies on the researcher showing that the "textual evidence is consistent with [her] interpretation" (Weber, 1990, as cited in Hsieh and Shannon, 2005:1285).

3.2.3 Further issues in qualitative content analysis

Prior to deciding which one of the preceding three forms of qualitative content analysis would be most appropriate in the context of the present study, a number of issues highlighted by Berg (2004), Hsieh and Shannon (2005), and Creswell (2013) required further attention. These included (i) the issue of manifest versus latent content analysis, (ii) reliability, validity and generalisability in qualitative research, and (iii) content analysis software.

Firstly, as has been touched on in the description of its summative form, content analysis can be conducted in both a manifest and latent manner. Hsieh and Shannon (2005:1283-1284) describe the former as referring to "analyzing for the appearance of a particular word or content in textual material", whereas the latter refers to "the process of interpretation of content", wherein "the focus is on discovering underlying meanings of the words or the content". Put differently, manifest analysis focuses on "those elements that are physically present and countable" (the text data's "surface structure"), whereas latent analysis is "an interpretative reading of the symbolism underlying the physical data" (focusing on the text data's "deep structural meaning") (Berg, 2004:269). With manifest analysis, the researcher can leave a clear audit trail of her interpretative process when she corroborates claims about the data with verbatim extracts in support of those claims. The implied danger in latent analysis is that this process of interpretation may become opaque, making it difficult for readers to understand the researcher's choices and arguments. Berg (2004:270) states, however, that "although there are some dangers in directly inferring

from latent symbolism, it is nonetheless possible to use it". To accomplish this, "researchers must first incorporate independent corroborative techniques" and they should "offer detailed excerpts from relevant statements (messages) that serve to document the researchers' interpretations" (Berg, 2004:270).

Secondly, in Subsection 3.2.1's introduction of content analysis, it was stated that a the key objective of content analysis is to increase the "trustworthiness or validity of [a] study" (Hsieh and Shannon, 2005:1278-1286). This warrants further elaboration. Creswell (2013:201) argues that the meaning of the concepts "reliability", "validity", and "generalizability" should not be understood in the same manner as in quantitative research. Rather, paraphrasing **?**, he explains that

> Qualitative *validity* means that the researcher checks for the accuracy of the findings by employing certain procedures, while qualitative *reliability* indicates that the researcher's approach is consistent across different researchers and different projects. [...] Qualitative *generalization* is a term that is used in a limited way in qualitative research, since the intent of this form of inquiry is not to generalize findings to individuals, sites, or places outside of those under study (Creswell, 2013:201-204).

He details a number of strategies for promoting reliability and validity, and discusses the prospects for qualitative generalisability. These are not discussed in detail here; for the full set of strategies, see Creswell (2013:201-204).

Lastly, on a practical point, both Berg (2004) and Creswell (2013) discuss the advantages of completing coding with the support of a digital software package and recommend its use[6]. Creswell (2013:194-195) lists MAXqda, ATLAS.ti, QSR NVivo, and HyperRESEARCH as popular packages.

3.2.4 Conclusion: directed qualitative content analysis as suitable design

The previous sections provided a general overview of qualitative content analysis, examined its three forms and their applications, and developed an awareness of further key issues around content analysis. Against this background, it was now possible to consider which of the three forms of content analysis are most appropriate for the present study's requirements. This could be done based on Hsieh and Shannon's (2005:780) simple framework to distinguish between the three forms, illustrated in Table 3.1.

The first point of consideration was the study's starting point. It was immediately clear that summative content analysis' applicability to the present study was limited, because it studies the meaning of terms based on their verbatim occurrence in the text. As has already been pointed out, there has been

[6]For the full discussions, please see Berg (2004:289-294) and Creswell (2013:194-195).

little explicit engagement with the meaning of development in ICTD literature, and the expectation is therefore that few studies will explicitly reference the concept of development or specific development theories. Rather, their adoption of specific development theories may be revealed through the objectives they identify as desirable, which aspects of their impact are described in a positive light, and so on.

The question was therefore whether it would be more appropriate to start with observation or theory. As discussed, the purpose of the present study is to comparatively examine the occurrence of development theories in samples of ICTD literature from the Global North and Global South. This entails analysing *if* and *how* these theories occur in the given samples, and to draw conclusions based on such analyses. The phenomenon in focus is therefore *the manner in which ICTD researchers from the Global North and Global South engage with development theories*. In terms of existing theory describing this phenomenon, Chapter 1's problem statement and Chapter 2's literature review has indicated that (i) ICTD studies implicitly subscribe to a specific meaning/theory of development, even if their authors do not articulate this explicitly; (ii) diversity in the way in which development is understood in ICTD literature is to be expected, especially amongst geographically-diverse researchers; (iii) there are a range of development theories that one might expect to encounter in engagement with the concept of development (Section 2.2); and (iv) there has been little explicit engagement with development theories in ICTD literature up to the present. While the above represented a starting point in terms of existing theory on the phenomenon in question, it also indicated that there is a lack of understanding about the occurrence of development theories in ICTD literature. This lent support to the applicability of using observation as starting point. Nevertheless, existing development theories, as they occur in broader discourses outside ICTD, are clearly delineated and can be identified using the frameworks discussed in Section 2.2. Therefore, while it is the case that there is little comprehensive theory on the occurrence of development theories in ICTD literature specifically, the aforementioned frameworks represented a robust foundation on which to examine the phenomenon in question, using theory from wider development literature as starting point.

The second and third points of consideration were the timing of defining codes or keywords and the source of codes or keywords, respectively. Given the above discussion's conclusion that there was a sufficient foundation of existing theory to use as starting point for the content analysis that would follow, codes could be distilled and operationalised from existing theory, before the analysis. Specifically, one or more of the frameworks identified in Section 2.2 could be used as a source of codes. Whilst it could be the case that that new categories of development engagement would emerge, that are not discussed by the framework(s) selected from Section 2.2, the present study's scope dictated that these would not be analysed in depth. Rather, in accordance with

the second coding strategy in directed content analysis (discussed in Subsection 3.2.2), such instances would be noted, and if significant trends would emerge in this regard, further analysis thereof would be discussed as a future prospect (Section 5.4).

From the above discussion, it became clear that the characteristics of *directed content analysis* made it the most relevant form of content analysis in the context of the present study. The structure of the remainder of the study would therefore be dictated by the general flow of qualitative content analysis described in Subsection 3.2.1, and the specific guidelines for directed content analysis described in Subsection 3.2.2. These could be summarised in list form as follows (Hsieh and Shannon, 2005:1285):

1. "[F]ormulating the research questions to be answered" (completed in Chapter 1);
2. "[S]electing the sample to be analyzed" (to be described in Section 3.3);
3. "[D]efining the categories to be applied" (to be described in Section 3.4);
4. "[O]utlining the coding process" (to be described in Section 3.5);
5. "[I]mplementing the coding process";
6. "[D]etermining trustworthiness" [*inter alia* with the use of Creswell's (2009:190-193) strategies for ensuring reliability and validity];
7. "[A]nalyzing the results of the coding process" (to be described in Chapter 4).

What remained to be done, was to address the concerns identified in the previous section. With regards to the issue of manifest versus latent analysis, a large part of the content analysis that would follow would foreseeably be conducted in a latent manner, given the expected lack of explicit engagement with development in ICTD literature. Where claims regarding development in a given literature sample would be identified, they would be corroborated with the claims of the broader development theories (as explicated in Section 2.2's frameworks), and the passages in question would clearly be highlighted. In this manner, it was the researcher's belief that the risk of the analysis becoming opaque would be sufficiently mitigated. With regards to the issue of reliability, validity and generalisability in qualitative research, the researcher took heed of the strategies discussed by Creswell (2009) and would implement these during the analysis as far as possible. Finally, with regards to the choice of software package, the researcher opted to use ATLAS.ti as software package for the coding process, on the basis of his previous experience with and proficiency in using the software.

3.3 Sample selection

As is evident, the examination of ICTD literature is integral to the present study's research question. In order to effectively accomplish this, the following prerequisites would have to be fulfilled: (i) a proper general pool of ICTD literature would have to be selected, and (ii) suitable samples of both groups would would to be selected from the general pool of ICTD literature. These are addressed in turn below.

3.3.1 Selecting a proper general pool of ICTD literature

For the purposes of the present study, a *proper general pool of ICTD literature* was one that contains papers of a high quality from a suitable time period, with adequate representation of both literature from the Global North and the Global South. An oft-used starting point (Gomez *et al.*, 2012; Dearden, 2013; Johnston *et al.*, 2015) for selecting such a sample is to turn to the field's specialist journals[7]. In a 2010 survey, Heeks (2010*c*:72) measures the impact of various ICTD journals to draw up a "Journal Impact Ranking Table". According to his analysis, the impact of the top three journals — Information Technology & International Development (ITID), the Electronic Journal of Information Systems in Developing Countries (EJISDC), and Information Technology for Development (ITD) — differs significantly from the remainder of journals. In his words,

> [w]hatever the specific basis for calculation, [these] three journals [...] have a much greater impact than any of the other journals. Indeed, their combined impact is about twice that of all other ICT4D specialist journals combined (Heeks, 2010*c*:73).

Using journal impact as heuristic for judging the quality of literature, the argument could be made that using these three journals as source of ICTD literature means that the papers selected would be of a high quality relative to the rest of the field's literature. Therefore, they were taken to be an appropriate source from which to draw the general pool of literature, from which the two samples could be selected.

With regards to defining an appropriate time frame from which to draw literature, it is useful to recall the discussion on ICTD 1.0 versus ICTD 2.0,

[7] A viable alternative is to turn to the field's main conferences. However, the author could not find a peer-reviewed conference ranking table — only a blog post (Heeks, 2010*b*). Furthermore, as Gomez *et al.* (2012:7) note in a comprehensive review of ICTD literature, "[t]here appears to be some overlap between conferences and journals, with conference papers frequently becoming journal contributions, either as part of special issues that emerge from the conference or as stand-alone papers that are published, presumably after further refinement and work." On the basis hereof, the present study regarded journals as a suitable source from which to draw ICTD literature.

from Section 3.1. To lessen the potential influence of temporal trends in the field, it was decided to draw the sample of ICTD papers from ICTD 2.0 only. While Heeks (2009:28) does not provide a definite starting point for ICTD 2.0, he mentions the mid/late 2000s as the end of ICTD 1.0 and the start of the transition to ICTD 2.0. For the purposes of this study, a suitable time frame was therefore taken to be the period 2008 to 2015.

Having identified a proper source of ICTD literature — papers published in ITID, EJISDC and ITD between 2008 and 2015 — it was important to ensure that both literature from the Global North and literature from the Global South were adequately represented in this pool. This was pertinent in light of warnings such as Gitau *et al.*'s (2010:1), that "the history of mainstream journal publications has been dominated by developed countries leaving many emerging or developing nations with little representation in published academic works". Examining the representation of the Global North and the Global South was necessarily tied to how the distinction between these two groups is operationalised. Ideally, the classification of an ICTD paper would take into account the authors' academic background — i.e. in which context they completed their undergraduate and graduate studies — to obtain a better idea of the context in which their thinking may have been shaped. Unfortunately, given practical constraints and the lack of such personal information, gaining such an understanding is not possible without surveying ICTD authors themselves. Seeing that this was infeasible, a plausible alternative for classifying literature as *from the Global North* or *from the Global South* was to determine whether the authors' institutions are based in Global North or Global South countries. Literature *from the Global North* would include papers of which all the authors are based at institutions in Global North countries, and vice versa for literature *from the Global South*. Where a paper was co-authored by a combination of scholars based in the Global North and scholars based in the Global South, such a paper would be regarded as being of a 'mixed' origin[8]. With these operational definitions in mind, it was possible to examine the representation of papers from the Global North and papers from the Global South in the above-mentioned general pool of ICTD literature.

To examine Global North and Global South representation in ITID, EJISDC and ITD, the author created an index of all papers published in these journals, together with a note of the countries in which the authors' institutions were based, in the period 2008 to 2015[9]. On the basis of the countries in which the authors' institutions were based, each paper was classified as being either literature from the Global North, literature from the Global South, or literature

[8]Whilst there is scope for future work to further investigate literature from mixed origins, for the purposes of the present study, only literature from immediately-evident Global North and Global South origins would be examined. This would, however, be done with a sober awareness of the assumptions inherent to and limitations of classifying papers based solely on their authors' listed affiliations.

[9]The full index and its underlying assumptions are included in Appendix B, Section B.1.

Journal	Papers from Global North	Papers from Global South	Papers from mixed origin	Unclassified papers	Total papers
Information Technologies & International Development (ITID)	80	26	26	1	133
The Electronic Journal of Information Systems in Developing Countries (EJISDC)	94	134	48	3	279
Information Technology for Development (ITD)	95	35	35	0	165
	269	**195**	**109**	**4**	**577**

Table 3.2: Breakdown of papers published in the top three ICTD journals from 2008 tot 2015, by origin.

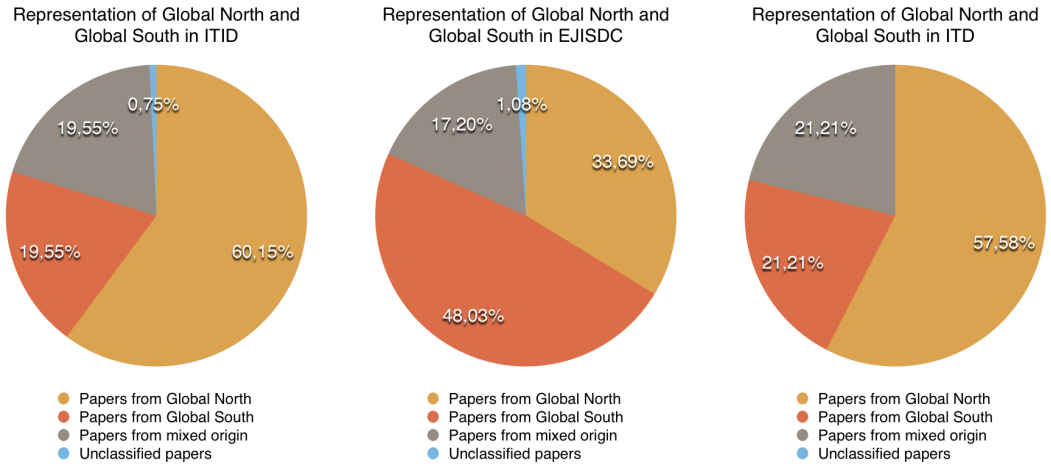

Figure 3.1: Representation of Global North and Global South in each of the top three ICTD journals, from 2008 tot 2015.

from a mixed origin. In isolated cases, authors' origins were neither indicated in the paper nor could it be discerned from a web search[10]. To avoid making unsubstantiated assumptions in these cases, papers with such authors were categorised as "unclassified". The results of this analysis are summarised in Table 3.2 and Figure 3.1. The general pool of literature consists of 577 papers, nearly half of which originates from EJISDC; ITID and ITD jointly account for the remaining half. As is evident from Figure 3.1, both ITID and ITD are dominated by literature from the Global North, with such papers accounting for around three fifths of each journal's output. Furthermore, literature from the Global South and of mixed origin (i.e. collaborations between scholars from the Global North and Global South) each account for a fifth of either journal's output. It is only in EJISDC that the picture looks substantially different: nearly half of its output stems from the Global South whereas only a third stems from the Global North, and less than a fifth stems from a mixed origin.

[10]For example, in Shapiro and Yates (2011:1), the first author's affiliation is listed simply as "Information Communications Technology Consultant".

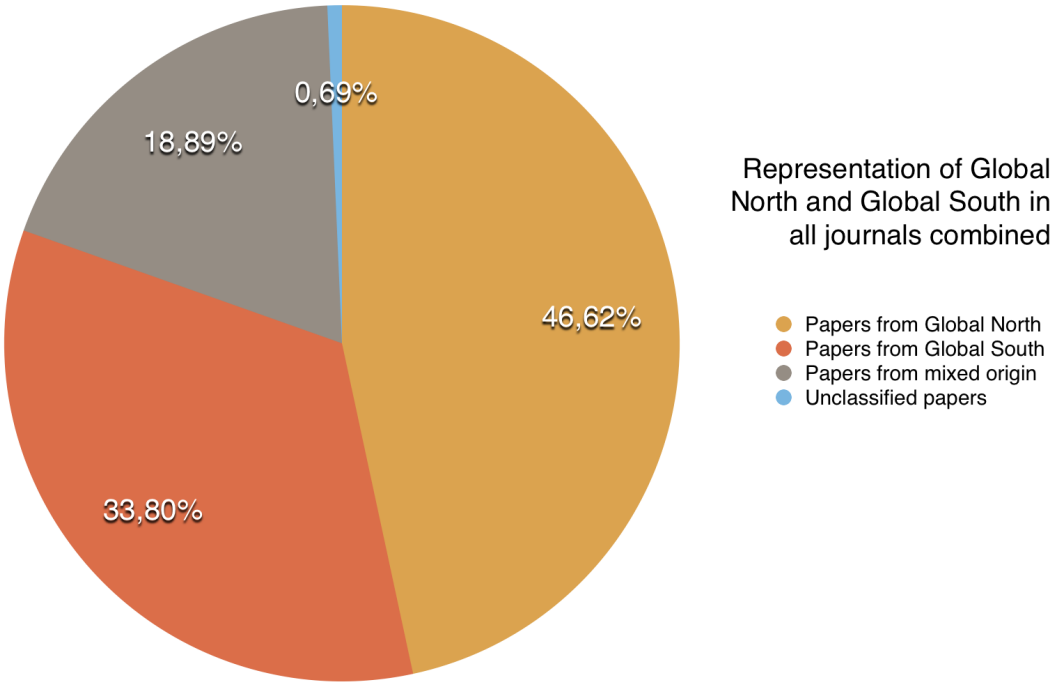

Figure 3.2: Overall proportions of papers from the Global North and Global South across the top three ICTD journals, from 2008 tot 2015.

The imbalance between literature from the Global North and literature from the Global South in the individual journals was somewhat palliated when the tallies from each journal were aggregated into a summative whole. This is primarily attributable to the balancing effect of EJISDC's large Global South output in absolute number of papers, compared to the other two journals. The overall picture is illustrated in Figure 3.2. Holistically, then, literature from the Global North accounts for slightly less than half of output across the top three journals, whereas literature from the Global South constitutes a third. Less than a fifth of the output stems from mixed origins. Although there was still a clear imbalance in literature stemming purely from the Global North and literature stemming purely from the Global South, for the present study's purposes, the Global South's stake of the output were accepted to be large enough to constitute adequate representation in the general pool of literature.

Through delineating sources of high-quality ICTD literature (ITID, EJISDC, and ITD), identifying a suitable time frame (2008 to 2015) and verifying that both the Global North and the Global South are adequately represented in these sources and time frame, the present section constructed a proper general pool of ICTD literature. On the basis hereof, it was possible to proceed to selecting suitable samples for the analysis that would follow.

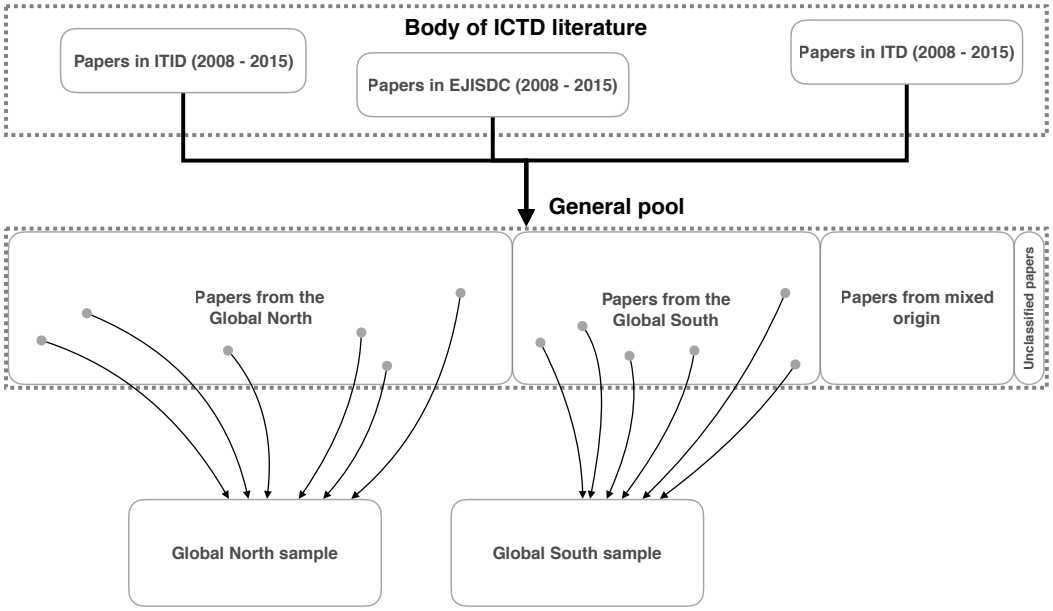

Figure 3.3: High-level conceptual representation of the sampling strategy.

3.3.2 Selecting suitable samples from the Global North and the Global South

Having selected a general pool of ICTD literature, the focus shifted to selecting suitable samples of literature from the Global North and the Global South from this pool. The high-level sampling strategy to the present point is illustrated conceptually in Figure 3.3; what is addressed in this section, is the specific selection of Global North and Global South samples from their respective subsets of the general pool.

In general terms, the purpose of sampling is "to make inferences about some larger population from a smaller one" (Berg, 2004:34), because "it is rarely practical, efficient or ethical to study whole populations" (Marshall, 1996:522). Berg (2004:34-35) differentiates between two broad groups of sampling strategies: probability strategies and nonprobability strategies. The former, which is primarily used in quantitative research, builds on probability theory to define representative "subgroups of some larger population"; it draws on statistical techniques to "make various inferential hypothesis tests" (Berg, 2004:34). By contrast, in the latter set of approaches, "efforts are undertaken (1) to create a kind of quasi-random sample and (2) to have a clear idea about what larger groups the sample may reflect" (Berg, 2004:34).

Berg (2004:35) names three probability sampling strategies: *simple random sampling*, *systematic random sampling* and *stratified random sampling*. In the first strategy, a subset is drawn from the larger population "in such a manner that every unit in that population has precisely the same chance (probability) of being included in the sample" (Berg, 2004:35). In the second, a unit is

selected from the broader population (arranged into a list of units, starting with a random unit) at a set interval, e.g. every tenth unit. The size of the interval is determined by the planned size of the sample relative to the larger population. Finally, in the third strategy, "the population is divided into subgroups (strata), and independent samples of each stratum are selected"; the combination of these sub-samples constitutes the final sample (Berg, 2004:35). In this way, the researcher can ensure that specific subgroups are adequately represented in the final sample. This does, however, require relevant meta-information about each unit in the population, such that it becomes possible to divide the population into the said subgroups.

In the category of nonprobability strategies, Berg (2004:35) discusses four sampling strategies. Firstly, *convenience sampling* entails constituting a sample from subjects "who are close at hand or easily accessible" (Berg, 2004:35-36). It is useful for "obtaining preliminary information about some research question quickly and inexpensively", but carries the risk of seriously biased results if it is approached without careful deliberation. Secondly, *purposive sampling* relies on researchers drawing on their "special knowledge or expertise about some group" to construct a sample in which "specific individuals or persons displaying certain attributes" are included (Berg, 2004:36). Thirdly, *snowball sampling* involves identifying an initial set of subjects with relevant attributes, who are then asked to refer researchers to similar subjects. In this way, the sample "snowballs" until it eventually reaches the size desired by the researcher (Berg, 2004:36). Lastly, *quota sampling* entails composing a sample using quotas for subjects with specific characteristics. These quotas are determined on the basis of the known occurrence of those characteristics in the broader population; for example, in a target sample size of 100, a researcher may choose to include 40 females and 60 males, if census data about the broader population supports this division.

With the above distinction between probability and nonprobability sampling in mind and turning to the choice of specific sampling strategy, the following characteristics of the present study would have to be taken into account:

1. The primary source of data for the present study was ICTD's body of literature, as operationalised through the selection of a general pool in Subsection 3.3.1. Whilst this literature was taken to be a valid proxy for the perspectives of the subjects they represent — their authors — there is a distinct difference between studying subjects indirectly through literature, and studying subjects directly through interviews, surveys and so on. In the case of the former, the data is static inasmuch as the researcher cannot prod subjects with specific questions, as can be done in the case of the latter. Rather, the researcher must glean what data is available from the textual content of the selected literature in order to gain insight and understand trends.

2. The large scale of the data source meant that it would likely be infeasible to gain the preliminary understanding of each paper in the general pool of literature, necessary in strategies such as purposive sampling.

3. Nevertheless, as was posited at the outset of this study — and further confirmed by the literature review — there is a lack of explicit engagement with the concept of development generally, and development theories specifically, in ICTD literature. In many papers, therefore, there would likely be little verbatim text based on which the occurrence of a development theory could be ascertained. This would not present a problem *per se*, as long as the arguments and outcomes advanced in a particular paper still carried enough discernible implicit meaning — i.e. there was enough "written between the lines" — for latent content analysis to be feasible. Whilst the distinction between manifest and latent analysis has already been explored in Subsection 3.2.3 and whilst the likely need for latent analysis in the present study's analyses was already noted in Subsection 3.2.4, it could conceivably be the case that not even latent analysis would be effective to identify the occurrence of development theories in some papers. It could be the case that these papers, addressing specialised or highly-focused ICTD topics, would contain no discernible broader engagement with development at all. While this would represents an interesting trend in and of itself, it was already known to be the case, and it was not very useful in addressing the study's broader research question. The research question did not preclude such a conclusion, but it was more interested in how ICTD scholars engage with development *when* they engage. The inclusion of 'non-engaging' papers in the Global North and Global South samples — expected to be highly likely — would prevent the present study from adequate discerning trends in the occurrence of development theories and therefore, from answering its broader research question. Therefore, there was a need to set aside papers without any discernible engagement with development: they would, of course, have to be factored into the final findings, but to afford greater attention to the analysis of actual engagement with development, they would have to be removed from the sample.

The last point above led the researcher to appreciate the necessity of a nonprobability sampling strategy. Specifically, *purposive sampling* seemed to be the most appropriate to address the need articulated above. However, given the scale of the data, the researcher believed that a pure purposive sampling strategy would be impractical and ineffective. Rather, such a strategy could usefully be combined with *systematic random sampling* to shrink the size of the Global North and Global South subsets that need to be examined to compose the final samples[11]. Global North and Global South papers would be randomly

[11] As noted at the start of this section, this refers specifically to the strategy to select the

	Papers in general pool	Papers in sample	Papers in sample relative to general pool
Literature from the Global North	269	27	10,04%
Literature from the Global South	195	20	10,26%
Combined	**464**	**47**	**10,13%**

Table 3.3: Planned sample size relative to the size of the general pool.

selected from their respective subsets of the general pool, whereafter they would undergo a filtering process to ensure that they were appropriate for further analysis. In this way, the key strength of purposive sampling — to construct a sample in which "specific individuals or persons displaying certain attributes" are included, in this case: papers with discernible engagement with development (Berg, 2004:36) — was retained, but the impracticality thereof in the context of the large data source was expected to be mitigated[12].

Turning to the question of sample size, the most pertinent concern was that the number of papers in the Global North and Global South samples would have to be large enough to ensure that any trends that could emerge from the analysis could be said to be meaningful. At the same time, the time investment required to conduct rigorous content analysis of each paper imposed a practical constraint on the sample size. A further consideration in this regard was the ratio of the combined sample to the general pool of literature identified in the previous section and specifically, the ratio of the Global North and Global South samples relative to their representation within the general pool of literature.

With these concerns in mind, it was proposed that the size of both the Global North and Global South samples should be at least a tenth of their representation in the general pool of literature. Given the respective sizes of the Global North (n=269) and Global South's (n=195) segments of the general pool, a crude estimation of the former's sample size was 26,9 papers, whereas the latter would amount to 19,5 papers. For simplicity's sake, the Global North sample size was rounded to 27 papers, whereas the Global South sample was rounded to 20 papers. The resulting, combined sample of 47 papers represented 10,13 per cent of the combined general pool of Global North and Global South literature (n=464)[13]. The final Global North sample repre-

Global North and Global South samples from their respective subsets of the general pool. It is, of course, the case that the very process whereby the general pool was constituted — i.e. selecting papers published in ITID, EJISDC, and ITD between 2008 and 2015 — already constituted a form of purposive sampling from the body of ICTD literature.

[12]The assumption underlying this expected efficiency gain was, of course, that there were many more papers in which development could be discerned in the general pool than the 27 to be included in the eventual Global North sample, and the 20 to be used for the Global South sample.

[13]Note that the combined general pool of Global North and Global South literature is in itself a subset of the general pool as a whole, which additionally includes literature from a mixed origin and unclassified literature (as indicated in Table 3.2).

sented 10,04 per cent of the broader Global North segment of the general pool, whereas the Global South sample represented 10,26 per cent of the corresponding segment of the general pool. This is summarised in Table 3.3. The sizes of the combined sample and the respective Global North and Global South samples, were assumed to be large enough relative to their counterparts in the general pool of literature for insights derived from the analysis to be regarded as meaningful.

Two additional qualifications regarding sample size were in order:

1. **The sizes of the two samples could be expanded dynamically.** Marshall (1996:523) notes that

   > [a]n appropriate sample size for a qualitative study is one that adequately answers the research question. [...] In practice, the number of required subjects usually becomes obvious as the study progresses, as new categories, themes or explanations stop emerging from the data (data saturation). Clearly this requires a flexible research design and an iterative, cyclical approach to sampling, data collection, analysis and interpretation.

   The author took heed of this warning; although it was posited as an assumption that the sample sizes discussed above would be large enough for the insights derived from the analysis to be regarded as meaningful, particular attention would be paid to data saturation during the analysis. Should it have become clear at the conclusion of the analysis that the sample would have to be expanded to attain a richer understanding of the occurrence of development theories in the literature, the sample would be adjusted accordingly.

2. **Papers without any discernible engagement with development would be set aside and would not count towards the size of the samples.** As explained in the preceding discussions, papers without discernible engagement with development would effectively be removed from the two samples. The number of papers removed from each sample would be recorded carefully, so as to be able to factor this into the findings discussed after the process of analysis. This implied, of course, that the actual sample size — i.e. the number of papers examined by the researcher — would likely be much larger than the select group of 47 papers to be examined in depth.

Having finalised the choices of sampling strategies and sample size, the final sampling process followed is illustrated in Figure 3.4[14]. Three aspects of this

[14]Readers unfamiliar with the conventions of UML activity diagrams, according to which Figure 3.4 is drawn, may wish to read Wikipedia's summary at `https://en.wikipedia.org/wiki/Activity_diagram`.

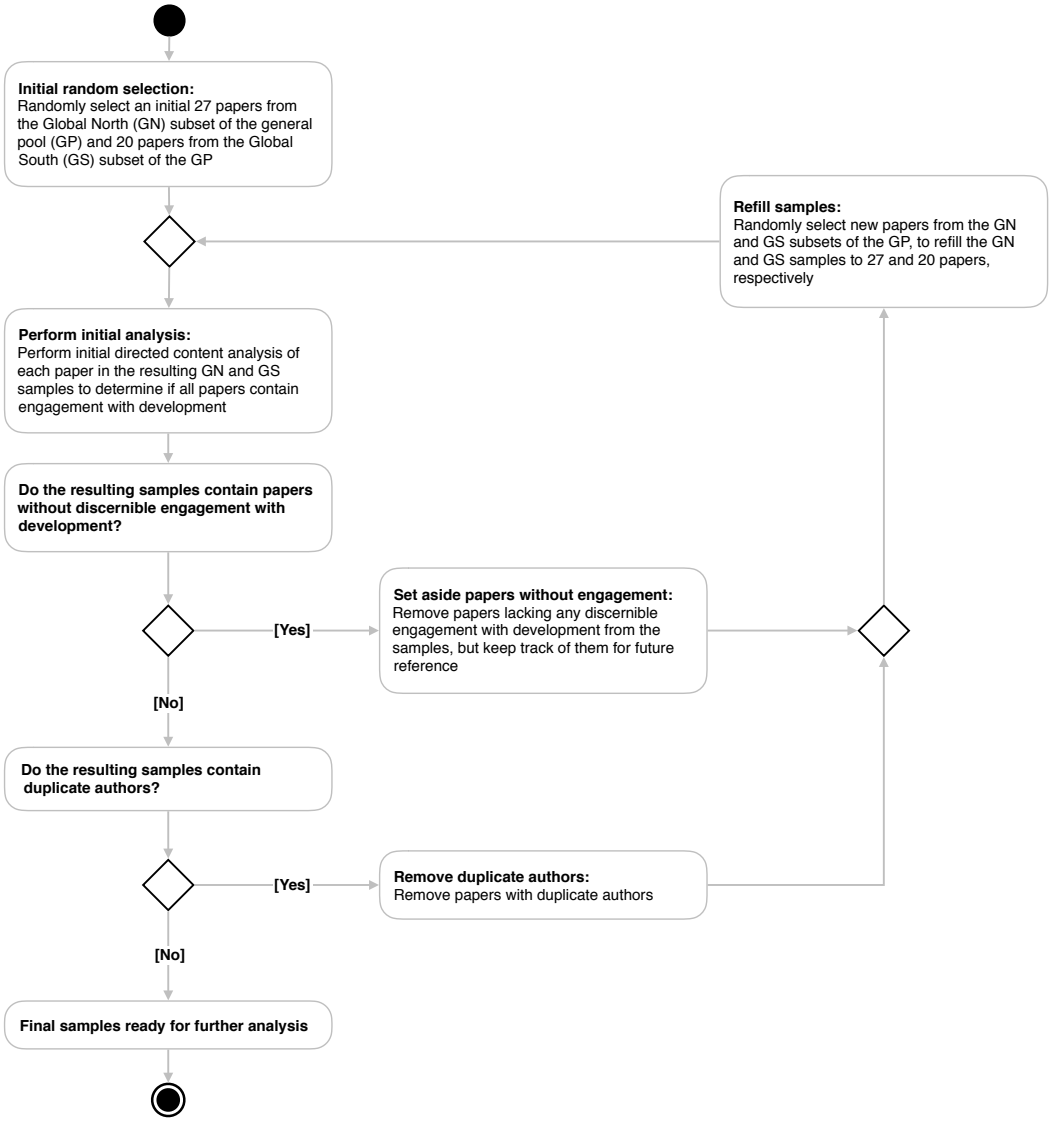

Figure 3.4: UML activity diagram of the process to select the final Global North and Global South samples.

process must be noted in particular:

1. An electronic random number generator would be used to guide the random selection of papers, by generating random numbers in the ranges of the Global North and Global South subsets of the general pool (the indexes of which are included in Section B.2 of Appendix B). The specific tool to be used was the random number generator on the website RANDOM.ORG — "a true random number service that generates randomness

via atmospheric noise" (Haahr, 1998)[15,16].

2. The initial analysis of papers — where they were to be screened for inclusion in the samples — would be based on a fast, but thorough analysis of the introductory and concluding sections of a paper, using the categories defined in Section 3.4 and the details provided in Section 3.5.

3. It would be unhelpful for addressing the research question to include multiple papers by the same author(s) in the sample. The effect thereof would be that these authors' patterns of engagement would be amplified within the broader findings. Furthermore, given the inherent size limits of the samples, this would exclude other subjects from the analysis. Therefore, a filtering mechanism was included in the sampling process to ensure that each author would be represented in only one paper in the final samples.

3.4 Definition of initial categories based on framework for the identification of development theories

With the sampling process finalised, the next step in directed content analysis was to define the initial categories that would form the basis of the ensuing analysis. As previous explained, the frameworks identified in Section 2.2 would be employed for this purpose. While it would be possible to combine multiple frameworks and to define initial categories based on the resulting amalgamation, this would introduce additional complexity (e.g. resolving conflicts between frameworks) and would raise questions about the internal validity of the reference frame thereby constituted. A simpler approach was to select a single framework to use as self-contained frame of reference. The latter approach would be adopted for the present study's purposes. This required a brief evaluation of the three frameworks discussed in Section 2.2. The logical criteria informing this evaluation were (i) how clearly a framework distinguishes between various development theories, and (ii) how well it describes the competing theories' precise claims. In addition, clarity and simplicity would also heighten the framework's ease of use for the purposes of analysis.

Thomas's (2000) framework was perhaps the simplest of the three, offering a high-level overview of competing theories of development. Its distinction

[15]For a detailed discussion of the distinction between "True Random Number Generators" and "Pseudo-Random Number Generators", see Haahr (1998).

[16]Random numbers would be generated using the web address and query string `https://www.random.org/integer-sets/?sets=1&num=20&min=1&max=195&commas=on&sort=on&order=index&format=plain&rnd=new`, where **num=20** would be replaced by the desired number of random numbers and **max=195** would be set to 269 and 195 for the Global North and Global South subsets, respectively.

between the groups of theories it identifies was clear, but it was not the most comprehensive (describing only six theories) or detailed (lacking detailed discussions of the claims made by competing development theories) of the three frameworks. Similarly, Willis's (2011) did not offer enough detail about the various development theories it identifies. It offered the advantage of a good high-level summary, but its discussions of the various development theories do not elucidate their claims clearly enough. Peet and Hartwick's (2009) framework, by contrast, discusses the origin and evolution of the various development theories in great detail and clearly identifies the claims they make. It is also very comprehensive, examining a wide range of development theories. Conversely, it does not offer a high-level summary such as that provided by Thomas (2000) and Willis (2011). Nevertheless, judged according the criteria defined above, it was clear that Peet and Hartwick's (2009) framework was most useful for the purposes of the analysis that would follow.

Consequently, the initial categories for the analysis of ICTD literature would be defined in accordance with Peet and Hartwick's (2009) framework, as follows:

1. Development theories
    - 1.1. Conventional development theories
        - 1.1.1. Classical economics
        - 1.1.2. Neoclassical economics
        - 1.1.3. Keynesian economics
        - 1.1.4. Structuralist economics
        - 1.1.5. Development economics
        - 1.1.6. Neoliberal economics
        - 1.1.7. Development as modernization
    - 1.2. Nonconventional, critical development theories
        - 1.2.1. Marxist and socialist theories
        - 1.2.2. Poststructuralism
        - 1.2.3. Postcolonialism
        - 1.2.4. Postdevelopmentalism
        - 1.2.5. Feminist development theories
    - 1.3. Critical modernism
        - 1.3.1. Critical modernism

These categories would form the basis of the coding process in ATLAS.ti. Quotations in papers would be coded with either a subcategory (e.g. classical economics, Keynesian economics, etc.) or, where a quotation showed correspondence to a broader category but cannot be linked to a specific category,

one of the broader categories (e.g. conventional development theories). Having defined these categories for the analysis, the details of the coding process could now be discussed.

3.5 Details of the coding process

As implied in the description of the iterative sampling process (Section 4.1, and specifically Figure 3.4), the coding process would be conducted in two phases. In the first phase, where papers were to be scanned to ascertain whether they contain sufficient engagement with development to be included in the final samples, the objective was to get a high-level impression of the development theories that underlay an author's writing. In this phase, the introduction and conclusion of a paper would be read and coding would be attempted. Where coding could not be done on the basis of lacking explicit or implicit engagement, the remainder of the paper would be scanned in the same way. To quickly identify the areas of the text in which the author would likely engage with development and to ensure that potential engagement was not missed, ATLAS.ti's search function would be used to look for the terms "development", "growth" and "progress". For the second phase of coding, where the final Global North and Global South samples would be examined, papers would be examined in greater depth and authors' arguments, desired outcomes and policy proposals, as well as the concepts that they employ and references that they make, would be scrutinised.

In both phases of the coding process, the same decision criteria would apply for coding a quotation with one of the categories listed in the previous section. The author would draw on the background knowledge of development that he developed while studying Peet and Hartwick's (2009) framework to identify the potential occurrence of theories in a text. Where passages or sentences would seem to show correspondence to one of the theories theories in the framework, the relevant descriptions in Peet and Hartwick (2009) would be consulted to ascertain whether the identified quotations could indeed be said to correspond to the theory in question.

Three pertinent principles to be followed in the coding process must be noted. Firstly, development as modernisation would not be coded. As became apparent from the prior deliberations and specifically the observations of Heeks (2009) and Pieterse (2010), the notion that technology — in this case, modern ICTs — could improve human life, inherently implied at least

some form of conception of development as modernisation[17]. Specifically, the notion that there is a 'digital divide' between those who have access to ICTs and those who don't, something that Heeks (2009:25) describes as central to ICT4D 1.0, is a highly modernist conception. The sampling process included a filtering mechanism to select only those papers where meaningful engagement with development could be discerned, because including papers without such engagement — whilst technically still valid as objects of analysis — would have obscured otherwise interesting insights to emerge from the samples. For the same reason, it was argued that coding papers for development as modernisation — implying that those papers drawing solely on such a conception of development would be deemed as containing engagement and would therefore have to be included in the samples — would obscure otherwise interesting trends in the occurrence of other development theories, to emerge. For this reason, development as modernisation would not be explicitly coded in the papers and its code (1.1.7) would be removed from the category tree defined in the previous section. Nevertheless, the occurrence thereof would be noted informally and discussed in the findings of the investigation.

Secondly, a cursory review of the literature (done in preparation for Subsection 2.4.2) revealed that a few authors have drawn on Sen's capability approach (Sen, 1999) specifically and the UNDP's human development paradigm more broadly in engaging with development. It could therefore be anticipated that at least some papers in the final samples would employ these conceptions of development. Peet and Hartwick (2009) do not devote much attention to the capability approach; this is a limitation of the framework that is discussed in Section 5.4. However, Sen's background is in development economics and many of the ideas of the capability approach can be related to the field; for example, Wells (2016) states that

> Amartya Sen had an extensive background in development economics, social choice theory (for which he received the 1998 Nobel Prize in Economics), and philosophy before developing the Capability Approach during the 1980s. This background can be pertinent to understanding and assessing Sen's Capability Approach because of the complementarity between Sen's contributions to these different fields. Sen's most influential and comprehensive account of his Capability Approach, Development as Freedom [...] helpfully synthesizes in an accessible way many of these particular, and often quite technical, contributions.

[17]Pieterse (2010:165,170) notes, for example, that "[t]he application of information and communication technologies (ICT) in development policies — in short, information-for-development or ICT4D — follows ideas of digital divide and cyber apartheid" and that "[a]ccording to techno determinists the spread of technology equals development. This recycles conventional modernization thinking which ranges from Enlightenment positivism (and Lenin's formula of progress as 'Soviets + Electricity') to postwar modernization theory".

On the basis hereof, occurrences of the capability approach would be coded with "1.1.5. Development economics".

Thirdly, it was posited that a single paper could conceivably contain two or more, potentially contradictory, development theories. For example, a paper could include a strong focus on the empowerment of women, but conceptualise this empowerment in neoliberal terms, e.g. that minimum wages should be removed to enable more women to participate in the workforce, or that women could be empowered through lower tax rates. Provisions would have to be made to capture these details when conclusions were drawn not only from single papers, but also from the broader analyses. It would be reductionist and over-simplistic, for example, to record only the dominant theory in a particular paper. Rather, it was proposed that each theory that could be discerned in a paper would have to be noted separately in the summary of that paper, as well as included in the final, general tallies of development theory occurrence, which would be used to paint the general picture of engagement in and across the two samples. This was accepted to constitute a suitable way to capture the nuance embedded in papers containing differing, potentially contradictory theories of development.

3.6 Chapter conclusion

This chapter sought to determine an appropriate approach to the research problem and formulate an effective design to address the research question. To do this, the distinction between a qualitative and quantitative approach was examined and the former was identified to be well-suited to the present study's objectives. Next, the need for content analysis was outlined and three alternative forms of content analysis were discussed. General issues pertaining to the use of content analysis were also examined. On the basis of these two discussions, directed content analysis was selected as most suitable and it was discussed how the remaining issues in content analysis would be addressed in the present study. The steps that would form the basis for the remainder of the investigation, as dictated by Hsieh and Shannon (2005:1285), were also outlined.

Having established an appropriate approach, the focus shifted to the selection of appropriate samples of Global North and Global South literature. To this end, a general pool of ICTD literature (composed of papers published in three leading journals between 2008 and 2015) was proposed and adequate representation of the Global North and Global South in this pool was ascertained. Using this pool as point of departure, various sampling strategies were discussed and it was concluded that a combination of systematic random sampling and purposive sampling would sufficiently address both concerns regarding efficiency and effectiveness. Next, appropriate sample sizes were determined and a step-wise selection strategy was presented. Finally, drawing

on one of the frameworks selected from the previous chapter, initial coding categories were defined and the details of the coding process were discussed.

Through the above-mentioned discussions, this chapter outlined an appropriate methodology for addressing the broader research question. The next chapter will present the results of this methodology's execution.

Chapter 4

Analyses

4.1 Sampling process

Prior to discussing the results of the sample analyses, two aspects related to the execution of the sampling process must be noted. Firstly, the final Global North and Global South samples, as composed through the sampling strategy, are shown in Table 4.2 and Table 4.3. Detailed audit trails of the execution of the process detailed in Subsection 3.3.2 (and specifically Figure 3.4) are provided for both the Global North and Global South sampling in Appendix B, Section B.2.

Secondly, with regards to sample size: As anticipated in Subsection 3.3.2's discussion, the number of papers reviewed for both the Global North and Global South samples was substantially larger than the sizes of the final samples. This is summarised in Table 4.1. As explained in Section 3.5, only papers (i) deemed to include sufficient explicit or implicit engagement with development to be classifiable using Peet and Hartwick's (2009) framework and (ii) not simply equating to development the modernisation that ICTs bring, were included in the samples. The number of papers included in the final samples relative to the number of papers reviewed can therefore be interpreted as an indicator of engagement within the broader subsets: the bigger this ratio, the less papers had to be reviewed to fill the samples and the more engagement there was in the broader subsets. However, as is illustrated in Table 4.1 and visualised in Figure 4.1, the ratios for both the Global North and Global South

	Papers in general pool	Papers reviewed		Papers in sample	
		Number	% of general pool	Number	% of papers reviewed
Literature from the Global North	269	83	30,86%	27	32,53%
Literature from the Global South	195	124	63,59%	20	16,13%
Combined	**464**	**207**	**44,61%**	**47**	**22,71%**

Table 4.1: Papers reviewed relative to the general pool and sample size relative to papers reviewed.

GNS#	Journal	Year	Volume	Issue	Location: All authors	Title
1	ITID	2010	6	1	USA	Policies, Partnerships, and Pragmatism: Lessons from an ICT-in-Education Project in Rural Uganda
2	ITID	2011	7	1	Canada	Designing Research for the Emerging Field of Open Development
3	ITID	2011	7	4	USA; USA	Mobile Phones and Rural Livelihoods: Diffusion, Uses, and Perceived Impacts Among Farmers in Rural Uganda
4	EJISDC	2008	35		South Korea; South Korea; South Korea; UK	Analysing South Korea's ICT for Development Aid Programme
5	EJISDC	2014	63		Finland; Sweden; Finland	Development of Projects and ICT: A Review of Non-Technical Aspects
6	ITD	2008	14	3	Belgium	Critical analysis of policy measures for the advancement of the level of computerization of SMEs
7	ITD	2013	19	2	USA	Does a government web presence reduce perceptions of corruption?
8	ITD	2014	20	1	UK	Power and the Construction of Independence in ICTD Organizations
9	ITD	2014	20	3	USA	Investigating the Impact of Investments in Telecoms on Microeconomic Outcomes: Conceptual Framework and Empirical Investigation in the Context of Transition Economies
10	ITD	2014	20	4	Singapore; Singapore	Internet Studies and Development Discourses: The Cases of China and India
11	ITD	2015	21	4	Australia	Theory Building for ICT4D: Systemizing Case Study Research Using Theory Triangulation
12	ITID	2011	7	1	UK; Norway	Transparency and Development: Ethical Consumption through Web 2.0 and the Internet of Things
13	ITID	2013	9	4	Ireland; Ireland; Ireland	ICT 4 the MDGs? A Perspective on ICTs' Role in Addressing Urban Poverty in the Context of the Millennium Development Goals
14	EJISDC	2009	37		New Zealand; New Zealand	ICTs as a Tool for Cultural Dominance: Prospects for a Two-Way Street
15	EJISDC	2010	41		UK	ICTs for the Broader Development of India: An Analysis of the Literature
16	ITID	2012	8	2	USA	Looking Beyond "Information Provision": The Importance of Being a Kiosk Operator in the Sustainable Access in Rural India (SARI) Project, Tamil Nadu, India
17	EJISDC	2008	35		UK	The Internet and the Public Sphere: Evidence from Civil Society in Developing Countries
18	EJISDC	2014	64		Sweden; Norway	Exploring the Link between ICT and Development in the Context of Developing Countries: A Literature Review
19	ITD	2010	16	2	Netherlands	The Architecture of Global ICT Programs: A Case Study of E-Governance in Jordan
20	ITD	2011	17	2	Sweden; Sweden	Bangladesh calling: farmers' technology use practices as a driver for development
21	EJISDC	2008	34		UK; UK; UK	Developing Countries and ICT Initiatives: Lessons Learnt from Jordan's Experience
22	ITD	2009	15	4	Canada; UK	Factors affecting ICT expansion in emerging economies: An analysis of ICT infrastructure expansion in five Latin American countries
23	EJISDC	2010	44		UK	ICTs, Citizens, and the State: Moral Philosophy and Development Practices
24	ITID	2010	6	1	USA	Globalization and Relative Compensation in India's Information Technology Sector
25	EJISDC	2015	70		Norway	Capacity Strengthening within a Development Context: Developing and Applying a Conceptual Model
26	ITID	2014	10	4	USA	Articulating and Enacting Development: Skilled Returnees in Ghana's ICT Industry
27	ITD	2012	18	1	UK; UK; UK	Signifiers of the life we value? – considering human development, technologies and Fair Trade from the perspective of the capabilities approach

Table 4.2: The final Global North sample.

GSS#	Journal	Year	Volume	Issue	Location: All authors	Title
1	EJISDC	2011	48		Mexico; Mexico	Information and Communication Technologies (ICTs) and Mexican Manufacturing Exports
2	EJISDC	2012	51		Tanzania	Barriers in Accessing Agricultural Information in Tanzania with a Gender Perspective: The Case Study of Small-Scale Sugar Cane Growers in Kilombero District
3	EJISDC	2013	59		South Africa; South Africa	The emancipation of the researcher as part of Information and Communication Technology for Development work in deep rural South Africa
4	EJISDC	2009	36		Egypt; Egypt; Egypt	The Impact of ICT Investments on Economic Development in Egypt
5	EJISDC	2014	63		Samoa	Issues and Challenges, Strategies and Recommendations, in the Development of ICT in a Small Island Developing State: The Case of Samoa
6	ITD	2013	19	1	Ethiopia	Telecommunications development and economic growth in Africa
7	EJISDC	2008	35		India	Telecentres in Rural India: Emergence and a Typology
8	EJISDC	2012	53		South Africa; South Africa	The Livelihood Outcomes of ICT Use in Microenterprises: The Case of South Africa
9	EJISDC	2015	70		Tanzania; Tanzania; Tanzania; Tanzania; Tanzania; Tanzania	New technologies for disseminating and communicating agriculture knowledge and information (AKI): Challenges for Agricultural Research Institutes (ARI) in Tanzania
10	EJISDC	2014	64		South Africa; South Africa	ICT Utilisation within Experienced South African Small and Medium Enterprises
11	ITD	2015	21	4	Malaysia; Malaysia	Information system success among manufacturing SMEs: case of developing countries
12	ITID	2010	6	2	India; India	Assessing the Impact of E-government: A Study of Projects in India
13	ITID	2013	9	1	South Africa; South Africa	"Ten Seeds": How Mobiles Have Contributed to Development in Women-Led Farming Cooperatives in Lesotho
14	EJISDC	2013	57		Bahrain; Oman	ASSESSING THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR LEARNING IN EMERGING COUNTRIES
15	ITD	2011	17	2	India	Developing women: why technology can help
16	EJISDC	2011	47		Ghana; Ghana; Ghana	Effects of Mobile Phone Use on Artisanal Fishing Market Efficiency and Livelihoods in Ghana
17	EJISDC	2015	67		Brazil; Brazil; Brazil	Analysing ICT and Development from the Perspective of the Capabilities Approach: A Study in South Brazil
18	ITD	2008	14	4	Oman	Towards gender equal access to ICT
19	ITID	2008	4	3	Sri Lanka; Sri Lanka	Internet Presence as Knowledge Capacity: The Case of Research in Information and Communication Technology Infrastructure Reform
20	ITD	2013	19	2	South Africa; South Africa; South Africa	Communities in control of their own integrated technology development processes

Table 4.3: The final Global South sample.

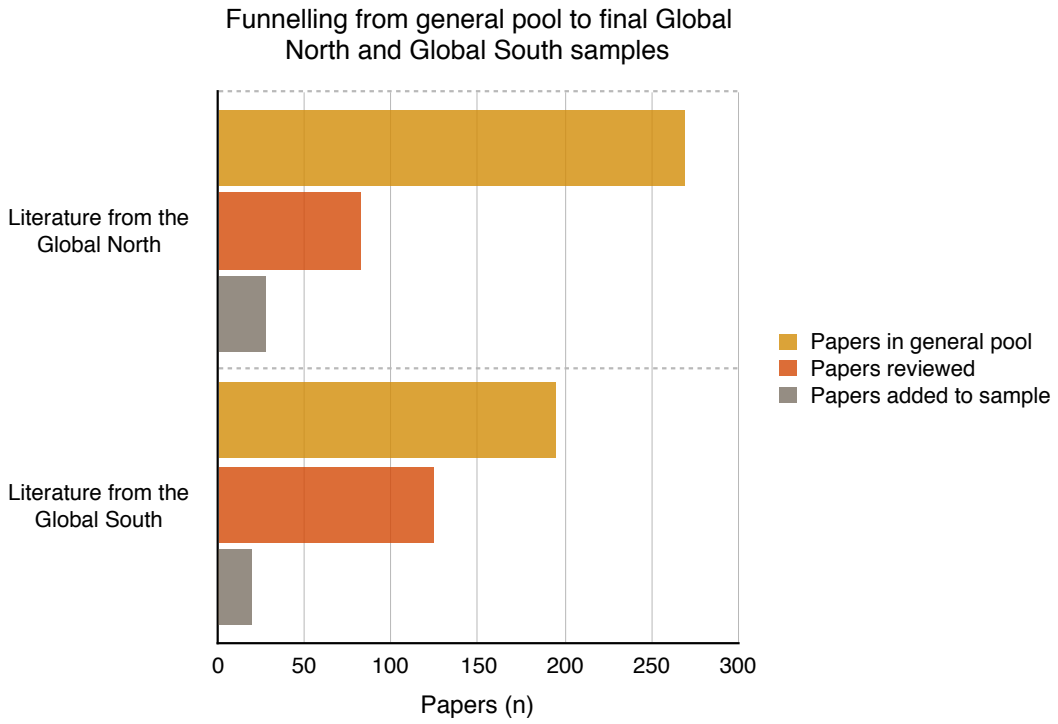

Figure 4.1: A visualisation of the funnelling process from the Global North and Global South subsets of the general pool to the final samples.

were low. In the case of the former, approximately one in three papers reviewed was included in the sample. In the case of the latter, this ratio was even lower: less than one in five papers reviewed was included in the final sample. This meant that for the Global North sample, a third of its respective subset of the general pool had to be reviewed to fill the sample, whereas nearly two-thirds of the Global South subset of the general pool had to be reviewed to compose its respective sample. The interpretation of this phenomenon is discussed in Section 5.2.

4.2 Paper analyses

The subsections that follow present the results of the coding process completed for each paper in the Global North and Global South samples. In each case, the main findings regarding the paper author(s)'s engagement with development — and the development theories discerned therein — are listed with supporting passages from the text. For easier reference, the features of the authors' engagement are presented in list-form and the development theories identified (corresponding to the code structure defined in Section 3.4) are underlined. The next chapter explores the broader findings that emerged in and across the respective samples, as well as the conclusions that can be drawn from them.

4.2.1 Global North

4.2.1.1 GNS#1: Hosman (2010)

Hosman (2010) studies the complexity of ICT deployment in education, using a Ugandan project as case. She proceeds from the case to offer a broader policy discussion, in search of effective ways in which ICTs can be implemented to enhance educational outcomes, in such a way that simplistic notions of ICT-as-panacea are transcended. Her engagement with development — and the theories of development discernible therein — can be understood in terms of the following features:

1. **The centrality of the knowledge economy**. The author frames education in terms of its value to prepare individuals for participation in the knowledge economy. This corresponds to new growth theory's premise of knowledge as basis for economic growth (Peet and Hartwick, 2009:63) and therefore reveals Keynesian economics.

    a) "Education is seen as a primary mechanism through which ICT can empower individuals, communities, and societies to develop technologically literate workforces that are able to participate in the *information society and economy of the present and future*." [own emphasis] (Hosman, 2010:49).

    b) "Education is believed to play an essential role in the development of a *knowledge-based society*." [own emphasis] (Hosman, 2010:49).

    c) "Understanding how and when to use technology appropriately to improve the educational experience and ultimately develop a workforce literate in, and prepared to contribute to, the *knowledge economy* remains an unaddressed challenge." [own emphasis] (Hosman, 2010:49).

2. **A critical stance towards universalist claims in economics.** She criticizes mainstream development economics' drive to seek universalist explanations for economic growth, and the policies that results from it. In particular, she is critical about the new fixation on technology as development panacea and instead, advocates for a contextual approach. In light of her focus on African development, her thinking seem to resemble structuralist economics, and specifically Peet and Hartwick's (2009:65) description: "This notion of a universal economic science ('monoeconomics') was contested by a 'structuralist approach' to development economics that insisted, instead, on the specificity of Third World economies — their differences — and therefore the inapplicability of universalist neoclassicism."

    a) "One-size-fits-all prescriptions and interventions have been carried out repeatedly by development or aid organizations targeting the

developing world. The prescriptions have changed over the decades, but the accompanying mindset has not [...] One of the dangers of the top-down, one-size-fits-all prescriptive policy approach is that it fails to allow or account for societal, historical, political, or other existing differences, or for change." (Hosman, 2010:50).

b) "Over time, the single-solution 'answers' proposed to bring about growth have included all of the following: increased capital, entrepreneurship, foreign investment, international trade, human capital, and more (or less) government [...] Technology is currently being touted as the new 'answer.' " (Hosman, 2010:50).

c) "The very notion of 'bridging the digital divide' is simplistic and misleading [...] there are multiple 'divides' " (Hosman, 2010:50).

d) "[T]echnology must be seen as an enabling tool, and for it to be effective in its purpose of enhancing people's capabilities to meet their needs and desires, it must also be *appropriate to their circumstances*." [own emphasis] (Hosman, 2010:51).

3. **The implied responsibility of governments in educational development projects.** Although the author takes great care to advocate for the relevance of local-led, multi-stakeholder initiatives, the focus on recommendations for national-level policy-making implies a level of responsibility laid at the door of the government. This can be seen as embodiment of the notion of the developmental state, and is categorised with the broader Keynesian economics (Peet and Hartwick, 2009:63).

a) "Creative efforts — particularly those with bottom-up approaches — to bring about improvements in the educational system may be seen both as a valuable method for addressing shortcomings *on the part of the national government*, and as a stepping-stone for building local capacities." [own emphasis] (Hosman, 2010:62).

b) "Another policy that *the government should be encouraged to continue*, based on the secondary research informing this article, is that of allowing Parent-Teacher Associations (PTAs) to develop." [own emphasis] (Hosman, 2010:62).

c) "African governments have a historical pattern of neglecting ongoing investment in infrastructure that must be overcome" (Hosman, 2010:63).

4.2.1.2 GNS#2: Reilly (2011)

Reilly (2011:47) investigates the "ontological, epistemological, and methodological considerations of significance" to the emerging field of so-called "open development", contrasting these with entrenched conceptions of the intersection between technology and development in ICTD. She constructs a detailed

argument to contend that the focus of open development research should be to enhance "cognitive justice", instead of focussing on the traditional notions of productivity and empowerment. Although Reilly's is an intricate and abstract exploration of how development is construed, and although she posits open development as a novel approach to the questions dealt with in ICTD, some resemblances to the development theories in Peet and Hartwick's (2009) framework can be discerned in her engagement with development. These can be understood in terms of the following:

1. **A seemingly post-structuralist call to move beyond traditional conceptions of development.** The author problematizes the assumptions made by what she regards as prominent ways of thinking about ICTD, and specifically the resulting foci on productivity or empowerment.

    a) "Of course, social change can be thought of in very different ways, and this has important implications for how development interventions or development research can be oriented" (Reilly, 2011:49).

    b) She draws "a contrast between [social informatics] research, which seeks to understand productive adoption of ICTs in developing countries such that they can become part of the new global information economy, and [community informatics] research, which seeks to understand community appropriation of ICTs such that they can resist incursions by global, corporate, top-down forces operating within the global information economy"; these correspond to foci on productivity and empowerment in ICTD research (Reilly, 2011:49).

    In contrast to the conceptions of development encapsulated in these approaches, she contends for a conception of development as "cognitive justice", rooted in "the need to move beyond either grand narratives or paralyzing theoretical moves (such as deconstructionism), and to establish critically realist and historically contextualized footing for the theorization of effective development alternatives." (Reilly, 2011:49).

    a) "This implies a wholly different vision of the networked world: neither a globocentric vision of the consolidated network society nor a nostalgic and nationalistic vision of resistance, but a focus on specific contexts for development and the real processes of dynamic change that take place within them" (Reilly, 2011:49).

    b) At the heart of her conception lies the contention to "move beyond either productivity or empowerment as anchoring concepts for development in ICT4D research"; instead of "modeling subjects as either productive contributors to an information society or empowered upholders of defensive stances, what I want to focus on is a

> need for a system of protections that recognizes, celebrates, and shelters situated, emergent *intent*" [author's emphasis] — what she defines as "cognitive justice" (Reilly, 2011:49-50).

The above can be understood as an embodiment of poststructuralist thinking about development described by Peet and Hartwick (2009:200).

2. **A call for epistemological pluralism in development.** Further expanding on her conception of "cognitive justice", the author calls for pluralism in development thinking:

   a) "[Cognitive justice] is the idea that no one form of knowledge should dominate at the expense of others, but rather, that different forms of knowledge should exist in dialogue with each other" (Reilly, 2011:51).

   b) "The value of this approach is that it centers research on the complex, situated processes of development that actors engage in as they try to overcome barriers to their well-being and create more innovative, experimental, resilient communities. We do not presume the nature of the information society or of its potential outcomes, thus curtailing open processes of subjectification, but rather, we observe, celebrate, and foster transformative initiatives that are engaging shifting realities at multiple scales" (Reilly, 2011:51).

   The above might sensibly be understood as a call for radical pluralism, described by Peet and Hartwick (2009:228) as being associated with post-developmental thinking. Nevertheless, in contrast to postdevelopmentalism, Reilly (2011) does not seek to undermine the notion of development entirely, but rather seeks to refocus it on enhancing cognitive justice. Read holistically, her conception of development shows strong resemblance to Peet and Hartwick's (2009) theory of critical modernism.

4.2.1.3 GNS#3: Martin and Abbott (2011)

Martin and Abbott (2011:17) study how social structures impact attempts to "successfully use mobile phones to aid development efforts" in rural agriculture in Uganda. They survey a group of phone owners to examine how mobile phones are used and understood to make an impact in the livelihoods of the respondents. The authors' engagement with development can be described in terms of the following key points:

1. **Human development measures as description of the state of development in Uganda.** Early in the study, in framing their context, the authors describe Uganda's state of development with reference to the HDI, human immunodeficiency virus (HIV) rate, and the section of the

population living under the poverty line (Martin and Abbott, 2011:18). While this does not indicate a commitment to a specific conception of development *per se*, such measures of development are associated with the UNDP's conception of development as "enlarging people's choices" (Peet and Hartwick, 2009:8). In broad terms, this links Martin and Abbott's (2011) conception of development to development economics.

2. **Development as improved economic opportunities reflected in the choice of study dimensions.** The authors' conception of development becomes apparent when they describe their theoretical framework.

    a) At the outset of the study, they note that "[t]he benefits accruing from the widespread adoption of information and communication technologies (ICTs) in developing countries include increasing people's knowledge of market information; improving the coordination of transportation, especially during emergencies; and enhancing the effectiveness of development activities" (Martin and Abbott, 2011:17).

    b) In describing their theoretical framework, they state that "Researchers [...] stress that mobile telephony can be an asset for development by enabling the rural poor to respond more efficiently to external economic opportunities or threats through an increase in access to information" (Martin and Abbott, 2011:20). This is then linked to three specific aspects of mobile phones' impacts: efficiency ("increased productivity while minimizing wasted effort or expense"), effectiveness ("increased productivity through access to resources"), and reach ("the ability to communicate regardless of time or geographic boundaries") (Martin and Abbott, 2011:20-26).

    The perceived impact of mobile phones in the authors' further investigation is studied in terms of these three aspects, and their findings are framed in terms thereof. While, on the basis of the limited insight into their conception of development available from gleaning the text, it is difficult to link their conception of development to a specific theory in Peet and Hartwick's (2009) framework, their core focus on productivity may be viewed as an instance of classical economic thinking.

4.2.1.4 GNS#4: Lee *et al.* (2008)

Lee *et al.* (2008:1) analyse South Korea's ICTD foreign aid to Global South countries, giving an account of its particulars and then proceeding to examine it "in terms of some basic concepts to find it associated with technological-determinism and techno-optimism, with the modernisation paradigm, with tied aid, and with the potential for creating dependency".

1. **A dependency theory critique of development-as-modernisation.** The authors characterise the development conception embedded in South Korea's ICTD programmes as development-as-modernisation and then proceed to critique it from a dependency perspective:

    a) "The Korean view of development seems to fall fair and square within the modernisation paradigm [...] Whether or not they recognise the issue [of dependency], it is arguable that their actions are — purposefully or not — increasing the e-dependence of their recipients. [...] On the basis of relatively limited data, then, we are associating Korea's ICT4D programme with technological-determinism and techno-optimism, with the modernisation paradigm, with tied aid, and with the potential for creating dependency." (Lee *et al.*, 2008:10).

    The authors' perspective is undoubtedly informed by dependency theory, classified by Peet and Hartwick (2009:166) amongst Marxist and socialist development theories. Nevertheless, they are not completely committed to such a conception and qualify their critique of South Korea's ICTD aid by commending its strengths:

    a) "Korea, probably quite rightly, has placed a significant emphasis on ICTs within its development assistance programme. In this, it reflects not only Korea's own comparative advantage but also the significant 'thirst' for ICT4D found in many developing countries: a thirst that some donor agencies from Western nations are failing to address. Korean ICT4D has undoubtedly assisted the diffusion of ICTs in the poorer nations of the world, and brought ICT-related benefits to those nations" (Lee *et al.*, 2008:11).

    Ultimately, then, although Lee *et al.* (2008) employ a dependency theory perspective in critiquing South Korea's ICTD aid, the above would seem to indicate that they still subscribe to a more conventional conception of development. It is, however, difficult to link this to a specific theory in Peet and Hartwick's (2009) framework, although their reference to comparative advantage, and the broader context of their appraisal of South Korea's ICTD aid, would seem to point to an understanding rooted in classical economics[1].

4.2.1.5 GNS#5: Kemppainen *et al.* (2014)

Kemppainen *et al.* (2014) describe six "non-technical aspects" of ICTD projects that they argue must be afforded specific consideration to improve project

[1]This represents a prime illustration of a paper containing multiple, contradictory theories of development. The reader is reminded of the deliberation on this issue in Section 3.5.

success. The first of these aspects pertains specifically to how development is conceived and it is in their description hereof that their understanding of development can be understood with Peet and Hartwick's (2009) framework:

1. **An evidently pragmatic view of how development is conceived.** The authors seem to harbour a particularly pragmatic view of development conceptions and adherence to them:

   a) "The goals of international development co-operation (IDC) are always politically guided [...] The current international political consensus for IDC can be summarized by three concepts: sustainable development, international human rights, and millennium development goals (MDGs) [...] Those concepts should be recognized in all IDC projects." (Kemppainen *et al.*, 2014:1).

   b) "In addition, in the beginning of the new millennium the World Bank Group (WB) and the International Monetary Fund (IMF) urged developing countries to design national strategies for poverty reduction [with the aim] to guide developing countries to meet the MDGs. Therefore, IDC projects in a developing country must typically be in line with each country's poverty reduction strategy." (Kemppainen *et al.*, 2014:1).

   c) "Political consensus about the importance of international human rights [...] has increased the use of human rights-based approach (RBA) in IDC project design [...] Hence, IDC project designs should be explicitly linked with rights-based issues, such as gender equality and rights of vulnerable groups" (Kemppainen *et al.*, 2014:2).

   d) "[I]n the 2000s, the IDC community introduced the concept of national strategies for poverty reduction, which aim at improving IDC efforts in each developing country [...] IDC projects are no longer seen as individual entities but they should fit in the existing development processes of the host country." (Kemppainen *et al.*, 2014:2).

   The above shows elements of both the UNDP's human development conception (i.e. development economics) and a more neoliberal conception of development. It would seem that the authors' commitment is a pragmatic one: in order for ICTD projects to be successful, they must adhere to whatever the international consensus understanding of development is at the time. Nevertheless, they do not offer any critique of these conceptions and can therefore be assumed to accept, at least in part, their normative value.

4.2.1.6 GNS#6: Milis (2008)

Milis (2008) examines government policies to increase the use of ICTs in SMEs

and specifically, why they seem to be less successful than their equivalents for larger enterprises. The following can be discerned from their engagement:

1. **Government ICT policies as an enabler, but not driver, of development, via economic gains.** A recurring underlying theme in the authors' engagement with development is the assumption that the state must help SMEs realise the gains of ICTs. These gains are construed in economic terms:

   a) For firms, these are "increases [in] the competitiveness of employees and [the strengthening of] the position of companies in the global economy" (Milis, 2008:253).

   b) So, too, for the broader society: "There is a large consensus that a high level of computerization and the creation of ICT-driven networks have positive economic effects and thus are important for the development of a region" (Milis, 2008:256).

   The authors' persistent focus on government policy indicates that they see an active role for the government, but this role must mainly be a supporting one:

   a) "Market situations, threats, and opportunities [...] are key factors and determine which level of computerization a company aims for [...] These factors are properties of the market in which the company is active and they result in specific threats and opportunities for each company. They can be influenced only indirectly by [...] government initiatives" (Milis, 2008:256).

   b) "This means that the government cannot steer the computerization process in a compelling way. The final decision lies in the hands of every individual company that is active in its market and reacts to changing circumstances. This does not mean that government initiatives are not useful, but it does mean that the initiatives have to be in line with the direction a company wishes to follow. In other words, it is the government's task to support companies in the choices they make" (Milis, 2008:256).

   c) "In spite of the limited impact of government initiatives on the adaptation of ICT and e-technology and the formation of ICT-based networks, computerization remains important for the region's development. Hence, active stimulation by the governments is necessary" (Milis, 2008:257).

   d) "Preferably, governments [must] offer solutions for problems that SMEs are facing with the execution of decisions taken by them. In the past, the attempts to steer the computerization process in SMEs

> have turned out to be unworkable. Support has to be the credo" (Milis, 2008:257).

Despite envisioning only a supporting role for government action, the authors' very focus on the government's role in the promotion of ICT would seem to associate it with Keynesian economics.

4.2.1.7 GNS#7: Garcia-Murillo (2013)

Garcia-Murillo (2013:151) examines the question: "Does a government web presence reduce perceptions of corruption?" She examines the question through a statistical analysis incorporating various factors. On the basis of her early description of the problem of corruption, a number of observations can be made regarding her engagement with development:

1. **Corruption as an economic problem.** The author begins by framing the problem of corruption in terms of funds lost through bribes, as well as in terms of its negative effect on the private sector:

   a) "Researchers have found that corruption severely affects a country's development because it takes resources away from the economy, leads to uncertainty and impairs investment" (Garcia-Murillo, 2013:151).

   b) "The private sector does not know how much government officials will 'request' to process a permit, an application or a license, or when or how. Under these circumstances, investors are unable to plan their investments, and they may decide not to invest at all" (Garcia-Murillo, 2013:151).

2. **Corruption as the product of self-interested individuals operating within a context of poor institutional incentives.** She proceeds to highlight how it is, in fact, institutions that produce corruption, by not incentivising self-interested individuals to act correctly:

   a) "[I]nstitutions determine economic activity. Individuals will generally engage in activities that generate the greatest economic returns" (Garcia-Murillo, 2013:152).

   b) "Corruption should thus be understood as a problem in institutions that do not provide the appropriate incentives to limit the motivation of government officials to engage in self-interested behavior in opposition to the public welfare" (Garcia-Murillo, 2013:152).

   c) "Within the context of the nation state, institutions provide the incentive structure for agents to operate. If opportunities and incentives allow agents to engage in productive activities, they will do so; however, if the institutions afford them opportunities to profit,

they will do so as well. Agents, in this case government officials, are therefore motivated by the governance structure where they operate" (Garcia-Murillo, 2013:154).

d) "[A] government agent who controls access to the permits necessary to enter a market has a self-interest in demanding a large bribe payment when limiting the number of firms. Just as in a market setting, a government monopoly reduces supply, thereby raising incentives for power holders (producers) to engage in corrupt activities (a market), due to the high price of the goods they control (power)" (Garcia-Murillo, 2013:155).

3. **Regulation as a hotbed for rent-seeking behaviour.** The author draws a link between regulation and corruption:

   a) "Poor governance may also be manifested in government policies that affect both the public and private sectors. This [...] 'regulatory burden' [...] includes the passing of market unfriendly policies as well as the perception of burdensome regulation. Complex and burdensome regulations can result in monopoly power by public officials [...]" (Garcia-Murillo, 2013:156).

   b) "The procurement system is a perfect instance of a process from which bureaucrats can extract rents. Governments that have active industrial policies make it possible for officials to extract rents from favored industries" (Garcia-Murillo, 2013:156).

   c) "We should expect greater corruption in countries that have large bureaucracies, complex and burdensome regulations that allow public officers to profit from 'facilitation fees' or where the economy is highly controlled" (Garcia-Murillo, 2013:157).

Garcia-Murillo's (2013) strong focus on corruption as an economic problem, her assumption of self-interested actors operating to maximise their economic benefit, and her criticism of poor regulation and strong economic control by the state means that her conceptions of development can be classified as neoliberal economics in terms of Peet and Hartwick's (2009:91-94) framework.

4.2.1.8 GNS#8: Kenny (2014)

Kenny (2014) examines the role of power in ICTD projects, with specific reference to how powerful interests impact the activities of one NGO. Her engagement with development may be understood in terms of the following features:

1. **A focus on "structures of power and domination".** Kenny (2014) argues that critical theory offers a useful perspective on ICTD, through the deconstruction of its common assumptions:

a) "For many authors, a critical theory perspective is helpful in understanding the problems inherent to ICTD [...] The aim here is to make structures of power and domination explicit, where they may not have been previously" (Kenny, 2014:7).

b) "[I]t involves standing apart from dominant assumptions underscoring ICTD initiatives, including the notion that technology necessarily leads to the positive transformation of peoples' lives if only the obstacles to successful implementation can be removed. In place of these assumptions, ICTD is understood as embedded within global flows of power" (Kenny, 2014:7).

2. **A focus on (Western) donor interests.** Building on the aforementioned discussion, the author proceeds to problematize the interests of donors in ICTD projects, with particular attention to Western countries:

   a) "Critical development theorists have long argued that forms of power that include the strategic interests of donors and managerial and technocratic logics influence development work more generally [...] [R]esearch has shown that political and strategic considerations are significant determinants of donor behavior, especially where the donor agency is funded by a national government [...] [A]id is often granted to countries with which strategic partnerships are desired, with those most in need being ignored" (Kenny, 2014:7-8).

   b) "[A]uthors have noted that the particular concerns of governments, corporations, and other powerful entities can color the activities of organizations working in ICTD. This occurs through the distribution of development funding and the exercise of political influence, and such practices ultimately contribute to the frequent failures of development projects in achieving their aims" (Kenny, 2014:8).

   c) As examples hereof she refers to (i) "how Western donors insisted upon the introduction of computing technology and information systems, which were developed in the West, during the structural adjustment programs of the late 1970s and early 1980s in several sub-Saharan African countries [...] [S]uch initiatives simply served to reproduce the hegemony of Western economic interests in these areas"; and (ii) "how representatives of the World Bank frame ICT in a way that reinforces the Bank's centrality within the development sector, partly by emphasizing particular, technocratic ways of understanding ICT. These ways of knowing effectively exclude any alternative perspectives of ICT, and development more generally, and ultimately act in the interest of the World Bank itself" (Kenny, 2014:8).

From the above, high-level features of the author's choice of approach and object of study, wherein deconstruction and a focus on power relations features prominently, her conception of development can be linked to poststructuralism.

4.2.1.9 GNS#9: Samoilenko (2014)

Samoilenko (2014:251) examines the "microeconomic outcomes" of telecom investments in so-called transition economies. They construct and test a model that "links investments in telecoms with microeconomic constructs that are closely associated with such measure of macroeconomic bottom line as GDP; this allows us to outline a more detailed path traversed by the impact of investments" (Samoilenko, 2014:251).

1. **From neoclassical growth accounting as point of departure, a call for a microeconomic approach.** The author begins by grounding his study in neoclassical growth accounting and then argues for the need to examine its components on a microeconomic level:

    a) "According to a widely used framework of neoclassical growth accounting [...] a macroeconomic impact of investments in ICT is a function of three components: level of investments, labor, and total factor productivity (TFP) [...] [A] theoretically justified path of increasing the level of macroeconomic impact of investments is via increases in levels of investments and labor, and possibly, a complementarity of the two" (Samoilenko, 2014:251-252).

    b) "[A] macroeconomic perspective deals with the issues concerning aggregate levels of production and consumption and, as a result, it does not offer any lower level specifics useful to a decision maker; thus, in order to get better insights into the nature and mechanics of existing inefficiencies, it could be of benefit to 'disaggregate' macroeconomic problems into microeconomic components" (Samoilenko, 2014:252).

    c) "We suggest that in order to obtain some actionable information, it could be useful to inquire into the links between investments in ICT and microeconomic precursors and targets indicative of such macroeconomic outcomes as GDP. Within the context of this study, we refer to such precursors and targets as microeconomic constructs, which we define as any investment-specific outcomes (e.g. impacts of investments in ICT) that contribute to the aggregated outcome (e.g. GDP as a measure of macroeconomic outcome). This is because no type of investments is directly transformed into a share of GDP; instead, investments work their way into a contribution to GDP via various paths and interconnected links" (Samoilenko, 2014:252).

2. **A focus on equipping policy-makers to make better investment decisions.** A consistently discernible aim in Samoilenko's (2014) study is to equip policy-makers in transition economies for better telecom investment decisions. Frequent references to the actions of policy-makers are included in the text; three of the ten examples are presented here:

    a) "The results of the investigation offer valuable insights to *decision and policy makers* tasked with the responsibility of improving the micro- and macroeconomic impacts of investments in telecoms" (Samoilenko, 2014:251).

    b) "[I]t is expected that *policy and decision makers* of the countries with the less pronounced macroeconomic benefits of investments in ICT are tasked to react appropriately and to improve the performance of investments" (Samoilenko, 2014:252).

    c) "By following [...] our model, decision and policy makers could monitor the performance of investments over time, as well as improving the overall level of the impact of investments" (Samoilenko, 2014:270).

    The author's point of departure, coupled with his focus on equipping policy-makers in transition economies, places his conception of development within Keynesian economics.

4.2.1.10 GNS#10: Zhang and Chib (2014)

Zhang and Chib (2014) compares the discourses on development (and specifically, the role of ICT therein) present China and India's respective internet studies fields. They note that "the Chinese scholarly community relies on the discourse of liberation from the state as a form of critique, whereas Indian Internet studies question the discourse of modernization to contemplate about the success and failure factors of information and communication technologies in development" (Zhang and Chib, 2014:324). It is, however, in their moving beyond the identified conceptions, that the following can be noted:

1. **A call for bottom-up and practice-oriented development thinking.** In the authors' concluding remarks after their analysis, their call for development thinking to move beyond academia and to reorient itself towards effecting practical policies, becomes clear:

    a) "[A]cademics are still limited in terms of actual impact if the critiques stay only on paper. In order to effect real influence, there are at least two directions that can be taken. First, recent scholarship has pointed out that we have to listen to the people and the communities that are being helped [...] A bottom-up approach

> requires us to begin our research practices by identifying the development discourses that are embedded in the everyday experiences of the people and the communities and then allow these communities to invent and utilize technological tools to achieve their own ends. Second, scholarship needs to generate impact in the domain of policy-making [...] We note that, whereas there are a few institutions in India that are actively developing a policy orientation via research [...] civil society counterparts in China are rarely seen. Such institutional efforts are needed to extend academic impacts to policymakers" (Zhang and Chib, 2014:332).

The authors' commitment to bottom-up development would seem to place them within a postdevelopmental school of thinking, albeit without the radical critique of Western modernity often associated with it (Peet and Hartwick, 2009:229). However, this must be qualified by their appeal for development thinking to aim itself at affecting policy-making, which is associated with state-driven development and would seem to associate them with Keynesian thinking.

4.2.1.11 GNS#11: Tibben (2015)

Tibben (2015) attempts theory-building on the basis of multiple case studies in Australia, by triangulating perspectives from three development conceptions. The three conceptions, drawn from previous work, are "populist, enterprise and statist" (Tibben, 2015:628) and, in terms of Peet and Hartwick's (2009) framework, can be broadly understood to correspond respectively to (i) postdevelopmental notions of grassroots-led development; (ii) classical and neoliberal economics, and (iii) the state-led development conceptions found in Keynesian economics and some Marxist and socialist theories. Tibben's (2015), then, is an attempt to bring these development conceptions into conversation with one another in the context of the cases he studies. Although this means that he remains ostensibly uncommitted to a specific conception of development, the following features of his engagement can nevertheless be discerned from his discussions:

1. **The problematisation of development conceptions in ICTD.** Contained in the need that he sees for theory triangulation and in his resulting discussion of different conceptions of development, is the implicit argument that all ICTD research is necessarily grounded in particular conceptions of development, which must be exposed and interrogated:

    a) "ICT4D research represents an important contemporary area of inquiry that has attracted the interest of a range of disciplines. With this comes the challenge of resolving different epistemologies that make *varying assumptions about the nature of development* and the

role of ICTs in development processes" [own emphasis] (Tibben, 2015:629).

b) "[M]any researchers failed to explicitly define what was meant by 'development' in their studies [...] [T]oo many researchers make implicit assumptions about what constitutes development" (Tibben, 2015:630).

c) "Hall and Midgley argue that informed debate about theory development is facilitated by making explicit the values and assumptions of each ideology" (Tibben, 2015:631).

d) "It is in making explicit the values and assumptions of each ideology that informed debate about theory development is facilitated. The vision of 'holistic social policy' seeks to bring together the strengths of each of the normative approaches as well as to minimize the effects of obvious contradictions and their weaknesses" (Tibben, 2015:633).

2. **An embrace of pluralism.** Key to the notion of theory triangulation is an inherent appreciation of different conceptions of development as analytical tools in the context of a particular case. This necessarily implies an embrace of pluralism and is further made explicit in the final paragraph of the paper:

   a) "The adoption of the analytical constructs derived from populist, enterprise and statist philosophies has the potential to link a broader body of ICT4D research leading to greater coherency in ICT4D theory. Alternatively, researchers may choose to adopt other normative philosophies that are of more relevance to the circumstances of their research, particularly in non-Western contexts" (Tibben, 2015:649).

Tibben's (2015) argument to undermine the universality of singular development conceptions and for the value in plurality, shows some resemblance to poststructural thinking about development. Nevertheless, it is clear that his understanding is nuanced and that it does not readily lend itself to classification within a single category of Peet and Hartwick's (2009) framework.

4.2.1.12 GNS#12: Graham and Haarstad (2011)

Graham and Haarstad (2011) examine whether and how "Web 2.0 and the Internet of Things" can foster ethical consumption by promoting transparency in global production processes. Two features of their underlying argument warrants discussion:

1. **Ethical consumption within a conventional economic theory of development.** Graham and Haarstad (2011) clearly advocate for ethical

consumption, but there are indications that this is still done within a broadly neoliberal framework:

a) They seem to accept as inevitable, for example, that the "[i]ncreasingly complex structures of production are driven by transnational corporations (TNCs) in their quest for efficiency, new markets, and new competitive advantages" (Graham and Haarstad, 2011:1).

b) Furthermore, ethical consumption is framed in economic terms as an issue of lacking information in consumer decisions: "This article discusses whether increased access to commodity chain information can foster progressive social and environmental change by enabling more ethical consumption. More specifically, we discuss the potential for emergent Web 2.0 frameworks to transcend barriers of time and space to facilitate *flows of information about the chains of commodities*, thereby encouraging consumers to *make informed economic decisions* by being more aware of the social, political, and environmental impacts of available products" [own emphasis] (Graham and Haarstad, 2011:2).

c) Later on, they describe the sanctioning of offending companies as an issue of incentivisation: "It should be stressed that it is primarily activist consumers who can be expected to make use of and act on information about conditions of production. But given the rapid increase in the availability, quantity, and quality of information, it is not unlikely that groups of ethically oriented consumers will make use of this information to a sufficient degree to *create incentives for producers* to either rethink production practices, or to yield to demands for improved working conditions" (Graham and Haarstad, 2011:12).

2. **The empowerment of marginalised workers through Web 2.0.** The above notwithstanding, the authors seem to problematize the opacity of global commodity chains. They explore the potential of Web 2.0 to enable marginalised workers (working in the "actual world of production") to communicate narratives about commodity chains contrary to those presented by TNCs:

a) "The complexity of commodity chains leaves us with highly opaque production processes. Trans-national companies often strive to maintain this opacity through a separation between the 'airbrushed world' communicated through advertising [...] and the actual world of production" (Graham and Haarstad, 2011:1).

b) "Yet for the most part, information being transmitted through producers and branders means that narratives constructed about upstream nodes in commodity chains can be difficult to challenge. It

has been virtually impossible for actors in the Global South, particularly those subject to oppressive labor practices or destructive environmental practices, to challenge these narratives and communicate counternarratives" (Graham and Haarstad, 2011:2).

c) "Our perspective on Web 2.0 and commodity chain transparency adds another element to this debate by outlining potential ways for marginalized communities to share information about labor and environmental conditions of production [...] This globalization of knowledge and transparency therefore offers the potential to alter the politics of consumption and practices of production, as well as to empower marginal individuals and communities" (Graham and Haarstad, 2011:2).

This may be interpreted as embodying a more critical conception of development, in the vein of Marxist and socialist theories of development.

Graham and Haarstad's (2011) conception of development therefore incorporates contradictory notions of the inevitability of neoliberal global economy, but the need for the empowerment of labour. Given its primacy in their analysis, however, the former can be regarded as being more fundamental to their understanding.

4.2.1.13 GNS#13: Clarke *et al.* (2013)

Clarke *et al.* (2013) examine how ICTs can contribute to the fulfilment of the ideals encapsulated in the MDGs, with specific reference to urban poverty. They offer a systematic review of ICTs' strengths and limitations in the context of each of the eight MDGs. In this engagement, the following can be understood about their conception of development.

1. **A recognition of broader conceptions of development nevertheless limited by a reliance on the MDGs.** As is already evident from the title of their paper ("ICT 4 the MDGs?"), the MDGs assume centre stage in the authors' analysis. At the outset of their paper, they state that:

   a) "Since the year 2000, the Millenium Development Goals (MDGs) have anchored efforts to combat global poverty. As we near 2015, this article assesses ICTs' role in reaching the goals, with an emphasis on urban poverty in the developing world" (Clarke *et al.*, 2013:55).

   They do demonstrate a historical awareness of changing conceptions of development, devoting a full section to it (Clarke *et al.*, 2013:56-57) and stating, for example:

a) "And even for those whose vision of development is broader than (or even against) the economic growth agenda, the potential of ICTs to facilitate the building of social networks that empower people or to cut environmental costs suggests that ICTs have an important role to play in development [...] It is therefore important to assess both aspects — the growth question and the social understanding of development — when assessing ICTs' role in realizing the MDGs" (Clarke *et al.*, 2013:57).

However, their desire for a more holistic understanding of development is undermined by their strong commitment to the MDGs, which, in Peet and Hartwick (2009:94-95) description, merely represents a new face for neoliberal economics.

4.2.1.14 GNS#14: Andrade and Urquhart (2009)

Andrade and Urquhart (2009:1) proceed from the premise that ICTDs must be problematized for the "sets of cultural assumptions" that are embedded in them and then examine the dominance of English-language content on the internet as a vehicle for "cultural homogenisation" by the West. In these engagements, the following becomes apparent:

1. **An explicit commitment to the capability approach.** In the opening paragraph of their paper, the authors include a clear description of how they conceive of development:

   a) "Humankind is supposed to be slowly, but steadily [...] heading to a condition of ultimate happiness [...] This transitional phase is signalled by progress, which aims at development, and general wellbeing. The problem is that defining development is not an easy task; development has continued to be an elusive term. The predominant view is that the Western lifestyle embodies development. So, we have the term 'developed countries' as opposed to 'developing countries'; the latter is commonly used to describe countries without an industrial-based economy. These terms are contestable — they imply that (right) development is the one existing in Western societies. We are not at all convinced by that assumption, and prefer to take a broader view of development. We favour the definition of development as the arrangements that can bring social opportunities for a better life" (Andrade and Urquhart, 2009:1). The last sentence is followed by a citation of development economist seminal work, *Development as Freedom* (Sen, 1999).

   Taking this discussion at face value would place the authors' conception of development within the domain of development economics. Nevertheless, further examination is warranted.

2. **ICT transfers and the language of online content as domains for Western domination.** The authors stress at length how the transfer of ICTs from the Global North to the Global South (i.e. through ICTD initiatives) and specifically the language of online content (i.e. dominantly English) fit into patterns of Western domination:

   a) "We know that ICTs are predominantly created in the West — this means that very often the default language is English. More tellingly, the ICTs themselves may have some embedded assumptions about development and what development means. So ICT for development runs the risk of being a one-way street where certain cultural ideas are exported" (Andrade and Urquhart, 2009:1-2).

   b) "[I]n our frantic pursuit of providing technological infrastructure in developing countries, we may overlook the relevance of the content — information. Are we unwittingly contributing to a cultural homogenisation process — that is Americanisation — by just providing computers in a generous endeavour to help those people so far 'disconnected from the world'?" (Andrade and Urquhart, 2009:2).

   c) "Indeed, emerging networks of information exclude 'non-valuable' social groups, mostly constituted by those who neither provide nor consume information that leads to an increase on wealth and power [...] The data presented in the previous sections confirms that the West has virtually monopolised content production in the World Wide Web" (Andrade and Urquhart, 2009:7).

   d) "The current imbalance in content production on the Internet calls upon us to be innovative. We need to come with viable proposals of production and distribution of 'non-mainstream content' that can effectively counteract the obviously prevailing Western, and American, influence. An anti-American or anti-Western feeling does not motivate this call; however, this information asymmetry cannot be allowed to continue" (Andrade and Urquhart, 2009:7).

   In these critical calls, their conception of development would seem to show strong links to postcolonial thinking.

3. **A call for market-based interventions.** The authors stress the need for interventions in response to the above problematique, but nevertheless frame these interventions in neoliberal terms:

   a) "Since we live within a market-based framework, where absolutely everything has a cost for the producers and a value for the consumers; we cannot escape from that logic. Thus we need to work within the market framework. Any initiative aiming at delivering local content must be financially viable; otherwise it is doomed" (Andrade and Urquhart, 2009:8).

They proceed to discuss a successful case wherein a private company, through profit-maximising behaviour, represents an intervention along the above lines:

a) "It is hard to say if the initiators of this project can be classified as social entrepreneurs — those who build a consumer base for a social goal [...] However, they wittingly or unwittingly were able to fulfil the demand of contextualized content by online consumers, either local or expatriates. Furthermore, they have successfully been doing it within the dominant market logic" (Andrade and Urquhart, 2009:9).

Despite the strong postcolonial character of their criticism of Western cultural dominance, their conceptualisation of development is nevertheless more closely linked to conventional economic development theories, specifically development economics and neoliberalism.

4.2.1.15 GNS#15: Walsham (2010)

Walsham (2010) studies the "contribution of ICTs towards the achievement of specific development goals" in the context of India. While there is an implicit distance between the author's own conception of development and those that he observes in the literature, the following can nevertheless be discerned:

1. **Conceptions of developments drawn from the literature, roofed under the capability approach.** Although the author is careful to retain a distance from the development conceptions he distils from ICTD literature, he nevertheless notes the broader applicability of the capability approach:

   a) "This list of specific development goals [...] is somewhat eclectic, reflecting the varied objectives of ICT-based initiatives and approaches displayed in the literature. However, the specific goals in the list can be seen to fit within the five categories of development ''freedoms' described by Sen [...] particularly those of economic facilities, social opportunities and transparency guarantees" (Walsham, 2010:2).

   b) "This paper has addressed the research question as to what development goals have been achieved in India to date through the use of ICTs beyond the export-oriented ICT services industry. One way to summarise an answer to this question is to refer to Sen's [...] list of five types of 'development freedoms' which he regards as important in going beyond simplistic development measures such as gross national product" (Walsham, 2010:15).

In this sense, insofar as it can be discerned, the author's underlying understanding of development can be linked to development economics.

4.2.1.16 GNS#16: Srinivasan (2012)

Srinivasan (2012) examines the unintended consequences of the Dhan telecentre project in India, exploring its impact on the female operators of the telecentre kiosks themselves.

1. **Female empowerment as an unintended, but welcome side effect.** The author begins by noting that most telecentre projects — aimed at "[reducing] information asymmetries, leading to the creation of a global and inclusive 'information society' " — had largely failed to deliver on their developmental promises, but that their impact had not been assessed in broader terms:

    a) "At least three questions need to be asked of kiosk projects and their fundamental premise that the availability of ICTs and the achievement of development goals are related. The first is whether or not information kiosks reduce information asymmetries or make information accessible to all sections of a population. So far, research on such projects suggests that access to information through kiosks is extremely uneven within a community for a variety of reasons [...] The second question is whether or not access to information does, indeed, translate to social and economic changes in a community. Research suggests that the relationship between information access at kiosks and socioeconomic change is hardly universal, as it is mediated by a variety of historical, political, and cultural factors [...] This article focuses on a third question, asking whether or not it is in their role as information providers that kiosks shape the most significant changes. [...] Since [this is] focused on information provision, there is little research on kiosk projects that looks beyond their functioning as information providers. " (Srinivasan, 2012:101).

On the basis of her investigation into the impacts of the project beyond its original objectives, she finds that the project had meaningfully improved the lives of its female kiosk operator (KO)s and that the nature of this improvement cannot be understood in purely economic terms:

a) "Women KOs have been able to use the economic and social resources available to them in their role as KOs in the renegotiation of their everyday lives in small ways [...] Their ability to contest their family norms, for example, drew largely from their belief that the Dhan project staff was behind them. They also drew strength

from their interactions with other women KOs who faced similar circumstances" (Srinivasan, 2012:112).

b) "KOs have benefited in unanticipated ways from the project. Further, these benefits do not all derive directly from access to information, nor are they solely economic. Rather, they are linked to the opportunities made available by being associated closely with a project of this kind, in particular, through the creation or modification of spaces for interaction" (Srinivasan, 2012:112).

In her focus on female empowerment, the author's conception of development can be construed as incorporating feminist development theories.

4.2.1.17 GNS#17: Lunat (2008)

Lunat (2008:1) studies how the internet empowers civil society in developing countries, with a specific focus on "the impact of the internet in redefining the public sphere and its contribution to the emergence of the Zapatista effect". The author's engagement with development is relatively explicit:

1. **The capability approach as point of departure.** The author makes his commitment to the conception of development as freedom clear and emphasises his grounding in political freedom:

   a) "I will adopt a freedom-centred view of development, proposed by Amartya Sen" (Lunat, 2008:1).

   b) "I will particularly focus on the first type of freedom discussed by Amartya Sen, Political Freedom. 'Politically unfree citizens — whether rich or poor — are deprived of a basic constituent of good living' " (Lunat, 2008:2).

   In Peet and Hartwick's (2009) categorisation, this places the author's engagement with development in the domain of development economics.

4.2.1.18 GNS#18: Thapa and Sæbø (2014)

On the basis of a review of ICTD literature, Thapa and Sæbø (2014) identify a number of prevalent development theories. On the basis of their inquiry, they identify Sen's capability approach as "a suitable framework with which to explore the link between ICT and D" and proceed to show its value by analysing a number of further case studies. From this engagement, the following becomes apparent:

1. **A commitment to Sen's capability approach as a suitable framework for examining ICTD.** While the authors provide a broad overview

of development thinking, they devote particular attention to Sen's capability approach and ultimately explicitly adopt his conception of development, seeming to argue that it can be used as an overarching theory of development:

a) "Like Sen's CA [capability approach], which could be argued to be more relevant, we view development as human development [...] Scholars have delved into human development to some extent [...] but have only recently begun to adopt Sen's ideas [...] This is an encouraging trend, since Sen's CA is seen as a suitable and appropriate lens through which to investigate how ICT may foster development" (Thapa and Sæbø, 2014:5).

b) "This paper utilized Sen's CA framework to analyze the selected articles and to understand the link between ICT and Development" (Thapa and Sæbø, 2014:6).

c) "We employed an evaluative lens based on Sen's theory of CA, and, as discussed earlier, *the CA can be used as a common framework to relate ICT and D*" [own emphasis] (Thapa and Sæbø, 2014:7).

d) "Through this analysis, we want to show that *the notion of CA was implicitly present*; however, the explicit use of this approach could help in understanding the nuances of the development context better" [own emphasis] (Thapa, 2011:8).

e) "We propose that Sen's CA may be a common approach for both practitioners and researchers to understand such relationship" (Thapa and Sæbø, 2014:12).

In light of the above, the authors' conception of development can be interpreted as falling within development economics.

4.2.1.19 GNS#19: Navarra (2010)

Navarra (2010:128) studies the structure of ICT programmes in the context of "the global transformation of government", drawing on a case study of the e-governance in Jordan. In his analysis of how "the architecture of global ICT programs can contribute to the ambitious targets set by the Millennium Development Goals", the following can be observed:

1. **A focus on good governance, studied in terms of the MDGs.**

   a) "Better accountability and improved transparency are the identified characteristics of good governance, and the latter becomes the *conditio sine qua non* for the rich states and international agencies to supply aid to developing states [...] Hence, innovations and reforms in the governmental and bureaucratic apparatus through

the introduction of ICT and e-government are seen as an important prerequisite for aid and global development policy initiatives" (Navarra, 2010:129).

b) "[T]he United Nations (UN) Millennium Development Goals and the good governance initiative of the Organisation for Economic Cooperation and Development (OECD) have set ambitious policy targets to deepen democracy, promote human development and economic growth among LDCs [less developed countries] and both consider ICT as a facilitator and enabler for the achievement of these goals" (Navarra, 2010:130).

c) "Global ICT programs [...] are implicated in processes of transforming relationships previously, politically negotiated within the state and bureaucracy into transnational public–private networks. This may involve, for example, the marketization of various functions of the state and a move toward a new regime based on contractual agreements, outsourcing of government services and a more overt role for the private sector (not just in terms of models or best practices) for service delivery. Good governance, in this sense, involves the creation of effective institutions to smooth the operations of the market and allows free relationships of exchange to prosper" (Navarra, 2010:131).

d) "[I]nternational institutions and global networks are important political forces that need to be reflected in such studies as more countries pursue the ambition to develop by using ICT programs to link their economic and industrial structure to global markets and to the international circuit of trade, transport, banking and finance. It then becomes appropriate to frame the development of e-governance within the wider agenda of development policy and as essentially associated with global ICT programs as a mechanism to achieve simultaneously decentered concentration and decentralised cooperation over the targets set by the Millennium Development Goals" (Navarra, 2010:137).

Navarra's (2010) focus on good governance and adoption of the MDGs as a suitable broader framework for thinking about development, corresponds to Peet and Hartwick's (2009:94) description of the "new liberal neoliberalism".

4.2.1.20 GNS#20: Islam and Grönlund (2011)

Islam and Grönlund (2011:95) proceed from the assumption that mobile phones can economically empower farmers and, on the basis thereof, examine "what factors affect mobile phone ownership and use and what professional informa-

tion is asked for". Two aspects of their engagement with development are of pertinence:

1. **Effective participation in the market, enabled through more comprehensive information, as a development outcome.**

    a) "Making farmers in developing countries more informed about market opportunities is generally considered a very important way to develop the agricultural sector and increase individual farmers' income" (Islam and Grönlund, 2011:95).

    b) "[T]he economy of Bangladesh is heavily dependent on agriculture, the growth of which depends on rural development. However the sector is poorly developed, for several reasons [...] There are some other factors pertinent to market systems, such as tolls in markets, extortion during transportation, hoarding, smuggling, commission charged by the middlemen, wholesalers' syndicates and creation of artificial supply-shortage [...] While this is clearly not a panacea, [...] '[e]fficient market information (MI) provision can be shown to have positive benefits for farmers, traders and policymakers' " (Islam and Grönlund, 2011:96).

2. **An explicit link to the capability approach.** The authors note that "[d]evelopment is the continuous process of improving quality of life", but that "there are several opinions and methodologies regarding ensuring and measuring that quality" (Islam and Grönlund, 2011:97). They focus specifically on Sen's capability approach, devoting a discussion to its core tenets (Islam and Grönlund, 2011:97). Their adoption of this conception of development is further evidenced later on:

    a) "As human capability is the basic fuel for development [...] one of the fundamental ways of achieving the capabilities for human capital is the acquisition of media literacy" (Islam and Grönlund, 2011:107).

In light of the above, Islam and Grönlund's (2011) engagement with development is best described as falling within the domain of development economics.

4.2.1.21 GNS#21: Mofleh (2008)

Mofleh (2008) attempt to identify the factors responsible for what they describe as the poor performance of Jordanian ICT programmes. In their examination, the following engagement with development can be discerned:

1. **Governments as contributors to development.** The authors seem to assume a meaningful role for governments in driving development:

a) "[Castells] explains that a country sustains a *developmental status* when 'it establishes as its principle of legitimacy its ability to promote and sustain development, understanding by development the combination of steady high rates of economic growth and structural change in the economic system both domestically and in its relationship to the international economy'. The pioneer for a *state sustaining developmental status* has been Japan [...] Research has linked economic growth with ICT adoption in developing countries" [own emphasis] (Mofleh, 2008:2).

b) "Despite the global boom in *governments investing in ICT initiatives and promising to achieve social and economic development*, the *opportunities for the success of these initiatives* in developing countries have been largely unexploited" [own emphasis] (Mofleh, 2008:3).

c) "The results of this study show that the Jordanian *government* has been sincere in deploying ICT based initiatives in order *to achieve social and economic developmental goals*. This is reflected by the number of programmes that are aimed at all aspects of civic and public life" [own emphasis] (Mofleh, 2008:6).

d) "For developing countries to achieve better e-Transformation, *governments* should adopt a realistic long-term transformation strategy. The strategy should accommodated the country's ICT initiatives and reflect acceptable levels of change attuned to the country's resources, and executed in stages and within an acceptable timeframes that would respond to both the social and cultural changes brought by ICT" [own emphasis] (Mofleh, 2008:11).

The above corresponds well to the notion of the developmental state, which is understood as forming part of Keynesian economics (Peet and Hartwick, 2009:63).

4.2.1.22 GNS#22: Ngwenyama and Morawczynski (2009)

Ngwenyama and Morawczynski (2009) study the expansion of ICT infrastructure in give Latin American "emerging economies", with a view to identifying those factors that influence the efficiency of such expansion. The following features characterise their engagement with development:

1. **Beyond market liberalisation towards the unique characteristics of emerging economies.** The authors note existing trends of market liberalisation amongst the Latin American countries that they study, as well as existing studies highlighting the positive impact of privatisation on ICT expansion. They argue, however, that there is a need to take a broader set of factors into account.

a) "Within the countries used in our sample, it was the 1980s debt crises that instigated this move toward economic liberalization [...] During this period, the national governments of these countries faced instances of high foreign debt, rising inflation and unemployment rates, and perceived risks of political instability. In reaction to such threat, they moved toward market liberalization as a strategy for stimulating economic growth. The debt crises also had profound implications for the ICT environment in these Latin American countries [...] Because Latin American governments were no longer able to maintain, expand, or modernize their national telecommunication infrastructures, there was a move toward privatization [...] This trend toward privatization was coupled with new types of regulatory regimes that were meant to stimulate competition and thereafter improve efficiency" (Ngwenyama and Morawczynski, 2009:240)

b) "A few studies have investigated [the impact of privatisation on] ICT expansion in Latin America [...] What is missing from these studies, however, is how factors such as civil infrastructure development, knowledge, and economic status impact ICT expansion efficiency" (Ngwenyama and Morawczynski, 2009:240)

On the basis of their investigation, they argue that the contexts of the emerging economies that they examine are different to those of developed countries and that this must be taken into account in studying the efficiency of ICT infrastructure:

a) "[S]imple measures of efficiency cannot answer the question of how well emerging economies are using their resources for the purposes of ICT sector expansion. Simple efficiency measures do not take into account exogenous factors, which may affect efficiency" (Ngwenyama and Morawczynski, 2009:252).

b) "Policy makers and researchers can benefit by viewing ICT infrastructure expansion as a complex evolutionary process in which ICTs complement other basic infrastructures and are dependent on socioeconomic and human capital attainments. The findings of this study suggest that policy makers consider some important issues when planning for ICT infrastructure expansion: (1) careful assessment of existing conditions and the level of technical capability, the ability to produce local engineers and technicians, and the level of development of basic civil infrastructure. These factors could hinder the expansion of the ICT infrastructure, and a lack of understanding of these conditions could lead to unrealistic goals and wasted investment; (2) complementarity of investment strategies to achieve improvements in those factors that may impede expansion. For example, more synergistic planning will be needed to achieve ad-

> equate levels of development of civil infrastructure and the technical capability necessary to expand and maintain ICT infrastructure." (Ngwenyama and Morawczynski, 2009:253)

This line of argumentation allows for the authors' development conception to be understood with structuralist economics.

4.2.1.23 GNS#23: Unwin (2010)

Unwin (2010:1) studies moral dimensions of e-government in the context of the Global South. He calls for "ethical resolutions concerning notions of trust, privacy, and the law" and also devotes attention to the "ethical problems that emerge in linking the notion of Universal Human Rights with the introduction of ICTs in developing countries". Herein, the following can be discerned:

1. **A critique of universalist notions of Western individual rights-based ethics in ICTD discourses.** Unwin (2010) critiques the universalism that he views as inherent to the notion of universal human rights in general and specifically in ICT discourses:

   a) "[B]y linking the ethics of the Information Society directly to the Universal Declaration of Human Rights, [the World Summit on the Information Society's claims about ethics] explicitly suggests that there are indeed universal human rights concerning these technologies This is nowhere actually justified, nor is the contested nature of universal human rights [...] ever recognised" (Unwin, 2010:2).

   b) "[T]he creation of an increasingly interconnected world through the use of ICTs has enabled powerful interests to assert ever more effectively that their vision of human rights is indeed the one that is truly universal" (Unwin, 2010:2-3).

   c) "[T]his is not to argue that the Universal Declaration of Human Rights has not had value, but it is to emphasise most emphatically that it is not universal, and should instead be seen as having emerged in a particular social, economic, and political context [...] Of considerable importance for the argument that follows is the recognition that the declaration is one that is above all based on individual rights, rather than communal responsibilities" (Unwin, 2010:3).

   In the author's highly critical account of the motivations behind e-government, his aversion to universalism is again apparent. In this case, he explicitly qualifies it to mean Western domination.

   a) "At this stage, it is useful to stress three important aspects of e-government. First, it is generally a top down process, decided upon

> and implemented by governments. Moreover, in the case of developing countries, such decisions are usually heavily influenced by the policies of international agencies and donors [...] Second, despite the increasingly globalised character of ICTs, and their ability almost instantaneously to bring people together from many different parts of the world, much of the regulation pertaining to such things as use of the Internet is actually at a national scale [...] E-government is thus fundamentally about ways in which ruling elites can use ICTs to retain their power [...] A third important aspect of many e-government initiatives in developing countries is their association with explicit attempts to enhance so-called democracy [...] and to impose a particular kind of government structure. This is yet another example of the universalising tendency of the current global system of power, where the world's richer countries, such as the USA and the states of Europe are seeking to impose their own model of governance on the rest of the world through institutional structures such as the United Nations" (Unwin, 2010:5).

The author's contentions are summarised in the concluding section of his paper:

a) "[The] exploration has highlighted three other related areas of particular interest and concern: the relevance of human rights; the balance of interests between individuals and communities; and the real interests that underlie the introduction of such e-government initiatives" (Unwin, 2010:12).

b) "I suggest here that greater emphasis on the responsibilities of individuals and states towards poor people rather than the purported idealised rights of individuals, might lead to more effective development practices [...] One of the failures of the individualised, economic growth and right-based approaches to poverty reduction has been that in focusing on individuals they have failed to deliver the communal dimensions that are so central to the shaping of coherent and lasting positive change in support of the interests of poor people" (Unwin, 2010:12).

These critiques may be understood to imply a poststructural conception of development.

4.2.1.24 GNS#24: Majumdar (2010)

Majumdar (2010:21) examines "the relationship, for several hundred key Indian information technology arms, between exporting behavior and the proportion of firm's product that is distributed among employees as the wage share." The underlying question is therefore whether firm-level gains from globalisation are

relayed to its employees. In studying this question, the following characteristics of the author's engagement with development can be discerned:

1. **A concern for how labour is rewarded in the global economy.** By positing as important the question of how labour is rewarded in relation to firms' gains, the author implies that a concern for the position of labour is warranted. In addition, this is evidenced in the author's implied contention that if policy recommendations to export do not benefit employees of firms engaging therein, they are not worth pursuing:

    a) "Since an important policy recommendation for many emerging economies is to engage in export-led growth, if the outcomes are equivocal or inconsequential for the employees of these firms in the emerging economies, then a legitimate question can be raised with respect to such a policy: Why bother?" (Majumdar, 2010:22).

    Despite an isolated ethical appeal (highlighted in the second quotation below), this concern is nevertheless still framed in market-based terms:

    a) "The unequal distribution of the rewards of growth can adversely influence both future growth and the gains from such growth. By downwardly altering the share that employees of firms receive, this process can shrink overall market size and retard employee motivation. The ability of those in employment to buy the goods and services produced can be undermined by the shrinkage of the market. Economic growth and globalization, it seems, have not been associated with a rise in the wage share" (Majumdar, 2010:22).

    b) "Do firms that export more, thereby participating more extensively in the global economy, share the rewards of such overseas market participation with their employees? This is an important issue, going to the heart of rent-sharing and *good human relations*, as it deals with how the benefits of the income generated within the firms themselves are shared" [own emphasis] (Majumdar, 2010:22).

    Holistically, then, although Majumdar (2010) shows a concern for the state of labour, this concern can nevertheless still be understood to be framed within a neoliberal economic framework.

4.2.1.25 GNS#25: Mukherjee (2015)

Mukherjee (2015:1) examines capacity strengthening in the case of an Indian public hospital information system, to explore the "distinction between human capital and human capability". Her engagement with development is explicit and can be understood as follows:

1. **Sen's capability approach as point of departure for capacity strengthening.** Mukherjee (2015) explicitly grounds her approach to capacity strengthening in Sen's capability approach:

   a) "[W]hile Sen's distinction is powerful to understand the difference between capital and capability, he does not go into details of how such capacity strengthening efforts can be operationalized in these two situations [...] In this paper, I try to understand these issues" (Mukherjee, 2015:1-2).

   b) "In the next section, I first review relevant literature based on development and capacity, and next articulate a theoretical framework drawing upon Sen's distinction of human capital and capability" (Mukherjee, 2015:2).

   c) "Strengthening capacity will contribute positively to broader development outcomes. Capacity is a convenient way to help make sense and organise the world(s) of development, and the conditions that influence them. Capacity is more than simply descriptions or guidebooks as to what to do; they represent theories of how development works, and evolve over time. Capacity models assist in framing issues of development, including the work of individuals or groups and institutions. After arguing for the intricate linkage between development and capacity strengthening, I seek to develop a conceptual framework to help operationalize this linkage. Drawing from Sen, I identify four questions that help me do so" (Mukherjee, 2015:3).

   In terms of Peet and Hartwick's (2009) framework, Mukherjee's (2015) conception of development can be placed in the category of development economics.

4.2.1.26 GNS#26: Avle (2014)

Avle (2014) examines the conceptions of development underlying technology entrepreneurs' reasons for returning to Ghana from abroad. Although she engages, for the most part, with the development notions arising from her interviews with returnees, her approach shifts from a descriptive to a more normative mode late in the paper. It is on the basis hereof that her own conception of development can be described:

1. **A call for pluralistic, grassroots development.** Having discussed her findings, Avle (2014) considers development in a more general sense and reveals a strong preference for developmental pluralism, specifically when emanating from local, grassroots actors:

a) "Development [...] is very much a contested notion, with multiple meanings for different social groups. These multiple meanings are articulated, or given expression, in ways that are not uniform, as they derive from the stock of personal and lived experiences that guide individual action. Moreover, their translation into action (or enactment) also reflects the various circumstances, experiences, goals, and capabilities that different people bring to the term. Thus, any meaningful engagement, be it through aid, capacity building, state policy, or other means, must include *the subjectivities of those for whom it is most pressing or relevant* and acknowledge the roles they give themselves. In some ways, this is similar to what advocates of participatory development emphasize, particularly on the point of *giving voice and agency to those for whom decisions are being made*, as well as a deeper understanding of sociocultural contexts [...] However, the core issue here is *the independent, uncoordinated, and locally focused activities* of those living within the 'development context,' rather than *an imposed or externally driven process by aid or donor agencies or even the state.* This kind of development *from within* is likely more sustainable, given the right institutional arrangements and active engagement from those impacted by actions toward that end" [own emphases] (Avle, 2014:10).

The value she attaches to pluralism in developmental thinking, coupled with her appreciation of local, grassroots, and bottom-up development, reveals elements of postdevelopmental thinking. However, her view does not include the radical rejection of Western modernity that Peet and Hartwick (2009:229) describe as being associated with postdevelopmental thinking. Viewed within the broader context of her study and the scope that she sees for technology entrepreneurs (i.e. private sector actors), it is clear that hers is a postdevelopmental conception wherein there is ample room for individuals to contribute to development through market mechanisms, should they wish to do so. The key for Avle (2014), then, is development *from within.*

4.2.1.27 GNS#27: Kleine *et al.* (2012)

Kleine *et al.* (2012) is an attempt to apply Sen's capability approach, operationalised within the "Choice Framework", to ICTD action research. In this endeavour, their engagement with development is fairly clear:

1. **The capability approach as point of departure.** The authors unambiguously draw on Sen's capability approach for the purposes of their study:

a) "The aim is to show, with the help of a concrete example, our attempt at applying the capability approach to an information and communication technology for development (ICT4D) action research project" (Kleine *et al.*, 2012:42).

b) "Technologies can be a source both of freedom and of unfreedom. From a capability approach perspective, development itself is defined as the freedom that people have to live the lives they have reason to value [...] Thus, technologies can be drivers for and against such development" (Kleine *et al.*, 2012:42).

c) "Human development, for the purpose of this paper, is understood as a process of expanding the real freedoms that people enjoy to lead the lives they value [...] The aim of human development is thus to expand people's capabilities" (Kleine *et al.*, 2012:44).

In this sense, their engagement can be traced to development economics.

4.2.2 Global South

4.2.2.1 GSS#1: Valderrama and Neme (2011)

Valderrama and Neme (2011) examine how investments in ICT impact Mexican manufacturers' exports. From the backdrop against which their investigation is set, the following becomes apparent:

1. **The primacy of the knowledge and information economy.** Early in the paper, the authors introduce the broader context in which they position their study, revealing a conception of development grounded in economic terms and driven by the dynamics of a knowledge economy:

   a) "The changes created by *a global economy based on knowledge, investment and use of information and communication technologies* [...] has become an explanatory factor of advances in productivity, international trade and economic growth in industrialized countries" [own emphasis] (Valderrama and Neme, 2011:1).

   The knowledge economy — or "new economy", as they term it, becomes a central theme in the authors' discussions:

   a) "From the technological revolution of computers and telecommunications in the late nineties, the term of *new economy* arises. It refers to the growth of ICT-producing sector and the spread of its use in all sectors of the economy. Machlup [...] describes the New Economy with the term 'knowledge-based industry' " [own emphasis] (Valderrama and Neme, 2011:2).

b) "[T]here are basic principles of the *new economy*, based on information, communications and intangibles. Physical resources are relatively less important, because now the information and services are central. Given this feature, individuals are the most important asset in the new economy, not only for their physical abilities but for their knowledge and skills" [own emphasis] (Valderrama and Neme, 2011:3).

c) "The *new economy* refers to an economy centered on information and knowledge, where information is considered as input, output and strength that move the economy and relates, through knowledge, economic agents. In consequence, information and knowledge can be considered as two, related but different, key factors in productivity, production and, ultimately, with the expansion of domestic market to foreigners, in exports of economies" [own emphasis] (Valderrama and Neme, 2011:3-4).

d) "In this type of economy, knowledge is created, acquired, transmitted and used effectively by firms, organizations, individuals and communities to promote economic and social development as well as firm benefits; so, the creation, distribution and use of knowledge is the greatest engine for growth, wealth and employment" (Valderrama and Neme, 2011:4).

The developmental orientation revealed above statements clearly links Valderrama and Neme's (2011) engagement to new growth theory, in the broader domain of Keynesian economics.

4.2.2.2 GSS#2: Siyao (2012)

Siyao (2012) asserts the centrality of information to rural agricultural development and examines barriers to the attainment of such information in Tanzania. In this examination, the following can be highlighted:

1. **Information as driving force of development.** Siyao (2012) consistently emphasis the link between information and development:

   a) "[T]o get information, people need to change the state of their knowledge. This means that information is a critical resource for socio-economic development because it empowers people to make informed choices for attaining better livelihoods" (Siyao, 2012:2).

   b) "Information is one of the most valuable resources for rural development [...] and can assist small-scale farmers in making informed decisions and taking appropriate action. To speed up development, crucial information needs to be made accessible" (Siyao, 2012:2).

c) "Information is considered as an important resource that contributes to the development of a nation. It provides the core for the development of knowledge, it is the basis for innovations, and is a resource for an informed citizenry, with the result, that it is a key commodity for the progress of a society" (Siyao, 2012:3).

d) "Information functions as a tool for acquiring knowledge, and decision making, and it is communicated between actors. In order for information to contribute positively to agricultural development its quality should rest solidly on three pillars which are accuracy, timelines, and relevance" (Siyao, 2012:4).

e) "[Q]uick and easy access to information is of vital importance for the development of rural areas [...] Information enhances agricultural development, and therefore also the general development of a country" (Siyao, 2012:4).

f) "[T]he information and communication infrastructure is considered as an indispensable condition for widespread socio-economic development in this age of globalization and information age" (Siyao, 2012:4).

Although the author includes some references to 'knowledge', the contexts in which they are used seem to indicate that his conception of development is not rooted in the idea of a knowledge economy, associated with new growth theory. Although his understanding of the exact path between information and development remains relatively unclear in his discussions, some passages seem to point to an instrumental understanding of information as a means to increase the efficiency of market mechanisms to the benefit of farmers:

a) "Agricultural information is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, food security and national economies" (Siyao, 2012:3).

b) "With information, small-scale farmers can reduce inputs costs, improve transport links and can have collective negotiations with buyers, hence widening the market for their products [...] [I]mprovement of agricultural productivity will be realised when farmers are linked to market information" (Siyao, 2012:4).

On the grounds of the above and specifically the author's seeming assumption that markets made efficient by information will promote agricultural development, places the author's conception of development in neoclassical economics.

2. **A minor gender perspective.** The author introduces information asymmetries due to gender early in the paper and later includes a more explicitly normative focus on gender:

    a) "The provision of agricultural information should be gender sensitive. That means agricultural information should not be geared to meeting the needs of men only. Both males and females are important actors in agriculture therefore, they equally need information to farm successfully" (Siyao, 2012:15).

    b) "Women should be involved in the decision-making process at all stages: Women in Sub-Saharan Africa are key actors in agriculture and produce 80% of the region's food" (Siyao, 2012:15)

    c) "Rural women should be empowered through the provision of education [...] [W]omen need to be empowered to increase productivity through access to information so that the country's population can achieve food security" (Siyao, 2012:15).

    These can be linked to feminist development theories.

In summary, Siyao's (2012) conception of development is primarily rooted in a market-based understanding linked with neoclassical economics, but includes a lesser focus on gender, additionally linking his conception to feminist theories of development.

4.2.2.3 GSS#3: Krauss and Turpin (2013)

Krauss and Turpin (2013:1) call for self-reflectiveness in ICTD researchers' approach to addressing development problems, such that the researcher becomes aware of their "own assumptions, preconceptions, and limitations as well as local concerns, needs, and realities". The following can be distilled from their engagement:

1. **A deconstruction of the 'developed/developing' dichotomy in development interventions.** The authors describe what they see as the typical model of engagement in African ICTD interventions:

    a) "[ICT4D] endeavours in Africa are generally based on the often subconscious assumption that there are two groups of people involved: those in need of development (the developing) and the outsider 'doing' the development (the developed). The party that is most obviously challenged (e.g. socially, economically, intellectually, culturally, and/or personally) is typically regarded as the developing group, and it is within this group that most emancipation and change is assumed to take place" (Krauss and Turpin, 2013:2).

They proceed to deconstruct this position and argue that it should be replaced with a fundamental focus on the realities and understanding of those "being developed":

a) "In ICT4D initiatives, the developing group is typically assumed to be the primary focus of developmental and emancipatory efforts. Moreover, ICT4D literature seldom portrays the 'outsider' or researcher as the deprived party or the ones in need of emancipation. In this paper, the authors attempt to show that exploring appropriate ways of introducing the ICT4D artefact, and questioning the value of ICT to the community, may provide a greater learning experience and 'eye-opener' for the outsider researcher and practitioner than for local community members who may be challenged by foreign ICTs. This highlights the need for the outsider-researcher to be enlightened and emancipated from preconceived ideas, assumptions, and repressions sustaining mechanisms before attempting emancipatory ICT4D work" (Krauss and Turpin, 2013:2).

b) "In line with this argument, issues of meaning and in particular issues related to the meaning of emancipation come into play. We demonstrate how the outsider-researcher could initiate an attempt to understand meaning from the point of view of the lifeworld and realities of the local people [...] and ultimately how these approaches may lead to a situation where the local people are treated in such a way that their traditional social fibre stays intact and that their cultural practices, protocol, agendas, values, and dignity are observed and respected" (Krauss and Turpin, 2013:2).

On the basis of the authors' critical approach with its focus on deconstruction, the authors' conception of development can be linked to post-structuralism.

4.2.2.4 GSS#4: Kamel *et al.* (2009)

Kamel *et al.* (2009) examines how ICTs can impact economic development in Egypt. Through a careful consideration of their investigation, the following can be noted about their engagement with development:

1. **Development understood in economic terms.** A consistent and clear theme in the author's arguments is a conception of development rooted in economic growth. Early in the paper, the authors describe "socioeconomic development" in developed countries in terms of their gross domestic product (GDP):

   a) "Experience has proved that given the proper infrastructure, ICT can be an enabler for socioeconomic development. Examples from

> the developed world where significant ICT investments had major impacts include increasing the United States gross domestic product (GDP) by 7.8%, 8.0% in the UK, 8.3% in Singapore and 8.4% in Australia; all such developments were linked with improved productivity, competitiveness and citizen engagement" (Kamel *et al.*, 2009:1).

Later, the authors argue that economically liberalising reforms undertaken by Egypt in the 1990s were successful:

a) "In the early 1990s, the government started a comprehensive economic and structural adjustment reform program aiming at generating sufficient and sustainable growth rates, improving the standard of living, reducing unemployment and bringing inflation rates to lower levels. The program has successfully achieved macroeconomic stability. Central to this success were three main pillars set by the government to allow Egypt to present itself as excellent provider of ICT services, and address development issues internally. The pillars included emphasizing continuing research and development on the applications of ICT in traditional and new industries to leverage competitiveness, providing universal access to the Internet and related services to encourage entrepreneurs and markets to fulfill their potentials and maintaining regulatory policies allowing Egypt to become an attractive foreign investment opportunity" (Kamel *et al.*, 2009:6).

Finally, in presenting recommendations at the end of the paper, further details about the authors' economic conception of development are revealed. Herein, a hybrid focus on market liberalisation and active government intervention comes to the fore.

a) "To develop *comprehensive support programs* that target increasing the competitiveness of local ICT companies" [own emphasis] (Kamel *et al.*, 2009:17).
b) "To leverage *economic reform* steps that can help create an *enticing environment to promote FDI* vital to bring emerging ICT to Egypt" [own emphasis] (Kamel *et al.*, 2009:17).
c) "To *overcome trade barriers* that exist among Arab countries allowing Egypt to realize economies of scale building on its Arab, African and Mediterranean identities to extend its market reach to capture the content market for Arabization and Arabic language applications" [own emphasis] (Kamel *et al.*, 2009:17).
d) "To continue investing in building ICT human resource capacities and professionals to help bridge and help improve the intra and inter digital divides" (Kamel *et al.*, 2009:17).

e) "To establish *more [public-private partnerships]* to create the proper and flexible environment to retain young professionals and provide them with competitive offers that other markets are offering" [own emphasis] (Kamel *et al.*, 2009:17).

f) "To proceed with the *liberalization agenda* for the telecom sector" [own emphasis] (Kamel *et al.*, 2009:17).

g) "To complete the universal access plan to induce critical mass deployment of ICT" (Kamel *et al.*, 2009:17).

h) "To build more *economic zones* and technology parks with the aim of attracting FDI as well as building local expertise in ICT" [own emphasis] (Kamel *et al.*, 2009:17).

Viewed holistically, Kamel *et al.*'s (2009) conception of development is very clearly envisioned in economic terms. However, as specifically revealed in their above recommendations, and perhaps contradictorily, this conception includes strong elements of both neoliberal and Keynesian economic thinking.

4.2.2.5 GSS#5: Mow (2014)

Mow (2014) examines the evolution of ICT in Samoa, paying particular attention to the obstacles encountered and strategies used, with a view to making policy recommendations. The following can be noted about the study's engagement with development:

1. **A passing reference to Sen.** Although the author explicitly grounds his conception of development in Sen, he does not elucidate the nature of this link, other than to state that:

   a) "The study also encapsulates Sen's Capability approach [...] to development where the focus is on the value of ICT opportunities and how users can actually reap benefits from these opportunities. The essence of these theories are well reflected in the goals and themes of the National ICT policies and plans (2002- 2017)" (Mow, 2014:3).

   Whilst, based on the above, the author's development conception can be linked to development economics, his limited engagement with Sen's capability theory weakens this link considerably.

4.2.2.6 GSS#6: Chavula (2013)

Chavula (2013:5) investigates the "impact of telecommunications penetration on peoples' living standards in Africa through their impact on per capita income growth." The following becomes apparent through an examination of his engagement with development:

1. **Efficient markets as driver of economic growth.** The author emphasises investment in telecommunications as positively impacting "productivity and efficiency" and along that pathway contributing to economic growth (Chavula, 2013:5). In a description of telecommunications development in Africa, the author's view of efficient market mechanisms and foreign direct investment as drivers of economic growth become apparent. He specifically mentions the structural adjustment programmes instituted by the World Bank and other international financial institutions in the 1980s, aimed at market liberalisation:

    a) "This [the structural adjustment programmes] led to the opening up of portions of their telecommunications markets to competition and creation of independent regulatory institutions. However, it has been observed that the governments often retain partial ownership of the incumbent, at least initially, and the governments sometimes give the newly privatized firms temporary monopoly powers by prohibiting competition in order to entice investors. Empirical studies have shown that these developments have most of the times seriously delayed the real benefits that competition could bring, hence negatively affecting the whole purpose of reforms [...] The main premise of the reform was to allow a multiplicity of operators to take advantage of the technological innovations in the sector to enhance and provide services that meet the different needs of subscribers. These processes have had a huge impact on the telecommunications sector which has experienced tremendous growth in players within the sector, providing new services and products with positive spill-over effects on the overall economic growth" (Chavula, 2013:7).

    b) "The introduction of competition through these economic reforms has contributed significantly to the growth of the telecommunications sector as well as the structure of African economies which have been predominantly dominated by the agricultural sector [...] there is a growing body of research suggesting that telecommunications are an essential tool for economic regeneration as they have a significant impact on economic growth and lead to an increase in foreign direct investment" (Chavula, 2013:7).

    c) "Telecommunications also facilitate information flow and enhance communication between buyers and sellers, rural and urban areas and within the different sectors, leading to lower communication costs, thereby allowing individuals and firms to send and acquire information quickly and cheaper on a variety of economic, social and political issues [...] This makes markets operate more efficiently, hence increasing the overall productivity of the economy in general" (Chavula, 2013:7).

In concluding the paper and offering recommendations, the author also references the free movement of production factors as a recommendation:

a) "There is a need to devise regional policies that would enhance the substantial mobility of factors of production such as labor and capital between countries as well as enhancement of technology transfer and diffusion between these countries" (Chavula, 2013:20).

In subscribing to these positions, the author's underlying conception of development as economic growth, driven by an efficient and free market, can be discerned. This places his conception within the domain of neoliberal economics.

4.2.2.7 GSS#7: Mukerji (2008)

Mukerji (2008) studies the inception of telecentres in India and attempts to construct a classification of differing types of telecentres. In this endeavour, the following can be noted:

1. **A combination of perspectives.** The author describes telecentres as contributing to development through four main mechanisms, namely the "[d]evelopment of physical infrastructure", "[e]conomic development", "[a]dministrative reforms", and "[s]ocial and cultural development" (Mukerji, 2008:1-2). She describes the specific impact of each in turn:

   a) With regard to the first, "[t]elecentres act as a means to bridge the digital divide [providing] connectivity in rural areas" (Mukerji, 2008:2).

   b) With regard to the second, "[t]elecentres effect economic development by generating direct or indirect employment; integrating relatively isolated communities into national and international information network, thus accelerating the exchange of private goods and services. Telecentres can lead to an increase in income and hence improvements in the livelihoods of the people by providing increased access to information related to the market, better farming practices, available job opportunities etc." (Mukerji, 2008:2).

   c) With regard to the third, "[t]elecentres as delivery points for e-government services can lead to better local administration and improved government-citizen/business/government interface leading towards increased reach, transparency, responsiveness, accountability, efficiency, effectiveness, citizen's empowerment and participation" (Mukerji, 2008:2).

   d) With regard to the last, "[t]elecentres can improve access to basic services like health and education. They also enable two-way exchange of communication, ideas, expertise, goods and services via

> national and international networks and forums. Telecentres empower rural farmers, women and other groups by providing access to information, training and education. It is hoped that telecentres can bring about changes in the structural relations of caste, class and gender" (Mukerji, 2008).

While the author's conception of development is a melange of elements from different perspectives, the combination of her statements nevertheless point to Peet and Hartwick's (2009:94) "new liberal neoliberalism".

4.2.2.8 GSS#8: Makoza and Chigona (2012)

Makoza and Chigona (2012) examine how ICTs impact microenterprises in South Africa, specifically focusing on the potential impact that a provincial government initiative could have on ICT utilisation. The following can be discerned in their engagement with development:

1. **Microenterprises as driver of development.** The authors explicitly premise their investigation on the contribution of small business (microenterprises) to socio-economic development, specifically noting their positive impact on employment. The argument that is constructed through the study is that ICTs can make microenterprises more competitive, there enabling their developmental impact:

   a) "This study is premised on the understanding that microenterprises play an important role in the socio-economic development of developing countries" (Makoza and Chigona, 2012:1).

   b) "There is a burgeoning body of knowledge demonstrating that microenterprises play a significant role in the socio-economic development of developing countries [...] Their role in socio-economic development is noted particularly in areas of job creation, income generation and skills development. Further, microenterprises are perceived to be a means for poverty alleviation in marginalised communities" (Makoza and Chigona, 2012:1).

   c) "The use of ICTs may help microenterprises to remain competitive. There is growing empirical evidence that the use of ICT in microenterprises may result in improved communication, reduced operating costs and improved access to information and knowledge " (Makoza and Chigona, 2012:1).

   d) "The potential of microenterprises to create employment and support the livelihoods of the majority of the citizens in the second economy is particularly valuable for South Africa where the unemployment rate is high [...] There is a need, therefore, to support the growth and sustainability of microenterprises" (Makoza and Chigona, 2012:11).

The study is also specifically set within the context of a government-led initiative and explicitly states its aim to make a contribution to such programmes in general:

a) "An example of such interventions is the Real Enterprise Development (RED) Door program by the Western Cape Provincial Government [...] Using RED Door as a case, this study explores the effectiveness of technology interventions embedded in business support programs on the livelihood of microenterprises [...] By adding to the body of knowledge on ICT use amongst microenterprises, this study makes a practical contribution. The findings will serve to inform policy makers, especially those involved in business development interventions supporting microenterprises on a wider scope of issues that affect the livelihoods of microenterprises" (Makoza and Chigona, 2012:2).

The authors' implicit argument that business (in this instance: microenterprises) drives development, with specific reference to employment, and the fact that the study implicitly contributes to the improvement of a government-led empowerment programme, links their conception of development to Keynesian economics.

4.2.2.9 GSS#9: Barakabitze *et al.* (2015)

Barakabitze *et al.* (2015) examine the potential impact of ICTs on agriculture in Tanzania and, on the basis of an investigation into the associated challenges, offers several recommendations. In this endeavour, the following becomes clear about their conception of development.

1. **The primacy of agriculture in Tanzanian development.** In the authors' general focus, as well in their specific deliberations, the primacy of agricultural development in their broader conception of development can be discerned:

   a) "Agriculture is the engine of economic growth, development and improved livelihood in African countries including Tanzania [...] Agriculture is the mainstay of the Tanzanian economy contributing to about 24.1% of GDP, 30% of export earnings, 65% of raw materials for industries and employs about 75% of the total labour force [...] Agriculture is important in economic sector because of food production, foreign exchange earnings, provides livelihood to more than 70% of the population and controls inflation, since food contributes about 50% of the inflation basket [...] In the foreseeable future, agriculture will remain to be a key to the country's economic and social development" (Barakabitze *et al.*, 2015:1).

b) "Agriculture researchers from ARIs [Agricultural Research Institutes] play an active part in the development of ICTs for the farming community to apply new technological farming practices which can raise agriculture productivity and eradicates poverty in Tanzania. It is well known that, if new farming techniques using ICT tools are effectively used, then agriculture productivity can be raised in a way that can help to eradicate poverty in Tanzania [...] It is, therefore, very important that agriculture productivity must be supported by ICTs that are developed by agriculture researchers from ARIs" (Barakabitze *et al.*, 2015:3-4).

The above emphasis on agricultural, in the specific context of the Tanzanian economy, would seem to place the authors' engagement within structuralist economics (Peet and Hartwick, 2009:69).

4.2.2.10 GSS#10: Adeniran and Johnston (2014)

In a somewhat similar vein to the previous study, Adeniran and Johnston (2014) examine the use of ICT in South African SMEs in helping firms become more competitive and efficient. This reveals the following:

1. **SME-driven, economic development.** The authors draw a causal link between SMEs and development, conceptualised in economic terms.

    a) "It is globally acknowledged that SMEs are significant in their contributions to economic growth, job creation, innovation of new products, income generation, poverty alleviation, technological progress and competitive advantage" (Adeniran and Johnston, 2014:1).

Furthermore, they seem to focus specifically on the capacity of ICT to promote SMEs' competitive advantage:

a) "ICT utilisation has been defined as a firm's ability to 'identify, acquire, process, organize, disseminate and apply information using ICTs for enhancing competitive advantage in local and international markets' " (Adeniran and Johnston, 2014:2).

b) "ICT is an essential tool for business processes and can assist SMEs to achieve competitive advantage" (Adeniran and Johnston, 2014:2).

While it is clear that the authors operate within the broader framework of conventional development theories, it is hard to associate their thinking with a particular school. However, a recommendation offered in the paper's conclusion provides some clarity:

a) "In order to reduce the failure rate of newly established firms, awareness needs to be created regarding the benefits related to extensive

use of advanced technologies. Costs could be reduced by government intervention in reducing customs and excise taxes on ICT, while vendors could increase awareness campaign to SMEs" (Adeniran and Johnston, 2014:21-22).

The aforementioned examples, coupled with the above emphasis on deregulation (in this case: import barrier elimination and tax reduction), would seem to point to a neoliberal understanding of development.

4.2.2.11 GSS#11: Ghobakhloo and Tang (2015)

Ghobakhloo and Tang (2015) examine information systems (IS) success in the context of SMEs, drawing on case studies from the manufacturing industries of Iran and Malaysia. Their engagement with development can be described as follows:

1. **Development through interventionist assistance to SMEs.** While the authors' engagement with development during most of their paper is very sparse, outside of mentioning that "[SMEs] are one of the major sources of employment, technological advancement and competitive advantage for both developed and developing countries" (Ghobakhloo and Tang, 2015:573), it is in the recommendations to governments in their concluding remarks that their conception of development becomes clear.

    a) "In a quest to achieve development, developing countries need to commit to a wide social and economic restructuring. SME development can significantly contribute to this restructuring given their potential role in (1) generating employment and thereby contributing to absorbing labor surpluses, (2) the development of a diversified economic structure; (3) the development of a supply base to serve the needs of large firms and (4) creating innovation [...] Therefore, the development of the SME sector is one of the most effective instruments in economic and even social development. In the current global market, in which information and knowledge play a key role, the use of IS can provide SMEs with the opportunity to deal with hyper-competition [...] This means that promoting IS usage among smaller businesses might be an effective strategy for strengthening the SME sector and contributing to the national development in Iran and Malaysia [...] [G]overnments can also play a key role in [the] institutionalization of IS among smaller businesses [...] Governments should provide support relating to IS implementation and use for SMEs to enhance their competitive position" (Ghobakhloo and Tang, 2015:593).

    b) "[The] Iranian government is recommended to change its current encouraging/facilitating policies to the welfare model in which IS

assistance packages (low-priced IT services, gratis training, information requirements analysis, financial aids and incentives, and secure e-environment) are handed out directly to the SMEs" (Ghobakhloo and Tang, 2015:593).

c) "Indeed, Iranian government can offer incentives for IS vendors and technology providers to target their products and services at smaller businesses" (Ghobakhloo and Tang, 2015:594).

d) "[W]e recommend Malaysian government to address the existing lack of IS education and technical skills among SMEs, for example, by providing them with IS training programs on different facets of IS implantation and use" (Ghobakhloo and Tang, 2015:594).

In their assertions about the general role of governments in assisting SMEs and their specific recommendations for the Iranian and Malaysian governments, a conception of development contingent on a government actively intervening in business operations is revealed. In addition, although not further explored, the authors' reference to the role of knowledge and information in the global economy can be linked to new growth theory. Taken together, it is clear that the authors' work within a Keynesian economic framework.

4.2.2.12 GSS#12: Bhatnagar and Singh (2010)

Bhatnagar and Singh (2010) proposes a method to evaluate the potential impact of investments in e-government projects, using India as a test case for the framework's application. Herein, the following can be noted:

1. **A focus on good governance, fighting corruption, transparency, accountability, and the MDGs.** The authors prominently include "quality of governance" indicators for both the "client" and "agency" facets of the framework (Bhatnagar and Singh, 2010:113). For the former, quality of governance is measured in terms of:

   a) "Extent of bribery in the working of the system" (Bhatnagar and Singh, 2010:113);

   b) "Extent to which functionaries can be held accountable for their actions" (Bhatnagar and Singh, 2010:113);

   c) "Transparency of rules and procedures" (Bhatnagar and Singh, 2010:113);

   d) "Availability of a mechanism to provide feedback to the agency and its effectiveness" (Bhatnagar and Singh, 2010:113).

   For the latter, quality of governance is measured in terms of:

   a) "Extent of corruption among employees" (Bhatnagar and Singh, 2010:113);

b) "Accountability [...]" (Bhatnagar and Singh, 2010:113);

c) "Transparency of decisions, procedures, and information [...]" (Bhatnagar and Singh, 2010:113);

d) "Participation, measured as the involvement of employees in internal decision processes" (Bhatnagar and Singh, 2010:113).

Furthermore, in the "society/government as a whole" facet of the framework, the MDGs are specifically mentioned:

a) "Long-term impact on Millennium Development Goals [...]" (Bhatnagar and Singh, 2010:113).

The inclusion of the above dimensions in the framework reveal an emphasis on good governance, anti-corruption measures, transparency and accountability, coupled with a broader link to the MDGs. This corresponds to Peet and Hartwick's (2009:94) description of the "new liberal neoliberalism".

4.2.2.13 GSS#13: Vincent and Cull (2013)

Vincent and Cull (2013) examine the impact of mobile phones on a female farming cooperative in Lesotho. In their engagement, the following features must be highlighted:

1. **Awareness of the importance of development engagement.** From the outset of their paper, the authors emphasise the importance of engagement with development in assessing the impact of ICTD projects:

   a) "[T]he dominance of technical specializations in development informatics, relative to development studies, means that impact assessments have been poorly informed by conceptual frameworks with which to truly assess the effects of mobiles on development. By association, it also raises the question of how to define (and measure) development" (Vincent and Cull, 2013:37).

   b) "[I]mpact assessments of ICT4D have typically been descriptive, rather than analytical; lacking in methodological rigor and, crucially, not linked to development studies–informed conceptual frameworks around which to structure and analyze findings. Perhaps even more fundamentally, undertaking impact assessments around ICTs requires epistemological questions to be asked concerning what development actually is and how to best measure and evaluate it" (Vincent and Cull, 2013:38).

2. **A three-pronged conception of development, based on economic growth, empowerment and capabilities.** In line with their initial

deliberation on the importance of development engagement, they identify three major conceptions of development — as economic growth, as empowerment, and as expanding choices — which they use to inform the impact assessment included in their own study:

a) "Using theories of development as economic growth, empowerment, and choice, the article highlights the ways that, in these women-led farming cooperatives, development has certainly been achieved for all of these elements" (Vincent and Cull, 2013:37).

b) "While *economic growth* is undoubtedly one aspect of development, there are other, less tangible elements that are equally important. The second aspect of development addressed in the policy arena is a sense of *empowerment*, arguably something that is of particular value to vulnerable groups in society, whose economic position may have consequences for their social standing [...] Staying with the more qualitative definitions of development, a sense of empowerment can also be brought about by the *increasing availability of choices* open to individuals. Sen [...] argues that development is about freedom of choice in the personal, social, economic, and political spheres" (Vincent and Cull, 2013:39).

c) "The present article applies the various conceptions of development outlined above to a women-led farming cooperative in Lesotho. Cooperatives are recognized as playing critical roles in development at the grassroots, as they enable active participation of weaker actors and act as a force to counteract monopolies" (Vincent and Cull, 2013:39).

From the above, it becomes evident that Vincent and Cull (2013) rely on a hybrid conception of development, encompassing an economic aspect (falling within conventional development theories), an empowerment aspect (which, given the study being set in a female cooperative, must be understood in a gendered manner and classified within feminist theories of development), and an expansion of choice aspect (clearly linked to Sen's capability approach, placed within development economics).

4.2.2.14 GSS#14: Ali and AlHinai (2013)

Ali and AlHinai (2013:1) focus on digital educational entertainment and attempt to assess whether "imported ICT-based learning tools can enhance students' learning compared to methods traditionally used in emerging countries". Herein, the following can be noted:

1. **The knowledge economy as latent motif.** The authors devote considerable attention to drawing a link between ICTs and development, specifically via their impact on information and knowledge sharing:

a) "The United Nations recognizes that the best way for emerging countries to advance their world ranking is to integrate ICT in schools and universities [...] The use of ICT by learners' increases *knowledge sharing*, improves skills of workers, creates more effective education systems and enhances economic development of any country" [own emphasis] (Ali and AlHinai, 2013:1).

b) "In the late 1990s, a common consensus [...] became evident that the world economy was undergoing fundamental restructuring led by two main drivers: globalization and the revolution in ICT [...] Since then, labels such as 'post-industrial society', 'information society', 'innovation economy', 'knowledge economy', 'network economy', 'digital economy', 'weightless economy', and 'e-conomy' became more commonly used to point out the ongoing transformation of our world economy" (Ali and AlHinai, 2013:2).

c) "In the education sector, the utilization of the strong global derives towards ICT in the acquisition, storing, and sharing of knowledge in educational institutions have become an important strategic pillar and a clear requirement for economic development in the 21st century [...] ICT bring together traditionally separated educational technologies [...] by bridging various forms of knowledge and literacy into an intersection of places of learning such as home, school, work and community" (Ali and AlHinai, 2013).

The underlying motif in the above statements is a conception of development driven by knowledge creation and sharing, in this case facilitated by ICTs in an educational context. This links the authors' conception to new growth theory, within the domain of Keynesian economics.

4.2.2.15 GSS#15: Goyal (2011)

Goyal (2011:112) focus on "female participation in the labor force" and specifically seek to examine how ICTs can "increase the equity and efficiency" thereof. Whilst an distinct focus on women's empowerment is clear, the following can nevertheless be noted about their engagement with development:

1. **The primacy of gender issues in (economic) development.** Already at the outset of their paper, the authors problematize a lacking focus on gender issues in economic development thinking:

   a) "Gender issues have long been neglected in mainstream economics and in the framing of policy. The large gaps in women's work participation and earnings, especially in developing areas, require attention" (Goyal, 2011).

They proceed conceptualise female empowerment in the specific terms of Sen's capability approach. This conception of development is further elucidated in the remainder of the paper, with the author's emphasising the link between women's economic positionality and broader cultural change:

a) "Sen [...] has conceptualized development as acquisition of a vector of capabilities that enable many types of functionings. The first capability is economic and others include social opportunities, political liberties, trust and basic securities. The analysis in the paper shows that [ICT] is uniquely suited to help women acquire vital economic capabilities and functionings, but supporting social and political capabilities are required for the first to fructify and lead to overall development" (Goyal, 2011:112).

b) "Changing perceptions and embedded social norms requires special policies. A rich set of case studies on ICT and development show bottom-up, context and culture sensitive policies have a better chance of success [...] Supportive social and institutional change is especially a prerequisite in regions where culture can exclude women from ICT [...]" (Goyal, 2011:113).

c) "It is beginning to be recognized that development will be fully successful only if it is gender aware and both sexes change; men contribute more to nurture while women become more active outside the home. The modern gender and development (GAD) and ICT for development (ICT4D) approaches, therefore, doubt if modernization alone will automatically improve women's position without institution and culture sensitive programs [...] Since ICT corrects the original distortion in production technology it allows women to gain economic independence and status without imitating men [...] But as both the GAD and ICT4D approaches point out, gender sensitive policy is required for the full benefits to occur. Changes will take time since they have to battle entrenched prejudices, whether those of women or their employers" (Goyal, 2011:114-115).

d) "All women share the biological constraints and historical disadvantages and can gain from the flexibility ICT makes possible. But income inequalities, social restrictions and urban–rural divides, especially in less-developed regions, compound gender differences. Policy implications therefore also have to take these differences into account" (Goyal, 2011:115).

e) "Gender bias, inequality and misperceptions that women can do only limited types of work and are technologically inept, must first be removed for women to be able to reap the full potential benefits of

the new technologies. Otherwise existing digital divides are feared to worsen" (Goyal, 2011:115).

f) "[D]istortions and perceptions accumulated over centuries will take time to reverse. Policies are required to help the process [...] [C]omplementary social change and sensitivity to gender issues in policy-making are required to facilitate these policies. If women had more equal political representation, women groups could participate in ICT policymaking and push their issues" (Goyal, 2011:128).

While the author's conception of development clearly includes a strong economic component, to which exact notion of economic development they subscribe, remains unclear. Frequent references to policy-making, as well as the quote below, may provide clues.

a) "Our second model of matching jobs to workers, with a higher probability of separation for women, is a co-ordination failure model building on the concept of externalities [...] Externalities are one reason why markets can fail and government interventions, such as pollution taxes, are required" (Goyal, 2011:118).

Taking the above into consideration, the authors' engagement with development can be understood to fall primarily within the domain of feminist theories of development, but secondarily also within Keynesian economics. Lastly, references to Sen's capability approach add a development economics dimension to the understanding.

4.2.2.16 GSS#16: Salia *et al.* (2011)

Salia *et al.* (2011) examines the impact of mobile phones on an "artisanal fishing industry" in Ghana, with specific reference to the effect in terms of the working of the market. In this engagement, the following can be noted:

1. **A focus on efficient market mechanisms as driver of development.** The authors' overarching focus on how mobile phones improve market efficiency is embodied throughout the paper:

   a) "In developed countries markets function efficiently because the prices of goods and services are known or can be accessed cheaply, widely, and readily [...] On the other hand, in rural Africa markets function inefficiently because information flow on the prices of goods and services is largely difficult and maldistributed, especially among artisanal fishermen and smallholder farmers. This condition in rural Africa is attributable to lack of cheap, timely, and readily accessible information, poor information delivery mechanisms and infrastructure, and a private sector attitude that typically views smallholders as commercially unattractive" (Salia *et al.*, 2011:2).

b) "Many studies have concluded that access to telecommunications has a fairly strong impact on growth and economic development, as well as poverty reduction. Recently, some studies have focused on the relationship between access to telecoms and economic well-being of the poorer segments of society in several countries at the micro-level, as does this study [...] In theory, lowered transaction costs, inter alia through faster access to more accurate information, should help the poor to increase their incomes directly or indirectly through the more productive use of the time saved by placing a call" (Salia *et al.*, 2011:2).

c) "The use of mobile phones can correct market inefficiencies through affordable access to information" (Salia *et al.*, 2011:2).

The conception of development evidenced in the above situate the authors' engagement in the domain of neoliberal economics.

4.2.2.17 GSS#17: Coelho *et al.* (2015)

Coelho *et al.* (2015) employ a capability approach to examine how ICTs promote local development in the case of a development association in Brazil. The following is noteworthy about their engagement with development:

1. **A critical awareness of engagement with development.** The authors problematize the lack of engagement with development in ICTD, noting that:

   a) "[A] number of researchers [...] point out that a great part of [ICTD] literature does not approach the matter of what is understood as development. Heeks [...] argues that the true attention towards understanding the contributions of ICT for development must be found in the results [...] [A]ny research that attempts to situate the disputed intellectual space that is 'development' needs to locate and understand what development perspective will be followed" (Coelho *et al.*, 2015:3).

   The authors proceed to provide a brief overview of extant development theories and arrive at Sen's capability approach as the chosen foundation for the remainder of their investigation.

2. **A capability approach-based conception of development.** The authors explicitly draw on Sen's capability approach to inform their examination:

   a) "[F]ollowing Sen's Capabilities Approach [...] this paper investigates how local development can benefit from ICT, based on a case study of Sudotec" (Coelho *et al.*, 2015:2).

b) "[T]he [Choice Framework] allows to see the complexity of interventions in systems while placing the choice at the center of process analysis. Therefore, the selection of Choice framework is considered as adequate for this research" (Coelho *et al.*, 2015:7).

c) "Based on development as freedom approach, other concepts were applied, as suggested by Choice Framework, in the attempt to identify the development outcomes, structure, agency and degrees of empowerment, forming webs and connections" (Coelho *et al.*, 2015:7).

Additionally, they provide an elaborate overview of the capability approach and its operationalisation in the Choice Framework (Coelho *et al.*, 2015:3-7). The authors' engagement with development can therefore clearly be categorised within development economics.

4.2.2.18 GSS#18: Elnaggar (2008)

Elnaggar (2008:280) examine the inhibitors to and enablers of ICT-driven development in Oman from a "gender-sensitive" perspective, focusing specifically on the link between ICTs and female empowerment. The following can be noted about the author's engagement with development:

1. **A focus on the inhibitors and enablers of ICT-driven, female-focused development.** The authors frame their study in terms of how ICT can empower women in Omani society:

   a) "Today, ICT is the most effective tool in the hands of women to enable them to extend their participation in a variety of productive fields and provide them with an avenue to express the development of their personalities and capacities [...] ICT can enable them to participate effectively in numerous development fields, including planning and decision making at the family, institutional, and societal levels [...] Therefore, ensuring gender equal access to ICT has become an essential core objective and integral element in the global, extensive research and development initiatives to effectively improve women's lives by increasing their capacities to share and access information and knowledge" (Elnaggar, 2008:280).

   b) "Equitable access to IT and the autonomy to receive and produce information relevant to women's needs and concerns are central to women's empowerment and the construction of an information society for all" (Elnaggar, 2008:283).

   c) "ICT should be promoted within the larger goal of enhancing the capabilities of women and empowering them through information and knowledge gain. For this to take place, the major issue of cultural transformation must be addressed" (Elnaggar, 2008:190).

2. **A call for governmental policy interventions.** In concluding the study, the author offers a number of recommendations, including a strong call for corrective policy-making to ensure more equitable access to ICTs for women:

    a) "The analysis and recommendations presented here are intended to assist policymakers who are willing and committed to reorient ICT policy to take account of the needs, aspirations, and constraints of women in the Omani society" (Elnaggar, 2008:287).

    b) "Raising gender and ICT awareness among policy makers and members of the government agencies involved in telecommunications, science, and technology is another intervention possible through the above-mentioned partnership. Gender sensitization training is a starting point in gender mainstreaming and policymakers need to be made aware of the specific issues related to the impact of ICTs on women. This type of training must be conducted with the goal of transforming the perspective of the individuals and the institutions, as opposed to simply informing them" (Elnaggar, 2008:288).

    The study's focus and deliberations allow its development conception to be strongly associated with feminist development theories, and secondarily, in light of the above, with Keynesian economics.

4.2.2.19 GSS#19: Gamage and Samarajiva (2008)

Gamage and Samarajiva (2008:89) study researchers' internet presence in Asia and, premised on the inadequacy of conventional citation indexes to help locate "knowledgeable individuals in Asia in a policy-relevant field", they develop a methodology for this purpose. In the framing of their study, the following can be noted about their engagement with development:

1. **The primacy of knowledge in development.** The clear underlying assumption in the authors' further examinations and their proposed methodology is a link between knowledge and development. The authors explicitly acknowledge this:

    a) "Knowledge is an important driver of development" (Gamage and Samarajiva, 2008:89).

    b) "Implementing the necessary institutional reforms in the ICT sector requires specialized knowledge, especially for reforms that are not limited to transactions or 'big-bang' reforms" (Gamage and Samarajiva, 2008:91).

    c) "As Delanty [...] states: 'Today knowledge has become more important and at the same time does not emanate from any one particular

> source. [...] The great significance of the university today is that it can be the most important site of interconnectivity in what is now a *knowledge society*" [own emphasis] (Gamage and Samarajiva, 2008:95).

Although sparse, the authors' explicit references to knowledge in development, viewed against the broader importance they attach to "locating knowledgeable individuals" for consultation purposes, would seem to imply a new growth theory-based conception of development, grouped within Keynesian economics.

4.2.2.20 GSS#20: Breytenbach *et al.* (2013)

Breytenbach *et al.* (2013) discuss the measurement of ICTD projects in terms of maturity level, combining a maturity model with Sen's capability approach. Although their engagement with development is conspicuous, the following can nevertheless be noted:

1. **ICT project maturity informed by development as expanding freedoms.** The authors explicitly adopt Sen's capability approach as a framework for thinking about development — prominently discussing it (Breytenbach *et al.*, 2013:134-136) — and integrate it with an existing ICT project maturity model. Particular attention is devoted to the concept of expanding freedoms.

    a) "The article leans heavily on two definitions and their underlying assumptions and philosophies: the definition of development as active increases in freedom(s) and ICT4D projects as projects that increase freedom(s) using some form of information technology, and the definition of ICT4D project success as a state of project maturity and sustainability [...] The first of these philosophies — development as active increases in freedom — is founded upon the works of Sen" (Breytenbach *et al.*, 2013:133).

    b) "We adjust the [maturity] model by informing (expanding) it with development project maturity variables extracted from the works of Sen [...] and test our adjustments to see whether or not they describe our case study findings more accurately or not" (Breytenbach *et al.*, 2013:134).

    c) "Sen [...] introduces us to five types of freedom that can be increased, for specific social entities, through thoughtful developmental actions such as ICT4D projects [...] When discussing development as a product of successful ICT4D projects, it must be possible to tie the development back to an increase in one of these five above-mentioned types of freedom. If freedom has not measurably

> increased then, by our definition, no development has taken place. If freedom has not increased due to an ICT4D project, the project is, per definition, not successful, not mature, and not sustainable" (Breytenbach *et al.*, 2013:135).

In so clearly relying on Sen's conception of development and directly integrating it into their criteria for project maturity, the authors locate their conception of development within development economics.

2. **A call for grassroots initiatives.** Later in the paper, they emphasise the importance of grassroots initiatives in project maturity and success:

   a) "Grassroots initiatives [...] have been observed to mature well, as opposed to development initiatives managed directly by members of foreign communities, or initiatives enforcing foreign epistemological assumptions" (Breytenbach *et al.*, 2013:138).

   b) "In another recent South African study, Pade-Khene et al. (2011) strengthens the discourse in favor of 'by the community, for the community' projects by listing a 'community-driven approach' as one of key success factor of ICT4D project success" (Breytenbach *et al.*, 2013:138).

   In terms of Peet and Hartwick's (2009:229) descriptions, the above links the authors' conception of development to postdevelopmentalism. However, the authors clearly do not subscribe to the anti-modernist sentiment sometimes associated with postdevelopmental thinking (Peet and Hartwick, 2009:229).

In sum, then, Breytenbach *et al.*'s (2013) conception of development relies strongly on Sen's capability approach (development economics) and to a lesser extent, on the grassroots inclinations of postdevelopmentalism.

4.3 Chapter conclusion

This chapter sought to show the results of the execution of the methodology, set out in the previous chapter. Results were described in two groups, as emanating from the sampling process and from the individual paper analyses of the 27 Global North and 20 Global South papers. The next chapter will present general findings from a holistic overview of the two samples and then integrate these findings to draw general conclusions. In addition, the implications of these conclusions will be discussed and the limitations of, and prospects for future study arising from, these conclusions and the study in general will be examined.

Chapter 5

Findings and conclusions

5.1 Findings

5.1.1 General findings

A number of general observations can be made on the basis of the preceding analyses of the 47 papers across the two samples. Table 5.1 and Table 5.2 provide a general summary of code occurrence by quotations and papers, in and across the two samples. Code occurrence by quotations is a low-level indicator of how many verbatim quotations in the papers were linked to a specific code (i.e. as highlighted for each paper in Section 4.2), whereas code occurrence by paper tallies the holistic classifications, made on the basis of insights arising

	Quotations in Global North sample	Quotations in Global South sample	Total quotations across samples
1.1 Conventional development theories	78	65	143
1.1.1 Classical economics	7	0	7
1.1.2 Neoclassical economics	0	6	6
1.1.3 Keynesian economics	21	26	47
1.1.4 Structuralist economics	6	2	8
1.1.5 Development economics	23	10	33
1.1.6 Neoliberal economics	21	19	40
1.2 Nonconventional, critical development theories	30	22	52
1.2.1 Marxist and socialist theories	4	0	4
1.2.2 Poststructuralism	15	3	18
1.2.3 Postcolonialism	5	0	5
1.2.4 Postdevelopmentalism	4	2	6
1.2.5 Feminist development theories	2	17	19
1.3 Critical modernism	0	0	0
1.3.1 Critical modernism	0	0	0

Table 5.1: Summary of code occurrence by quotations.

	Papers in Global North sample		Papers in Global South sample		Total papers across samples	
	Number	% of sample	Number	% of sample	Number	% of samples
1.1 Conventional development theories	25	67,57%	23	79,31%	48	72,73%
1.1.1 Classical economics	2	5,41%	0	0,00%	2	3,03%
1.1.2 Neoclassical economics	0	0,00%	1	3,45%	1	1,52%
1.1.3 Keynesian economics	5	13,51%	8	27,59%	13	19,70%
1.1.4 Structuralist economics	2	5,41%	1	3,45%	3	4,55%
1.1.5 Development economics	9	24,32%	5	17,24%	14	21,21%
1.1.6 Neoliberal economics	7	18,92%	6	20,69%	13	19,70%
1.2 Nonconventional, critical development theories	11	29,73%	6	20,69%	17	25,76%
1.2.1 Marxist and socialist theories	2	5,41%	0	0,00%	2	3,03%
1.2.2 Poststructuralism	4	10,81%	1	3,45%	5	7,58%
1.2.3 Postcolonialism	1	2,70%	0	0,00%	1	1,52%
1.2.4 Postdevelopmentalism	3	8,11%	1	3,45%	4	6,06%
1.2.5 Feminist development theories	1	2,70%	4	13,79%	5	7,58%
1.3 Critical modernism	1	2,70%	0	0,00%	1	1,52%
1.3.1 Critical modernism	1	2,70%	0	0,00%	1	1,52%

Table 5.2: Summary of code occurrence by paper.

from the combination of quotations, as well as latent features[1]. While these tallies are simplistic, they are valuable in that they paint a broader picture of *which* development theories occur and *what* engagement takes place in the samples, to which the nuanced insights regarding the nature of such theories and engagement — the *how* thereof — can be related[2]. In this regard, the following general findings are of note. The next section adds further texture to these findings by presenting specific observations regarding the occurrence of each development theory.

1. **The dominance of Sen's capability approach, new growth theory specifically and Keynesianism more broadly, and neoliberal economic thinking.** It has become evident from both samples that most authors conceptualise development in largely economic terms, specifically in asserting the primacy of economic growth in development. Many authors understood the developmental impact of ICTs in the specific terms of such notions as increasing productivity, improving market

[1]Note that for both Table 5.1 and Table 5.2, the values for the broader categories (1.1, 1.2 and 1.3) are the sum of both specific references to them (i.e. where a quotation/paper was coded with the general category as opposed to a specific subcategory) and the values in their subcategories (i.e. 1.1.1 to 1.1.6 for category 1.1, 1.2.1 to 1.2.5 for category 1.2, and so on). In interpreting Table 5.2, it is useful to recall that more than one development theory (and even two of the same broader category, e.g. Keynesian economics and development economics) could occur in a single paper.

[2]On this point, the reader is reminded of the discussions around the quantity and quality of development theory occurrence, captured in the two points listed near the end of Section 3.1.

efficiency through more complete information, and reducing barriers to exchange. Nevertheless, arising from the domain of development economics, Sen's capability approach — and its notion of development as freedom — featured very prominently in the literature. Specifically, the capability approach was frequently used in combination with other theories to draw up multidimensional impact assessment frameworks. This seems to speak to the idea that the capability approach is regarded as a comprehensive framework for ICTD research, within which the impact of ICTs can be related to the enhancement of specific capabilities. In addition to the capability approach and development economics more broadly, the prevalence of Keynesian economic thinking was evidenced by the fact that many authors referred to the notion of "knowledge economy" and the role of knowledge and innovation driving development, associated with new growth theory. Whilst the notions of "knowledge economy" and "information society" seemed often to be used interchangeably, without deep interrogation of the exact meanings and origins of the terms, the underlying idea that promoting knowledge creation and dissemination is fundamental to development, shines through clearly on numerous occasions. Furthermore, evidencing development thinking within the broader domain of Keynesian economic thinking, the frequent policy recommendations made in papers often attached primary importance to the role of the state and government, through active policy-making and interventions. Lastly, it was at the nexus with the capability approach and development economics that the prevalence of neoliberal economic thinking emerged. This was evidenced through the strong focus on the economic aspects of the MDGs, as well as the frequent incorporation of some of the items on the "'Augmented' Washington Consensus" list of priorities (Peet and Hartwick, 2009:93), particularly good governance and anti-corruption measures. The preceding patterns seem to be mirrored in both samples, with the Global North sample including a slightly stronger focus on development economics and the capability approach.

2. **Some, but not many, critical voices.** As expected on the basis of Chapter 1's discussions, the techno-optimism thought to be widespread in ICTD was also reflected in the samples, with very few authors explicitly problematising development, deconstructing the dynamics of how it is defined and by whom, promoting the idea of radical, local pluralism, and advocating for development emanating from the context of the "developing" themselves. Nevertheless, there were some incisive contributions in this regard. Interestingly, critical voices drawing on Marxist and socialist theories, poststructuralism, postcolonialism and postdevelopmentalism, were far more prevalent in the Global North sample than in the Global South sample. However, in turn, the Global South sample included a much stronger reliance on feminist development theories than

the Global North.

3. **Incoherency in authors' conception of development.** In many papers from both the Global North and the Global South, where authors made reference to multiple development theories, the potential incommensurability between such theories was left unexplored and contradictions left unaddressed. Examples hereof include Graham and Haarstad (2011) [GNS#12], wherein neoliberal thinking is juxtaposed with a concern for voiceless workers (i.e. drawing on Marxist and socialist theories), and Lee *et al.* (2008) [GNS#4], who also draw on Marxist and socialist theories but ultimately praise South Korea's ICTD aid on the basis of a classical economic conception of development. While explicit attempts to synthesize different theoretical streams — e.g. Tibben (2015) [GNS#11] — must be acknowledged, few authors who drew on multiple theories paid particular attention to the internal coherence of their resulting conception of development.

4. **The latency of development as modernisation.** While, as discussed in Section 3.5, development as modernisation was not explicitly coded in the papers because it is inherent to the notion of ICTs in development, it was nevertheless categorically evident from the samples, as well as the broader pool of papers reviewed, that the modernising potential of ICTs was fundamental to nearly all authors' engagement with development. The notion of using ICTs to modernise existing institutions, processes and practices was often used as motivation for a study and/or intervention, without any further engagement with broader development thinking. As a particular manifestation hereof, the notion of the "bridging the digital divide" (i.e. using ICT as a vehicle to allow the Global South to "catch up" with the Global North) was frequently regarded as a sufficient basis for relating ICT-based interventions to a developmental impact, without an interrogation of how that notion in itself relates to broader conceptions of development. A simple quantitative indicator hereof is that, within the broader set of Global North papers reviewed (including the papers contained in the final sample), 46 of the 83 papers reviewed included the term "digital divide". In the papers reviewed from the Global South, 48 of the 124 included the term. This does not, of course, imply that all of those who used the term relied exclusively on it as justification for development, but it is nevertheless indicative of a particular discourse that is prevalent in the field.

5.1.2 Theory-specific findings

As noted in the previous section, the tallies presented in Table 5.1 and Table 5.2 offer a simplistic overview of the various development theories' *quantity*

of occurrence in the samples, to which a number of general findings regarding the *quality* of occurrence could be related. This section adds further texture to these general findings by detailing the insights derived from the cross-paper analysis of each development theory's occurrence. For this purpose, all quotations coded with a particular category (i.e. development theory) were considered holistically, to capture trends in the nature of engagement with these theories. The general categories (1.1, 1.2, and 1.3) were excluded from this analysis, because the nature of engagement with them can already be derived from the previous section's general findings, as well as the combination of engagement with each of their subcategories. In addition, those theories discerned in less than three papers were also excluded, because any abstraction from two or less papers is arguably otiose. In the subsections that follow, engagement with each of the remaining theories is discussed in turn, in ascending order according to the frequency of occurrence (according to Table 5.2).

5.1.2.1 Development economics [1.1.5] (14 papers overall)

A number of aspects are of note in the engagement with development economics across the samples. Firstly, as referred to in the previous section, Sen's capability approach — within the broader domain of development economics — could prominently be discerned in many papers. In authors' descriptions of the capability approach, it is presented as an alternative, more enlightened, and broader conception of development; this is contrasted with traditional, more strictly modernist and economically-based conceptions. Coupled with this framing of the capability approach, there seems to be high hopes for it to become a common foundation in ICTD research. Whilst the general notion of increasing people's freedoms in terms of various capabilities was adopted as benchmark in multiple instances, it was clear that authors struggled to operationalise the capability approach, specifically when it came to measuring the impact of development interventions on improving these capabilities. More often, the capability approach was integrated or combined with existing evaluation frameworks, for example by showing how the outcomes in such frameworks can be related back to the capability approach. Interestingly, except for one paper, the notion of how ICTs could both positively and negatively affect people's capabilities — in the words of Kleine *et al.* (2012:42), "a source of both freedom and of unfreedom" — was left largely unexplored. Generally speaking, there were no notable differences in engagement with development economics between the two samples, except for the fact that the occurrence of such thinking was less pronounced in the Global South sample (as already shown in Table 5.1 and Table 5.2).

5.1.2.2 Keynesian economics [1.1.3] (13 papers overall)

In engagement from the context of Keynesian economics in the samples, both Global North and Global South scholars conceptualised the government's ability to drive development mainly through creating supporting policies that can foster ICT adoption in various contexts, most prominently small and medium enterprises (SMEs). The focus on government supporting SMEs is of particular interest, because it represents a nexus of top-down (emanating from government policy-makers) and bottom-up development (emanating from independent entrepreneurs). On the one hand, this could be interpreted as an enlightened attempt to transcend the traditional divide between development emanating respectively from the public and from the private sectors, or it could be interpreted as another example of the incoherency in authors' development conceptions, discussed in the previous section.

Furthermore, as pointed out in the previous section, many authors implicitly subscribed to new growth theory, wherein knowledge is seen as a driver of development and ICTs were construed as a vehicle for increasing the efficiency and effectiveness of knowledge production, dissemination and use in Global South countries. There was a clearer focus on knowledge in development amongst Global South scholars than could be discerned in the Global North sample. Nevertheless, in both samples, on numerous occasions, the terminology that authors used to describe the link between knowledge and development, was often muddled and imprecise. Prominently, *knowledge* and *information* were often used interchangeably, without interrogating (i) the content of the concepts, (ii) how they are related, and (iii) where they fit into the broader scheme of development.

5.1.2.3 Neoliberal economics [1.1.6] (13 papers overall)

The salience of the "'new liberal' neoliberalism" (Peet and Hartwick, 2009:94) could be discerned across both samples. There was a strong focus on the MDGs amongst Global North scholars, but much less so amongst Global South scholars. In turn, Global South authors focused more on the need to creating an enabling environment for business, through such measures as increased competition, deregulation, trade liberalisation, and export promotion. Interestingly, amongst Global North scholars, some authors seemed to regard market forces as inevitable "rules of the game", which ICTD interventions should take into account if they are to succeed. In these cases, the authors seemed not so much to intentionally make the case for neoliberal development as resign themselves to it.

5.1.2.4 Poststructuralism [1.2.2] (5 papers overall)

The engagement discerned amongst authors working within poststructuralist conceptions of development was characterized by attempts at deconstructing

existing, taken-for-granted consensuses and institutions, to unearth vested interests and power relations. This manifested itself in attempts to illuminate and question the embeddedness of traditional, modernist and economic conceptions of development in practice, and strong criticism of top-down approaches to development and imposed solutions. Underlying these criticisms is a call for epistemological plurality: a relegation of Western knowledge and practice from the pedestal it is said to occupy, coupled with a greater openness towards alternative ways of knowing and living. This was reflected in both the Global North and Global South samples, although poststructural thinking could be discerned in only one paper in the latter compared to four in the former.

5.1.2.5 Feminist development theories [1.2.5] (5 papers overall)

The only Global North paper to include a feminist focus conceptualised female empowerment in terms of how kiosk operators' self confidence to change their daily circumstances increased through their involvement in a ICT kiosk project. In the engagement amongst Global South scholars, the main foci were the role of education in female empowerment, asymmetries in access to and the production of information amongst males and females, and women's exclusion from access to ICTs.

5.1.2.6 Postdevelopmentalism [1.2.4] (4 papers overall)

In both the Global North and Global South samples, authors' engagement with postdevelopmental thinking centred mainly on the notions of radical pluralism (calling, similarly to poststructuralism, for greater epistemological diversity) and grassroots initiatives (locating the locus of development at the very communities that is intended to be served by it). Although authors' engagement have show postdevelopmental characteristics, viewed holistically, it lacks a vigorous and all-encompassing rejection of development as concept and project.

5.1.2.7 Structuralist economics [1.1.4] (3 papers overall)

The thinking of authors working with structuralist economic conceptions of development was characterised by contrasts between the societal structures of Global North and Global South countries. In drawing these contrasts, both Global North authors alluded to the complexity of Global South countries. In comparison, the sole Global South structuralist economic paper focused on agricultural progress as a prerequisite for development in Tanzania.

5.2 Conclusions

Having completed the analyses of literature from the Global North and Global South, it is now necessary to return to and address the research question de-

fined at the outset of the study. The present study was based on the premise that ICTD research requires not only deep engagement with the nature and applications of ICTs, but also engagement with the concept of, and problematique surrounding, development. It was posited that the latter requires ICTD scholars to explicitly draw on existing development theory, from fields such as Economics and Development Studies, to inform their own thinking. However, it was concurrently noted that there is a broad lack of such explicit engagement with development theory and that scholars and practitioners often implicitly assume certain conceptions of development through what they regard as desirable outcomes for ICTD research and projects. The present study problematized this fact and sought to sought to examine the occurrence, both explicit and implicit, of development theories in ICTD literature. This examination was done along one of the core dimensions of diversity within the ICTD field, namely the geographical spread of scholars and specifically, the division between the Global North and the Global South. To coherently capture these concerns, the research question posed was: *Are there meaningful trends in the occurrence of development theories of ICTD literature from the Global North and Global South?*

To establish an appropriate theoretical foundation for the investigation, Chapter 2 started by establishing working definitions of development theory, as well as of the distinction between, and terminology of, "developed" and "developing" countries. Next, three frameworks for the identification of prominent development theories were identified and described, whereafter contextualisations of the ICTD field and body of literature, as well as existing engagement with development in ICTD, were presented. This review of literature lent support to the initial observation that there was a lack of explicit engagement with development in ICTD.

On the basis of the above, Chapter 3 sought to construct a research design appropriate for addressing the study's broader research question. This was done by starting with the broad choice between a quantitative and a qualitative approach. Having established the suitability of a qualitative approach, the need for content analysis was identified and three forms of content analysis, along with more general issues of pertinence in conducting such analyses, were discussed. It was concluded that directed content analysis, using one or more of the frameworks identified in Chapter 2 as theoretical lens, constituted the most appropriate method for effectively addressing the research question. Following this, sampling strategies were discussed and the requirements for suitable samples of Global North and Global South literature were defined. The latter was used as point of departure to firstly select a general pool of ICTD literature (consisting of papers published in three leading journals between 2008 and 2015) and secondly, select samples of Global North (27 papers) and Global South (20 papers) literature. An iterative sampling process, combining systematic random sampling (to increase efficiency) and purposive sampling (to ensure that meaningful engagement could be studied)

was designed and presented. Finally, initial categories for the directed content analysis were extracted from one of the frameworks identified in Section 2.2 and the details of the coding process were outlined. This provided a comprehensive framework within which the execution of the methodology could be completed.

Chapter 4 presented the results of the above-mentioned execution. Firstly, in regard to the sampling process, it was noted that a third of the Global North subset had to be reviewed to compose its final sample, whereas over two thirds of the Global South subset had to be reviewed to do the same. Secondly, the content analyses for each paper in the two samples was discussed, noting which theories of development could be discerned and how the author(s) engaged with them. The findings emerging from these analyses were presented in the present chapter; Subsection 5.1.1 elaborated on general findings, whereas Subsection 5.1.2 noted those findings emerging from a broader survey of engagement with each of the development theories coded. From these two sets of findings, and the broader process of analysis, the following two holistic conclusions can be drawn.

1. **Global South scholars engaged less with development than Global North scholars.** The fact that it was necessary to review nearly two-thirds of the Global South subset of the general pool to compose the final sample, compared to only a third of the Global North pool, indicates that the level of development engagement amongst Global South authors was substantially lower than that of Global North authors. Judged holistically from the review process, Global South literature seemed often to be more practically-orientated than Global North literature, encompassing a great deal of studies focussing on specific cases of ICTD projects and examining the contextual dynamics of their implementation. In explanation hereof, one could venture the hypothesis that ICTD is still a young field in many parts of the Global South and that the shift from the techno-optimism characteristic of Heeks's (2009:25) ICT4D 1.0 to a greater reflexivity in ICTD research, may not yet have filtered down into these areas of practice, due to many Global South-based scholars not having access to the leading ICTD discussion fora. Such a hypothesis is highly speculative, but it would seem to be consistent with Gitau *et al.*'s (2010:8-9) discussion of the barriers that apply specifically to African ICTD scholarship, such as poor access to information, political and linguistic barriers, a lack of conference attendance, and the lack of a strong African ICTD community.

2. **Conventional theories of development, rooted in a modernisation agenda, still dominate both Global North and Global South literature, but alternative conceptions are present.** As became clear from Table 5.1 and Table 5.2 and was discussed in Subsec-

tion 5.1.1, conventional, largely economically-based conceptions of development still account for the largest part of engagement with development amongst ICTD scholars. This fits well with the latency of development as modernisation, that was noted during the review process. The prevalence of Sen's capability approach which, although still largely situated within conventional theories of development, shifts the focus to a broader, more human-centred conception of development, coupled with the small number of critical voices that could be discerned, does however point to the fact that alternative conceptions of development are present in ICTD research.

5.3 Contributions and implications

This study has sought to further the idea that greater and deeper explicit engagement with development theory is required in ICTD research, echoing the calls of Thompson (2008), Heeks (2010*a*), and Thapa and Sæbø (2014). Through the systematic analyses of literature from the Global North and the Global South, the study has concluded that there is still very much a lack of engagement with development in the field and that conventional development theories still dominate the discourse in ICTD. Understood in the broader argument that a lack of engagement with development is problematic, the implication of these conclusions is that there is still a pertinent need to foster greater engagement with development amongst ICTD scholars. There may be various ways to accomplish this; some examples include the institution of further special journal issues to stimulate greater engagement with particular conceptions of development (such as ITD Volume 18, Number 1, that focused on the capability approach), or more explicit efforts to foster ties with Development Studies, such as joint conferences and workshops.

The disparity between engagement by Global North and Global South scholars is further cause for concern. Specific efforts may be needed to stimulate greater engagement with development by Global South scholars. However, this disparity may form part of broader structural disparities between Global North and Global South ICTD scholarship, such as those highlighted by Gitau *et al.* (2010), and addressing these will require broader, more concerted efforts.

Finally, from a methodological perspective, it has been shown that qualitative directed content analysis can be an effective approach to study the occurrence of development theories in ICTD literature. This contributes a practical tool to the quest for greater reflexivity in ICTD scholarship.

5.4 Limitations and prospects for future study

Before discussing the study's limitations and the prospects for future study arising from them, the prospects immediately evident from Section 5.2 must be noted. Firstly, future work could further explore the disparity in development engagement between Global North and Global South literature. While Gitau *et al.* (2010) have already examined some of the dynamics of African ICTD scholarship, there is scope for both in-depth work trying to uncover the contextual dynamics at play within specific countries or regions, or longitudinal studies examining whether this disparity is widening or closing. Secondly, with regards to the presence of alternative conceptions of development and critical voices, longitudinal studies examining the emergence of such perspectives in ICTD — especially in the current transition period between Heeks's (2009:25) ICT4D 1.0 and ICT4D 2.0 — may provide rich insight into when, how and from where these voices have and are emerging in ICTD scholarship, and what the future implications thereof might be for the field. In the years to come, this could be a useful way to empirically validate Heeks's (2009) predictions about the nature of ICT4D 2.0.

More broadly, the present study's findings and the conclusions drawn from it are subject to a number of limitations. These can be grouped as arising from (i) the choice of framework for the identification of development theories, (ii) the sampling process, and (iii) the particulars of the research design and execution.

Firstly, in regard to the choice of framework: because a framework has been used as theoretical lens, the occurrence of theories can necessarily only be described in terms of those theories identified in the framework, using the characteristics of theories highlighted by the framework, and limited by its level of analysis. A pertinent limitation of Peet and Hartwick's (2009) framework, used as theoretical lens in this study, is that it did not devote much attention to Sen's capability approach. While this limitation was partially circumvented by classifying the capability approach as development economics (as discussed in Section 3.5), a clear prospect for future study is to study the same sample using a framework with an emphasis on different theories.

Secondly, with regards to the sampling process, a possible limitation of the study is that the categories of Global North and Global South are perhaps too broad to draw the most meaningful conclusions on differences in engagement according to the geographic spread of ICTD scholars. Future work could construct an alternative classification, perhaps using more specific geographic regions (e.g. Western Europe, Eastern Europe, South East Asia, Oceania, the Middle East and North Africa, Southern African, North America, South America, etc.) as basis for a comparative analysis. Whilst there may be some difficulty in selecting suitable samples for each of these groups, a successful analysis based on these categories may yield deeper insight into the dynamics of development engagement in ICTD.

Furthermore, the present study's choice of journals constituting the general pool of literature is fully open to critique. As discussed in Section 3.3, the main consideration in this decision was to ensure that the resulting samples would consist of high quality literature. However, there is scope for future work to attempt the same analysis on a general pool of literature constituted from different sources of ICTD literature, such as purposefully-selected conferences.

A last and more fundamental point in regard to the sampling process, that became evident during the composition of the samples, is that the delineation of the field of ICTD is itself unclear. This is a necessary limitation of the fact that the field very much interdisciplinary and still in an emergent phase in which the definition of its core subject matter is itself a matter of debate. Accordingly, there seems to be a great deal of ambiguity in the journals studied as to what should be regarded as ICTD scholarship. For example, it was clear that many papers could more accurately be described as studying information systems in developing countries. Furthermore, the incorporation of Human-Computer Interaction for Development (HCI4D) in many journals added further ambiguity to this definition. Future work could afford more explicit attention to this issue, for example by imposing a definition of ICTD and excluding work dealing with subjects that cannot be directly be linked to this core.

Thirdly, concerning the particulars of the research design and execution, a cynical critic could argue that the manner in which development theories were employed during the analysis, does itself amount to the very "black boxing" of theory that the author lamented in Chapter 1. However, this was an implicit limitation of the process of operationalising and essentialising theories in order to study their occurrence in the literature. Furthermore, the classification of theories attempted during the analysis is undoubtedly naive in some respects. This is a limitation of the fact that the author does not have a strong background in Economics or Development Studies. However, in response, one might also argue that this has allowed the author to rely more precisely on the framework as theoretical lens and not draw on broader background knowledge in the classification of theories. Nevertheless, there is scope for future work to draw on expert opinions from fields such as Economics, Development Studies and Sociology, to study the occurrence of theories in the literature. A sensible approach may be to compose a panel of three to five experts to study the samples and then incorporate inter-coder reliability measures to ensure a suitable level of correspondence between the different experts' classifications.

A broader and perhaps more fundamental limitation of attempting content analysis in the manner that this study has done, is that there are inherent difficulties to classifying authors' engagement with development based on very limited verbatim text, as is the case in ICTD literature. The implicit assumption in this endeavour is that there is some coherency in authors' thinking about development and that development concepts are not simply employed as "buzzwords". However, it is reasonable to argue that this is not necessarily

the case. To circumvent this limitation, however, would require a much deeper analysis of authors' conceptions of development. This is not possible based on the limited engagement in the literature and would therefore require surveying and/or interviewing scholars with specific leading questions. While this will undoubtedly be an onerous undertaking, there is certainly scope for future work to attempt to do so.

5.5 Final words

If ICTD is to find meaningful ways to harness ICTs' potential to contribute to the progress and/or transformation of humanity — whether that be conceptualised as improving the livelihoods of its most vulnerable, empowering its most marginalised, or otherwise — it is imperative that scholars engage with the problematique of defining 'development'. This is of particular pertinence in a world in which the diversity of human perspectives is perhaps more evident — and more far-reaching — than ever before. The present paper has sought to advance this objective by uncovering some of the dynamics of how scholars engage with development in existing literature. Through its conclusions, it is hoped that the paper will contribute to a growing discourse on development within ICTD.

Appendices

Appendix A

Summaries: Frameworks for the identification of development theories

	Development *of* capitalism	Development *alongside* capitalism		Development *against* capitalism		Rejection of development
	Neo-liberalism	Interventionism		Structuralism	'Alternative' (people-centred) development	'Post-development'
		'Market efficiency'	'Governing the market'			
Vision: desirable 'developed' state	Liberal capitalism (modern industrial society and liberal democracy) (plus achieving basic social/ environmental goals)			Modern industrial society (but not capitalist)	All people and groups realise their potential	['development' is *not* desirable]
Theory of social change	Internal dynamic of capitalism	Need to remove 'barriers' to modernization	Change can be deliberately directed	Struggle between classes (and other interests)	[not clear]	[not clear]
Role of 'development'	Immanent process within capitalism	To 'ameliorate the disordered faults of [capitalist] progress'		Comprehensive planning/ transformation of society	Process of individual and group empowerment	A 'hoax' which strengthened US hegemony
Agents of development	Individual entrepreneurs	Development agencies or 'trustees' of development (states, NGOs, international organizations)		Collective action (generally through the state)	Individuals, social movements	Development agencies

Table A.1: Summary of Thomas's (2000:780) framework

Name	*Main actors*	*Scale*	*Definition of development*	*Description*
Classical economic theory	Private sector (the market)	National	Economic growth	Focus on market forces as the most efficient way of organizing economies
Classical Marxism	State	National	Economic growth, industrialization, urbanization, increased complexity of societies	State as key actor in organizing resource distribution and use
Keynesianism	State and market	National	Economic growth, in particular full employment	State intervention in the economy to help regions and groups that are disadvantaged
Modernization theory	State and market	National	Economic growth and increased complexity in social and economic organization	Eurocentric assumptions that all countries should follow the path of Northern nations
Structural approaches	State	National	Economic growth	National governments need to protect domestic production from global markets and competition because of global economic inequalities
Dependency theories	State	National	Economic growth	Economic disadvantage in the global periphery is a result of exploitation from the North; need to withdraw from global economic system
Neoliberalism	Private sector, NGOs and individuals	National and sub-national	Economic growth, liberal democracy	State involvement regarded as being detrimental to development; state should provide regulatory framework within which companies and NGOs can operate
Sustainable development	Depends on perspective	Depends on perspective	Protection of the natural environment	Diversity of approaches to sustainable development; some are very market-led and involve pricing nature, while others involve putting environmental protection at the heart of policy and reducing consumption
Ethnodevelopment	State and ethnic groups	National and sub-national	Recognition of ethnic diversity. Definitions may vary by ethnic group	Development decisions balance the requirements of different ethnic groups
Gender and development	Depends on perspective	National and sub-national	Moves towards greater gender equity	Approaches vary, but increasingly there is a focus on grassroots participation
Rights-based development	State, NGOs and individuals	Varies	Individuals and groups able to live fulfilled lives	Approaches vary from very small-scale awareness-raising activities to large-scale transnational campaigns
Post-development	Grassroots organizations and individuals	Very small-scale	A dangerous, Eurocentric concept which destroys local cultures and environments	Focus on grassroots activities, local-level participation

Table A.2: Summary of Willis's (2011:225) framework

Appendix B

Paper indexes

B.1 General pool of ICTD literature

The table below represents an index of ICTD papers from the three top journals in ICTD — *Information Technologies & International Development* (ITID), the *Electronic Journal of Information Systems in Developing Countries* (EJISDC), and *Information Technology for Development* (ITD) — for the period 2008 to 2015. The following assumptions apply:

1. Only research papers in the peer reviewed sections of the three journals were included in the index. Editorials, book reviews and papers in journal sections that represent alternative and non-peer reviewed outlets were excluded. For **ITID**, papers in the "Forum" and "Notes from the Field" sections were excluded[1,2,3]. For **EJISDC**, papers in the "Discussion Papers" section were excluded, because these are general introductions; Kowal and Roztocki (2013) in EJISDC year 2013, volume 57, serves as example[4].

2. For the classification of countries as Global North or Global South, the International Monetary Fund's (2015:150-153) country classification lists were used as reference; see Subsection 2.1.2 for a discussion hereof.

3. Where the author of a paper was associated with two institutions, only the first was recorded in the index. This is based on the assumption that each author has a single primary institution.

[1]ITID's section policies can be viewed at: `http://itidjournal.org/index.php/itid/about/editorialPolicies#sectionPolicies`.

[2]The exclusion of "Notes from the Field" is in accordance with the decision adopted by Gomez *et al.* (2012:2) and Dodson *et al.* (2013:22).

[3]All papers in the "Harvard Forum II Essays" special edition of ITID, which appeared as part of volume 6 in 2010, were excluded, because they were considered submissions to the "Forum" section by the editors (Best and Bar, 2010:v).

[4]EJISDC's section policies can be at: `http://www.ejisdc.org/ojs2/index.php/ejisdc/about/editorialPolicies#sectionPolicies`.

Each paper is assigned an indexing number for later use. This is indicated in the "GP#" column.

GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
1	ITID	2008	4	3	Afghanistan; Canada	Mixed	The Impact of the Internet on Local Social Equity: A Study of a Telecenter in Aguablanca, Colombia
2	ITID	2008	4	3	China	Global South	The Institutional Framework of the United Nations Development Programme–Ministry of Science and Technology (UNDP–MoST) Telecenter Project in Rural China
3	ITID	2008	4	3	South Africa; USA	Mixed	Using Diffusion of Innovations Framework to Explain Communal Computing Facilities Adoption Among the Urban Poor
4	ITID	2008	4	3	USA; USA	Global North	Teaching Globalization, Globally: A 7-Year Case Study of South Africa–U.S. Virtual Teams
5	ITID	2008	4	3	Sri Lanka; Sri Lanka	Global South	Internet Presence as Knowledge Capacity: The Case of Research in Information and Communication Technology Infrastructure Reform
6	ITID	2008	4	4	USA	Global North	Problematic Empowerment: West African Internet Scams as Strategic Misrepresentation
7	ITID	2008	4	4	USA; India	Mixed	Sustainability Failures of Rural Telecenters: Challenges from the Sustainable Access in Rural India (SARI) Project
8	ITID	2008	4	4	UK; UK; UK	Global North	The Impact of Mobile Telephony on Developing Country Micro-Enterprise: A Nigerian Case Study
9	ITID	2008	4	4	USA	Global North	ICT in Education Reform in Cambodia: Problems, Politics, and Policies Impacting Implementation
10	ITID	2009	5	1	India; USA; India; India	Mixed	Digital Green: Participatory Video and Mediated Instruction for Agricultural Extension
11	ITID	2009	5	1	USA; USA	Global North	Constructing Class Boundaries: Gender, Aspirations, and Shared Computing
12	ITID	2009	5	1	Pakistan; Pakistan; Pakistan; Pakistan; Pakistan	Global South	A Peer-to-Peer Internet for the Developing World
13	ITID	2009	5	1	USA; USA; USA; South Africa; India	Mixed	The Case of the Occasionally Cheap Computer: Low-cost Devices and Classrooms in the Developing Regions
14	ITID	2009	5	1	Nepal; Nepal; Nepal	Global South	Why Don't People Use Nepali Language Software?
15	ITID	2009	5	1	USA; India; India	Mixed	Warana Unwired: Replacing PCs with Mobile Phones in a Rural Sugarcane Cooperative
16	ITID	2009	5	2	USA; USA; USA; USA	Global North	Skills Are Not Binary: Nuances in the Relationship Between ICT Skills and Employability
17	ITID	2009	5	2	Mexico; Colombia; Brazil	Global South	Training on Communication and Information Technologies, Employment and Youth: The Case of Brazil, Colombia, and Mexico
18	ITID	2009	5	2	USA; USA	Global North	An ICT Skills Cascade: Government-Mandated Open Source Policy as a Potential Driver for ICT Skills Transfer
19	ITID	2009	5	2	Jamaica	Global South	Teleworking the Mobile Caribbean: Emerging Patterns of Broadband-Assisted Remote Work Among the Marginalized in Jamaica and Trinidad and Tobago
20	ITID	2009	5	3	Australia	Global North	Using Actor-Network Theory to Trace an ICT (Telecenter) Implementation Trajectory in an African Women's Micro-Enterprise Development Organization
21	ITID	2009	5	3	Canada	Global North	Effects of Education and ICT Use on Gender Relations in Bhutan
22	ITID	2009	5	3	Mexico	Global South	Strategic Use of Mobile Telephony at the Bottom of the Pyramid: The Case of Mexico
23	ITID	2009	5	3	USA; USA	Global North	Tracking the Introduction of the Village Phone Product in Rwanda
24	ITID	2009	5	4	USA; USA; USA; UK	Global North	Human-Computer Interaction for Development: The Past, Present, and Future
25	ITID	2009	5	4	UK; India; UK	Mixed	Democracy, Design, and Development in Community Content Creation: Lessons From the StoryBank Project
26	ITID	2009	5	4	USA; USA; USA; USA	Global North	Orality-Grounded HCID: Understanding the Oral User
27	ITID	2009	5	4	USA; USA; USA; USA	Global North	Adapting User-Centered Design Methods to Design for Diverse Populations
28	ITID	2009	5	4	USA; USA; USA	Global North	Overcoming Blind Spots in Interaction Design: A Case Study in Designing for African AIDS Orphan Care Communities
29	ITID	2010	6	1	South Africa; South Africa; South Africa; South Africa	Global South	Morphological Analysis: A Method for Selecting ICT Applications in South African Government Service Delivery
30	ITID	2010	6	1	USA	Global North	Globalization and Relative Compensation in India's Information Technology Sector
31	ITID	2010	6	1	Brazil; Brazil	Global South	Ethnic Digital Exclusion in Brazil: National and Regional Data from 2001 to 2004
32	ITID	2010	6	1	USA	Global North	Policies, Partnerships, and Pragmatism: Lessons from an ICT-in-Education Project in Rural Uganda
33	ITID	2010	6	1	Canada; Canada; Canada	Global North	Expanding Theories of HCI: A Case Study in Requirements Engineering for ICT4D
34	ITID	2010	6	1	Norway; Norway; Norway	Global North	Community Re-Engagement of Youth: eParticipation Realities in Uganda and Norway
35	ITID	2010	6	2	USA; USA; USA; USA; USA; USA; USA	Global North	Improving Child Literacy in Africa: Experiments with an Automated Reading Tutor
36	ITID	2010	6	2	India; India; India; India	Global South	User-Generated Content Creation and Dissemination in Rural Areas
37	ITID	2010	6	2	USA	Global North	Rajnikant's Laptop: Computers and Development in Popular Indian Cinema
38	ITID	2010	6	2	Bangladesh; India	Global South	A Framework and Case Example for Evaluating Cost-Effectiveness of Information Services Across Technologies
39	ITID	2010	6	2	USA; USA; USA	Global North	The Contribution of User-Based Subsidies to the Impact and Sustainability of Telecenters—The eCenter Project in Kyrgyzstan
40	ITID	2010	6	2	USA; USA; USA; USA	Global North	Uses of Mobile Phones in Post-Conflict Liberia
41	ITID	2010	6	2	India; India	Global South	Assessing the Impact of E-government: A Study of Projects in India
42	ITID	2010	6	3	UK	Global North	Discourses on ICT and Development
43	ITID	2010	6	3	Norway; Norway; Norway; Norway	Global North	Interplay of Institutional Logics and Implications for Deinstitutionalization: Case Study of HMIS Implementation in Tajikistan
44	ITID	2010	6	3	Norway	Global North	Sociotechnical Dynamics in IS Development in Organizations: The Case of a Resource-Constrained and Competitive Context

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45	ITID	2010	6	3	India; USA	Mixed	The Mobile Phone Store Ecology in a Mumbai Slum Community: Hybrid Networks for Enterprise
46	ITID	2010	6	3	Norway; Norway	Global North	Strengthening Metis Around Routine Health Information Systems in Developing Countries
47	ITID	2010	6	4	USA; USA; USA	Global North	Visibility and Quality in Spanish-Language Latin American Scholarly Publishing
48	ITID	2010	6	4	USA; India; USA	Mixed	Technology and Mother-Tongue Literacy in Southern India: Impact Studies Among Young Children and Out-of-School Youth
49	ITID	2010	6	4	USA	Global North	Innovation Capability and Globalization Propensity in India's Information Technology and Software Industry
50	ITID	2010	6	4	UK	Global North	Justifying Virtual Presence in the Thai Silk Industry: Links Between Data and Discourse
51	ITID	2011	7	1	UK; Norway	Global North	Transparency and Development: Ethical Consumption through Web 2.0 and the Internet of Things
52	ITID	2011	7	1	UK	Global North	Negotiating Openness Across Science, ICTs and Participatory Development: Lessons from the AfricaAdapt Network
53	ITID	2011	7	1	USA; South Africa	Mixed	Enacting Openness in ICT4D Research
54	ITID	2011	7	1	Canada	Global North	Designing Research for the Emerging Field of Open Development
55	ITID	2011	7	1	Canada; Canada; Canada; Canada	Global North	Open Source Biotechnology Platforms for Global Health and Development: Two Case Studies
56	ITID	2011	7	2	Mexico; Mexico; Mexico	Global South	Policies on Access to Information Technologies: The Case of e-Mexico
57	ITID	2011	7	2	South Africa; UK	Mixed	Visions of Community: Community Informatics and the Contested Nature of a Polysemic Term for a Progressive Discipline
58	ITID	2011	7	3	Sri Lanka; Sri Lanka; Sri Lanka	Global South	Social Influence in Mobile Phone Adoption: Evidence from the Bottom of the Pyramid in Emerging Asia
59	ITID	2011	7	3	Peru; Sri Lanka; USA	Mixed	Bottom of the Pyramid Expenditure Patterns on Mobile Services in Selected Emerging Asian Countries
60	ITID	2011	7	3	Singapore; USA	Global North	The Future of the Public Payphone: Findings from a Study on Telecom Use at the Bottom of the Pyramid in South and Southeast Asia
61	ITID	2011	7	3	Sri Lanka; Sri Lanka	Global South	Are the Poor Stuck in Voice? Conditions for Adoption of More-Than-Voice Mobile Services
62	ITID	2011	7	3	Sri Lanka; Sri Lanka; Singapore	Mixed	CellBazaar: Enabling M-Commerce in Bangladesh
63	ITID	2011	7	3	Canada; Canada; Canada	Global North	Mobile Phones and Expanding Human Capabilities
64	ITID	2011	7	4	USA; USA; India	Mixed	The Limited Impact of ICTs on Microenterprise Growth: A Study of Businesses Owned by Women in Urban India
65	ITID	2011	7	4	USA; USA	Global North	Mobile Phones and Rural Livelihoods: Diffusion, Uses, and Perceived Impacts Among Farmers in Rural Uganda
66	ITID	2011	7	4	Sudan; Ireland	Mixed	Information Systems Innovation in the Humanitarian Sector
67	ITID	2011	7	4	USA; Singapore	Global North	Community Factors in Technology Adoption in Primary Education: Perspectives from Rural India
68	ITID	2011	7	4	UK	Global North	Earphones Are Not for Women: Gendered ICT Use Among Youths in Ethiopia and Malawi
69	ITID	2012	8	1	USA; USA; USA	Global North	Consumption, Technology, and Development: The "Poor" as "Consumer"
70	ITID	2012	8	1	USA; USA	Global North	The Problematics of the "Bottom of the Pyramid" Approach to International Development: The Case of Micro-Entrepreneurs' Use of Mobile Phones in Morocco
71	ITID	2012	8	1	UK; UK	Global North	The Complex Position of the Intermediary in Telecenters and Community Multimedia Centers
72	ITID	2012	8	2	USA; USA	Global North	Divided We Call: Disparities in Access and Use of Mobile Phones in Rwanda
73	ITID	2012	8	2	USA; USA; USA	Global North	Understanding the Links Between ICT Skills Training and Employability: An Analytical Framework
74	ITID	2012	8	2	South Africa	Global South	Digital and Other Poverties: Exploring the Connection in Four East African Countries
75	ITID	2012	8	2	India; India; India; USA	Mixed	Correlation Between Limited Education and Transfer of Learning
76	ITID	2012	8	2	USA; USA; India; USA; Malaysia; Chile; USA	Mixed	Managing Microfinance with Paper, Pen, and Digital Slate
77	ITID	2012	8	2	USA; USA; Australia; Ghana	Mixed	Impact of Low-Cost, On-Demand Information Access in a Remote Ghanaian Village
78	ITID	2012	8	2	USA	Global North	Looking Beyond "Information Provision": The Importance of Being a Kiosk Operator in the Sustainable Access in Rural India (SARI) Project, Tamil Nadu, India
79	ITID	2012	8	3	Ireland	Global North	The Informationalization of Poverty in Africa? Mobile Phones and Economic Structure
80	ITID	2012	8	3	USA	Global North	Users' Perceptions of the Impact of Public Access Computing in Colombia: Libraries, Telecenters and Cybercafés
81	ITID	2012	8	3	Peru; Spain	Mixed	Mobile Phone Use Among Market Traders at Fairs in Rural Peru
82	ITID	2012	8	3	USA	Global North	Innovation Strategies Under Uncertain Regulatory Circumstances: Argentinean ICT MSMEs
83	ITID	2012	8	3	USA; USA; USA	Global North	What's It For? Expectations of Internet Value and Usefulness in Central Asia
84	ITID	2012	8	3	Norway; South Korea	Global North	Introducing Internet-Based Services in the Mountain Areas of Nepal: An Asset Pentagon Perspective
85	ITID	2012	8	4	Mexico; Mexico	Global South	Institutional Connectivity: The Case of Mexico
86	ITID	2012	8	4	USA; USA	Global North	Same But Different: Comparing Public Access Computing Venues in Colombia
87	ITID	2012	8	4	Peru; Peru; Peru; Peru	Global South	The Impacts of the Use of Mobile Telephone Technology on the Productivity of Micro- and Small Enterprises: An Exploratory Study into the Carpentry and Cabinet-Making Sector in Villa El Salvador

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88	ITID	2012	8	4	Peru	Global South	Use of the Internet and Productivity of Microbusinesses: Evidence from the Peruvian Case (2007–2010)
89	ITID	2012	8	4	Uruguay; Uruguay	Global South	One Laptop per Child and Bridging the Digital Divide: The Case of Plan CEIBAL in Uruguay
90	ITID	2012	8	4	Peru; Peru	Global South	Institutional Barriers to Development Innovation: Assessing the Implementation of XO-1 Computers in Two Peri-Urban Schools in Peru
91	ITID	2012	8	4	Spain; Spain; Spain; Spain; Spain; Nicaragua	Mixed	A Tele-Health Communication System for Underserved Children in Rural Areas of Nicaragua
92	ITID	2013	9	1	USA; USA; USA; USA	Global North	Crossing Borders, Organizations, Levels, and Technologies: IS Collaboration in Humanitarian Relief
93	ITID	2013	9	1	UK; UK; USA	Global North	A Framework Using Institutional Analysis and the Capability Approach in ICT4D
94	ITID	2013	9	1	South Africa; South Africa	Global South	"Ten Seeds": How Mobiles Have Contributed to Development in Women-Led Farming Cooperatives in Lesotho
95	ITID	2013	9	2	UK	Global North	See No Evil? Ethics in an Interventionist ICTD
96	ITID	2013	9	2	USA; USA; USA	Global North	Considering Failure: Eight Years of ITID Research
97	ITID	2013	9	2	Spain; Spain	Global North	Cell Phone Analytics: Scaling Human Behavior Studies into the Millions
98	ITID	2013	9	2	India; India	Global South	Anthropology, Development, and ICTs: Slums, Youth, and the Mobile Internet in Urban India
99	ITID	2013	9	2	USA; India; India	Mixed	Emergent Practices Around CGNet Swara: A Voice Forum for Citizen Journalism in Rural India
100	ITID	2013	9	2	India; Singapore; India; India; USA; USA	Mixed	Power to the Peers: Authority of Source Effects for a Voice-Based Agricultural Information Service in Rural India
101	ITID	2013	9	3	USA; USA; USA	Global North	Mixed-Method Evaluation of a Passive mHealth Sexual Information Texting Service in Uganda
102	ITID	2013	9	3	USA; USA; USA	Global North	Is the One Laptop Per Child Enough? Viewpoints from Classroom Teachers in Rwanda
103	ITID	2013	9	3	Germany; UK	Global North	Evolving a Software Development Methodology for Commercial ICTD Projects
104	ITID	2013	9	4	Japan; Japan	Global North	Unintended Technology Transfer to Chinese Software Firms from Japan Through Offshore Software Development
105	ITID	2013	9	4	Singapore; USA; Singapore	Global North	International Migrant Workers' Use of Mobile Phones to Seek Social Support in Singapore
106	ITID	2013	9	4	UK; Switzerland; Italy; Switzerland	Global North	Exploring the Meanings of Community Multimedia Centers in Mozambique: A Social Representation Perspective
107	ITID	2013	9	4	Ireland; Ireland; Ireland	Global North	ICT 4 the MDGs? A Perspective on ICTs' Role in Addressing Urban Poverty in the Context of the Millennium Development Goals
108	ITID	2014	10	1	UK	Global North	"A Country in Order": Technopolitics, Nation Building, and the Development of ICT in Ethiopia
109	ITID	2014	10	2	UK	Global North	Framing ICT4D Research Using Activity Theory: A Match Between the ICT4D Field and Theory?
110	ITID	2014	10	2	UK; UK	Global North	Consultants as Intermediaries and Mediators in the Construction of Information and Communication Technologies for Development
111	ITID	2014	10	2	Norway; Norway	Global North	Paying Per Diems for ICT4D Project Participation: A Sustainability Challenge
112	ITID	2014	10	2	USA; USA	Global North	Aboard Abroad: Supporting Transnational Parent–School Communication in Migration-Separated Families
113	ITID	2014	10	3	USA; Italy	Global North	All Work and No Play? Judging the Uses of Mobile Phones in Developing Countries
114	ITID	2014	10	3	Singapore	Global North	ICT and (Personal) Development in Rural China
115	ITID	2014	10	3	USA; USA	Global North	Relax, You've Got M-PESA: Leisure as Empowerment
116	ITID	2014	10	3	USA; USA	Global North	The Value of Non-Instrumental Computer Use: A Study of Skills Acquisition and Performance in Brazil
117	ITID	2014	10	3	USA; USA	Global North	Sites of Playful Engagement: Twitter Hashtags as Spaces of Leisure and Development in Kenya
118	ITID	2014	10	4	USA	Global North	Articulating and Enacting Development: Skilled Returnees in Ghana's ICT Industry
119	ITID	2014	10	4	Brazil; USA; USA	Mixed	Achieving ICT4D Project Success by Altering Context, Not Technology
120	ITID	2014	10	4	India; India	Global South	Same Language Subtitling of Bollywood Film Songs on TV: Effects on Literacy
121	ITID	2015	11	1	USA; USA; USA; USA; USA	Global North	A Longitudinal Study of Local, Sustainable, Small-Scale Cellular Networks
122	ITID	2015	11	1	USA; USA; USA; USA; USA; USA; USA; USA; USA; USA; Norway	Global North	SmartBrowse: Design and Evaluation of a Price Transparency Tool for Mobile Web Use
123	ITID	2015	11	1	India; USA	Mixed	ICTD in the Popular Press: Media Discourse Around Aakash, the "World's Cheapest Tablet"
124	ITID	2015	11	1	India; USA	Mixed	On the Importance of Price Information to Fishers and to Economists: Revisiting Mobile Phone Use Among Fishers in Kerala
125	ITID	2015	11	1	USA; USA; USA; ?; USA; USA	Unclassified	There When You Need It: The Multiple Dimensions of Public Access ICT Uses and Impacts
126	ITID	2015	11	2	USA; USA; USA; USA	Global North	Internet Bandwidth Upgrade: Implications on Performance and Usage in Rural Zambia
127	ITID	2015	11	2	USA	Global North	Internet Use and the Building of Social Capital for Development: A Network Perspective
128	ITID	2015	11	3	USA; USA; USA	Global North	Family Networks of Mobile Money in Kenya
129	ITID	2015	11	3	USA; Ethiopia; USA	Mixed	A Pilot Study Using Educational Animations as a Way to Improve Farmers' Agricultural Practices and Health Around Adama, Ethiopia
130	ITID	2015	11	3	Mexico	Global South	How Transformational Mobile Banking Optimizes Household Expenditures: A Case Study from Rural Communities in Mexico
131	ITID	2015	11	3	USA	Global North	Investigating the Role of Innovation Attributes in the Adoption, Rejection, and Discontinued Use of Open Source Software for Development

GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
132	**ITID**	2015	11	4	South Africa; South Africa	Global South	Sharing the Cloudlet: Impression Management and Designing for Colocated Mobile Sharing
133	**ITID**	2015	11	4	USA; USA; USA; USA; USA; USA; USA	Global North	Understanding Sociotechnical Implications of Mobile Health Deployments in India, Kenya, and Zimbabwe
134	**EJISDC**	2008	33		UK; UK; UK; Tanzania; UK	Mixed	Integrated Health Information Systems in Tanzania: Experience and Challenges
135	**EJISDC**	2008	33		Australia; Australia	Global North	Culture and Vietnam as a Knowledge Society
136	**EJISDC**	2008	33		Thailand; Thailand; Thailand; Thailand; Thailand	Global South	Attitudes of Staff to Information and Communication Technologies in a Provincial University in Thailand
137	**EJISDC**	2008	33		Malaysia; USA	Mixed	Information and Learning Technology (ILT) Adoption Among Career and Technical Teachers in Malaysia
138	**EJISDC**	2008	33		China	Global South	Defining the ICT4D plus Pro-Poor Tourism Convergence Space: Synergies for Natural Allies in the Global War on Poverty
139	**EJISDC**	2008	34		Egypt	Global South	Modeling Students' Intention to Adopt E-learning: A Case from Egypt
140	**EJISDC**	2008	34		Australia	Global North	Information Technology and Business Value in Developing Economies: A Study of Intangible Benefits of Information Technology Investments in Fiji
141	**EJISDC**	2008	34		Australia	Global North	Corporate Struggle with ICT in Thailand: A Case Study
142	**EJISDC**	2008	34		Japan	Global North	Strengthening ICT Leadership in Developing Countries
143	**EJISDC**	2008	34		UK; UK; UK	Global North	Developing Countries and ICT Initiatives: Lessons Learnt from Jordan's Experience
144	**EJISDC**	2008	34		Netherlands; Netherlands	Global North	APAC's E-Society Programme for Uganda
145	**EJISDC**	2008	35		Morocco; Canada; Canada; Morocco	Mixed	E-Government and Local Good Governance: A Pilot Project In Fez, Morocco
146	**EJISDC**	2008	35		South Korea; South Korea; South Korea; UK	Global North	Analysing South Korea's ICT for Development Aid Programme
147	**EJISDC**	2008	35		UK	Global North	The Internet and the Public Sphere: Evidence from Civil Society in Developing Countries
148	**EJISDC**	2008	35		Malaysia; Malaysia; Saudi Arabia	Global South	Opportunities and Challenges of the Knowledge Management Approach to E-learning: A Case Study in Al-Bayan Girls' School, Kingdom of Saudi Arabia
149	**EJISDC**	2008	35		India	Global South	Telecentres in Rural India: Emergence and a Typology
150	**EJISDC**	2008	35		Canada	Global North	The Contribution of ICT to Freedom and Democracy: An Empirical Analysis of Archival Data on the Middle East
151	**EJISDC**	2008	35		Saudi Arabia	Global South	Students' Perceived Barriers to In-Class Participation in a Distributed and Gender Segregated Educational Environment
152	**EJISDC**	2008	35		Turkey	Global South	Implementing E-Government in Turkey: A Comparison of Online Public Service Delivery in Turkey and the European Union
153	**EJISDC**	2008	35		USA; Brazil	Mixed	Information Technology Use, Strategy, and Subcultural Environments: An Exploratory Study of Brazilian Real Estate Agencies
154	**EJISDC**	2009	36		Egypt; Egypt; Egypt	Global South	The Impact of ICT Investments on Economic Development in Egypt
155	**EJISDC**	2009	36		Canada; Canada	Global North	Mobile Phones and Development: An Analysis of IDRC-Supported Projects
156	**EJISDC**	2009	36		Ghana; Ghana; Ghana	Global South	Open Pit Mining and Land Use Changes: An Example from Bogosu-Prestea Area, South West Ghana
157	**EJISDC**	2009	36		Jamaica	Global South	Issues Affecting the Social Sustainability of Telecentres in Developing Contexts: A Field Study of Sixteen Telecentres in Jamaica
158	**EJISDC**	2009	36		Brazil; Brazil	Global South	Mass Customization and Strategic Benefits: A Case Study in Brazil
159	**EJISDC**	2009	36		Australia	Global North	Digital Divide Between Urban and Rural Regions in China
160	**EJISDC**	2009	36		South Africa; South Africa; South Africa; South Africa	Global South	Can Mobile Internet Help Alleviate Social Exclusion in Developing Countries?
161	**EJISDC**	2009	36		Pakistan; Pakistan	Global South	IT in Pakistan: Threats & opportunities for eBusiness
162	**EJISDC**	2009	37		UK	Global North	The Palestinian Hidden Transcript: Domination, Resistance and the Role of ICTs in Achieving Freedoms
163	**EJISDC**	2009	37		New Zealand; New Zealand	Global North	ICTs as a Tool for Cultural Dominance: Prospects for a Two-Way Street
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171	**EJISDC**	2009	38		South Africa; South Africa; South Africa	Global South	Internet Access in South African Homes: A Preliminary Study on Factors Influencing Consumer Choice
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178	EJISDC	2009	38		Papua New Guinea	Global South	Appropriate ICT as a Tool to Increase Effectiveness in ICT4D: Theoretical considerations and illustrating cases
179	EJISDC	2009	38		Malaysia	Global South	Factors Influencing AIS Effectiveness Among Manufacturing SMEs: Evidence from Malaysia
180	EJISDC	2009	39		New Zealand; New Zealand; New Zealand	Global North	Information Literacy in Kenya
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369	EJISDC	2015	66		USA; USA; Kenya; Zambia; Kenya; Zambia; USA	Mixed	Transitioning Customized ACASI Windows .NET Solution to Android Java on Lower-Priced Devices and Technical Lessons Learned
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385	EJISDC	2015	68		South Africa	Global South	Effect of Gen Y's Affective Attitudes Towards Facebook Marketing Communications in South Africa
386	EJISDC	2015	68		Zimbabwe; South Africa	Global South	Bandwidth Management in the Era of Bring Your Own Device (BYOD)
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393	EJISDC	2015	69		Uruguay	Global South	E-skill's Effect on Occupational Attainment: A PISA-Based Panel Study
394	EJISDC	2015	69		Cameroon; Cameroon	Global South	ICT for the Development of Labour Productivity in Cameroon
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396	EJISDC	2015	69		India; India	Global South	Analyzing Multimedia Data: Exploring the Dimensions of Context in ICT for Development Research
397	EJISDC	2015	70		South Africa	Global South	Disciplinary Kingdoms: Navigating the Politics of Research Philosophy in the Information Systems
398	EJISDC	2015	70		Tanzania; Tanzania; Tanzania; Tanzania; Tanzania; Tanzania	Global South	New technologies for disseminating and communicating agriculture knowledge and information (AKI): Challenges for Agricultural Research Institutes (ARI) in Tanzania
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416	ITD	2008	14	1	USA	Global North	Contributing factors to information technology investment utilization in transition economies: An empirical investigation
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427	ITD	2008	14	3	Belgium	Global North	Critical analysis of policy measures for the advancement of the level of computerization of SMEs
428	ITD	2008	14	4	UK; UK; UK; UK	Global North	"Missing women": Gender, ICTs, and the shaping of the global economy
429	ITD	2008	14	4	Oman	Global South	Towards gender equal access to ICT
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449	ITD	2009	15	4	India; India	Global South	Whose gain is it anyway? Structurational perspectives on deploying ICTs for development in India's microfinance sector
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453	ITD	2010	16	1	Sweden; Sweden	Global North	Increasing Interactivity in Distance Educations: Case Studies Bangladesh and Sri Lanka
454	ITD	2010	16	1	Netherlands; Netherlands; Netherlands; Netherlands	Global North	A Constructive Technology Assessment Approach to ICT Planning in Developing Countries: Evaluating the First Phase, the Roundtable Workshop
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459	ITD	2010	16	2	Netherlands	Global North	The Architecture of Global ICT Programs: A Case Study of E-Governance in Jordan
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468	ITD	2010	16	4	USA; USA	Global North	Improving the relative efficiency of revenue generation from ICT in transition economies: a product life cycle approach
469	ITD	2010	16	4	Canada; Canada; USA	Global North	The digital divide: global and regional ICT leaders and followers
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473	ITD	2011	17	1	Norway; Norway; Norway; Norway; Norway	Global North	Comparing strategies to integrate health information systems following a data warehouse approach in four countries
474	ITD	2011	17	1	Sweden; Sweden; Sweden; Uganda	Mixed	Perceptions of the role of ICT on quality of life in rural communities in Uganda
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489	ITD	2012	18	1	Norway; Norway; Norway	Global North	Building collective capabilities through ICT in a mountain region of Nepal: where social capital leads to collective action
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491	ITD	2012	18	1	UK; UK; UK	Global North	Signifiers of the life we value? – considering human development, technologies and Fair Trade from the perspective of the capabilities approach
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495	ITD	2012	18	2	USA	Global North	Inferring patterns of internal migration from mobile phone call records: evidence from Rwanda
496	ITD	2012	18	2	UK	Global North	Lines across the desert: mobile phone use and mobility in the context of trans-Saharan migration
497	ITD	2012	18	2	UK; UK; Ghana; Malawi; Malawi; South Africa; Ghana	Mixed	Youth, mobility and mobile phones in Africa: findings from a three-country study
498	ITD	2012	18	2	India; USA	Mixed	The PC in an Indian urban slum: enterprise and entrepreneurship in ICT4D 2.0
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507	ITD	2012	18	4	Norway; Norway	Global North	Intermediaries: bridges across the digital divide
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511	ITD	2013	19	1	USA	Global North	Investigating factors associated with the spillover effect of investments in telecoms: Do some transition economies pay too much for too little?
512	ITD	2013	19	1	USA; USA	Global North	On the endogeneity of telecommunications and economic growth: evidence from Asia
513	ITD	2013	19	1	USA	Global North	Harnessing information and communication technologies (ICTs) to address urban poverty: Emerging open policy lessons for the open knowledge economy
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546	ITD	2015	21	1	Netherlands; Netherlands; Netherlands; Benin; Netherlands	Mixed	Taking Profit from the Growing Use of Mobile Phone in Benin: A Contingent Valuation Approach for Market and Quality Information Access
547	ITD	2015	21	1	South Africa; South Africa	Global South	Access to and Utilization of Information and Communication Technologies by Agricultural Researchers and Extension Workers in Zimbabwe
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551	ITD	2015	21	1	South Africa; South Africa	Global South	A Framework to Guide Development Through ICTs in Rural Areas in South Africa
552	ITD	2015	21	1	Norway; Norway; Ghana; Norway	Mixed	Models for Online Computing in Developing Countries: Issues and Deliberations
553	ITD	2015	21	2	South Africa; South Africa	Global South	Increasing the Quality and Quantity of Tertiary- Level Information Systems Students: A Graduate Development Framework
554	ITD	2015	21	2	South Africa	Global South	The Information Technology Influence on LIS Job Descriptions in South Africa
555	ITD	2015	21	2	South Africa; South Africa	Global South	Enabling Social Sustainability of E-Participation through Mobile Technology
556	ITD	2015	21	2	South Africa; South Africa	Global South	A Decision Model of Kenyan SMEs' Consumer Choice Behavior in Relation to Registration for a Mobile Banking Service: A Contextual Perspective
557	ITD	2015	21	2	Kenya	Global South	The Impact of Information and Communication Technology Adoption and Diffusion on Technology Entrepreneurship in Developing Countries: The Case of Kenya
558	ITD	2015	21	2	Finland; Finland; Finland	Global North	Internet Adoption at the User Level: Empirical Evidence from The Gambia
559	ITD	2015	21	2	UK	Global North	ICT for Rural Community Development: Implementing the Communicative Ecology Framework in the Niger Delta Region of Nigeria
560	ITD	2015	21	3	USA; USA	Global North	Information and Communication Technology in Transition Economies: An Assessment of Research Trends
561	ITD	2015	21	3	Slovakia	Global North	ICT and Innovation in the Provision of Public Services: The Case of Slovakia

GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
562	ITD	2015	21	3	Finland; Ukraine; Ukraine	Mixed	Semantic Portal as a Tool for Structural Reform of the Ukrainian Educational System
563	ITD	2015	21	3	Poland; Poland	Global South	ICT in Supporting Content and Language Integrated Learning: Experience from Poland
564	ITD	2015	21	3	Czech Republic; Czech Republic; Czech Republic; Czech Republic	Global North	The Determinants of IT Adoption in SMEs in the Czech-Polish Border Areas
565	ITD	2015	21	3	Slovenia; Slovenia; Slovenia; Slovenia; Slovenia	Global North	Outsourcing as an Economic Development Tool in Transition Economies: Scattered Global Software Development
566	ITD	2015	21	3	Greece; Greece; Italy	Global North	A Framework for Service-oriented Architecture Adoption in e-Banking: the Case of Banks from a Transition and a Developed Economy
567	ITD	2015	21	3	Czech Republic; Czech Republic	Global North	Academic-Industrial Cooperation in ICT in a Transition Economy – Two Cases from the Czech Republic
568	ITD	2015	21	3	Serbia; Serbia; Serbia; Serbia	Global South	Development of eGovernment services in the Autonomous Province of Vojvodina
569	ITD	2015	21	4	Finland; India; USA	Mixed	Mattering Matters: Agency, Empowerment, and Mobile Phone Use by Female Microentrepreneurs
570	ITD	2015	21	4	Malaysia; Malaysia; Malaysia; Malaysia	Global South	Mapping the Patterns of Mobile Phone Usage Among Fishermen in Malaysia
571	ITD	2015	21	4	United Arab Emirates; Saudi Arabia; Malaysia; Malaysia	Global South	An Empirical Study of Factors Affecting e- Commerce Adoption among Small- and Medium- Sized Enterprises in a Developing Country: Evidence from Malaysia
572	ITD	2015	21	4	Malaysia; Malaysia	Global South	Information system success among manufacturing SMEs: case of developing countries
573	ITD	2015	21	4	UK; UK; Brunei	Mixed	The Impact of Leadership Orientation on Strategic Information System Planning Processes, with an Application to Libyan Organizations
574	ITD	2015	21	4	Australia	Global North	Theory Building for ICT4D: Systemizing Case Study Research Using Theory Triangulation
575	ITD	2015	21	4	UK; UK; UK	Global North	Understanding e-Waste Management in Developing Countries: Strategies, Determinants, and Policy Implications in the Indian ICT Sector
576	ITD	2015	21	4	India; India; India	Global South	Assessing Mobile Technology Usage for Knowledge Dissemination among Farmers in Punjab
577	ITD	2015	21	4	Belgium	Global North	Extending an ICT4D Computer Re-use Model with E-waste Handling Activities: A Case Study

B.2 Global North and Global South subsets of the general pool

The tables below represent indexes of those papers from the general pool (see previous section) classified as from the Global North and the Global South. The main purpose of these two subsets of the general pool is to re-index the papers with a new sequential numbering scheme, so that in the random sample selection process, random numbers can simply be generated within the range between 1 and the number of papers in the respective Global North and Global South subsets, as opposed to having to generate numbers that fall in the specific set of indexing numbers from the general pool.

Each paper's original indexing number from the general pool is indicated in the "GP#" column. In addition, its new indexing number is indicated in the "GNSS#" (in the Global North subset) or "GSSS#" (in the Global South subset) columns. The latter is used in the random sampling selection process, detailed in Section 3.3.

B.2.1 Global North subset

GNSS#	GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
1	4	ITID	2008	4	3	USA; USA	Global North	Teaching Globalization, Globally: A 7-Year Case Study of South Africa–U.S. Virtual Teams
2	6	ITID	2008	4	4	USA	Global North	Problematic Empowerment: West African Internet Scams as Strategic Misrepresentation
3	8	ITID	2008	4	4	UK; UK; UK	Global North	The Impact of Mobile Telephony on Developing Country Micro-Enterprise: A Nigerian Case Study
4	9	ITID	2008	4	4	USA	Global North	ICT in Education Reform in Cambodia: Problems, Politics, and Policies Impacting Implementation
5	11	ITID	2009	5	1	USA; USA	Global North	Constructing Class Boundaries: Gender, Aspirations, and Shared Computing
6	16	ITID	2009	5	2	USA; USA; USA; USA	Global North	Skills Are Not Binary: Nuances in the Relationship Between ICT Skills and Employability
7	18	ITID	2009	5	2	USA; USA	Global North	An ICT Skills Cascade: Government-Mandated Open Source Policy as a Potential Driver for ICT Skills Transfer
8	20	ITID	2009	5	3	Australia	Global North	Using Actor-Network Theory to Trace an ICT (Telecenter) Implementation Trajectory in an African Women's Micro-Enterprise Development Organization
9	21	ITID	2009	5	3	Canada	Global North	Effects of Education and ICT Use on Gender Relations in Bhutan
10	23	ITID	2009	5	3	USA; USA	Global North	Tracking the Introduction of the Village Phone Product in Rwanda
11	24	ITID	2009	5	4	USA; USA; USA; UK	Global North	Human-Computer Interaction for Development: The Past, Present, and Future
12	26	ITID	2009	5	4	USA; USA; USA; USA	Global North	Orality-Grounded HCID: Understanding the Oral User
13	27	ITID	2009	5	4	USA; USA; USA; USA	Global North	Adapting User-Centered Design Methods to Design for Diverse Populations
14	28	ITID	2009	5	4	USA; USA; USA	Global North	Overcoming Blind Spots in Interaction Design: A Case Study in Designing for African AIDS Orphan Care Communities
15	30	ITID	2010	6	1	USA	Global North	Globalization and Relative Compensation in India's Information Technology Sector
16	32	ITID	2010	6	1	USA	Global North	Policies, Partnerships, and Pragmatism: Lessons from an ICT-in-Education Project in Rural Uganda
17	33	ITID	2010	6	1	Canada; Canada; Canada	Global North	Expanding Theories of HCI: A Case Study in Requirements Engineering for ICT4D
18	34	ITID	2010	6	1	Norway; Norway; Norway	Global North	Community Re-Engagement of Youth: eParticipation Realities in Uganda and Norway
19	35	ITID	2010	6	2	USA; USA; USA; USA; USA; USA; USA	Global North	Improving Child Literacy in Africa: Experiments with an Automated Reading Tutor
20	37	ITID	2010	6	2	USA	Global North	Rajnikant's Laptop: Computers and Development in Popular Indian Cinema
21	39	ITID	2010	6	2	USA; USA; USA	Global North	The Contribution of User-Based Subsidies to the Impact and Sustainability of Telecenters—The eCenter Project in Kyrgyzstan
22	40	ITID	2010	6	2	USA; USA; USA; USA	Global North	Uses of Mobile Phones in Post-Conflict Liberia
23	42	ITID	2010	6	3	UK	Global North	Discourses on ICT and Development
24	43	ITID	2010	6	3	Norway; Norway; Norway; Norway	Global North	Interplay of Institutional Logics and Implications for Deinstitutionalization: Case Study of HMIS Implementation in Tajikistan
25	44	ITID	2010	6	3	Norway	Global North	Sociotechnical Dynamics in IS Development in Organizations: The Case of a Resource-Constrained and Competitive Context
26	46	ITID	2010	6	3	Norway; Norway	Global North	Strengthening Metis Around Routine Health Information Systems in Developing Countries
27	47	ITID	2010	6	4	USA; USA; USA	Global North	Visibility and Quality in Spanish-Language Latin American Scholarly Publishing
28	49	ITID	2010	6	4	USA	Global North	Innovation Capability and Globalization Propensity in India's Information Technology and Software Industry
29	50	ITID	2010	6	4	UK	Global North	Justifying Virtual Presence in the Thai Silk Industry: Links Between Data and Discourse
30	51	ITID	2011	7	1	UK; Norway	Global North	Transparency and Development: Ethical Consumption through Web 2.0 and the Internet of Things
31	52	ITID	2011	7	1	UK	Global North	Negotiating Openness Across Science, ICTs and Participatory Development: Lessons from the AfricaAdapt Network
32	54	ITID	2011	7	1	Canada	Global North	Designing Research for the Emerging Field of Open Development
33	55	ITID	2011	7	1	Canada; Canada; Canada; Canada	Global North	Open Source Biotechnology Platforms for Global Health and Development: Two Case Studies
34	60	ITID	2011	7	3	Singapore; USA	Global North	The Future of the Public Payphone: Findings from a Study on Telecom Use at the Bottom of the Pyramid in South and Southeast Asia
35	63	ITID	2011	7	3	Canada; Canada; Canada	Global North	Mobile Phones and Expanding Human Capabilities
36	65	ITID	2011	7	4	USA; USA	Global North	Mobile Phones and Rural Livelihoods: Diffusion, Uses, and Perceived Impacts Among Farmers in Rural Uganda
37	67	ITID	2011	7	4	USA; Singapore	Global North	Community Factors in Technology Adoption in Primary Education: Perspectives from Rural India
38	68	ITID	2011	7	4	UK	Global North	Earphones Are Not for Women: Gendered ICT Use Among Youths in Ethiopia and Malawi
39	69	ITID	2012	8	1	USA; USA; USA	Global North	Consumption, Technology, and Development: The "Poor" as "Consumer"
40	70	ITID	2012	8	1	USA; USA	Global North	The Problematics of the "Bottom of the Pyramid" Approach to International Development: The Case of Micro-Entrepreneurs' Use of Mobile Phones in Morocco
41	71	ITID	2012	8	1	UK; UK	Global North	The Complex Position of the Intermediary in Telecenters and Community Multimedia Centers
42	72	ITID	2012	8	2	USA; USA	Global North	Divided We Call: Disparities in Access and Use of Mobile Phones in Rwanda
43	73	ITID	2012	8	2	USA; USA; USA	Global North	Understanding the Links Between ICT Skills Training and Employability: An Analytical Framework
44	78	ITID	2012	8	2	USA	Global North	Looking Beyond "Information Provision": The Importance of Being a Kiosk Operator in the Sustainable Access in Rural India (SARI) Project, Tamil Nadu, India
45	79	ITID	2012	8	3	Ireland	Global North	The Informationalization of Poverty in Africa? Mobile Phones and Economic Structure

GNSS#	GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
46	80	ITID	2012	8	3	USA	Global North	Users' Perceptions of the Impact of Public Access Computing in Colombia: Libraries, Telecenters and Cybercafés
47	82	ITID	2012	8	3	USA	Global North	Innovation Strategies Under Uncertain Regulatory Circumstances: Argentinean ICT MSMEs
48	83	ITID	2012	8	3	USA; USA; USA	Global North	What's It For? Expectations of Internet Value and Usefulness in Central Asia
49	84	ITID	2012	8	3	Norway; South Korea	Global North	Introducing Internet-Based Services in the Mountain Areas of Nepal: An Asset Pentagon Perspective
50	86	ITID	2012	8	4	USA; USA	Global North	Same But Different: Comparing Public Access Computing Venues in Colombia
51	92	ITID	2013	9	1	USA; USA; USA; USA	Global North	Crossing Borders, Organizations, Levels, and Technologies: IS Collaboration in Humanitarian Relief
52	93	ITID	2013	9	1	UK; UK; USA	Global North	A Framework Using Institutional Analysis and the Capability Approach in ICT4D
53	95	ITID	2013	9	2	UK	Global North	See No Evil? Ethics in an Interventionist ICTD
54	96	ITID	2013	9	2	USA; USA; USA	Global North	Considering Failure: Eight Years of ITID Research
55	97	ITID	2013	9	2	Spain; Spain	Global North	Cell Phone Analytics: Scaling Human Behavior Studies into the Millions
56	101	ITID	2013	9	3	USA; USA; USA	Global North	Mixed-Method Evaluation of a Passive mHealth Sexual Information Texting Service in Uganda
57	102	ITID	2013	9	3	USA; USA; USA	Global North	Is the One Laptop Per Child Enough? Viewpoints from Classroom Teachers in Rwanda
58	103	ITID	2013	9	3	Germany; UK	Global North	Evolving a Software Development Methodology for Commercial ICTD Projects
59	104	ITID	2013	9	4	Japan; Japan	Global North	Unintended Technology Transfer to Chinese Software Firms from Japan Through Offshore Software Development
60	105	ITID	2013	9	4	Singapore; USA; Singapore	Global North	International Migrant Workers' Use of Mobile Phones to Seek Social Support in Singapore
61	106	ITID	2013	9	4	UK; Switzerland; Italy; Switzerland	Global North	Exploring the Meanings of Community Multimedia Centers in Mozambique: A Social Representation Perspective
62	107	ITID	2013	9	4	Ireland; Ireland; Ireland	Global North	ICT 4 the MDGs? A Perspective on ICTs' Role in Addressing Urban Poverty in the Context of the Millennium Development Goals
63	108	ITID	2014	10	1	UK	Global North	"A Country in Order": Technopolitics, Nation Building, and the Development of ICT in Ethiopia
64	109	ITID	2014	10	2	UK	Global North	Framing ICT4D Research Using Activity Theory: A Match Between the ICT4D Field and Theory?
65	110	ITID	2014	10	2	UK; UK	Global North	Consultants as Intermediaries and Mediators in the Construction of Information and Communication Technologies for Development
66	111	ITID	2014	10	2	Norway; Norway	Global North	Paying Per Diems for ICT4D Project Participation: A Sustainability Challenge
67	112	ITID	2014	10	2	USA; USA	Global North	Aboard Abroad: Supporting Transnational Parent–School Communication in Migration-Separated Families
68	113	ITID	2014	10	3	USA; Italy	Global North	All Work and No Play? Judging the Uses of Mobile Phones in Developing Countries
69	114	ITID	2014	10	3	Singapore	Global North	ICT and (Personal) Development in Rural China
70	115	ITID	2014	10	3	USA; USA	Global North	Relax, You've Got M-PESA: Leisure as Empowerment
71	116	ITID	2014	10	3	USA; USA	Global North	The Value of Non-Instrumental Computer Use: A Study of Skills Acquisition and Performance in Brazil
72	117	ITID	2014	10	3	USA; USA	Global North	Sites of Playful Engagement: Twitter Hashtags as Spaces of Leisure and Development in Kenya
73	118	ITID	2014	10	4	USA	Global North	Articulating and Enacting Development: Skilled Returnees in Ghana's ICT Industry
74	121	ITID	2015	11	1	USA; USA; USA; USA; USA	Global North	A Longitudinal Study of Local, Sustainable, Small-Scale Cellular Networks
75	122	ITID	2015	11	1	USA; USA; USA; USA; USA; USA; USA; USA; USA; USA; Norway	Global North	SmartBrowse: Design and Evaluation of a Price Transparency Tool for Mobile Web Use
76	126	ITID	2015	11	2	USA; USA; USA; USA	Global North	Internet Bandwidth Upgrade: Implications on Performance and Usage in Rural Zambia
77	127	ITID	2015	11	2	USA	Global North	Internet Use and the Building of Social Capital for Development: A Network Perspective
78	128	ITID	2015	11	3	USA; USA; USA	Global North	Family Networks of Mobile Money in Kenya
79	131	ITID	2015	11	3	USA	Global North	Investigating the Role of Innovation Attributes in the Adoption, Rejection, and Discontinued Use of Open Source Software for Development
80	133	ITID	2015	11	4	USA; USA; USA; USA; USA; USA; USA	Global North	Understanding Sociotechnical Implications of Mobile Health Deployments in India, Kenya, and Zimbabwe
81	135	EJISDC	2008	33		Australia; Australia	Global North	Culture and Vietnam as a Knowledge Society
82	140	EJISDC	2008	34		Australia	Global North	Information Technology and Business Value in Developing Economies: A Study of Intangible Benefits of Information Technology Investments in Fiji
83	141	EJISDC	2008	34		Australia	Global North	Corporate Struggle with ICT in Thailand: A Case Study
84	142	EJISDC	2008	34		Japan	Global North	Strengthening ICT Leadership in Developing Countries
85	143	EJISDC	2008	34		UK; UK; UK	Global North	Developing Countries and ICT Initiatives: Lessons Learnt from Jordan's Experience
86	144	EJISDC	2008	34		Netherlands; Netherlands	Global North	APAC's E-Society Programme for Uganda
87	146	EJISDC	2008	35		South Korea; South Korea; South Korea; UK	Global North	Analysing South Korea's ICT for Development Aid Programme
88	147	EJISDC	2008	35		UK	Global North	The Internet and the Public Sphere: Evidence from Civil Society in Developing Countries
89	150	EJISDC	2008	35		Canada	Global North	The Contribution of ICT to Freedom and Democracy: An Empirical Analysis of Archival Data on the Middle East

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90	155	EJISDC	2009	36		Canada; Canada	Global North	Mobile Phones and Development: An Analysis of IDRC-Supported Projects
91	159	EJISDC	2009	36		Australia	Global North	Digital Divide Between Urban and Rural Regions in China
92	162	EJISDC	2009	37		UK	Global North	The Palestinian Hidden Transcript: Domination, Resistance and the Role of ICTs in Achieving Freedoms
93	163	EJISDC	2009	37		New Zealand; New Zealand	Global North	ICTs as a Tool for Cultural Dominance: Prospects for a Two-Way Street
94	164	EJISDC	2009	37		Australia	Global North	Understanding Successful Use of Technology in Organisations in Developing Countries: A Structurational Perspective
95	166	EJISDC	2009	37		Sweden	Global North	Build it and They Will Come? – Inhibiting Factors for Reuse of Open Content in Developing Countries
96	170	EJISDC	2009	38		USA; USA	Global North	Examining Online Banking Initiatives in Nigeria: A Value Network Approach
97	174	EJISDC	2009	38		New Zealand	Global North	Sustainable Development: The Role of GIS and Visualisation
98	176	EJISDC	2009	38		USA; USA	Global North	Web-Based GIS and the Future of Participatory GIS Applications within Local and Indigenous Communities.
99	177	EJISDC	2009	38		Sweden; Sweden	Global North	A Conceptual Framework for E-Learning in Developing Countries: A Critical Review of Research Challenges
100	180	EJISDC	2009	39		New Zealand; New Zealand; New Zealand	Global North	Information Literacy in Kenya
101	182	EJISDC	2009	39		Australia	Global North	A Framework to e-Transform SMEs in Developing Countries
102	185	EJISDC	2009	39		UK; UK	Global North	Addressing Animal Health Knowledge Gaps in Southern Countries: The Creation of a 2D Animal Health Resource Room
103	189	EJISDC	2010	40		UK; UK	Global North	Local Voices Enhance Knowledge Uptake: Sharing Local Content in Local Voices
104	192	EJISDC	2010	40		USA; USA	Global North	Digital Library Adoption and the Technology Acceptance Model: A Cross-Country Analysis
105	194	EJISDC	2010	41		UK; UK	Global North	Organisational Issues with Electronic Government Procurement: A Case Study of the UAE
106	196	EJISDC	2010	41		UK; UK	Global North	Developing a Knowledge Management Strategy for the Arab World
107	198	EJISDC	2010	41		UK	Global North	ICTs for the Broader Development of India: An Analysis of the Literature
108	204	EJISDC	2010	42		UK; UK	Global North	Factors Affecting Bank Staff Attitude Towards E-Banking Adoption in Libya
109	206	EJISDC	2010	42		USA; USA	Global North	Twitter as a Rapid Response News Service: An Exploration in the Context of the 2008 China Earthquake
110	208	EJISDC	2010	43		Norway	Global North	The Role of Technological Frames of Key Groups in Open Source Software Implementation in a Developing Country Context
111	210	EJISDC	2010	43		USA; Japan; USA	Global North	M-Pesa: A Case Study of the Critical Early Adopters' Role in the Rapid Adoption of Mobile Money Banking in Kenya
112	212	EJISDC	2010	43		USA; USA	Global North	Gender and Public Access Computing: An International Perspective
113	214	EJISDC	2010	43		UK; UK	Global North	Researching ICT Micro-Enterprise in Developing Countries: Themes, Wider Concepts and Future Directions
114	215	EJISDC	2010	44		UK	Global North	ICTs, Citizens, and the State: Moral Philosophy and Development Practices
115	216	EJISDC	2010	44		Hong Kong	Global North	Mobile Phones, the Bottom of the Pyramid and Working-Class Information Society in China
116	221	EJISDC	2011	45		UK	Global North	Financial vs. social sustainability of telecentres: mutual exclusion or mutual reinforcement?
117	223	EJISDC	2011	45		UK	Global North	Disintermediation, Altered Chains and Altered Geographies: The Internet in the Thai Silk Industry
118	225	EJISDC	2011	46		USA; USA	Global North	The negligible role of fees as a barrier to public access computing in developing countries
119	237	EJISDC	2011	47		Australia; Australia; Australia	Global North	Factors Influencing E-Commerce Adoption by Retailers in Saudi-Arabia: A Qualitative Analysis
120	240	EJISDC	2011	48		Norway	Global North	The "I" between G and C: E-Government Intermediaries in Developing Countries
121	243	EJISDC	2011	48		UK; UK	Global North	Changing Computing Curricula in African Universities: Evaluating Progress and Challenges via Design-Reality Gap Analysis
122	244	EJISDC	2011	48		Norway; Norway	Global North	Mobilising Local Networks of Implementers to Address Health Information Systems Sustainability
123	247	EJISDC	2011	49		Norway	Global North	The Role of ICT Actors and Networks in Development: The Case Study of a Wireless Project in Nepal
124	248	EJISDC	2011	49		USA; USA	Global North	Does Public Access Computing Really Contribute to Community Development? Lessons from Libraries, Telecenters and Cybercafés in Colombia
125	249	EJISDC	2011	49		UK; UK	Global North	Electronic Payment Systems Development in a Developing Country: The Role of Institutional Arrangements
126	250	EJISDC	2011	49		UK; UK; Greece	Global North	Exploring the Socio-Economic Structures of Internet-Enabled Development: A Study of Grassroots Netrepreneurs in China
127	257	EJISDC	2012	50		USA; USA	Global North	Ethics of Participation: Research or Reporting
128	259	EJISDC	2012	51		New Zealand; Germany	Global North	Boundary Objects to Guide Sustainable Technology-Supported Participatory Development for Poverty Alleviation in the Context of Digital Divides
129	262	EJISDC	2012	51		USA	Global North	The IT Productivity Paradox: Evidence from the Nigerian Banking Industry
130	269	EJISDC	2012	52		Australia; Australia	Global North	Mapping Local Solutions to Entrenched Transport Problems: Key Lessons Regarding the Use of Geographical Information Technologies in Community Mapping with Disadvantaged Communities
131	272	EJISDC	2012	52		USA; USA; Japan	Global North	Computerizing Primary Schools in Rural Kenya: Outstanding Challenges and Possible Solutions
132	273	EJISDC	2012	52		Singapore	Global North	"Sister-Groups" and Online-Offline Linkages in Networked Collective Action: A Case Study of the Right to Information Movement in India
133	278	EJISDC	2012	53		Norway; Norway	Global North	Data Warehouse Approach to Strengthen Actionability of Health Information Systems: Experiences from Tajikistan

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134	284	EJISDC	2012	54		Sweden; Sweden	Global North	Considering Pigeons for Carrying Delay Tolerant Networking based Internet traffic in Developing Countries
135	288	EJISDC	2012	54		Sweden; Sweden; Sweden; Sweden	Global North	Hopes and Fears in Implementation of Electronic Health Records in Bangladesh
136	290	EJISDC	2012	55		Australia; Australia; Australia	Global North	Evaluating the anti-corruption capabilities of public e-procurement in developing countries
137	291	EJISDC	2012	55		Finland; Sweden; Finland; Finland	Global North	Risk Identification Tool for ICT in International Development Co-operation Projects
138	296	EJISDC	2013	56		UK; UK	Global North	Imagining a Silicon Savannah? Technological and Conceptual Connectivity in Kenya's BPO and Software Development Sectors
139	297	EJISDC	2013	56		USA; USA; USA; USA; USA	Global North	Fearless Cards: a low-tech solution to help overcome emotional barriers to ICT adoption among marginalized populations
140	301	EJISDC	2013	56		Finland; Finland; Finland	Global North	ICT Barriers and Critical Success Factors in Developing Countries
141	303	EJISDC	2013	57		Germany; Germany	Global North	An Information Technology Model for Pharmaceutical Supply Chain Security
142	305	EJISDC	2013	57		Hong Kong; Germany; Hong Kong	Global North	Investigation of the Radio Frequency Identification Assimilation Process in China: A Stage Based Model Perspective
143	306	EJISDC	2013	57		Singapore; Singapore; Singapore; Singapore	Global North	An Investigation of e-Government Services in China
144	307	EJISDC	2013	58		USA	Global North	The Changing Field of ICTD: Growth and maturation of the field, 2000-2010
145	317	EJISDC	2013	59		UK; UK; UK	Global North	Information systems deployment in Libyan oil companies: two case studies
146	319	EJISDC	2013	59		Norway; Norway	Global North	Big Data Analytics for developing countries – Using the Cloud for Operational BI in Health
147	329	EJISDC	2014	61		Australia; Australia	Global North	Cultural Aspects of Business-to-Consumer (B2C) E-commerce: A Comparative Analysis of Pakistan and Australia
148	332	EJISDC	2014	61		Norway	Global North	Making Distance Learning an Effective Health Information Systems Training Strategy: A Combined Social Network Analysis and Content Analysis Perspective
149	335	EJISDC	2014	61		Sweden; Sweden; Sweden	Global North	Constraints of ICT in Lifelong Learning on Disadvantaged Women
150	336	EJISDC	2014	62		UK; UK; UK	Global North	Cloud Computing: Adoption Issues for Sub-Saharan Africa SMEs
151	337	EJISDC	2014	62		UK	Global North	EXPLORING INFORMATION ETHICS FOR INCLUSIVE OPEN DEVELOPMENT
152	338	EJISDC	2014	62		Norway; Norway	Global North	Intervention Breakdowns as Occasions for Articulating Mobile Health Information Infrastructures
153	342	EJISDC	2014	62		UK; UK	Global North	Understanding the Introduction and Use of a Mobile Device-Supported Health Information System in Nigeria
154	345	EJISDC	2014	63		UK; UK	Global North	The Innovation of Multiview3 for Development Professionals
155	346	EJISDC	2014	63		Finland; Sweden; Finland	Global North	Development of Projects and ICT: A Review of Non-Technical Aspects
156	347	EJISDC	2014	63		UK; Sweden	Global North	E-Trade Facilitation in Ghana: A Capability Approach Perspective
157	351	EJISDC	2014	64		Sweden; Norway	Global North	Exploring the Link between ICT and Development in the Context of Developing Countries: A Literature Review
158	352	EJISDC	2014	64		Norway	Global North	Challenges in Implementing Patient-Centred Information Systems in Tanzania: An Activity Theory Perspective
159	359	EJISDC	2014	64		Japan; Japan; Japan	Global North	The Knowledge-Bridging Process in Software Offshoring from Japan to Vietnam
160	360	EJISDC	2014	65		Sweden; Sweden	Global North	The Role of ICT for the Growth of Small Enterprises in Ethiopia
161	361	EJISDC	2014	65		USA	Global North	Managing Gender-Related Challenges in ICT4D Field Research
162	362	EJISDC	2014	65		Sweden; Sweden	Global North	Putting a MOOC for Human Rights in the Hands of Kenyans: THe Haki Zangu Case for Non-Formal Learning
163	366	EJISDC	2014	65		UK	Global North	The Impact of Communication Technologies on the Performance of SMEs in a Developing Country: Nigeria as a Case Study
164	372	EJISDC	2015	66		Australia	Global North	Exploring Mobile Internet use among Marginalised Young People in Post-conflict Sierra Leone
165	376	EJISDC	2015	67		Sweden; Sweden	Global North	Citizens' Use of New Media in Authoritarian Regimes: A Case Study of Uganda
166	378	EJISDC	2015	67		Australia; Australia	Global North	Mobile Phones and the Well-Being of Blind Micro-Entrepreneurs in Indonesia
167	383	EJISDC	2015	67		Switzerland; UK; Switzerland; Switzerland	Global North	Using Photo-Elicitation to Explore Social Representations of Community Multimedia Centers in Mozambique
168	384	EJISDC	2015	68		Czech Republic; Netherlands	Global North	Community Mapping in Urban Informal Settlements: Examples from Nairobi, Kenya
169	387	EJISDC	2015	68		Singapore	Global North	Mobile Ecosystems among Low-skilled Migrants in Singapore: An Investigation into Mobile Usage Practices
170	389	EJISDC	2015	68		Germany	Global North	Assessing the Role of Mobile Phones in Offering Price Information and Market Linkages: The Case of M-Farm in Kenya
171	402	EJISDC	2015	70		Norway	Global North	Capacity Strengthening within a Development Context: Developing and Applying a Conceptual Model
172	403	EJISDC	2015	70		UK; UK; UK; UK	Global North	The Dreams Plan: A Blupoint Strategy for E-Education Provision in South Africa
173	405	EJISDC	2015	71		USA; USA; USA	Global North	ICT Policies in Developing Countries: An Evaluation with the Extended Design-Actuality Gaps Framework
174	406	EJISDC	2015	71		Sweden; Germany	Global North	The Role of ICT Expenditure for Cash Crop Production and Income Generation in Southern Ethiopia
175	413	ITD	2008	14	1	USA; USA	Global North	Information technology investments in emerging economies
176	414	ITD	2008	14	1	Greece; UK	Global North	A study of information systems investment evaluation in the Greek banking sector
177	416	ITD	2008	14	1	USA	Global North	Contributing factors to information technology investment utilization in transition economies: An empirical investigation

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178	418	ITD	2008	14	2	USA; USA	Global North	Global digital divide: Influence of socioeconomic, governmental, and accessibility factors on information technology
179	422	ITD	2008	14	2	USA; USA	Global North	Young people and ICTs in developing countries
180	424	ITD	2008	14	3	Netherlands; Belgium; Netherlands	Global North	Sensemaking and implications for information systems design: Findings from the Democratic Republic of Congo's ongoing crisis
181	425	ITD	2008	14	3	Netherlands	Global North	The enabling role of information technology in the global war for talent: Accenture's industrialized approach
182	427	ITD	2008	14	3	Belgium	Global North	Critical analysis of policy measures for the advancement of the level of computerization of SMEs
183	428	ITD	2008	14	4	UK; UK; UK; UK	Global North	"Missing women": Gender, ICTs, and the shaping of the global economy
184	430	ITD	2008	14	4	Canada; Canada	Global North	Are ICT investments paying off in Africa? An analysis of total factor productivity in six West African countries from 1995 to 2002
185	431	ITD	2008	14	4	USA; USA; USA	Global North	The case for a multi-methodological, cross- disciplinary approach to the analysis of ICT investment and projects in the developing world
186	432	ITD	2008	14	4	USA	Global North	Discourse as practice in Nigeria's IT industry—A research in progress
187	433	ITD	2009	15	1	UK; Norway	Global North	Software exports development in Costa Rica: Potential for policy reforms
188	434	ITD	2009	15	1	Norway	Global North	Negotiating the symbolic power of information and communication technologies (ICT): The spread of Internet-supported distance education
189	435	ITD	2009	15	1	USA; USA	Global North	Human resource development, domains of information technology use, and levels of economic prosperity
190	438	ITD	2009	15	2	UK	Global North	Different spaces for e-development: What can we learn from the capability approach?
191	439	ITD	2009	15	2	Norway; Norway; Norway	Global North	Toward a political perspective of integration in information systems research: The case of health information systems in India
192	441	ITD	2009	15	2	New Zealand; New Zealand	Global North	The value of extended networks: Social capital in an ICT intervention in rural Peru
193	443	ITD	2009	15	3	Australia; Australia	Global North	A cross-country comparative analysis of e-government service delivery among Arab countries
194	445	ITD	2009	15	3	UK; UK	Global North	E-government evaluation: Citizen's perspective in developing countries
195	448	ITD	2009	15	4	Canada; UK	Global North	Factors affecting ICT expansion in emerging economies: An analysis of ICT infrastructure expansion in five Latin American countries
196	450	ITD	2009	15	4	UK	Global North	Carving a niche: ICT, social capital, and trust in the shift from personal to impersonal trading in Tanzania
197	452	ITD	2010	16	1	USA; USA	Global North	Socioeconomic Foundations Enabling E-Business and E-Government
198	453	ITD	2010	16	1	Sweden; Sweden	Global North	Increasing Interactivity in Distance Educations: Case Studies Bangladesh and Sri Lanka
199	454	ITD	2010	16	1	Netherlands; Netherlands; Netherlands; Netherlands	Global North	A Constructive Technology Assessment Approach to ICT Planning in Developing Countries: Evaluating the First Phase, the Roundtable Workshop
200	456	ITD	2010	16	1	USA; USA; USA; USA	Global North	Protecting Critical Information Infrastructure: Developing Cybersecurity Policy
201	457	ITD	2010	16	2	Canada; Canada	Global North	Highlighting the Duality of the ICT and Development Research Agenda
202	458	ITD	2010	16	2	UK; UK	Global North	ICT Research in Africa: Need for a Strategic Developmental Focus
203	459	ITD	2010	16	2	Netherlands	Global North	The Architecture of Global ICT Programs: A Case Study of E-Governance in Jordan
204	462	ITD	2010	16	3	Norway	Global North	When does ICT support education in South Africa? The importance of teachers' capabilities and the relevance of language
205	463	ITD	2010	16	3	UK; UK	Global North	The contribution of ICTs to the delivery of special educational needs in Ghana: practices and potential
206	464	ITD	2010	16	3	USA	Global North	Learning assessment of a videoconference-based training: lessons from medical training between USA and Ethiopia
207	465	ITD	2010	16	3	UK	Global North	ICT for education projects: a look from behind the scenes
208	467	ITD	2010	16	4	UK; UK	Global North	The role of institutions in ICT innovation: learning from interventions in a Nigerian e-government initiative
209	468	ITD	2010	16	4	USA; USA	Global North	Improving the relative efficiency of revenue generation from ICT in transition economies: a product life cycle approach
210	469	ITD	2010	16	4	Canada; Canada; USA	Global North	The digital divide: global and regional ICT leaders and followers
211	470	ITD	2010	16	4	UK; UK	Global North	WiMAX for development
212	471	ITD	2011	17	1	UK; UK	Global North	Competing institutional logics and sustainable development: the case of geographic information systems in Brazil's Amazon region
213	472	ITD	2011	17	1	UK; USA	Global North	ICTs and monitoring of MDGs: a case study of Kenya HIV/AIDS monitoring and evaluation in a donor multi-agency context
214	473	ITD	2011	17	1	Norway; Norway; Norway; Norway; Norway	Global North	Comparing strategies to integrate health information systems following a data warehouse approach in four countries
215	475	ITD	2011	17	1	UK	Global North	Knowledge behind barriers: IT access as an enabler of Cuban development
216	476	ITD	2011	17	2	Sweden; Sweden	Global North	Bangladesh calling: farmers' technology use practices as a driver for development
217	478	ITD	2011	17	2	Japan	Global North	Measuring impacts of e-government support in least developed countries: a case study of the vehicle registration service in Bhutan
218	482	ITD	2011	17	3	USA; USA	Global North	The spillover effects of investments in telecoms: insights from transition economies
219	483	ITD	2011	17	3	USA	Global North	Making the transition from pilot to scale: examining sustainability and scalability issues in a public–private telecenter partnership in Sri Lanka
220	485	ITD	2011	17	4	UK	Global North	Researching impact of mobile phones for development: concepts, methods and lessons for practice
221	488	ITD	2011	17	4	Canada; USA	Global North	The case for cases: writing and teaching cases for the emerging economies

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222	489	ITD	2012	18	1	Norway; Norway; Norway	Global North	Building collective capabilities through ICT in a mountain region of Nepal: where social capital leads to collective action
223	490	ITD	2012	18	1	Sweden; Sweden	Global North	The capability approach as a tool for development evaluation – analyzing students' use of internet resources
224	491	ITD	2012	18	1	UK; UK; UK	Global North	Signifiers of the life we value? – considering human development, technologies and Fair Trade from the perspective of the capabilities approach
225	492	ITD	2012	18	1	USA; USA	Global North	Capable and convivial design (CCD): a framework for designing information and communication technologies for human development
226	494	ITD	2012	18	2	Spain; Spain; Spain	Global North	On the relation between socio-economic status and physical mobility
227	495	ITD	2012	18	2	USA	Global North	Inferring patterns of internal migration from mobile phone call records: evidence from Rwanda
228	496	ITD	2012	18	2	UK	Global North	Lines across the desert: mobile phone use and mobility in the context of trans-Saharan migration
229	502	ITD	2012	18	3	USA	Global North	Problems of information technology diffusion in sub-Saharan Africa: the case of Ghana
230	504	ITD	2012	18	4	New Zealand; UK	Global North	Unveiling the modernity bias: a critical examination of the politics of ICT4D
231	505	ITD	2012	18	4	USA; USA	Global North	Internet as freedom – does the internet enhance the freedoms people enjoy?
232	507	ITD	2012	18	4	Norway; Norway	Global North	Intermediaries: bridges across the digital divide
233	510	ITD	2013	19	1	Ireland	Global North	A knowledge economy or an information society in Africa? Thintegration and the mobile phone revolution
234	511	ITD	2013	19	1	USA	Global North	Investigating factors associated with the spillover effect of investments in telecoms: Do some transition economies pay too much for too little?
235	512	ITD	2013	19	1	USA; USA	Global North	On the endogeneity of telecommunications and economic growth: evidence from Asia
236	513	ITD	2013	19	1	USA	Global North	Harnessing information and communication technologies (ICTs) to address urban poverty: Emerging open policy lessons for the open knowledge economy
237	514	ITD	2013	19	2	USA	Global North	Information technology and development: the Internet and the mobile phone in Haiti
238	515	ITD	2013	19	2	UK; UK	Global North	Hybridity, consulting and e-development in the making: inscribing new practices of impact assessment and value management
239	517	ITD	2013	19	2	USA	Global North	Does a government web presence reduce perceptions of corruption?
240	518	ITD	2013	19	2	USA; USA; Sweden	Global North	Frugal information systems (IS)
241	520	ITD	2013	19	3	Norway; Norway	Global North	Challenges in Moving to "Health Information for Action": An Infrastructural Perspective From a Case Study in Tajikistan
242	526	ITD	2013	19	4	USA	Global North	A Cuban Spring? The Use of the Internet as a Tool of Democracy Promotion by United States Agency for International Development in Cuba
243	527	ITD	2014	20	1	UK	Global North	Power and the Construction of Independence in ICTD Organizations
244	528	ITD	2014	20	1	USA; USA	Global North	The Mediating Role of Voice and Accountability in the Relationship Between Internet Diffusion and Government Corruption in Latin America and Sub- Saharan Africa
245	529	ITD	2014	20	1	USA; USA; USA	Global North	ICT Capacity as the Investment and Use of ICT: Exploring its Antecedents in Africa
246	530	ITD	2014	20	1	Canada; Canada; USA	Global North	Information and Communications Technology Development and the Digital Divide: A Global and Regional Assessment
247	532	ITD	2014	20	2	USA; USA; USA	Global North	Institutions for Cyber Security: International Responses and Global Imperatives
248	533	ITD	2014	20	2	USA	Global North	A Model for the Impact of Cybersecurity Infrastructure on Economic Development in Emerging Economies: Evaluating the Contrasting Cases of India and Pakistan
249	534	ITD	2014	20	2	USA; USA; USA	Global North	Architecture for Managing Knowledge on Cybersecurity in Sub-Saharan Africa
250	536	ITD	2014	20	2	USA; USA; USA; Hong Kong	Global North	Improving Password Cybersecurity Through Inexpensive and Minimally Invasive Means: Detecting and Deterring Password Reuse Through Keystroke-Dynamics Monitoring and Just-in-Time Fear Appeals
251	537	ITD	2014	20	3	USA; USA; USA	Global North	The Changing – and Unchanging – Face of the Digital Divide: an Application of Kohonen Self- Organizing Maps
252	538	ITD	2014	20	3	USA	Global North	Investigating the Impact of Investments in Telecoms on Microeconomic Outcomes: Conceptual Framework and Empirical Investigation in the Context of Transition Economies
253	539	ITD	2014	20	3	USA	Global North	When You Do Not Have a Computer: Public-Access Computing in Developing Countries
254	541	ITD	2014	20	4	Singapore; Singapore	Global North	Internet Studies and Development Discourses: The Cases of China and India
255	542	ITD	2014	20	4	South Korea; South Korea; South Korea; South Korea; South Korea	Global North	What is the Right R&D Strategy for Overcoming the Difficulties of the South Korean IT Industry?
256	543	ITD	2014	20	4	USA	Global North	Understanding the Electronic Recruiting Marketplace Strategy: The Case of JobKorea
257	548	ITD	2015	21	1	Switzerland; Switzerland; Switzerland	Global North	Information and Communication Flows through Community Multimedia Centers: Perspectives from Mozambican Communities
258	550	ITD	2015	21	1	USA	Global North	Knowledge Management for Information and Communications Technologies for Development Programs in South Africa
259	558	ITD	2015	21	2	Finland; Finland; Finland	Global North	Internet Adoption at the User Level: Empirical Evidence from The Gambia
260	559	ITD	2015	21	2	UK	Global North	ICT for Rural Community Development: Implementing the Communicative Ecology Framework in the Niger Delta Region of Nigeria
261	560	ITD	2015	21	3	USA; USA	Global North	Information and Communication Technology in Transition Economies: An Assessment of Research Trends
262	561	ITD	2015	21	3	Slovakia	Global North	ICT and Innovation in the Provision of Public Services: The Case of Slovakia
263	564	ITD	2015	21	3	Czech Republic; Czech Republic; Czech Republic; Czech Republic	Global North	The Determinants of IT Adoption in SMEs in the Czech-Polish Border Areas
264	565	ITD	2015	21	3	Slovenia; Slovenia; Slovenia; Slovenia; Slovenia	Global North	Outsourcing as an Economic Development Tool in Transition Economies: Scattered Global Software Development

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265	566	ITD	2015	21	3	Greece; Greece; Italy	Global North	A Framework for Service-oriented Architecture Adoption in e-Banking: the Case of Banks from a Transition and a Developed Economy
266	567	ITD	2015	21	3	Czech Republic; Czech Republic	Global North	Academic-Industrial Cooperation in ICT in a Transition Economy – Two Cases from the Czech Republic
267	574	ITD	2015	21	4	Australia	Global North	Theory Building for ICT4D: Systemizing Case Study Research Using Theory Triangulation
268	575	ITD	2015	21	4	UK; UK; UK	Global North	Understanding e-Waste Management in Developing Countries: Strategies, Determinants, and Policy Implications in the Indian ICT Sector
269	577	ITD	2015	21	4	Belgium	Global North	Extending an ICT4D Computer Re-use Model with E-waste Handling Activities: A Case Study

B.2.2 Global South subset

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1	2	ITID	2008	4	3	China	Global South	The Institutional Framework of the United Nations Development Programme–Ministry of Science and Technology (UNDP–MoST) Telecenter Project in Rural China
2	5	ITID	2008	4	3	Sri Lanka; Sri Lanka	Global South	Internet Presence as Knowledge Capacity: The Case of Research in Information and Communication Technology Infrastructure Reform
3	12	ITID	2009	5	1	Pakistan; Pakistan; Pakistan; Pakistan; Pakistan	Global South	A Peer-to-Peer Internet for the Developing World
4	14	ITID	2009	5	1	Nepal; Nepal; Nepal	Global South	Why Don't People Use Nepali Language Software?
5	17	ITID	2009	5	2	Mexico; Colombia; Brazil	Global South	Training on Communication and Information Technologies, Employment and Youth: The Case of Brazil, Colombia, and Mexico
6	19	ITID	2009	5	2	Jamaica	Global South	Teleworking the Mobile Caribbean: Emerging Patterns of Broadband-Assisted Remote Work Among the Marginalized in Jamaica and Trinidad and Tobago
7	22	ITID	2009	5	3	Mexico	Global South	Strategic Use of Mobile Telephony at the Bottom of the Pyramid: The Case of Mexico
8	29	ITID	2010	6	1	South Africa; South Africa; South Africa; South Africa	Global South	Morphological Analysis: A Method for Selecting ICT Applications in South African Government Service Delivery
9	31	ITID	2010	6	1	Brazil; Brazil	Global South	Ethnic Digital Exclusion in Brazil: National and Regional Data from 2001 to 2004
10	36	ITID	2010	6	2	India; India; India; India	Global South	User-Generated Content Creation and Dissemination in Rural Areas
11	38	ITID	2010	6	2	Bangladesh; India	Global South	A Framework and Case Example for Evaluating Cost-Effectiveness of Information Services Across Technologies
12	41	ITID	2010	6	2	India; India	Global South	Assessing the Impact of E-government: A Study of Projects in India
13	56	ITID	2011	7	2	Mexico; Mexico; Mexico	Global South	Policies on Access to Information Technologies: The Case of e-Mexico
14	58	ITID	2011	7	3	Sri Lanka; Sri Lanka; Sri Lanka	Global South	Social Influence in Mobile Phone Adoption: Evidence from the Bottom of the Pyramid in Emerging Asia
15	61	ITID	2011	7	3	Sri Lanka; Sri Lanka	Global South	Are the Poor Stuck in Voice? Conditions for Adoption of More-Than-Voice Mobile Services
16	74	ITID	2012	8	2	South Africa	Global South	Digital and Other Poverties: Exploring the Connection in Four East African Countries
17	85	ITID	2012	8	4	Mexico; Mexico	Global South	Institutional Connectivity: The Case of Mexico
18	87	ITID	2012	8	4	Peru; Peru; Peru; Peru	Global South	The Impacts of the Use of Mobile Telephone Technology on the Productivity of Micro- and Small Enterprises: An Exploratory Study into the Carpentry and Cabinet-Making Sector in Villa El Salvador
19	88	ITID	2012	8	4	Peru	Global South	Use of the Internet and Productivity of Microbusinesses: Evidence from the Peruvian Case (2007–2010)
20	89	ITID	2012	8	4	Uruguay; Uruguay	Global South	One Laptop per Child and Bridging the Digital Divide: The Case of Plan CEIBAL in Uruguay
21	90	ITID	2012	8	4	Peru; Peru	Global South	Institutional Barriers to Development Innovation: Assessing the Implementation of XO-1 Computers in Two Peri-Urban Schools in Peru
22	94	ITID	2013	9	1	South Africa; South Africa	Global South	"Ten Seeds": How Mobiles Have Contributed to Development in Women-Led Farming Cooperatives in Lesotho
23	98	ITID	2013	9	2	India; India	Global South	Anthropology, Development, and ICTs: Slums, Youth, and the Mobile Internet in Urban India
24	120	ITID	2014	10	4	India; India	Global South	Same Language Subtitling of Bollywood Film Songs on TV: Effects on Literacy
25	130	ITID	2015	11	3	Mexico	Global South	How Transformational Mobile Banking Optimizes Household Expenditures: A Case Study from Rural Communities in Mexico
26	132	ITID	2015	11	4	South Africa; South Africa	Global South	Sharing the Cloudlet: Impression Management and Designing for Colocated Mobile Sharing
27	136	EJISDC	2008	33		Thailand; Thailand; Thailand; Thailand; Thailand	Global South	Attitudes of Staff to Information and Communication Technologies in a Provincial University in Thailand
28	138	EJISDC	2008	33		China	Global South	Defining the ICT4D plus Pro-Poor Tourism Convergence Space: Synergies for Natural Allies in the Global War on Poverty
29	139	EJISDC	2008	34		Egypt	Global South	Modeling Students' Intention to Adopt E-learning: A Case from Egypt
30	148	EJISDC	2008	35		Malaysia; Malaysia; Saudi Arabia	Global South	Opportunities and Challenges of the Knowledge Management Approach to E-learning: A Case Study in Al-Bayan Girls' School, Kingdom of Saudi Arabia
31	149	EJISDC	2008	35		India	Global South	Telecentres in Rural India: Emergence and a Typology
32	151	EJISDC	2008	35		Saudi Arabia	Global South	Students' Perceived Barriers to In-Class Participation in a Distributed and Gender Segregated Educational Environment
33	152	EJISDC	2008	35		Turkey	Global South	Implementing E-Government in Turkey: A Comparison of Online Public Service Delivery in Turkey and the European Union
34	154	EJISDC	2009	36		Egypt; Egypt; Egypt	Global South	The Impact of ICT Investments on Economic Development in Egypt
35	156	EJISDC	2009	36		Ghana; Ghana; Ghana	Global South	Open Pit Mining and Land Use Changes: An Example from Bogosu-Prestea Area, South West Ghana
36	157	EJISDC	2009	36		Jamaica	Global South	Issues Affecting the Social Sustainability of Telecentres in Developing Contexts: A Field Study of Sixteen Telecentres in Jamaica
37	158	EJISDC	2009	36		Brazil; Brazil	Global South	Mass Customization and Strategic Benefits: A Case Study in Brazil
38	160	EJISDC	2009	36		South Africa; South Africa; South Africa; South Africa	Global South	Can Mobile Internet Help Alleviate Social Exclusion in Developing Countries?
39	161	EJISDC	2009	36		Pakistan; Pakistan	Global South	IT in Pakistan: Threats & opportunities for eBusiness
40	165	EJISDC	2009	37		Egypt; Egypt	Global South	Using Blended Learning Techniques in Knowledge Dissemination
41	167	EJISDC	2009	37		Thailand	Global South	The Adoption and Use of Personal Internet Banking Services in Thailand
42	171	EJISDC	2009	38		South Africa; South Africa; South Africa	Global South	Internet Access in South African Homes: A Preliminary Study on Factors Influencing Consumer Choice
43	172	EJISDC	2009	38		China	Global South	E-government, People and Social Change: A Case Study in China
44	173	EJISDC	2009	38		Botswana	Global South	Factors Affecting Adoption of e-Government in Zambia

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45	175	EJISDC	2009	38		Brazil; Brazil; Brazil; Brazil	Global South	Information Technology Management Styles Under the Prism of the Telecommunications Sector
46	178	EJISDC	2009	38		Papua New Guinea	Global South	Appropriate ICT as a Tool to Increase Effectiveness in ICT4D: Theoretical considerations and illustrating cases
47	179	EJISDC	2009	38		Malaysia	Global South	Factors Influencing AIS Effectiveness Among Manufacturing SMEs: Evidence from Malaysia
48	181	EJISDC	2009	39		Brazil; Brazil	Global South	Implementation of an Electronic Prescription System in a Brazilian General Hospital: Understanding Sources of Resistance
49	183	EJISDC	2009	39		South Africa; South Africa	Global South	Awareness of e-Government Related Small Business Development Services in Cape Town
50	184	EJISDC	2009	39		Thailand	Global South	The Nature and Structure of the Information Systems Profession in Thailand
51	186	EJISDC	2009	39		Kuwait	Global South	The Ethical Dilemma of Software Piracy in Islamic Societies: The Case of Kuwait
52	191	EJISDC	2010	40		Philippines; Philippines	Global South	Monitoring Employee Use of the Internet in Philippine Organizations
53	193	EJISDC	2010	41		Cameroon; Cameroon; Cameroon; Cameroon	Global South	Improving the Quality of Service Delivery in a Public Service Workflow Based on the Ant Theory: A Case Study in Cameroon
54	195	EJISDC	2010	41		Pakistan; Pakistan	Global South	Demographic implications for the User-Perceptions of E-Learning in Higher Education Institutions of N-W.F.P, Pakistan
55	197	EJISDC	2010	41		Malaysia; Malaysia	Global South	SMS Banking: Explaining the Effects of Attitude, Social Norms and Perceived Security and Privacy
56	199	EJISDC	2010	41		India	Global South	A Dedicated Satellite for Meeting Health Education Needs of Afro-Asian Nations: Possibilities, Action Plan and Benefits
57	200	EJISDC	2010	42		Ghana; Ghana; Ghana	Global South	Enhanced Land Documentation For Farmland Compensation - A Case Study Of UMaT Lands, Postulated Challenges and Solutions.
58	201	EJISDC	2010	42		Ghana; Ghana; Ghana	Global South	Surface Deformation Monitoring in the Godfields Ghana Limited Area.
59	203	EJISDC	2010	42		Pakistan; Pakistan	Global South	Understanding Attitudes Towards Computer Use in the Police Department of Pakistan
60	205	EJISDC	2010	42		Tanzania; Tanzania; Tanzania	Global South	Contribution of Mobile Phones to Rural Livelihoods and Poverty Reduction in Morogoro Region, Tanzania
61	207	EJISDC	2010	42		Nigeria; Nigeria; Nigeria	Global South	A Study of the Impact of Information and Communications Technology (ICT) on the Quality of Quantity Surveying Services in Nigeria
62	209	EJISDC	2010	43		South Africa; Namibia	Global South	A User Interface for Micro-Entrepreneurs in a Rural Community
63	213	EJISDC	2010	43		Tanzania	Global South	Bridging the Agricultural Knowledge and Information Divide: The Case of Selected Telecenters and Rural Radio in Tanzania
64	217	EJISDC	2010	44		India	Global South	Framing M4D: The Utility of Continuity and the Dual Heritage of "Mobiles and Development"
65	219	EJISDC	2011	45		India; India; India	Global South	Role of existing channels on customer adoption of new channels: A case of ATM and Internet banking
66	222	EJISDC	2011	45		Turkey; Turkey	Global South	Modelling and Assessment of the Effectiveness of Government Information Technologies - Value Space Approach with a Public Sector Case Study in Turkey
67	224	EJISDC	2011	45		Pakistan; Pakistan	Global South	Probing Factors Affecting Knowledge Sharing Behaviour of Pakistani Bloggers
68	228	EJISDC	2011	46		Palestine; Palestine	Global South	The Impact of Mobile Telephony on Developing Countries Enterprises: A Palestinian Case Study
69	230	EJISDC	2011	46		South Africa; South Africa	Global South	In the Eyes of the Media: Discourse of an ICT4D Project in a Developing Country
70	231	EJISDC	2011	47		Fiji	Global South	Understanding IT Business Value Creation in Least Developed Economies
71	232	EJISDC	2011	47		South Africa; South Africa; South Africa	Global South	Mobile Banking Adoption in Nigeria
72	233	EJISDC	2011	47		United Arab Emirates	Global South	Adoption of E-commerce: Understanding of Security Challenge
73	234	EJISDC	2011	47		Oman	Global South	Strategic value of IT in Private Sector Organisations in a Developing Country: Oman
74	235	EJISDC	2011	47		Brazil; Brazil	Global South	An Exploratory Model for the Relevant Factors Related to the Professional Performance of the Brazilian CIO
75	236	EJISDC	2011	47		Ghana; Ghana; Ghana	Global South	Effects of Mobile Phone Use on Artisanal Fishing Market Efficiency and Livelihoods in Ghana
76	238	EJISDC	2011	47		Ghana	Global South	Developing Information Society in Ghana: How Far?
77	241	EJISDC	2011	48		India; India; India	Global South	ICTs for Agricultural Extension: A Study in the Indian Himalayan Region
78	242	EJISDC	2011	48		Mexico; Mexico	Global South	Information and Communication Technologies (ICTs) and Mexican Manufacturing Exports
79	251	EJISDC	2011	49		South Africa; South Africa; South Africa; South Africa	Global South	Uses, Benefits and Challenges of Public Access Points in the Face of Growth of Mobile Technology
80	252	EJISDC	2012	50		South Africa; South Africa; South Africa; South Africa; South Africa	Global South	Research Testbed Networks: Practical Tools for Service Delivery?
81	254	EJISDC	2012	50		Malaysia; Malaysia; Malaysia; Malaysia; Malaysia	Global South	Telecentre Replication Initiative in Borneo, Malaysia: The CoERI Experience
82	258	EJISDC	2012	50		South Africa; South Africa	Global South	Improving Data Quality in the Banking Supervisory Data of Southern Africa Central Banks
83	260	EJISDC	2012	51		South Africa; South Africa; South Africa	Global South	Quality Assessment of Information Systems in SMEs: A Study of Eldoret Town in Kenya
84	261	EJISDC	2012	51		Qatar; Qatar; Oman	Global South	Examining the Impact of Information and Communication Technologies (ICT) on Enterprise Practices: A Preliminary Perspective from Qatar
85	263	EJISDC	2012	51		Thailand; Thailand	Global South	The Structure of the Information Technology Profession: A Comparison Among Organizational Sectors in Thailand
86	264	EJISDC	2012	51		Tanzania	Global South	Barriers in Accessing Agricultural Information in Tanzania with a Gender Perspective: The Case Study of Small-Scale Sugar Cane Growers in Kilombero District
87	265	EJISDC	2012	51		Indonesia	Global South	Managing Risks at the Project Initiation Stage of Large IS Development for HEI: A Case Study in Indonesia
88	266	EJISDC	2012	51		South Africa; South Africa	Global South	The Rural ICT Comprehensive Evaluation Framework: Implementing the First Domain, The Baseline Study Process

GSSS#	GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
89	270	EJISDC	2012	52		Egypt	Global South	Success Factors for ERP Implementation in Large Organizations: The Case of Egypt
90	271	EJISDC	2012	52		Ghana	Global South	Mobilizing Culture for E-Business in Developing Countries: An Actor Network Theory Account
91	274	EJISDC	2012	52		Thailand	Global South	An Effective Model for Successful IT Professionals in Thailand
92	275	EJISDC	2012	53		South Africa; South Africa	Global South	The Livelihood Outcomes of ICT Use in Microenterprises: The Case of South Africa
93	277	EJISDC	2012	53		Uganda	Global South	Information Technology-Mediated Issues in Sexual Health and HIV/AIDS Education
94	279	EJISDC	2012	53		South Africa; South Africa	Global South	Towards an Organisational Readiness Framework for Emerging Technologies: An Investigation of Antecedents for South African Organisations' Readiness for Server Virtualisation
95	282	EJISDC	2012	54		Botswana; Botswana; Botswana; Botswana	Global South	Developing a Contextualized Information Systems Curriculum for an Emerging Economy
96	283	EJISDC	2012	54		Malaysia; Malaysia; Malaysia	Global South	E-Government Service Quality in Saudi Arabia
97	285	EJISDC	2012	54		Malaysia; Malaysia; Malaysia	Global South	Urbanization and 3D City Modelling for Developing Countries: A Comparative Study
98	286	EJISDC	2012	54		South Africa; South Africa	Global South	Conceptualising the Effect of the Black Economic Empowerment Score-Card on IT Governance
99	289	EJISDC	2012	55		Uganda; Uganda	Global South	A Software Capability Maturity Adoption Model for Small and Medium Enterprises in Developing Countries
100	292	EJISDC	2012	55		Jamaica; Jamaica; Jamaica	Global South	The Contribution of Process, People and Perception to Information Systems Quality and Success: A Jamaican Study
101	293	EJISDC	2012	55		Cameroon	Global South	Complementarity or Substitutability Between the Different Modes of Internet Access: A Property Rights-Based Analysis on Cybercafés Offerings with Data from Cameroon
102	295	EJISDC	2013	56		Tanzania; Tanzania	Global South	Using Information and Communication Technologies for Enhancing the Accessibility of Agricultural Information for Improved Agricultural Production in Tanzania
103	299	EJISDC	2013	56		India; India; India; India	Global South	An Exploratory study of Mobile Multimedia Agricultural Advisory System: Challenges and Lessons from Tamil Nadu, India
104	300	EJISDC	2013	56		Mauritius; Mauritius; Mauritius; Mauritius	Global South	Impact of Online Social Networking on Youth: Case Study of Mauritius
105	302	EJISDC	2013	57		Poland; Poland	Global South	Impediments to Enterprise System Implementation over the System Lifecycle: Contrasting Transition and Developed Economies
106	304	EJISDC	2013	57		Bahrain; Oman	Global South	ASSESSING THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR LEARNING IN EMERGING COUNTRIES
107	309	EJISDC	2013	58		Uganda; Uganda	Global South	A Framework for the Adoption of Electronic Customer Relationship Management Information Systems in Developing Countries
108	310	EJISDC	2013	58		Malaysia; Malaysia	Global South	A Multipurpose Cadastral Framework for Developing Countries Concepts
109	311	EJISDC	2013	58		Malaysia; Malaysia; Malaysia; Malaysia	Global South	A Preliminary Investigation of Islamic Websites' Design Features that Influence Use: A Proposed Model
110	313	EJISDC	2013	58		South Africa; South Africa; South Africa	Global South	Rethinking Information Systems Projects using Actor-Network Theory – Perspectives from a Developing Country
111	314	EJISDC	2013	59		Thailand; Thailand	Global South	ICT Curricular and the Requirements of Organizations in Thailand
112	315	EJISDC	2013	59		South Africa; South Africa	Global South	The emancipation of the researcher as part of Information and Communication Technology for Development work in deep rural South Africa
113	318	EJISDC	2013	59		Botswana; Botswana	Global South	Factors Influencing the Usage of the Tribal Land Information Management Systems for Land Management and Administration: The Case of Mogoditshane Subordinate Land-Board
114	320	EJISDC	2014	60		Sri Lanka; Sri Lanka	Global South	Mobile Based Information Communication Interactions among Major Agricultural Stakeholders: Sri Lankan Experience
115	321	EJISDC	2014	60		South Africa; South Africa	Global South	Aligning Work Practices, Mobile Technology and Strategy for Performance Improvement: The Case of SMEs in Uganda
116	322	EJISDC	2014	60		Malaysia; Malaysia	Global South	Towards an Efficient City Inventory Management System for Urban Authorities in Developing Countries – The Case of 3D Change Detection
117	323	EJISDC	2014	60		South Africa; South Africa; South Africa	Global South	Critical Themes of Process Assessment in Rural ICT4D Projects: An Analysis of Assessment Approaches
118	324	EJISDC	2014	60		Egypt	Global South	The Value of Social Media in Egypt's Uprising and Beyond
119	327	EJISDC	2014	60		Malaysia; Malaysia; Malaysia; Malaysia; Malaysia	Global South	Determinants of Online Waqf Acceptance: An Empirical Investigation
120	331	EJISDC	2014	61		Ghana	Global South	Formation and Failure of an E-Marketplace Pioneer in a Developing Country
121	333	EJISDC	2014	61		South Africa; South Africa	Global South	Desperately Seeking Systems Thinking in ICT4D
122	339	EJISDC	2014	62		South Africa; South Africa; South Africa	Global South	Introducing a Mobile Payment System to an Emerging Economy's Mobile Phone Subscriber Market. An Actor Network Perspective.
123	340	EJISDC	2014	62		Brazil; Brazil	Global South	Health Information Systems and Democracy: Contributions from the Brazilian Sanitary Movement
124	341	EJISDC	2014	62		Jamaica; Jamaica; Jamaica; Jamaica	Global South	A Design Science Approach to Developing and Evaluating a National Cybersecurity Framework for Jamaica
125	344	EJISDC	2014	63		Samoa	Global South	Issues and Challenges, Strategies and Recommendations, in the Development of ICT in a Small Island Developing State: The Case of Samoa
126	348	EJISDC	2014	63		Albania; Albania; Albania	Global South	Effective IT Governance in the Albanian Public Sector – A Critical Success Factors Approach
127	349	EJISDC	2014	63		Jamaica; Jamaica	Global South	A Participatory GIS for Marine Spatial Planning in the Grenadine Islands
128	353	EJISDC	2014	64		Egypt; Egypt; Egypt	Global South	The Quest for Global Expansion - Xceed Re-Visited
129	354	EJISDC	2014	64		Kenya	Global South	The Role of Contextual Factors in the Uptake and Continuance of Mobile Money Usage in Kenya
130	355	EJISDC	2014	64		South Africa; South Africa	Global South	ICT Utilisation within Experienced South African Small and Medium Enterprises
131	356	EJISDC	2014	64		Uganda; Uganda; Uganda	Global South	Antecedents and Dynamics for Strategic Alignment of Health Information Systems in Uganda

GSS$#	GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
132	358	EJISDC	2014	64	1	South Africa; South Africa	Global South	Different Shades of Success: Educator Perception of Government Strategy on E-Education in South Africa
133	363	EJISDC	2014	65	1	India; India	Global South	Online Retailing in India: Linking Internet Usage, Perceived Risks, Website Attributes and Past Online Purchase Behaviour
134	364	EJISDC	2014	65	1	South Africa; South Africa	Global South	User Acceptance of Telemedicine by Health Care Workers: A Case of the Eastern Cape Province, South Africa
135	365	EJISDC	2014	65	1	Egypt	Global South	A Mobile Management System for Reforming Subsidies Distribution in Egypt
136	367	EJISDC	2014	65	1	South Africa; South Africa	Global South	Leveraging E-health for Future-oriented Healthcare Systems in Developing Countries
137	368	EJISDC	2015	66	1	Oman; Oman; Oman; Oman	Global South	Al-Shifa Healthcare Information System in Oman: A Debatable Implementation Success
138	371	EJISDC	2015	66	1	Kenya; Kenya	Global South	E-Learning in Kenyan Universities: Preconditions for Successful Implementation
139	377	EJISDC	2015	67	1	Brazil; Brazil; Brazil	Global South	Analysing ICT and Development from the Perspective of the Capabilities Approach: A Study in South Brazil
140	380	EJISDC	2015	67	1	South Africa; South Africa; South Africa	Global South	The Alignment of Information Technology Applications with Non-Technological Competencies of SMEs in Africa
141	382	EJISDC	2015	67	1	South Africa; South Africa	Global South	E-Commerce Enablers and Barriers in Tanzanian Small and Medium Enterprises
142	385	EJISDC	2015	68	1	South Africa	Global South	Effect of Gen Y's Affective Attitudes Towards Facebook Marketing Communications in South Africa
143	386	EJISDC	2015	68	1	Zimbabwe; South Africa	Global South	Bandwidth Management in the Era of Bring Your Own Device (BYOD)
144	388	EJISDC	2015	68	1	South Africa; South Africa	Global South	Determinants for South African SMEs to Adopt Broadband Internet Technologies
145	390	EJISDC	2015	68	1	South Africa; South Africa	Global South	The Adoption of Electronic Commerce by Small and Medium Enterprises in Pretoria East
146	391	EJISDC	2015	68	1	South Africa; South Africa	Global South	Measurement and Determining Factors affecting the Level of Knowledge Management
147	392	EJISDC	2015	69	1	Argentina; Argentina; Argentina; Argentina	Global South	Digital and Social Inequalities: a Qualitative Assessment of the Impact of Connecting Equality Program among Argentinean young people
148	393	EJISDC	2015	69	1	Uruguay	Global South	E-skill's Effect on Occupational Attainment: A PISA-Based Panel Study
149	394	EJISDC	2015	69	1	Cameroon; Cameroon	Global South	ICT for the Development of Labour Productivity in Cameroon
150	396	EJISDC	2015	69	1	India; India	Global South	Analyzing Multimedia Data: Exploring the Dimensions of Context in ICT for Development Research
151	397	EJISDC	2015	70	1	South Africa	Global South	Disciplinary Kingdoms: Navigating the Politics of Research Philosophy in the Information Systems
152	398	EJISDC	2015	70	1	Tanzania; Tanzania; Tanzania; Tanzania; Tanzania; Tanzania	Global South	New technologies for disseminating and communicating agriculture knowledge and information (AKI): Challenges for Agricultural Research Institutes (ARI) in Tanzania
153	399	EJISDC	2015	70	1	South Africa; South Africa; South Africa; South Africa	Global South	ICTs for the Broader Development of South Africa: An Analysis of the Literature
154	400	EJISDC	2015	70	1	South Africa; South Africa; India; South Africa	Global South	Building Technology Trust in a Rural Agricultural e-Marketplace: A User Requirements Perspective
155	401	EJISDC	2015	70	1	South Africa; South Africa	Global South	Teachers' Understanding of E-Safety: An Exploratory Case in KZN, South Africa
156	404	EJISDC	2015	70	1	Uganda; Tanzania; Tanzania	Global South	Analysis of the Acceptance Process of District Health Information Systems (DHIS) for Vertical Health Programmes: A Case Study of TB, HIV/AIDS and Malaria Programmes
157	408	EJISDC	2015	71	1	Argentina	Global South	"Multimacy": Performances of intimacy on Facebook by Buenos Aires adolescents
158	409	EJISDC	2015	71	1	Thailand	Global South	DETERMINANTS OF THE SUCCESS OF INFORMATION TECHNOLOGY PROJECT MANAGEMENT IN THAILAND
159	410	EJISDC	2015	71	1	Namibia; South Africa	Global South	Deployment of Enterprise Architecture in The Namibian Government: The Use of Activity Theory to Examine the Influencing Factors
160	411	EJISDC	2015	71	1	South Africa; South Africa	Global South	The Influence of Higher Education Institutions on the Sustainability of ICT4D Initiatives in Underserved Communities
161	415	ITD	2008	14	1	Poland	Global South	Difficulties in enterprise system implementation in emerging economies: Insights from an exploratory study in Poland
162	420	ITD	2008	14	2	Brazil; Brazil; Brazil	Global South	Information technology and productivity: Evidence for Brazilian industry from firm-level data
163	421	ITD	2008	14	2	Mozambique	Global South	On implementation of an information system in the Mozambican context: The EDM case viewed through ANT lenses
164	429	ITD	2008	14	4	Oman	Global South	Towards gender equal access to ICT
165	436	ITD	2009	15	1	Sierra Leone	Global South	Automation: Whither academic libraries?
166	437	ITD	2009	15	1	United Arab Emirates	Global South	A Survey of rural e-Government projects in India: Status and benefits
167	447	ITD	2009	15	3	Kenya; Kenya	Global South	Organizational cultural dynamics and information and communication technology adaptation in a developing country: The case of the Kenyan joint university admission system
168	449	ITD	2009	15	4	India; India	Global South	Whose gain is it anyway? Structurational perspectives on deploying ICTs for development in India's microfinance sector
169	460	ITD	2010	16	2	Nigeria; Nigeria; Nigeria	Global South	Efficiency of Resource-Use in Accounting Data Processing in Selected Development Projects in Nigeria
170	461	ITD	2010	16	3	Palestine; Palestine	Global South	An e-learning approach to secondary education in Palestine: opportunities and challenges
171	477	ITD	2011	17	2	India	Global South	Developing women: why technology can help
172	479	ITD	2011	17	2	Bangladesh; Bangladesh	Global South	Gonokendra model: a response to "information poverty" in rural areas of Bangladesh
173	480	ITD	2011	17	3	Mozambique	Global South	Structurational analysis of cross-cultural development of an academic registry information system in Mozambique
174	481	ITD	2011	17	3	South Africa; South Africa; South Africa	Global South	Sustainable rural ICT project management practice for developing countries: investigating the Dwesa and RUMEP projects

GSS$#	GP#	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
175	508	ITD	2012	18	4	Mexico; Mexico; Mexico; Mexico	Global South	The new digital divide: the confluence of broadband penetration, sustainable development, technology adoption and community participation
176	509	ITD	2013	19	1	Ethiopia	Global South	Telecommunications development and economic growth in Africa
177	516	ITD	2013	19	2	South Africa; South Africa; South Africa	Global South	Communities in control of their own integrated technology development processes
178	522	ITD	2013	19	3	Nigeria; Nigeria	Global South	The Effects of Mobile Phone on the Socio- economic Life of the Rural Dwellers in the Niger Delta Region of Nigeria
179	524	ITD	2013	19	4	South Africa	Global South	Collisions between the Worldviews of International ICT Policy-Makers and a Deep Rural Community in South Africa: Assumptions, Interpretation, Implementation, and Reality
180	531	ITD	2014	20	1	Egypt	Global South	Egypt's Ongoing Uprising and the Role of Social Media: Is there Development?
181	535	ITD	2014	20	2	Jamaica	Global South	Using Frugal Innovations to Support Cybercrime Legislations in Small Developing States: Introducing the Cyber-Legislation Development and Implementation Process Model (CyberLeg- DPM)
182	547	ITD	2015	21	1	South Africa; South Africa	Global South	Access to and Utilization of Information and Communication Technologies by Agricultural Researchers and Extension Workers in Zimbabwe
183	549	ITD	2015	21	1	South Africa; South Africa	Global South	Evaluating Users' Perceptions of the Digital Doorway: A Narrative Analysis
184	551	ITD	2015	21	1	South Africa; South Africa	Global South	A Framework to Guide Development Through ICTs in Rural Areas in South Africa
185	553	ITD	2015	21	2	South Africa; South Africa	Global South	Increasing the Quality and Quantity of Tertiary- Level Information Systems Students: A Graduate Development Framework
186	554	ITD	2015	21	2	South Africa	Global South	The Information Technology Influence on LIS Job Descriptions in South Africa
187	555	ITD	2015	21	2	South Africa; South Africa	Global South	Enabling Social Sustainability of E-Participation through Mobile Technology
188	556	ITD	2015	21	2	South Africa; South Africa	Global South	A Decision Model of Kenyan SMEs' Consumer Choice Behavior in Relation to Registration for a Mobile Banking Service: A Contextual Perspective
189	557	ITD	2015	21	2	Kenya	Global South	The Impact of Information and Communication Technology Adoption and Diffusion on Technology Entrepreneurship in Developing Countries: The Case of Kenya
190	563	ITD	2015	21	3	Poland; Poland	Global South	ICT in Supporting Content and Language Integrated Learning: Experience from Poland
191	568	ITD	2015	21	3	Serbia; Serbia; Serbia; Serbia	Global South	Development of eGovernment services in the Autonomous Province of Vojvodina
192	570	ITD	2015	21	4	Malaysia; Malaysia; Malaysia; Malaysia	Global South	Mapping the Patterns of Mobile Phone Usage Among Fishermen in Malaysia
193	571	ITD	2015	21	4	United Arab Emirates; Saudi Arabia; Malaysia; Malaysia	Global South	An Empirical Study of Factors Affecting e- Commerce Adoption among Small- and Medium- Sized Enterprises in a Developing Country: Evidence from Malaysia
194	572	ITD	2015	21	4	Malaysia; Malaysia	Global South	Information system success among manufacturing SMEs: case of developing countries
195	576	ITD	2015	21	4	India; India; India	Global South	Assessing Mobile Technology Usage for Knowledge Dissemination among Farmers in Punjab

B.3 Audit trails of sampling strategy execution

The indexes and execution flows below provide audit trails of how the sampling strategy, detailed in Subsection 3.3.2 and specifically Figure 3.4 (on page 47), was executed in the cases of both the Global North and Global South samples. In the indexes, papers removed (either due to a lack of engagement with development or duplicate authorship) are shaded in red. The two resulting samples can be discerned using the "GNS#" and "GSS#" columns (in the Global North and Global South indexes, respectively). Simplified representations of the respective samples can be found in Table 4.2 (page 55) and Table 4.3 (page 56).

B.3.1 Audit trail of Global North sampling

The index below lists the papers reviewed for the final Global North sample. The column reference is as follows:

1. "GNAL#": indexes entries in the Global North audit log for later reference;
2. "GNSS#": corresponds to the "GNSS#" column in the Global North subset (see Section B.2);
3. "GP#": corresponds to the "GP#" column in the general pool (see Section B.1);
4. "GNS#": indexes the resulting 27 papers constituting the final sample;
5. "Removal reason": indicates whether a paper's removal, where it occurs, was due to non-engagement with development ("NE") or because it was a case of duplicate authorship ("DA").

GNAL#	GNSS#	GP#	GNS#	Removal reason	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
1	11	24		NE	ITID	2009	5	4	USA; USA; USA; UK	Global North	Human-Computer Interaction for Development: The Past, Present, and Future
2	12	26		NE	ITID	2009	5	4	USA; USA; USA; USA	Global North	Orality-Grounded HCID: Understanding the Oral User
3	14	28		NE	ITID	2009	5	4	USA; USA; USA	Global North	Overcoming Blind Spots in Interaction Design: A Case Study in Designing for African AIDS Orphan Care Communities
4	16	32	1		ITID	2010	6	1	USA	Global North	Policies, Partnerships, and Pragmatism: Lessons from an ICT-in-Education Project in Rural Uganda
5	32	54	2		ITID	2011	7	1	Canada	Global North	Designing Research for the Emerging Field of Open Development
6	36	65	3		ITID	2011	7	4	USA; USA	Global North	Mobile Phones and Rural Livelihoods: Diffusion, Uses, and Perceived Impacts Among Farmers in Rural Uganda
7	59	104		NE	ITID	2013	9	4	Japan; Japan	Global North	Unintended Technology Transfer to Chinese Software Firms from Japan Through Offshore Software Development
8	82	140		NE	EJISDC	2008	34		Australia	Global North	Information Technology and Business Value in Developing Economies: A Study of Intangible Benefits of Information Technology Investments in Fiji
9	87	146	4		EJISDC	2008	35		South Korea; South Korea; South Korea; UK	Global North	Analysing South Korea's ICT for Development Aid Programme
10	109	206		NE	EJISDC	2010	42		USA; USA	Global North	Twitter as a Rapid Response News Service: An Exploration in the Context of the 2008 China Earthquake
11	113	214		DA	EJISDC	2010	43		UK; UK	Global North	Researching ICT Micro-Enterprise in Developing Countries: Themes, Wider Concepts and Future Directions
12	118	225		NE	EJISDC	2011	46		USA; USA	Global North	The negligible role of fees as a barrier to public access computing in developing countries
13	121	243		NE	EJISDC	2011	48		UK; UK	Global North	Changing Computing Curricula in African Universities: Evaluating Progress and Challenges via Design+Reality Gap Analysis
14	133	278		NE	EJISDC	2012	53		Norway; Norway	Global North	Data Warehouse Approach to Strengthen Actionability of Health Information Systems: Experiences from Tajikistan
15	134	284		NE	EJISDC	2012	54		Sweden; Sweden	Global North	Considering Pigeons for Carrying Delay Tolerant Networking based Internet traffic in Developing Countries
16	146	319		NE	EJISDC	2013	59		Norway; Norway	Global North	Big Data Analytics for developing countries – Using the Cloud for Operational BI in Health
17	155	346	5		EJISDC	2014	63		Finland; Sweden; Finland	Global North	Development of Projects and ICT: A Review of Non-Technical Aspects
18	182	427	6		ITID	2008	14	3	Belgium	Global North	Critical analysis of policy measures for the advancement of the level of computerization of SMEs
19	205	463		NE	ITID	2010	16	3	UK; UK	Global North	The contribution of ICTs to the delivery of special educational needs in Ghana: practices and potential
20	221	488		NE	ITID	2011	17	4	Canada; USA	Global North	The case for cases: writing and teaching cases for the emerging economies
21	239	517	7		ITID	2013	19	2	USA	Global North	Does a government web presence reduce perceptions of corruption?
22	243	527	8		ITID	2014	20	1	UK	Global North	Power and the Construction of Independence in ICTD Organizations
23	251	537		NE	ITID	2014	20	3	USA; USA; USA	Global North	The Changing – and Unchanging – Face of the Digital Divide: an Application of Kohonen Self-Organizing Maps
24	252	538	9		ITID	2014	20	3	USA	Global North	Investigating the Impact of Investments in Telecoms on Microeconomic Outcomes: Conceptual Framework and Empirical Investigation in the Context of Transition Economies
25	254	541	10		ITID	2014	20	4	Singapore; Singapore	Global North	Internet Studies and Development Discourses: The Cases of China and India
26	260	559		NE	ITID	2015	21	2	UK	Global North	ICT for Rural Community Development: Implementing the Communicative Ecology Framework in the Niger Delta Region of Nigeria
27	267	574	11		ITID	2015	21	4	Australia	Global North	Theory Building for ICT4D: Systemizing Case Study Research Using Theory Triangulation
28	17	33		NE	ITID	2010	6	1	Canada; Canada; Canada	Global North	Expanding Theories of HCI: A Case Study in Requirements Engineering for ICT4D
29	30	51	12		ITID	2011	7	1	UK; Norway	Global North	Transparency and Development: Ethical Consumption through Web 2.0 and the Internet of Things
30	56	101		NE	ITID	2013	9	3	USA; USA; USA	Global North	Mixed-Method Evaluation of a Passive mHealth Sexual Information Texting Service in Uganda
31	62	107	13		ITID	2013	9	4	Ireland; Ireland; Ireland	Global North	ICT 4 the MDGs? A Perspective on ICTs' Role in Addressing Urban Poverty in the Context of the Millennium Development Goals
32	93	163	14		EJISDC	2009	37		New Zealand; New Zealand	Global North	ICTs as a 'tool for Cultural Dominance: Prospects for a Two-Way Street
33	107	198	15		EJISDC	2010	41		UK	Global North	ICTs for the Broader Development of India: An Analysis of the Literature
34	132	273		NE	EJISDC	2012	52		Singapore	Global North	'Sister-Groups' and Online-Offline Linkages in Network-of-Collective-Action: A Case Study of the Right to Information Movement in India
35	139	297		NE	EJISDC	2013	56		USA; USA; USA; USA; USA	Global North	Fearless Cards: a low-tech solution to help overcome emotional barriers to ICT adoption among marginalized populations
36	160	390		NE	EJISDC	2014	65		Sweden; Sweden	Global North	The Role of ICT for the Growth of Small Enterprises in Ethiopia
37	188	434		NE	ITID	2009	15	1	Norway	Global North	Negotiating the symbolic power of information and communication technologies (ICT): The spread of Internet-supported distance education
38	207	465		NE	ITID	2010	16	3	UK	Global North	ICT for education projects: a look from behind the scenes
39	217	478		NE	ITID	2011	17	2	Japan	Global North	Measuring impacts of e-government support in least developed countries: a case study of the vehicle registration service in Bhutan
40	228	498		NE	ITID	2012	18	2	UK	Global North	Lines across the desert: mobile phone use and mobility in the context of trans-Saharan migration
41	258	550		NE	ITID	2015	21	1	USA	Global North	Knowledge Management for Information and Communications Technologies for Development Programs in South Africa
42	265	566		NE	ITID	2015	21	3	Greece; Greece; Italy	Global North	A Framework for Service-oriented Architecture Adoption in e-Banking: the Case of Banks from a Transition and a Developed Economy
43	22	40		NE	ITID	2010	6	2	USA; USA; USA; USA	Global North	Uses of Mobile Phones in Post-Conflict Liberia
44	38	68		NE	ITID	2011	7	4	UK	Global North	Earphones Are Not for Women: Gendered ICT Use Among Youths in Ethiopia and Malawi
45	44	78	16		ITID	2012	8	2	USA	Global North	Looking Beyond "Information Provision": The Importance of Being a Kiosk Operator in the Sustainable Access in Rural India (SARI) Project, Tamil Nadu, India
46	88	147	17		EJISDC	2008	35		UK	Global North	The Internet and the Public Sphere: Evidence from Civil Society in Developing Countries
47	129	282		NE	EJISDC	2012	51		USA	Global North	The IT Productivity Paradox: Evidence from the Nigerian Banking Industry
48	157	351	18		EJISDC	2014	64		Sweden; Norway	Global North	Exploring the Link between ICT and Development in the Context of Developing Countries: A Literature Review
49	170	389		NE	EJISDC	2015	68		Germany	Global North	Assessing the Role of Mobile Phones in Offering Price Information and Market Linkages: The Case of M-Farm in Kenya

GNALe	GNSSe	GPe	GNSe	Removal reason	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
50	203	439	19		ITD	2010	16	2	Netherlands	Global North	The Architecture of Global ICT Programs: A Case Study of E-Governance in Jordan
51	216	476	20		ITD	2011	17	2	Sweden; Sweden	Global North	Bangladesh calling: farmers' technology use practices as a driver for development
52	262	561		NE	ITD	2015	21	3	Slovakia	Global North	ICT and Innovation in the Provision of Public Services: The Case of Slovakia
53	266	567		NE	ITD	2015	21	3	Czech Republic; Czech Republic	Global North	Academic-Industrial Cooperation in ICT in a Transition Economy – Two Cases from the Czech Republic
54	85	143	21		EJISDC	2008	34		UK; UK; UK	Global North	Developing Countries and ICT Initiatives: Lessons Learnt from Jordan's Experience
55	108	204		NE	EJISDC	2010	42		UK; UK	Global North	Factors Affecting Bank Staff Attitude Towards E-Banking Adoption in Libya
56	110	208		NE	EJISDC	2010	43		Norway; Norway	Global North	The Role of Technological Frames of Key Groups in Open Source Software Implementation in a Developing Country Context
57	123	247		NE	EJISDC	2011	49		Norway; Norway	Global North	The Role of ICT Actors and Networks in Development: The Case Study of a Wireless Project in Nepal
58	193	443		NE	ITD	2009	15	3	Australia; Australia	Global North	A cross-country comparative analysis of e-government service delivery among Arab countries
59	195	448	22		ITD	2009	15	4	Canada; UK	Global North	Factors affecting ICT expansion in emerging economies: An analysis of ICT infrastructure expansion in five Latin American countries
60	58	103		NE	ITD	2013	9	3	Germany; UK	Global North	Evolving a Software Development Methodology for Commercial ICTD Projects
61	114	215	23		EJISDC	2010	44		UK	Global North	ICTs, Citizens, and the State: Moral Philosophy and Development Practices
62	184	430		DA	ITD	2008	14	4	Canada; Canada	Global North	Are ICT investments paying off in Africa? An analysis of total factor productivity in six West African countries from 1995 to 2002
63	236	513		NE	ITD	2013	19	1	USA	Global North	Harnessing information and communication technologies (ICTs) to address urban poverty: Emerging open policy lessons for the open knowledge economy
64	43	73		NE	ITD	2012	8	2	USA; USA; USA	Global North	Understanding the Links Between ICT Skills Training and Employability: An Analytical Framework
65	248	533		NE	ITD	2014	20	2	USA	Global North	A Model for the Impact of Cybersecurity Infrastructure on Economic Development in Emerging Economies: Evaluating the Contrasting Cases of India and Pakistan
66	144	307		NE	EJISDC	2013	58		USA	Global North	The Changing Field of ICTD: Growth and maturation of the field, 2000-2010
67	269	577		NE	ITD	2015	21	4	Belgium	Global North	Extending an ICT4D Computer Re-use Model with E-waste Handling Activities: A Case Study
68	159	359		NE	EJISDC	2014	64		Japan; Japan; Japan	Global North	The Knowledge-Bridging Process in Software Offshoring from Japan to Vietnam
69	199	454		NE	ITD	2010	16	1	Netherlands; Netherlands; Netherlands; Netherlands	Global North	A Constructive Technology Assessment Approach to ICT Planning in Developing Countries: Evaluating the First Phase, the Roundtable Workshop
70	66	111		NE	ITD	2014	10	2	Norway; Norway	Global North	Paying Per Diems for ICT4D Project Participation: A Sustainability Challenge
71	100	180		NE	EJISDC	2009	39		New Zealand; New Zealand; New Zealand	Global North	Information Literacy in Kenya
72	105	194		NE	EJISDC	2010	41		UK; UK	Global North	Organisational Issues with Electronic Government Procurement: A Case Study of the UAE
73	222	489		DA	ITD	2012	18	1	Norway; Norway; Norway	Global North	Building collective capabilities through ICT in a mountain region of Nepal: where social capital leads to collective action
74	151	337		NE	EJISDC	2014	62		UK	Global North	EXPLORING INFORMATION ETHICS FOR INCLUSIVE OPEN DEVELOPMENT
75	15	30	24		ITD	2010	6	1	USA	Global North	Globalization and Relative Compensation in India's Information Technology Sector
76	4	9		NE	ITD	2008	4	4	USA	Global North	ICT in Education Reform in Cambodia: Problems, Politics, and Policies Impacting Implementation
77	131	272		NE	EJISDC	2012	52		USA; USA; Japan	Global North	Computerizing Primary Schools in Rural Kenya: Outstanding Challenges and Possible Solutions
78	264	565		NE	ITD	2015	21	3	Slovenia; Slovenia; Slovenia; Slovenia	Global North	Outsourcing as an Economic Development Tool in Transition Economies: Scattered Global Software Development
79	71	116		NE	ITD	2014	10	3	USA; USA	Global North	The Value of Non-Instrumental Computer Use: A Study of Skills Acquisition and Performance in Brazil
80	171	402	25		EJISDC	2015	70		Norway	Global North	Capacity Strengthening within a Development Context: Developing and Applying a Conceptual Model
81	181	425		NE	ITD	2008	14	3	Netherlands	Global North	The enabling role of information technology in the global war for talent: Accenture's industrialized approach
82	73	118	26		ITD	2014	10	4	USA	Global North	Articulating and Enacting Development Skilled Returnees in Ghana's ICT Industry
83	224	491	27		ITD	2012	18	1	UK; UK; UK	Global North	Signifiers of the life we value? – considering human development, technologies and Fair Trade from the perspective of the capabilities approach

The execution flow below provides a stepwise explanation of how the index above was composed:

1. Selected and reviewed 27 random papers: GNSS #11, #12, #14, #16, #32, #36, #59, #82, #87, #109, #113, #118, #121, #133, #134, #146, #155, #182, #205, #221, #239, #243, #251, #252, #254, #260, #267.
2. Removed 15 papers for non-engagement: GNAL #1-3, #7, #8, #10, #12-16, #19, #20, #23, #26.
3. Selected and reviewed 15 random papers: GNSS #17, #30, #56, #62, #93, #107, #132, #139, #160, #188, #207, #217, #228, #258, #265.
4. Removed 11 papers for non-engagement: GNAL #28, #30, #34-42.
5. Selected and reviewed 11 random papers: GNSS #22, #38, #44, #88, #129, #157, #170, #203, #216, #262, #266.
6. Removed 6 papers for non-engagement: GNAL #43, #44, #47, #49, #52, #53.
7. Selected and reviewed 6 random papers: GNSS #85, #108, #110, #123, #193, #195.
8. Removed 4 papers for non-engagement: GNAL #55-58.
9. Selected and reviewed 4 random papers: GNSS #58, #114, #184, #236.
10. Removed 2 papers for non-engagement: GNAL #60, #63.
11. Selected and reviewed 2 random papers: GNSS #43, #248.
12. Removed 2 papers for non-engagement: GNAL #64, #65.
13. Selected and reviewed 2 random papers: GNSS #144, #269.
14. Removed 2 papers for non-engagement: GNAL #66, #67.
15. Selected and reviewed 2 random papers: GNSS #159, #199.
16. Removed 2 papers for non-engagement: GNAL #68, #69.
17. Selected and reviewed 2 random papers: GNSS #66, #100.
18. Removed 2 papers for non-engagement: GNAL #70, #71.
19. Selected and reviewed 2 random papers: GNSS #105, #222.
20. Removed 1 paper for non-engagement: GNAL #72.

21. Selected and reviewed 1 random paper: GNSS #151.
22. Removed 1 paper for non-engagement: GNAL #74.
23. Selected and reviewed 1 random paper: GNSS #15.
24. Removed 3 papers from the sample for duplicate authorship: GNAL #11 (duplicate of #9), #62 (duplicate of #59), #73 (duplicate of #48).
25. Selected and reviewed 3 random papers: GNSS #4, #131, #264.
26. Removed 3 papers for non-engagement: GNAL #76-78.
27. Selected and reviewed 3 random papers: GNSS #71, #171, #181.
28. Removed 2 papers for non-engagement: GNAL #79, #81.
29. Selected and reviewed 2 random papers: GNSS #73, #224.

B.3.2 Audit trail of Global South sampling

The index below lists the papers reviewed for the final Global South sample. The column reference is as follows:

1. "GSAL#": indexes entries in the Global South audit log for later reference;
2. "GSSS#": corresponds to the "GSSS#" column in the Global South subset (see Section B.2);
3. "GP#": corresponds to the "GP#" column in the general pool (see Section B.1);
4. "GSS#": indexes the resulting 20 papers constituting the final sample;
5. "Removal reason": indicates whether a paper's removal, where it occurs, was due to non-engagement with development ("NE") or because it was a case of duplicate authorship ("DA").

GSAL#	GSSS#	GP#	GSS#	Removal reason	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
1	3	12		NE	ITID	2009	5	1	Pakistan; Pakistan; Pakistan; Pakistan; Pakistan	Global South	A Peer-to-Peer Internet for the Developing World
2	10	36		NE	ITID	2010	6	2	India; India; India; India	Global South	User-Generated Content Creation and Dissemination in Rural Areas
3	13	56		NE	ITID	2011	7	2	Mexico; Mexico; Mexico	Global South	Policies on Access to Information Technologies: The Case of e-Mexico
4	41	167		NE	EJISDC	2009	37		Thailand	Global South	The Adoption and Use of Personal Internet Banking Services in Thailand
5	52	191		NE	EJISDC	2010	40		Philippines; Philippines	Global South	Monitoring Employee Use of the Internet in Philippine Organizations
6	54	195		NE	EJISDC	2010	41		Pakistan; Pakistan	Global South	Demographic Implications for the User-Perceptions of E-Learning in Higher Education Institutions of N-W.F.P. Pakistan
7	59	203		NE	EJISDC	2010	42		Pakistan; Pakistan	Global South	Understanding Attitudes Towards Computer Use in the Police Department of Pakistan
8	77	241		NE	EJISDC	2011	48		India; India; India	Global South	ICTs for Agricultural Extension: A Study in the Indian Himalayan Region
9	78	242	1		EJISDC	2011	48		Mexico; Mexico	Global South	Information and Communication Technologies (ICTs) and Mexican Manufacturing Exports
10	86	264	2		EJISDC	2012	51		Tanzania	Global South	Barriers in Accessing Agricultural Information in Tanzania with a Gender Perspective: The Case Study of Small-Scale Sugar Cane Growers in Kilombero District
11	99	289		NE	EJISDC	2012	55		Uganda; Uganda	Global South	A Software Capability Maturity Adoption Model for Small and Medium Enterprises in Developing Countries
12	111	314		NE	EJISDC	2013	59		Thailand; Thailand	Global South	ICT Curriculum and the Requirements of Organizations in Thailand
13	112	315	3		EJISDC	2013	59		South Africa; South Africa	Global South	The emancipation of the researcher as part of Information and Communication Technology for Development work in deep rural South Africa
14	128	353		NE	EJISDC	2014	64		Egypt; Egypt; Egypt	Global South	The Quest for Global Expansion - Xceed Re-Visited
15	131	356		NE	EJISDC	2014	64		Uganda; Uganda; Uganda	Global South	Antecedents and Dynamics for Strategic Alignment of Health Information Systems in Uganda
16	136	367		NE	EJISDC	2014	65		South Africa; South Africa	Global South	Leveraging E-health for Future-oriented Healthcare Systems in Developing Countries
17	34	154	4		EJISDC	2009	36		Egypt; Egypt; Egypt	Global South	The Impact of ICT Investments on Economic Development in Egypt
18	162	420		NE	ITID	2008	14	2	Brazil; Brazil; Brazil	Global South	Information technology and productivity: Evidence for Brazilian industry from firm-level data
19	172	479		NE	ITID	2011	17	2	Bangladesh; Bangladesh	Global South	Gonoxondra model: a response to 'information poverty' in rural areas of Bangladesh
20	192	570		NE	ITID	2015	21	4	Malaysia; Malaysia; Malaysia; Malaysia	Global South	Mapping the Patterns of Mobile Phone Usage Among Fishermen in Malaysia
21	24	120		NE	ITID	2014	10	4	India; India	Global South	Same Language Subtitling of Bollywood Film Songs on TV: Effects on Literacy
22	57	200		NE	EJISDC	2010	42		Ghana; Ghana; Ghana	Global South	Enhanced Land Documentation For Farmland Compensation - A Case Study Of UMaT Lands, Postulated Challenges and Solutions.
23	66	222		NE	EJISDC	2011	45		Turkey; Turkey; Turkey	Global South	Modelling and Assessment of the Effectiveness of Government Information Technologies - Value Space Approach with a Public Sector Case Study in Turkey
24	71	232		NE	EJISDC	2011	47		South Africa; South Africa; South Africa	Global South	Mobile Banking Adoption in Nigeria
25	84	261		NE	EJISDC	2012	51		Qatar; Qatar; Oman	Global South	Examining the Impact of Information and Communication Technologies (ICT) on Enterprise Practices: A Preliminary Perspective from Qatar
26	88	286		NE	EJISDC	2012	51		South Africa; South Africa	Global South	The Rural ICT Comprehensive Evaluation Framework: Implementing the Frist Domain, The Baseline Study Process
27	104	300		NE	EJISDC	2013	56		Mauritius; Mauritius; Mauritius; Mauritius	Global South	Impact of Online Social Networking on Youth: Case Study of Mauritius
28	109	311		NE	EJISDC	2013	58		Malaysia; Malaysia; Malaysia; Malaysia	Global South	A Preliminary Investigation of Islamic Websites' Design Features that Influence User: A Proposed Model
29	115	321		NE	EJISDC	2014	60		South Africa; South Africa	Global South	Aligning Work Practices, Mobile Technology and Strategy for Performance Improvement: The Case of SMEs in Uganda
30	116	322		NE	EJISDC	2014	60		Malaysia; Malaysia	Global South	Towards an Efficient City Inventory Management System for Urban Authorities in Developing Countries – The Case of 3D Change Detection
31	120	331		NE	EJISDC	2014	61		Ghana	Global South	Formation and Failure of an E-Marketplace Pioneer in a Developing Country
32	124	341		NE	EJISDC	2014	62		Jamaica; Jamaica; Jamaica; Jamaica	Global South	A Design Science Approach to Developing and Evaluating a National Cybersecurity Framework for Jamaica
33	142	385		NE	EJISDC	2015	68		South Africa	Global South	Effect of Gen Y's Affective Attitudes Towards Facebook Marketing Communications in South Africa
34	155	401		NE	EJISDC	2015	70		South Africa; South Africa	Global South	Teachers' Understanding of E-Safety: An Exploratory Case in KZN, South Africa
35	159	410		NE	EJISDC	2015	71		Namibia; South Africa	Global South	Deployment of Enterprise Architecture in The Namibian Government: The Use of Activity Theory to Examine the Influencing Factors
36	169	440		NE	ITID	2010	16	2	Nigeria; Nigeria; Nigeria	Global South	Efficiency of Resource-Use in Accounting Data Processing in Selected Development Projects in Nigeria
37	4	14		NE	ITID	2009	5	1	Nepal; Nepal; Nepal	Global South	Why Don't People Use Nepali Language Software?
38	18	67		NE	ITID	2012	8	4	Peru; Peru; Peru; Peru	Global South	The Impacts of the Use of Mobile Telephone Technology on the Productivity of Micro- and Small Enterprises: An Exploratory Study into the Carpentry and Cabinet-Making Sector in Villa El Salvador
39	125	344	5		EJISDC	2014	63		Samoa	Global South	Issues and Challenges, Strategies and Recommendations, in the Development of ICT in a Small Island Developing State: The Case of Samoa
40	35	156		NE	EJISDC	2009	36		Ghana; Ghana; Ghana	Global South	Open Pit Mining and Land Use Changes: An Example from Bogosu-Prestea Area, South West Ghana
41	43	172		NE	EJISDC	2009	38		China	Global South	E-government, People and Social Change: A Case Study in China
42	96	283		NE	EJISDC	2012	54		Malaysia; Malaysia; Malaysia	Global South	E-Government Service Quality in Saudi Arabia
43	101	293		NE	EJISDC	2012	55		Cameroon	Global South	Complementarity or Substitutability Between the Different Modes of Internet Access: A Property Rights-Based Analysis on Cybercafes Offerings with Data from Cameroon
44	105	302		NE	EJISDC	2013	57		Poland; Poland	Global South	Impediments to Enterprise System Implementation over the System Lifecycle: Contrasting Transition and Developed Economies
45	134	364		NE	EJISDC	2014	65		South Africa; South Africa	Global South	User Acceptance of Telemedicine by Health Care Workers: A Case of the Eastern Cape Province, South Africa
46	146	391		NE	EJISDC	2015	68		South Africa; South Africa	Global South	Measurement and Determining Factors affecting the Level of Knowledge Management
47	147	392		NE	EJISDC	2015	69		Argentina; Argentina; Argentina	Global South	Digital and Social Inequalities: a Qualitative Assessment of the Impact of Connecting Equality Program among Argentinean young people
48	154	400		NE	EJISDC	2015	70		South Africa; South Africa; India; South Africa	Global South	Building Technology Trust in a Rural Agricultural e-Marketplace: A User Requirements Perspective

GSAL#	GSSS#	GP#	GSS#	Removal reason	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
49	158	409		NE	EJISDC	2015	71		Thailand	Global South	DETERMINANTS OF THE SUCCESS OF INFORMATION TECHNOLOGY PROJECT MANAGEMENT IN THAILAND
50	176	509	6		ITID	2013	19	1	Ethiopia	Global South	Telecommunications development and economic growth in Africa
51	182	547		NE	ITID	2015	21	1	South Africa; South Africa	Global South	Access to and Utilization of Information and Communication Technologies by Agricultural Researchers and Extension Workers in Zimbabwe
52	195	576		NE	ITID	2015	21	4	India; India; India	Global South	Assessing Mobile Technology Usage for Knowledge Dissemination among Farmers in Punjab
53	5	17		NE	ITID	2009	5	2	Mexico; Colombia; Brazil	Global South	Training on Communication and Information Technologies, Employment and Youth: The Case of Brazil, Colombia, and Mexico
54	31	149	7		EJISDC	2008	35		India	Global South	Telecentres in Rural India: Emergence and a Typology
55	36	157		NE	EJISDC	2009	36		Jamaica	Global South	Issues Affecting the Social Sustainability of Telecentres in Developing Contexts A Field Study of Sixteen Telecentres in Jamaica
56	39	161		NE	EJISDC	2009	36		Pakistan; Pakistan	Global South	IT in Pakistan: Threats & opportunities for eBusiness
57	49	183		NE	EJISDC	2009	39		South Africa; South Africa	Global South	Awareness of e-Government Related Small Business Development Services in Cape Town
58	73	234		NE	EJISDC	2011	47		Oman	Global South	Strategic value of IT in Private Sector Organisations in a Developing Country Oman
59	87	265		NE	EJISDC	2012	51		Indonesia	Global South	Managing Risks at the Project Initiation Stage of Large IS Development for HEI: A Case Study in Indonesia
60	92	275	8		EJISDC	2012	53		South Africa; South Africa	Global South	The Livelihood Outcomes of ICT Use in Microenterprises: The Case of South Africa
61	94	279		NE	EJISDC	2012	53		South Africa; South Africa	Global South	Towards an Organisational Readiness Framework for Emerging Technologies: An Investigation of Antecedents for South African Organisations Readiness for Server Virtualisation
62	98	285		NE	EJISDC	2012	54		South Africa; South Africa	Global South	Conceptualising the Effect of the Blaxx Economic Empowerment Score-Card on IT Governance
63	110	313		NE	EJISDC	2013	58		South Africa; South Africa; South Africa	Global South	Rethinking Information Systems Projects using Actor-Network Theory – Perspectives from a Developing Country
64	113	318		NE	EJISDC	2013	59		Botswana; Botswana	Global South	Factors Influencing the Usage of the Tribal Land Information Management Systems for Land Management and Administration: The Case of Mogoditshane Subordinate Land Board
65	114	320		NE	EJISDC	2014	60		Sri Lanka; Sri Lanka	Global South	Mobile Based Information Communication Interactions among Major Agricultural Stakeholders: Sri Lankan Experience
66	127	349		NE	EJISDC	2014	63		Jamaica; Jamaica	Global South	A Participatory GIS for Marine Spatial Planning in the Grenadine Islands
67	29	139		NE	EJISDC	2008	34		Egypt	Global South	Modeling Students' Intention to Adopt E-learning: A Case from Egypt
68	42	171		NE	EJISDC	2009	38		South Africa; South Africa; South Africa	Global South	Internet Access in South African Homes: A Preliminary Study on Factors Influencing Consumer Choice
69	69	230		NE	EJISDC	2011	46		South Africa; South Africa	Global South	In the Eyes of the Media: Discourse of an ICT4D Project in a Developing Country
70	79	251		NE	EJISDC	2011	49		South Africa; South Africa; South Africa; South Africa; South Africa	Global South	Uses, Benefits and Challenges of Public Access Points in the Face of Growth of Mobile Technology
71	80	252		NE	EJISDC	2012	50		South Africa; South Africa; South Africa; South Africa; South Africa; South Africa	Global South	Research Testbed Networks: Practical Tools for Service Delivery?
72	81	254		NE	EJISDC	2012	50		Malaysia; Malaysia; Malaysia; Malaysia; Malaysia; Malaysia	Global South	Telecentre Replication Initiative in Borneo, Malaysia: The CoSERI Experience
73	119	327		NE	EJISDC	2014	60		Malaysia; Malaysia; Malaysia; Malaysia; Malaysia	Global South	Determinants of Online Waqf Acceptance: An Empirical Investigation
74	137	368		NE	EJISDC	2015	66		Oman; Oman; Oman; Oman	Global South	Al-Shifa Healthcare Information System in Oman: A Debatable Implementation Success
75	138	371		NE	EJISDC	2015	66		Kenya; Kenya	Global South	E-Learning in Kenyan Universities: Preconditions for Successful Implementation
76	149	394		NE	EJISDC	2015	69		Cameroon; Cameroon	Global South	ICT for the Development of Labour Productivity in Cameroon
77	152	398	9		EJISDC	2015	70		Tanzania; Tanzania; Tanzania; Tanzania; Tanzania; Tanzania	Global South	New technologies for disseminating and communicating agriculture knowledge and information (AKI): Challenges for Agricultural Research Institutes (ARI) in Tanzania
78	166	437		NE	ITID	2009	15	1	United Arab Emirates	Global South	A Survey of rural e-Government projects in India: Status and benefits
79	11	38		NE	ITID	2010	6	2	Bangladesh; India	Global South	A Framework and Case Example for Evaluating Cost-Effectiveness of Information Services Across Technologies
80	50	184		NE	EJISDC	2009	39		Thailand	Global South	The Nature and Structure of the Information Systems Profession in Thailand
81	58	201		NE	EJISDC	2010	42		Ghana; Ghana; Ghana	Global South	Surface Deformation Monitoring in the Godfields Ghana Limited Area.
82	83	260		NE	EJISDC	2012	51		South Africa; South Africa; South Africa	Global South	Quality Assessment of Information Systems in SMEs: A Study of Eldoret Town in Kenya
83	89	270		NE	EJISDC	2012	52		Egypt	Global South	Success Factors for ERP Implementation in Large Organizations: The Case of Egypt
84	107	309		NE	EJISDC	2013	58		Uganda; Uganda	Global South	A Framework for the Adoption of Electronic Customer Relationship Management Information Systems in Developing Countries
85	130	355	10		EJISDC	2014	64		South Africa; South Africa	Global South	ICT Utilisation within Experienced South African Small and Medium Enterprises
86	135	365		NE	EJISDC	2014	65		Egypt	Global South	A Mobile Management System for Reforming Subsidies Distribution in Egypt
87	170	461		NE	ITID	2010	16	3	Palestine; Palestine	Global South	An e-learning approach to secondary education in Palestine: opportunities and challenges
88	186	554		NE	ITID	2015	21	2	South Africa	Global South	The Information Technology Influence on LIS Job Descriptions in South Africa
89	194	572	11		ITID	2015	21	4	Malaysia; Malaysia	Global South	Information system success among manufacturing SMEs: case of developing countries
90	7	22		NE	ITID	2009	5	3	Mexico	Global South	Strategic Use of Mobile Telephony at the Bottom of the Pyramid: The Case of Mexico
91	12	41	12		ITID	2010	6	2	India; India	Global South	Assessing the Impact of E-government: A Study of Projects in India
92	32	151		NE	EJISDC	2008	35		Saudi Arabia	Global South	Students' Perceived Barriers to In-Class Participation in a Distributed and Gender Segregated Educational Environment
93	22	94	13		ITID	2013	9	1	South Africa; South Africa	Global South	"Ten Seeds": How Mobiles Have Contributed to Development in Women-Led Farming Cooperatives in Lesotho
94	62	209		NE	EJISDC	2010	43		South Africa; Namibia	Global South	A User Interface for Micro-Entrepreneurs in a Rural Community
95	97	285		NE	EJISDC	2012	54		Malaysia; Malaysia; Malaysia	Global South	Urbanization and 3D City Modeling for Developing Countries: A Comparative Study
96	106	304	14		EJISDC	2013	57		Bahrain; Oman	Global South	ASSESSING THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES FOR LEARNING IN EMERGING COUNTRIES

GSAL#	GSSS#	GP#	GSS#	Removal reason	Journal	Year	Volume	Issue	Location: All authors	Location (classification): All authors	Title
97	122	339		NE	EJISDC	2014	62		South Africa; South Africa; South Africa	Global South	Introducing a Mobile Payment System to an Emerging Economy's Mobile Phone Subscriber Market: An Actor Network Perspective
98	157	408		NE	EJISDC	2015	71		Argentina	Global South	"Multimacy": Performances of Intimacy on Facebook by Buenos Aires adolescents
99	45	175		NE	EJISDC	2009	38		Brazil; Brazil; Brazil; Brazil	Global South	Information Technology Management Styles Under the Prism of the Telecommunications Sector
100	103	299		NE	EJISDC	2013	56		India; India; India; India	Global South	An Exploratory study of Mobile Multimedia Agricultural Advisory System: Challenges and Lessons from Tamil Nadu, India
101	129	354		NE	EJISDC	2014	64		Kenya	Global South	The Role of Contextual Factors in the Uptake and Continuance of Mobile Money Usage in Kenya
102	144	388		NE	EJISDC	2015	68		South Africa; South Africa	Global South	Determinants for South African SMEs to Adopt Broadband Internet Technologies
103	168	449		NE	ITID	2009	15	4	India; India	Global South	Whose gain is it anyway? Structurational perspectives on deploying ICTs for development in India's microfinance sector
104	171	477	15		ITID	2011	17	2	India	Global South	Developing women: why technology can help
105	8	29		NE	ITID	2010	6	1	South Africa; South Africa; South Africa; South Africa	Global South	Morphological Analysis: A Method for Selecting ICT Applications in South African Government Service Delivery
106	37	168		NE	EJISDC	2009	36		Brazil; Brazil	Global South	Mass Customization and Strategic Benefits: A Case Study in Brazil
107	64	217		NE	EJISDC	2010	44		India	Global South	Framing M4D: The Utility of Continuity and the Dual Heritage of 'Mobiles and Development'
108	75	236	16		EJISDC	2011	47		Ghana; Ghana; Ghana	Global South	Effects of Mobile Phone Use on Artisanal Fishing Market Efficiency and Livelihoods in Ghana
109	132	358		NE	EJISDC	2014	64		South Africa; South Africa	Global South	Different Shades of Success: Educator Perception of Government Strategy on E-Education in South Africa
110	82	258		NE	EJISDC	2012	50		South Africa; South Africa	Global South	Improving Data Quality in the Banking Supervisory Data of Southern Africa Central Banks
111	139	377	17		EJISDC	2015	67		Brazil; Brazil; Brazil	Global South	Analysing ICT and Development from the Perspective of the Capabilities Approach: A Study in South Brazil
112	148	393		NE	EJISDC	2015	69		Uruguay	Global South	E-skill's Effect on Occupational Attainment: A PISA-Based Panel Study
113	164	429	18		ITID	2008	14	4	Oman	Global South	Towards gender equal access to ICT
114	2	5	19		ITID	2008	4	3	Sri Lanka; Sri Lanka	Global South	Internet Presence as Knowledge Capacity: The Case of Research in Information and Communication Technology Infrastructure Reform
115	91	274		NE	EJISDC	2012	52		Thailand	Global South	An Effective Model for Successful IT Professionals in Thailand
116	93	277		NE	EJISDC	2012	53		Uganda	Global South	Information Technology-Mediated Issues in Sexual Health and HIV/AIDS Education
117	68	228		NE	EJISDC	2011	46		Palestine; Palestine	Global South	The Impact of Mobile Telephony on Developing Countries Enterprises: A Palestinian Case Study
118	14	58		NE	ITID	2011	7	3	Sri Lanka; Sri Lanka; Sri Lanka	Global South	Social Influence in Mobile Phone Adoption: Evidence from the Bottom of the Pyramid in Emerging Asia
119	118	324		NE	EJISDC	2014	60		Egypt	Global South	The Value of Social Media in Egypt's Uprising and Beyond
120	178	522		NE	ITID	2013	19	3	Nigeria; Nigeria	Global South	The Effects of Mobile Phone on the Socio- economic Life of the Rural Dwellers in the Niger Delta Region of Nigeria
121	174	481		NE	ITID	2011	17	3	South Africa; South Africa; South Africa	Global South	Sustainable rural ICT project management practice for developing countries: investigating the Dwesa and RUMEP projects
122	187	555		NE	ITID	2015	21	2	South Africa; South Africa	Global South	Enabling Social Sustainability of E-Participation through Mobile Technology
123	16	74		NE	ITID	2012	8	2	South Africa	Global South	Digital and Other Poverties: Exploring the Connection in Four East African Countries
124	177	516	20		ITID	2013	19	2	South Africa; South Africa; South Africa	Global South	Communities in control of their own integrated technology development processes

The execution flow below provides a stepwise explanation of how the index above was composed:

1. - Selected and reviewed 20 random papers: GSSS #3, #10, #13, #34, #41, #52, #54, #59, #77, #78, #86, #99, #111, #112, #128, #131, #136, #162, #172, #192.
2. Removed 16 papers for non-engagement: GSAL #1-8, #11, #12, #14-#16, #18-#20.
3. Selected and reviewed 16 random papers: GSSS #24, #57, #66, #71, #84, #88, #104, #109, #115, #116, #120, #124, #142, #155, #159, #169.
4. Removed 16 papers for non-engagement: GSAL #21-#36.
5. Selected and reviewed 16 random papers: GSSS #4, #18, #35, #43, #96, #101, #105, #125, #134, #146, #147, #154, #158, #176, #182, #195.
6. Removed 14 papers for non-engagement: GSAL #37, #38, #40-#49, #51, #52.
7. Selected and reviewed 14 random papers: GSSS #5, #31, #36, #39, #49, #73, #87, #92, #94, #98, #110, #113, #114, #127.
8. Removed 12 papers for non-engagement: GSAL #53, #55-#59, #61-#66.
9. Selected and reviewed 12 random papers: GSSS #29, #42, #69, #79, #80, #81, #119, #137, #138, #149, #152, #166.
10. Removed 11 papers for non-engagement: GSAL #67-76, #78.
11. Selected and reviewed 11 random papers: GSSS #11, #50, #58, #83, #89, #107, #130, #135, #170, #186, #194.
12. Removed 9 papers for non-engagement: GSAL #79-84, #86-88.
13. Selected and reviewed 9 random papers: GSSS #7, #12, #22, #32, #62, #97, #106, #122, #157.
14. Removed 6 papers for non-engagement: GSAL #90, #92, #94, #95, #97, #98.
15. Selected and reviewed 6 random papers: GSSS #45, #103, #129, #144, #168, #171.
16. Removed 5 papers for non-engagement: GSAL #99-103.

17. Selected and reviewed 5 random papers: GSSS #8, #37, #64, #75, #132.
18. Removed 4 papers for non-engagement: GSAL #105-107, #109.
19. Selected and reviewed 4 random papers: GSSS #82, #139, #148, #164.
20. Removed 2 papers for non-engagement: GSAL #110, #112.
21. Selected and reviewed 2 random papers: GSSS #2, #91.
22. Removed 1 paper for non-engagement: GSAL #115.
23. Selected and reviewed 1 random paper: GSSS #93.
24. Removed 1 paper for non-engagement: GSAL #116.
25. Selected and reviewed 1 random paper: GSSS #68.
26. Removed 1 paper for non-engagement: GSAL #117.
27. Selected and reviewed 1 random paper: GSSS #14.
28. Removed 1 paper for non-engagement: GSAL #118.
29. Selected and reviewed 1 random paper: GSSS #118.
30. Removed 1 paper for non-engagement: GSAL #119.
31. Selected and reviewed 1 random paper: GSSS #178.
32. Removed 1 paper for non-engagement: GSAL #120.
33. Selected and reviewed 1 random paper: GSSS #174.
34. Removed 1 paper for non-engagement: GSAL #121.
35. Selected and reviewed 1 random paper: GSSS #187.
36. Removed 1 paper for non-engagement: GSAL #122.
37. Selected and reviewed 1 random paper: GSSS #16.
38. Removed 1 paper for non-engagement: GSAL #123.
39. Selected and reviewed 1 random paper: GSSS #177.

Appendix C

ATLAS.ti data set

The ATLAS.ti data set contains all papers reviewed[1], including all annotations made and coding applied during the directed content analysis process. Due to the size of the data set, it is not included here, but is available from the researcher on request[2,3].

[1]For the full Global North and Global South indexes, see Section B.3 in Appendix B.

[2]Whilst ITID and EJISDC papers are licensed under open access agreements, ITD follows a traditional, closed-access licensing scheme. Therefore, the full text of ITD papers cannot be provided as part of the data set, and only summaries of quotations and coding will be provided for those ITD papers examined.

[3]The researcher can be contacted at joh@johannesjonker.com.

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