The London School of Economics and Political Science

Exploring the Role of Health Management Information Systems in Improving Accountability Arrangements for Primary Health Care Delivery in Less Developed Countries: A Case of Northern Nigeria

Adebusoye Adedamola Anifalaje

A thesis submitted to the Department of Management (Information Systems and Innovation Group) of the London School of Economics for the degree of Doctor of Philosophy, London, April 2012

Declaration

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

I warrant that this authorisation does not, to the best of my belief, infringe the rights of any third party.

I declare that my thesis consists of 69,353 words.

Some of the ideas in this thesis appear in the following paper, written during the PhD.

Anifalaje, Adebusoye (2009), "Decentralisation and Health Systems Performance in Developing Countries." *International Journal of Healthcare Delivery Reform Initiatives*, **1(1)** pp. 25-47.

Acknowledgement

My foremost gratitude goes to Almighty God for His grace that is always a source of strength, hope and encouragement through the many changing scenes of life. His love provides a dependable foundation of meaning and purpose that make all my endeavours worthwhile.

I need to thank my parents and siblings (and their spouses), for their unwavering moral and material support for as long as I can remember.

It is indeed a blessing to have a supervisor like Dr Shirin Madon, who constantly maintained a positive outlook, believed in me even when I seriously doubted myself, and provided critical direction as my thesis evolved. I must mention Professor Edwin Michael who at the initial stages of my research helped in setting me on an intellectually stimulating course and as a second supervisor, instrumental in putting together a successful grant application, which fully funded my research. I am also grateful to members of faculty especially Professor Jannis Kallinikos for his inspiring lectures, conversations and the glowing reference he wrote for my funding application; Dr Susan Scott for her insightful critique of and interest in my research as well as acting as second referee for my funding application. Professor Chrisanthi Avgerou and Dr Edgar Whitley are members of faculty who provided invaluable counsel at some point during my doctoral studies.

I am indebted to friends from the LSE's Information System and Innovation Group: Dr Savita Bailur for your tireless encouragement and detailed feedback on many draft chapters; Wifak Houij-Gueddana and Carla Bonina for your priceless critique and input at the eleventh hour and Wifak also for your generosity of spirit in opening your home to me during a time when most needed time and space. Nuno Oliveira for being a friend indeed and selflessly making my life so much easier when the pressure was on. To Dr Maha Shaikh for being a buffer and keeping me constantly supplied with chocolates, which were a welcome bonus especially after many hours of perspiration. Drs Jonathan Ezer, Magda Hercheui and Matthew Smith at different times have been great sounding boards to bounce off ideas.

I owe my interest in health management information systems in poor countries to Dr Babafemi Balogun who challenged me to live for a vision bigger than my immediate needs and comfort. For the counsel I received on how a life of excellence is about balancing roles and doing the best we can in light of our multiple responsibilities. I

could not have got through this demanding process without your spiritual guidance and practical wisdom that God's grace is able to make a significant difference especially in overwhelming and seemingly impossible situations. I would also like to thank Mrs Tiwalola Balogun for the calm and reassuring perspective you always provide in the most critical of times. Pastor Kolade Adebayo-Oke also provided me with unreserved Christian counsel and support. Members of my Home Group at Holy Trinity Cambridge were such a resource, providing my family and I with a community that took an interest in our general welfare and prayed towards the successful completing of this thesis.

At this time, it is imperative to also remember friends who supported me financially and gave sacrificially towards my research studies: Pastor Ayodeji Akinsola, Dr Muyiwa Ojo and Pastor Tunde Okeowo.

The substantive fieldwork conducted for this research would have been impossible without the support of Dr Vincent Shaw. I am also grateful to the following people for helping me with specific access to primary data either by directly giving their time as respondents or connecting me the appropriate persons to speak to: Dr Bola Njoku, Dr Akin Oyemakinde, Dr Ola Soyinka, Ms Diana Johnson, Dr Olumide Okunola, Mr Debo Williams, colleagues at HISP Nigeria (Ime Asangasi, Aluka Terpase, Jerome Shaguy and Dapo Adejumo), Health Partners International and PRRINN-MNCH (Cathy Green, Dr Solomon Mengiste, Dr Nasiru, Nasir Bala). My first fieldwork to Nigeria was made extremely pleasant as Mr and Mrs Kunle Osobu gave me a reception second to none and hosted me with all the comforts I could imagine and more. It is impossible to name everyone who has helped me along the way so this also goes out to you all.

Last but not the least, I would like to thank my wife, Tolulope, who has been a great rock of support and my angel sent from God. Thank you for believing in me and for all the sacrifices you endured. I am exceedingly grateful to my children, Tobiloba and Ore-Ofe for their patience and understanding.

This work was supported by the Economic and Social Research Council [grant number ES/F010192/].

Abstract

Health management information systems (HMIS) are implemented in less developed countries (LDCs) with the expectation that they will contribute to improving primary health care (PHC) delivery. Information generated through these systems is conceived as an imperative for better decision making processes and strengthening accountability arrangements that underpin the delivery of PHC. Despite strong rhetoric and significant investments to support these systems, most HMIS implementation in LDCs face challenges of poor data quality and weak accountability arrangements that limit their impact on health status. This constitutes a divergence from the instrumentality of predetermined indicators measuring health status performance that do not necessarily reflect the complex reality underlying how poor communities define their health priorities. We therefore highlight that accountability for performance management may indeed detract from the objective of improving the health of the poor and needs to be understood more broadly.

This study illuminates the challenges and potential of HMIS implementation through accountability arrangements that are socially embedded in institutions, interactions and interpretations of global and local actors. As such, our primary research question is, *"To what extent can HMIS improve accountability arrangements of PHC delivery?*" Employing an interpretivist research methodology, we provide perceptions of how interactions between citizens, service providers, bureaucratic and political agents dynamically construct, contest and navigate accountability arrangements underpinning the provision of health care. This understanding has hitherto been limited in the HMIS literature. As a central theme in ICT for Development literature, illuminating these interactions furthers our understanding regarding the potential of HMIS in improving the lives of the poor. National governments, donors and HMIS practitioners will benefit from the practical insights derived from this study especially in relation to reconceptualising HMIS analysis to incorporate contextual and developmental notions of PHC. With relatively limited HMIS research, Northern Nigeria as the empirical context of this study also constitutes a useful contribution to the body of knowledge.

Table of contents

List of tables

List of Figures

Acronyms and Abbreviations

ANC	Antenatal Care
ATM	HIV/AIDS, Tuberculosis and Malaria
CBO	Community Based Organisation
CDC	Community Development Committee
DHIS	District Health Information System
DPRS	Director Planning Research and Statistics
DPT	Diphtheria, Pertussis and Tetanus
DSN	Disease Surveillance and Notification
DSNO	Disease Surveillance and Notification Officers
FMOH	Federal Ministry of Health
HDCC	Health Data Consultative Committee
HDPU	Health Data Producers and Users
HF	Health Facility
HISP	Health Information Systems Program
HF	Health Facility
HMIS	Health Management Information System
IDSR	Integrated Disease Surveillance and Response
IPDs	Immunisation Plus Days
ITN	Insecticide-treated nets
JCHEW	Junior CHEW
LCV	Local Community Volunteer
LDCs	Less Developed Countries
LEC/O	Local Engagement Consultant/Officer
LGA	Local Government Authority
LGSC	Local Government Service Commission
LIO	Local Immunisation Officers
M&E	Monitoring and Evaluation
MDG	Millennium Development Goal
MNCH	Maternal, Newborn and Child Health
MSP	Minimum Service Package
NDHS	National Demographic and Health Survey
NHMIS	National HMIS
NICS	National Immunisation Cluster Survey
NIDs	National Immunisation Days
NIPD	National IPD
NORAD	Norwegian Agency for Cooperation and Development
NPHCDA	National PHC Development Agency
OIC	Officer in-Charge
OPD	Outpatients Department
PATHS	Partnership for Transforming Health Systems
PEI	Polio Eradication Initiative
PHC	Primary Health Care
PPRHAA	Peer and Participatory Rapid Health Appraisal for Action
PRRINN	Partnership for Reviving Routine Immunisation in Northern Nigeria
RI	Routine Immunisation
SCHEW	Senior CHEW
SIO	State Immunisation Officer
SMOH	State Ministry of Health
SMOLG	State Ministry of Local Government
SPHC	Selective Primary Health Care
SPHCDA	State PHC Development Agency
UNICEF	United Nations Children's' Fund
VDC	Village Development Committee
VPDs	Vaccine Preventable Diseases
WDC	Ward Development Committee
WHO	World Health Organisation
WMHCP	Ward Minimum Health Care Package

Table A: List of Acronyms

Chapter 1: Introduction

This thesis explores the intricacies of how health management information systems (HMIS) are implicated in the accountability arrangements underpinning the delivery of primary health care (PHC) in less developed countries (LDCs). Accordingly, we unpack the interrelated influences between divergent ideologies regarding healthcare and development, the role of information in health care delivery and accountability arrangements that reflect particular notions of information and specific developmental views of health. The empirical context of this study is located within the Nigerian PHC system. Nigeria has one of the weakest health systems in the world, reporting correspondingly high mortality and morbidity rates and poor human development index. For instance, the Mo Ibrahim index on governance ranked the country 51 out of 53 African countries on health delivery (Mo Ibrahim Foundation 2011).

We design this study as a multilevel interpretive case study analysing national PHC/HMIS policy agenda, localised implementation at sub national levels and developmental experiences from the perspective of poor citizens. For this purpose, we identify a series of HMIS implementation efforts and health systems strengthening activities underway in Northern Nigeria (a region mostly with the poorest health status and developmental indices in the country). HMIS are often defined as decision-making tools for healthcare managers. From this conception, emphasis is placed on technological (digital and non-digital) artefacts implemented to aid the systematic process of collecting, storing, analysing, disseminating and using data for the improvement of health service delivery (AbouZahr and Boerma 2005; Stansfield 2005). In this study, we broaden this conception to include both formal and informal HMIS (Mutemwa 2006), reaching beyond the technological to incorporate the social, institutional, organisational and cognitive realities. This broader HMIS definition reflects a tradition of information system research that adopts a critical socio-technical perspective (for example see Avgerou 2002).

The urgency for poor countries to implement HMIS is fuelled by a number of expected returns that: quality information improves health care management decisions

and policy formulation; empowers citizens by increasing their understanding of issues that affect their health; and is a critical governance tool for enhancing accountability for donor resources (Carlson 2007). These benefits have largely remained unrealised (Heeks 2006, Littlejohns *et al.* 2003). This study explores the extent to which HMIS can improve PHC accountability arrangements necessary for improving the health and wellbeing of poor communities.

Background to research domain

Dire Health Status

Sub-Saharan Africa (SSA) is regarded as one of the most poverty-stricken regions in the world (Chen and Ravallion 2004). In contrast to global trends, poverty has been on the rise in sub-Saharan Africa over the last twenty-five years (Collier 2007). For the last three decades, over half of the population have lived below $1.25 a day and almost seventy-five percent live below $2 a day (Chen and Ravallion 2008). Basic public and social amenities for the most vulnerable are either absent or inadequate. There is a mutually influencing relationship between the state of poverty in SSA and health status of the population (Handley, Higgins et al. 2009). Failing public health systems are particularly alarming, resulting in high mortality and morbidity levels especially in rural communities and among women and children. For instance, African countries account for 90% of the ten worst under-5 mortality rankings (UNICEF 2009). Maternal mortality on average is 900 per 100,000 compared to 27 per 100,000 live births in Europe (WHO 2009). Only 14% of children less than five years old sleep under insecticide-treated nets (ITN) in a region where an average of 104 per 100,000 of these under-fives die of malaria every year (WHO 2009).

Health status is particularly dire in Nigeria. Since independence over half a century ago, health indicators have remained poor and in some cases even worse (HERFON 2006; HERFON 2008). Thus, Nigeria is judged to have one of the lowest living conditions in the world (allWestAfrica 2010). The WHO, in 2000, ranked the country's health system performance within the bottom five of its member states (WHO 2000). Not much has changed over the last decade (Enogholase 2010) with government expenditure on health less than 5% of general government expenditure

instead of the 15% pledged at the Abuja declaration in 2001 (Africa Public Health 2009-2010). In Nigeria, only 6% (less than half the average for the African region) of under-fives sleep under ITNs (UNICEF 2009) and maternal mortality rate could be as high as 1500 per 100,000 (WHO Not Dated). Between 1990 and 2011, maternal deaths in Nigeria have almost doubled from just over 16,000 to over 31,000 and the country has one of the slowest rates of decline in child mortality (Lozano, Wang et al. 2011). There are significant regional variation is health status within Nigeria. For instance, maternal mortality ratio in the North East is almost ten times higher than in the South West (HERFON 2006) as only 12% of women in North East Nigeria give birth in a health facility compared to 70% in the South West (National Population Commission and ICF Macro 2009). There have been efforts by the international community to reverse the tide of the poverty and ill health. A significant initiative in this direction has been the introduction of PHCs as the primary means of health care delivery.

Failing PHC Systems

In the late 1970s, the primary health care system was decided at Alma Ata to be the model for health service delivery. This involved the decentralisation of the health sector in such a way that communities will have a greater input in the provision of their health services. More importantly, the ideological underpinning of this model was universal access to basic healthcare with a central focus on the socio-economic and political determinants of health (WHO 1978; Cueto 2004). By the late 1980s, what were essentially social-welfare principles had been replaced by the efficiency and cost-effectiveness approach of selective primary health care (Cueto 2004). There was also a corresponding shift by the international development community to provide assistance on the condition that aid recipients adhere to trade and economic liberalisation policies articulated both in the Washington (Williamson 1990) and post-Washington Consensus (Stiglitz 1998). These policies favoured an economic growth approach, which relies on a 'trickle-down' effect. Healthcare management have since been dominated by policies promoting technological interventions and efficiency gains.

In the late 1980s, the WHO and UNICEF sponsored the Bamako Initiative which was adopted by African health ministers. The objective of the initiative was to strengthen

the already waning PHC services by introducing a minimum service package (MSP) for all primary health centres. By doing this, the initiative sought to improve cost-effectiveness, efficiency and equity of health service provision (Soucat 1997). At the time health budgets in many African countries were already significantly reduced. This was part of the broader structural adjustment programme demanding austerity measures through fiscal discipline. A major component of this approach was for communities to finance and manage medical supplies through a drug revolving fund. The required introduction of user fees nevertheless had a negative impact on poor people in the community (UNICEF Not dated).

Weak HMIS

There is widespread support for the adoption of HMIS as a mechanism for improving healthcare service delivery (Idowu, Cornford et al. 2008) by facilitating the process of collecting, storing, analysing and disseminating data (AbouZahr and Boerma 2005), for better policies and decision-making processes. A particular objective is making health care providers accountable to funders (government and donors) in terms of efficient use of resources (Stansfield 2005). Despite the investments in these systems, their implementation in developing countries has been shrouded in partial or complete "failure" (Heeks 2006, Littlejohns *et al.* 2003). In Nigeria, problems encountered in the implementation of HMIS include the lack of an information culture, problem of scaling up (Shaw, Mengiste et al. 2007), inappropriate infrastructure, low management capacity and lack of trained workforce especially at the primary care level. The country's National Health Management Information System (NHMIS) is noted to be weak (especially in terms of data reliability) in supporting the PHC system (Sambo, Lewis et al. 2005; Adindu and Babatunde 2006) with this leading to

> "serious limitations in the value of the health information that "data-led" national information system could provide, particularly regarding its availability and usefulness for decision-making processes at local level" (HERFON 2008: 304).

HMIS are implemented in LDCs to improve decision-making and accountability arrangements. We adopt the term "less developed countries" without intentions to address the fierce debates that surround the notion of development (for example Escobar 1995; Thomas 2000; Kothari and Minogue 2002; Escobar 2002). Instead, our choice is a practical one: relative to more developed countries, LDCs report higher

rates of morbidity and mortality. It therefore seems logical to avoid the use of the term "Third World" because this might conjure imperialist connotations; on the other hand employing developing countries seem to suggest a modernisation perspective where there is a know trajectory for development. We are inclined to exercise caution about attributing a causal design to development. Escobar (2002) articulates a convincing argument in this regard:

> "The coherence of effects of the development discourse should not signify any sort of intentionality. As the discourses discussed by Foucault, development must be seen as a "strategy without strategists," in the sense that nobody is explicitly masterminding it; if is the result of a historical problematization and a systematized response to it." (Pg. 91)

The use of LDCs in this thesis therefore point generally to whole regions and countries facing desperate healthcare challenges and weak institutional arrangements that can adequately support PHC delivery.

Our research question is presented in the form of a primary question, providing an overarching direction, and three interrelated sub questions. These are as follows:

Primary Research Question: "To what extent can HMIS improve the accountability arrangements underpinning the delivery of PHC in LDCs?

Sub-research Questions:

a) How are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?
b) How can we better understand the challenges of HMIS implementation in LDCs through the complexities of PHC accountability mechanisms?
c) What kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?

Current research in the literature have either conceptualised accountability from a narrow technological or instrumental view or not sufficiently engaged in problematising the concept in the context of LDCs.

Approaches in the literature

Approaches in the literature have been wide and varied: there are studies that concentrate on managerial implications of HMIS (Al-Alawi 2006), designing the system (Aqil, Lippeveld et al. 2009), the social infrastructure of HMIS implementation (Asangasi and Shaguy 2009); HMIS as supporting decentralised organisational structures (Ausse, Omar et al. 1995); HMIS as technology in the health sector (Bernardi 2009); others have emphasised the particular institutional context in which HMIS is implemented (Bishaw 2008).

We focus on two broad approaches to HMIS studies in LDCs: the first is a technical, a-contextual view that emphasises HMIS as tools for achieving an objectified end. The second view provides a more nuanced approach to HMIS studies by elucidating how these systems embody contestations of particular values deriving from the context where they are developed and/or implemented. This thesis follows in the tradition of the latter approach and builds on it.

Techno-economic approaches

This view somewhat objectifies the technological potential of HMIS to improve healthcare delivery (see for example Edejer 2000). A few examples in the literature include, the extent of broadband penetration and expansion of internet access in recent years enabling health education communication *en masse* (Gupta and Papagari 2004) and serving as a global information gateway for health practitioners to develop their knowledge and improve their service to patients (Niessen, Grijseels et al. 2000). The implication of these assumptions is that the desired end is undisputedly universal. For instance, it is assumed that service providers want to provide better services and improve their ability to account for their activities. The literature also states one of the benefits of ICT-based HMIS implementation as knowledge diffusion. In the HMIS literature this is sometimes presented in terms of bridging the digital divide which limits the access of health professionals in LDCs to current knowledge and research in best practice (see Edejer 2000; Godlee, Pakenham-Walsh et al. 2004). From a global health policy perspective, the WHO's *World report on knowledge for better health* highlights the importance of health information systems in addressing global health inequities (Nolen, Braveman et al. 2005) and meeting the health-component targets of the Millennium Development Goals (WHO 2004). The assumptions made are that

health practitioners indeed value this knowledge and that this knowledge will be used for improving accountability and services to users. The literature is replete with notions of health as a commodity contributing to economic productivity. From an economic perspective, priority diseases that are calculated to have high economic impact, like malaria (Gallup and Sachs 2001) are seen to be obvious candidates. HMIS were introduced against the backdrop of this instrumentality as LDCs instituted a raft of administrative and health systems reforms according to the imperatives of selective PHC (SPHC). The logic of this instrumentality relies on a predefined course of action to achieve a predetermined and objectively desirable outcome. Reflecting this rationality, HMIS are conceived as managerial and technological tools implemented to support evidence-based health care delivery and performance evaluation of vertical (disease-focussed) interventions. As most LDCs depend on donor aid for implementing their health programmes, measuring performance against financial assistance is considered to be of utmost importance. Donors have therefore increasingly made recourse to the good governance agenda to set out, amongst other criteria, accountability parameters as conditions for aid provided to recipient countries. These are often based on measurable indicators for financial and managerial accountability. As part of these conditions, recipient countries are expected to adopt principles of public sector efficiency and transparency, with HMIS playing a key role. In LDCs, the goals of rational decision-making have been marred by unintended outcomes, while the predetermined objectives of tackling major diseases still prove to be elusive. In Nigeria, HMIS-supported accountability in terms of filling forms and reporting data has been reported to be weak because of poor capacity (Osa-Eloka, Nwakoby et al. 2009) and a bias towards hierarchical information demands rather than local use (Adindu and Babatunde 2006). These typify locally situated practices that are tangential to the predefined expectations of HMIS supporting a formalised accountability arrangement. Consequently, HMIS implementations seldom achieve a predetermined and expected end but rather are implicated in unpredictable and fluid outcomes. For instance, an account of Nigeria's PHC initiative express sentiments that suggest that challenges faced are not just economic:

> "In some respects, Nigeria's record in health development has been disappointing in that smaller, poorer neighbours have outstripped us in the achievements of their health services. This observation is not to deny that Nigeria is well able to provide strong leadership within the African region

> on health development based on the principles of primary health care. Our slow start is in part related to the enormous size of our population, the great diversity of language and culture and the complex political systems in the federal state" (HERFON 2008: xi)

In addition, the weakness of accountability in PHC governance means that, "many Nigerians still lack access to formal health care services" (HERFORN 2006: 60). Consequently, accountability structures that underlie PHC delivery suggest that while there are formal instrumental arrangements defining roles, responsibilities and targets for PHC delivery, there are also socio-cultural and political dynamics at play, which are implicated in the way these formal demands are interpreted, localised and redefined.

The limitation of instrumental approaches is brought to the fore in the divergence between objectified formulations - linking information to decision and actual practice - that confound prescriptive analytics (Klecun-Dabrowska 2002). The technical instrumental approach does not illuminate the intricate social dynamics that modulate and contest the goal of PHC accountability. This has been indicated in critical HMIS studies that show the problematic nature in the logic underpinning the assumed positive associations between information/knowledge and decisions (Mutemwa 2006). More broadly, ICTD capability studies have proposed that ICTs (such as HMIS) potentials require the converting of resources such as information into effective capability sets (Kleine 2010). In HMIS research, this is implied through attempts to understand the capacity or agency of communities in defining their health priorities and participating in formulating strategies regarding the delivery of primary health care. This shifts focus from the binary functions defining those with access to technology versus those without and rather focus on the lack of requisite capability necessary to convert potential resources into increased opportunities for engaging in social, economic and political activities (Zheng 2009) that underpin the delivery of primary health care. As such the capabilities approach show that ICTs (or HMIS specifically), on their own are not able to generate significant improvement in the lives of the poor (and their health care) but requires a holistic strategy that help poor people to effectively take advantage of the potentials of ICTs (Zheng and Walsham 2008).

In summary, the implementation of HMIS has mainly been conceived from a narrow techno-economic rationality. Their design is usually based on a top-down approach that assumes universal principles apply regardless of contexts. The motivation underlying their potential contribution to strengthening health care delivery has therefore been predominantly articulated in terms of cost effectiveness, service efficiency and rational decision-making. These arguments draw from similar concerns raised in the IS and ICTD literature (Avgerou 2002; Avgerou 2010). Experience shows in the case of HMIS that there are complexities of variation and divergence in how health and health care problems are defined by local communities including local interpretations of health and illness (Good 1994 in Miscione 2007). What is often missing in a technical instrumental approach is the people-centred view and by extension how the social context in which these systems are implemented bear upon the analysis of the outcome of their implementation. This is critical within the primary health care system that requires responsiveness to the health priorities of the community. The articulation of health priorities and the intricacies surrounding how they are met (or not) requires analytical approaches with tools for understanding the nature social interactions in the provision of public services. The approach of this study is therefore context sensitive.

Context-sensitive approaches

Avgerou argues that a context sensitive view of ICT implementation goes beyond analysing technological artefacts but spans a wider analytical space including socio-cultural and political arrangements (Avgerou 2010). She notes that IS implementation studies following the social embeddedness tradition

> "see the purpose of ICT innovation as arising from local problematizations, and its course as being shaped by the way local actors make sense of it and accommodate it in their lives" (Avgerou, 2002 in Avgerou 2010: 4).

This has implications for the developmental role of HMIS as a form of ICTD. In terms of healthcare delivery, this developmental ideology resonates with general PHC, where priority is given to the role of communities in defining their health priorities and participating in formulating strategies regarding the delivery of primary health care (Cueto 2004). The important point to note is that these are situated approaches to HMIS research seeking to account for the notion of locally defined

development parameters including "culture and local context, civil society involvement, local participation, decentralisation and transparency" (Soeftestad and Sein 2003: 69). This addresses the attitudes, understanding, and behaviour of local officials, healthcare providers and communities. Therefore this view provides analytical means and insight into the varied and divergent sense-making process that typifies PHC delivery and accountability arrangements.

While the problems highlighted in the implementation of HMIS are relevant, what is still missing is a good understanding of the processes through which these systems actually impact the delivery of healthcare services to communities. HMIS implementation is often designed to capture disease incidence, service utilisation and produce various management reports. Higher-level government officials and funders require this output for performance monitoring and resource allocation (Carlson 2007). It is usually the case that health workers either do not have the capacity to use the data or do not find the data locally relevant. Indeed most of the data elements are decided at a distance involving a range of high-level public officials and international donor organisations (Madon and Krishna 2010). The volume of data required often makes it less likely for public officials to monitor these. The experience in most developing countries is that the accountability mechanisms and institutional arrangements required are often weak or inappropriate and therefore limit the reliability of the HMIS (see for example, Heywood 2008).

Aims of Research

The main differences between the approaches discussed are not just in techniques, strategies or means through which HMIS is conceived to support PHC delivery. Rather, these go deeper into ideologies regarding PHC from a developmental view, the nature of accountability consequent on the particular notion of PHC adopted and the role of HMIS in this relationship. A preponderance of literature debate divergent economic perspectives promoted in global health policy (see for example, Paglin 1974; Szreter 1997; Macfarlane, Racelis et al. 2000; WHO 2000; Gallup and Sachs 2001; Deaton 2003; Waitzkin 2003; Sachs 2004); Other perspectives such as a special

series by the British Medical Journal present studies on the socio-economic causation of health status (see Bartley, Blane et al. 1997; Brunner 1997; James, Nelson et al. 1997; Kawachi and Kennedy 1997; Roberts 1997) and other still on behavioural and cultural factors (Anderson, Davies *et al.* 1989; Conner and Norman 1996; Norman, Abraham et al. 2006). These debates are particularly rife in the context of LDCs. We therefore need to understand HMIS from a developmental view especially as a form of ICTD.

The nature and mechanisms through which information and communication technologies contribute to development (ICTD) has been an important discourse in both academic and policy debates. ICTD conceptualisations are useful in discussing theoretical approaches to HMIS implementation. ICTD literature has called for a closer and more explicit conceptualisation of development. In this regard there have been studies advocating that the contribution of ICTs to development must extend beyond economic growth (for example, Madon 2000; Soeftestad and Sein 2003; Kleine 2010). It is therefore critical for studies located in LDC contexts to explore ways in which ICTs such as HMIS are implicated in development.

From this viewpoint, this study positions HMIS in relation to its role in supporting a responsive and locally relevant healthcare delivery service. This thesis approaches responsiveness through the notion of accountability. Accountability itself is problematized in order to fully explore how HMIS may or may not support these arrangements in LDCs. In this relationship, some authors have conceptualised HMIS as playing a role to support bureaucratic and democratic accountability through formal and informal organisational arrangements (Madon, Krishna et al. 2010). The aim of this thesis is therefore to *address the necessity of a real-world context where different forms of accountability are required to analyse the implementation of HMIS in terms of their potential roles and challenges.* By focussing on a real-world context it is implied that HMIS conceptualisations must achieve a balance between managerial functions and situated responsiveness. Therefore, while maintaining its managerial functions HMIS must also be conceived in a way that is responsive to community needs. This approach is in the spirit of what Roberts (1991) proposes in the case of informal and formal (hierarchical) forms of accountability when he suggests that "there is little hope that the communicative and moral potentials of the informal organization will be able to supplant the overarching instrumentalism

reproduced through the hierarchy" (Pg. 356) instead "the lateral ties that are produced do much to secure the routine interdependence of action upon which effective organization depends" (Pg. 364).

Expected Research Contributions

Academic

By placing HMIS studies within an accountability framework, this study attempts to provide a conceptualisation of HMIS as developmental interaction between health providers, local administration and citizens. This has hitherto been limited in the literature. The illumination of this interface helps to further contribute to the literature on the developmental dimension of ICTD and the ways in which ICTs can actually impact on the lives of the poor.

The contextual analysis provided by socializing forms accountability might also go some way in unpacking HMIS challenges in achieving instrumental accountability. In a sense we might begin to see how particular forms of interaction influence the outcome of hierarchical information demands and accountability. Furthermore, HMIS implementation in the Nigerian context is rarely found in the literature.

Policy

This study hopes to shed understanding on the interdependent micro-level factors that impact the health of poor communities and the governance arrangements underpinning healthcare delivery. The implications of this study for HMIS analysis and implementation might help policy makers reformulate PHC HMIS development and implementation as experimental and contextual. In addition it helps to provide a framework to go beyond the instrumental view of HMIS implementation. In a sense this allows PHC policy formulations to incorporate a broader understanding of HMIS into primary healthcare delivery strategies. This may include developing different categories of data relevant to health at a community level (Madon and Krishna 2010).

PHC HMIS implementation is particularly critical because the rationale underpinning these systems is based on community level interventions especially for the rural poor. This study can therefore provide useful insights on potential transformational avenues

and explanatory factors for understanding the challenges currently faced in their implementation.

Thesis Chapter Outline

The reset of this thesis is structured as follows:

Chapter 2: provides a critical review of the literature. This traces the different understandings regarding the link between PHC and development focussing especially on the transformational dimensions of ICTD. The role of HMIS is then considered in light of accountability arrangements that have far-reaching consequences for the delivery of primary healthcare delivery. This chapter ends by framing the research questions that will guide the thesis.

Chapter 3: expands on key concepts from the literature review as theoretical propositions to sensitise the design of the empirical fieldwork as well as provide a guide for data analysis.

Chapter 4: discusses the philosophical and methodological underpinnings of this study and their epistemological implications of the nature of contribution made to scholarship.

Chapter 5: the case study used for empirical fieldwork is detailed in Chapter 5. This broadly describes the Nigerian primary healthcare system and then concentrates on Northern Nigeria before centring on Jigawa state and Tsakuwawa community.

Chapter 6: analysis of the case study is presented using theoretical constructs developed in Chapter Three.

Chapter 7: discusses further conclusions from the case study analysis, presents implications of the findings for HMIS research and provides a critical evaluation of the thesis as a research project in terms of its contributions. This chapter also presents weaknesses, limitations and recommendations for further study.

Chapter 2: Literature Review

HMIS and Primary Health Care in LDCs

Introduction

This chapter explores the discourse surrounding the implementation of HMIS in developing countries to support the delivery of PHC services. Given the divergent ideologies regarding PHC delivery, HMIS discourse is debated within the broader role of either contributing to health as a developmental commodity i.e. in terms of economic or productivity value, or directly to human development as indicated in the original ideology underpinning PHC. This latter view evolves from a particular socio-political, economic and cultural context and is based on a participatory approach where health care priorities and delivery are contingent on the democratic engagement between state and society. The former view however is reflected in selective PHC ideologies, where health care objectives are disease-focussed and priority given to biomedical interventions and principles of efficiency and cost effectiveness. Global health policy and donor programmes typically favour this technical view and consequently implement and conceptualise HMIS as tools for improving PHC delivery.

The implementation of HMIS is therefore often based on an instrumental rationality that conceives of an unambiguous relationship that the availability of quality information will lead to better health policies and decision-making for the efficient and effective delivery of PHC services. To some degree HMIS implementation can be analysed from an *instrumental* perspective as they are introduced in health management administration to achieve predetermined objectives according to a set of predefined processes and rules. In this respect, HMIS are conceived as improving health care delivery by exploiting technological innovations to improve the process of data-driven decision-making. However, the limitations of an instrumental approach are evident in the gap between expectations and actual experiences that constitute tangential outcomes. To understand these divergence, HMIS implementation are conceived as s*ocially embedded* in order to account for the unpredictable and complex interaction of multiple agents and institutions. In this regard, HMIS are construed as socio-technical systems with their implementation outcome highly situated, socially

constructed, constantly negotiated and inevitably contested. Consequently, HMIS design, implementation and use are necessarily contingent on the socio-cultural, political and institutional arrangements of the context in which they are introduced. It is noteworthy that an intrinsic component of this context is the hierarchical information demands of an instrumental approach. Accentuated by donors' involvement in supporting health care systems in LDCs (Ashraf 2005), one of the key demands is for HMIS to support formalised accountability arrangements that are measured in terms of predetermined performance indicators (Wild and Domingo 2010). From a socially embedded understanding the focus is on illuminating how these accountability arrangements are interpreted locally and therefore modulated.

Accountability arrangements are especially critical in the delivery of primary healthcare due to the heterogeneous interests represented by stakeholders such as donors, health ministries/parastatals and communities. Therefore, one of the alleged developmental contributions of HMIS is improving PHC accountability mechanisms through a decentralised organisational structure. However, in HMIS research, accountability is either treated superficially i.e. in a non-critical way (for example AbouZahr and Boerma 2005) and/or biased towards instrumental accountability which are derived from the expediencies of performance management (Braa and Hedberg 2000). This constitutes an important gap in the literature, reflecting limited understanding and appreciation of the accountability arrangements through which HMIS can improve PHC delivery.

The rest of this chapter is divided into five sections: the first section provides a brief review of perspectives of PHC as a route to development; next we present the role of information and knowledge in health policy and decision-making; the section following explores pertinent issues surrounding the implementation of HMIS in LDCs; the penultimate section connects HMIS to accountability; and the last section synthesises the main themes in the literature review and identifies gaps in the literature.

Perspectives of PHC as a route to development

Development ideologies address the constitution and reconstitution of society (Leys 1996), therefore not only do they influence the process and means of (PHC contributing to) development but also the goal of development (Pieterse 2000). These ideologies are underpinned predominantly by two different rationalities: a socially embedded view that attempts to understand the contingent nature of health and healthcare delivery through the way it evolves from a particular socio-political and cultural context, and an instrumental rationality that predefines what health is in a manner that allows for measurable and technical interventions. In this section we review these two perspectives of PHC and their underlying developmental goals.

Social development approach

Before gaining independence, many LDCs like Nigeria, inherited a health system based on secondary care, primarily serving the needs of colonial administrators who suffered fatalities from tropical diseases (HERFON 2006; HERFON 2008). In the newly independent states, this approach to health care delivery continued as mostly selective, serving a new privileged social class of indigenes but failing to meet the health needs of the general population, especially the rural poor (Roemer 1986). With the resulting high rates of mortality and morbidity among the poor, the international health community turned its attention to the central concern that majority of the population in LDCs lacked access to basic health care services (Orubuloye and Yoyeneye 1982). An effort to address these failing systems was articulated in the WHO Alma Ata declaration (WHO 1978). This declaration conceived of health as a fundamental human right and therefore promoted universal access to basic health services. Primary health care (PHC) was proposed as the main approach to achieving equitable health service delivery within and between countries (Starfield, Shi et al. 2005). PHC was introduced based on the implicit assumption that diseases in developing countries were contingent on socio-economic arrangements and therefore interventions required political will rather than sophisticated biomedical interventions (Cueto 2004). The Alma Ata declaration of "health for all" is based on decentralised, community-led (Tarimo and Fowkes 1989), preventative programmes (Atkinson, Medeiros et al. 2000) that foster local accountability, responsiveness (Cornwall, Lucas et al. 2000), and sustainable health systems through a participatory approach

(WHO 1978; Starfield, Shi et al. 2005). This approach emphasises the need for communities to be able to actively participate in the delivery of their health care (Gilson and Schneider 2010). By focussing on the community-level, proponents of the PHC systems suggest that health services are more accessible and interventions are likely to be more responsive to local needs as there is increased opportunity for effective local participation (Tarimo and Fowkes 1989). The rationale is that there is increased accountability and improved health care service when policies and intervention strategies are formulated with the users to reflect local priorities (Cornwall, Lucas et al. 2000). With this system, less emphasis is placed on technologically sophisticated and curative bio-medical interventions (Bossert 1979).

Essentially, PHC delivery from the Alma Ata view is context-sensitive, evolving from a particular socioeconomic and cultural context, highlighting organisational arrangements for community engagement (Atkinson, Medeiros et al. 2000). Health is seen as constitutive of development with the aim of improving socio-political and economic opportunities that expand the freedom of individuals to engage in matters that relate to their health (Sen 1999). As such, poverty is not just instrumentally undesirable in terms of unaffordable access to health care services, but embodies the erosion of individuals' right and capacity to fully participate in decisions regarding their health care delivery (Macfarlane, Racelis et al. 2000). This engagement implies that in addition to political freedom, communities must be afforded the requisite social and economic opportunities that will enable them to effectively exercise their rights within a democratic space.

Similarly, poor citizens need a formal institution to support "collective voice and action" (Mehrotra 2006). In this spirit, Mehrotra (2006) developed a model of *democratic decentralisation* that focuses on how local functionaries can provide effective delivery of basic social services to poor communities. It captures a three-way dynamic relationship between an active central government, well-resourced local authority and functioning civil society (Tendler 1997 in Kjær 2004). Nevertheless, the mere existence of these three do not lead to effective service delivery unless central governments, local governments and civil society are bound in a mutually accountable relationship. The essence of this accountability is premised on the intrinsic value of health, which is to be provided by states according to principles of social justice (WHO 1978; Orubuloye and Yoyeneye 1982; Roemer 1986). Not long after the Alma Ata declaration, this approach was seen as too

idealistic and replaced by an instrumental view of health as economic commodity (Hall and Taylor 2003).

Economic view

The end of the Cold War era ushered in the dominating influence of neo-liberal ideologies, and brought with it change of priorities in relations between donor and recipient countries (Cueto 2004). Upheavals in global politics and the failure of state-driven economies corresponded to a shift from PHC to selective primary health care (SPHC) (Hall and Taylor 2003; Cueto 2004). Cueto describes this new era as a change of emphasis in PHC ideology from a people-centred welfare strategy to the biomedical technological approach of SPHC (2004). This model assumes that diseases in developing countries are a natural phenomenon and therefore renders them amenable to economically viable and technical interventions (Cueto 2004). Underpinning this approach is an instrumental rationality that defines health to fit the logic of a rational biomedical perspective. This is reflected in health systems reform initiatives defined as "…"purposeful" in the sense of emerging from a rational, planned and evidence-based process..."(Berman 1995). As such, health reforms in LDCs prioritise the tackling of major diseases (Unger, Paepe et al. 2003) through efficient (Mills 1995) and economically viable means (Sen and Koivusalo 1998). This approach essentially represents a new public management (NPM) health model (Cueto 2004) conceived from the union between neo-liberal ideology[1](Segall 2003) and public administration (Dunleavy and Hood 1994; Gray and Jenkins 1995; Hood 1995; Heeks 1999; Gruening 2001). Health reform policy context parallels a wave of changes addressing public sector productivity crises in developed countries (Berman and Bossert 2000). Generally, NPM is a term used to illustrate a particular type of administrative reform that "adopts private sector management model" (Criado, Hughes et al. 2002) with strong emphasis on performance targets (Hood 1991). These

[1] It must be noted that change initiatives in the public sector are not restricted to a specific political ideology and some authors have attempted a more comprehensive analysis of the origins of NPM (see Gruening 2001).

efforts are underpinned by a managerialist approach to development (see Gulrajani 2009).

Against this backdrop, the notion of good governance evolved from international donors' efforts to redefine the modalities and mechanisms for aid provision (Santiso and Nitze 2001) while stipulating institutional reforms towards economic liberalisation and democratisation (Doornbos 2003). These reforms promote the limited role of the state in public service provision like health care (Loewenson 1993) and the ascendancy of *marketisation* ideologies. Thus constructing a depoliticised instrument for donor communities to influence health policies and programmes in LDCs (Okuonzi and Macrae 1995). For instance, in return for financial aid, LDCs committed to structural adjustment policies (Loewenson 1993; Cornia 2001; Olowu and United Nations Research Institute for Social Development. 2001) as a form of fiscal discipline in public sector spending (Doornbos 2003; Waitzkin 2003). These policies have been criticised for further weakening PHC delivery (Segall 2003; Chatora and Tumusime 2004). Therewith, the decentralisation of public health services in LDCs (which is a feature of primary health care) is conflated with the means of rolling back the state (Collins and Green 1994). A major implication of this techno-economic approach to PHC delivery is the lack of appreciation for the informal institutions and situated organisational arrangements that constitute a comprehensive view of health care delivery (Atkinson, Medeiros et al. 2000; Atkinson 2002). Instead, the principal focus of SPHC reform initiatives have been administrative decentralisation in terms of cost-savings, efficiency gains and new public management, rather than democratic decentralisation which emphasises the need for local participation (Bossert 1998).

SPHC view resonates with influential policy reports (such as the (United Nations Development Programme 2001; World Bank 2002), *Commission on Macroeconomics and Health* (WHO 2000; Sachs 2004), Kirkman et al., 2002). It is also from this standpoint that health economists advocate for increased investment in health (Sachs 2001; Sachs 2002; Sachs 2004) and the need for innovative sources of funding (Blaauw, Gilson et al. 2003). These approaches however imply universal objectives (Tarimo and Fowkes 1989) of development as economic growth without much reference to the socio-cultural context within which these objectives are made sense

of (Fine 2001; Fine, Lapavitsas et al. 2006). Atkinson (1995: 497) points to a similar lack of contextual understanding in PHC research studies:

> "…the managerial aims of health sector reform are only in part to improve coverage. They also include improved quality, effectiveness, efficiency, and humanity or acceptability with improved equity. Wider social development goals of reforms are not even considered in these health services research models."

The ideological preferment of SPHC, sustains the emphasis on a technological, disease-focussed model of health care delivery, which has failed to adequately address the health needs of LDCs (Magnussen, Ehiri et al. 2004). For instance poor regions like sub-Saharan Africa are generally lagging behind especially as rural primary health care systems are most backward (Godlee, Pakenham-Walsh et al. 2004).

There are contentions that these global health policy imperatives are highly influenced by the sedimentation of modernisation ethos (Garrett 2007), which is the prevalent view of development (Gardner and Lewis 1996; Schech and Haggis 2000). In this tradition, one of the hallmarks of modernity is the diffusion of technological artefacts (Rostow 1960) - seen in the digitisation of public service delivery (Bellamy and Taylor 1994; Atkinson, Medeiros et al. 2000; Ho 2002) - as both the means and objective of development (Eggleston, Jensen et al. 2002). The central tenets being that the goals of development are rendered technical in order to propose instrumental tools to achieve them (Hasselskog 2009). Schön summarises the limitation of this approach as follows:

> "Technological rationality depends on agreement about ends. When ends are fixed and clear, then the decision to act can present itself as an instrumental problem. But when ends are confused and conflicting, there is as yet no problem to solve. A conflict of ends cannot be resolved by the use of techniques derived from applied research. It is rather through the non-technical process of framing the problematic situation that we may organize and clarify both the ends to achieve and the possible means of achieving them" (Schön 1996: 16).

While it is vitally important to address diseases as well as general welfare (Gonzalez 2005), the instrumental approach of SPHC narrows the developmental objectives of these interventions to measurable economic indicators (Atkinson, Cohn et al. 2005), requiring efficiency-driven public sector management and biomedical interventions (Hall and Taylor 2003). This approach renders the technicalisation of health care

objectives possible by conceiving of health primarily as the absence of (major) diseases. However, there are complexities of variation and divergence in how health care problems are defined and how local communities interpret health and illness (Good 1994 in Miscione 2007). It is this need to address incongruent ends that development is reconceptualised to accommodate the multidimensional nature of human development and welfare as opposed to commodities and economic growth indices (Sen 1999). The original conception of PHC is that health is not just the absence of disease (WHO 1978) but embedded within socially constructed values of general wellbeing; appropriate PHC delivery is thus locally negotiated through interactions between communities, services providers and political agents. This holistic viewpoint emphasises the need to place health priorities within their broader socioeconomic context (Magnussen, Ehiri et al. 2004). In progressing the debate, these ideological views of PHC have an influence on conceptualising the means of intervention. The literature points to similar contentions regarding the role of information and knowledge in improving PHC delivery through policy and decision-making.

Role of information and knowledge in health policy and decision-making

Instrumental view of HMIS

While not writing directly about HMIS, Schön (1996) describes instrumentality as a view where ends are discretely defined and means, deriving from a scientific knowledge base, rendered in terms of universal principles. The instrumentality of health technologies and information systems such as HMIS is reflected in their conception as decision-making tools for healthcare managers and their challenges seen as providing quality data, which will help implement effective and efficient healthcare delivery (Mutemwa 2006). In this light the desired end is perceived to be undisputedly universal: HMIS are implemented to aid the systematic process of collecting, storing, analysing, disseminating and using data for the improvement of health service delivery (AbouZahr and Boerma 2005; Stansfield 2005). It is proposed that poor countries particularly need to invest in these systems for this purpose (AbouZahr and Boerma 2005; Stansfield, Walsh et al. 2006; Gething, Noor et al. 2007). Within a decentralised PHC structure, HMIS are seen as supporting local decision-making that is more relevant and responsive (Lippeveld, Sauerborn et al.

2000; WHO 2004). Significant numbers of researchers and global health agencies focus on the potential of technological advancements to improve health care delivery in developing countries (Chetley 2006 in Lucas 2008). Lucas (2008) outlines four broad categories of how ICT applications contribute to the improvement of health care systems in developing countries. The first category is the improvement of data quality and reporting through the digitisation of conventional paper-based HMIS. The second category is employing technology for better diagnosis and monitoring of treatment. The third category presents telemedicine as enabling geographically unbounded support for local health care delivery. The last category expresses how ICTs are used for providing health and healthcare information to whole populations.

From a global health policy perspective, the WHO's *World report on knowledge for better health* highlights the importance of health information systems in addressing global health inequities (Nolen, Braveman et al. 2005) and meeting the health-component targets of the Millennium Development Goals (WHO 2004). The US-funded *Data for Decision Making Project*, sought to develop the capacity of public health practitioners in data-driven decision making and improve health information systems so that they will adequately support data collection and use at all government administrative levels (Pappaioanou, Malison et al. 2003). Furthermore, in 2005, the WHO set up the Health Metrics Network (HMN) as a way of stimulating international support for HMIS in terms of technical capacity input (such as policy, tools, indicators etc) and financial support (Carlson 2007). The aim is to achieve consensus regarding health data requirement so as to facilitate harmonised data reporting nationally and globally.

Technologically based HMIS are increasingly occupying a central role in the design and evaluation of healthcare delivery (Odhiambo-Otieno 2005; Maokola, Willey et al. 2011). This is part of a broader commitment to an evidence-based approach (Niessen, Grijseels et al. 2000) where identifying priority diseases, building responsive epidemiological surveillance systems, formulating appropriate health policy and delivering cost-effective interventions is data-driven (Green 1999; Niessen, Grijseels et al. 2000; McMichael, Waters et al. 2005). This approach has also been referred to as a "medical rationality" (Heeks 2006). A few examples in the literature include the implementation of geographic information systems (GIS) for capturing spatial health

data to improve public health systems and tackle epidemics (Clarke, McLafferty et al. 1996; Johnson and Johnson 2001); the extent of broadband penetration and expansion of internet access in recent years to enable health education communication *en masse* (Gupta and Papagari 2004) and serve as a global information gateway for health practitioners to develop their knowledge and improve their service to patients (Niessen, Grijseels et al. 2000); mobile technologies such as PDAs used in developing countries by health workers to improve the delivery of primary health care to rural areas (Chandrasekhar and Ghosh 2001). The benefits of information systems implementation are represented as knowledge diffusion and HMIS conceptualised in terms of bridging the digital divide which limits the access of health professionals in LDCs to current knowledge and research in best practice (see Edejer 2000; Godlee, Pakenham-Walsh et al. 2004). This is especially as HMIS implementation expenditure and attention is mostly concentrated on tertiary hospitals rather than primary health care facilities, leading to a greater divide between rural and urban areas (Simba 2004). A developmental argument for HMIS implementation in LDCs is to help poor countries leapfrog into the digital age (Edejer 2000; Chandrasekhar and Ghosh 2001; Stansfield 2005). In this vein some researchers have proposed that the digital divide is possibly more important than "inequity in health or income" and as a result, the optimal use of technology is prescribed as an imperative:

> "The way forward is to exploit the full interactivity of the internet, which allows rapid feedback and change to continuously mould information into useful knowledge" (Edejer 2000: 797).

Efforts to exploit the optimum technological potential of HMIS (McGrail and Black 2005) are justified in terms of cost savings (Stansfield 2005; Krishnan, Nongkynrih et al. 2010) and the efficient allocation of resources according to clearly defined health priorities (Jamison and Mosley 1991; Niessen, Grijseels et al. 2000). Accordingly, this approach towards HMIS implementation is the *raison d'être* of most donor programmes (Ashraf 2005). From this instrumental perspective, one of the main challenges of implementing HMIS in LDCs is that the quality of information available is usually unreliable (Reerink and Sauerborn 1996). Writing in 2004, Godlee and colleagues argue that the drive for better information has not significantly improved primary health care delivery in the last 10 years (Godlee, Pakenham-Walsh et al. 2004), with a general lack of information being a major barrier (McGrail and

Black 2005). In 2011, assessments of progress against Millennium Development Goals (MDGs) (UN Millennium Project 2005) targets show that no country in sub-Saharan Africa will meet the target for maternal and child health (Jane Dreaper - BBC News 2011; Lozano, Wang et al. 2011). Interestingly, one of the major challenges in the assessment of these targets is that there is a lack of reliable data (also see Nolen, Braveman et al. 2005). The BBC News article reporting on the Lancet publication assessing progress towards maternal and child health MDGs, quoted global health experts as saying, "Numerical assessments against the MDGs are inevitably processes that are plagued by poor and missing data" (Jane Dreaper - BBC News 2011). The significance of this evaluation is that for at least two decades, HMIS implementation in developing countries has not been able to provide quality data, which can be used to improve health care delivery. To address this problem, there is usually an emphasis on instrumental tools or procedures e.g. rigorous methodological procedures, sound reasoning for processes followed, open critique of data used (Krieger 2003; Elliott and Wartenberg 2004) or statistical solutions to providing reliable information from unreliable data (Gething, Noor et al. 2006; Gething, Noor et al. 2007).

A critical and fundamental problem with the instrumental view of HMIS is the very real possibility of misidentifying the problems of ill heath and therefore specifying inappropriate instrumental tools through data indicators and processes to address what are essentially peripheral health problems. The strive for a scientific knowledge base and subsequent drive for quality data may therefore institute a series of evidence-based criteria for measuring improvements in health but these may still not reflect the complex and varied reality of why communities suffer from ill health.

We acknowledge that there is an expected instrumentality in HMIS implementation. However, slightly more nuanced HMIS studies question the feasibility of a one-size-fits-all approach and instead adopt "a notion of "appropriate," context-specific practice" (Avgerou 2010: 4) (for example, Akubue 2000; Wilson and Heeks 2001; Soriyan, Korpela et al. 2009) within the predefined goal of evidence-based decision-making (Korpela, Soriyan et al. 2000; Korpela, Hanmer et al. 2004; Soriyan, Ajayi et al. 2007).

Limitations of the instrumental view of HMIS

Despite the rational approach that conceives of information as a vital resource for improving health care delivery, experience shows that most decisions appear to be driven by political motives or intuition (Pappaioanou, Malison et al. 2003). Rather than view these as irrational actions, the theoretical basis for constructing the instrumental role of information in decision-making has been problematised in organisational management literature (Mintzberg 1975; March 1988 in Mutemwa 2006). From a philosophical stance, critical perspectives have questioned the neutrality of technology and information (Borgmann 1999). Therefore, the claim that PHC delivery is strengthened by an effective HMIS is called into question by contradictory practices that either derail, or to some degree, limit the underlying objectivity of this relationship (Mutemwa 2006). Contrary to the unambiguously defined goals of instrumental rationality, the actual reality of HMIS and information use is socially constructed and negotiated and is distinctively characterised by uncertainty and unintentional outcomes. The essence of this contingent view of HMIS is argued as follows:

> "With divergent trajectories or outcome-projection functions, between theory and actual practice, there is an absence of the necessary agreement on the measuring of benefits, success or indeed failure" (Mutemwa 2006)

Mutemwa (2006) notes that the literature implies three ways in which information diverges from the instrumentality of rational decision-making. Firstly, information being manipulated for self-interest is noted as a core feature of organisational experience (Feldman and March 1981; Feldman 1988; Dean and Sharfman 1993; Mutemwa 2006). The objective function imputed to information is often superseded by its symbolic value to justify and legitimise a preferred course of action or decision (Mutemwa 2006). Secondly, there is a presumption that information is indeed used for decision-making. However, studies show that most decisions are made before information is sought to justify them (March 1982; Mutemwa 2006). In other cases, decision makers at the local level opt for a more intuitive approach to decision-making thereby ignoring the formal health information system altogether (Finau 1994). Lastly, Mutemwa (2006) observes that there are other forms of information in addition to the formal HMIS. He presents the formal HMIS, which incorporates paper and electronic media, as "written form of transmission or information" (pg 3) and other forms of information including "verbal, observational, experiential and

training". From this study, he concludes that all these forms of information bear upon decision-making processes and outcomes. Therefore,

> "it becomes evident that the actual health management information system for a decentralized district health system is by far more integrated and complex than the formal HMIS" (Pg. 11).

In this vein, there are critical studies that question the narrowness of the instrumental analysis of HMIS implementation. To be clear, our critique does not completely reject rational approaches to HMIS implementation. Instead, it attempts to broaden its analytical scope by addressing situated practices typified by multiple and conflicting forms of rationalities (Chilundo and Aanestad 2004). These conflicts represent a tension between predetermined expectations of the formal HMIS and the fluidity of informal decision-making at local levels (Mutemwa 2006). To analyse the mutually influencing relationship between these formal and informal interactions, information (or HMIS) is conceived as socially embedded within dynamics that account for the attitudes, understanding, and behaviour of local officials, healthcare providers and communities (Bossert 1998; Madon, Krishna et al. 2010). Therefore, context-sensitive theories are employed to analyse the varied and divergent sense making processes of HMIS implementation for PHC delivery. For instance, to understand the consequent social complexities that underpin the use of information in decision-making processes, Mukama, Kimaro *et al*. employ structuration theory to highlight the power relations that underlie the organisational culture of those involved in HMIS implementation and how health workers navigate the social structures within which they make decisions (2005). Thompson (2002) employed theories from social psychology and anthropology to highlight the behavioural components that are brought to the fore in how users make meaning which are useful to them (Thompson 2002). Thompson argues that this is a practical framework for understanding the "interaction between users and technology" (Thompson 2002). Other studies have analysed how social communication practices embedded in cultural histories, have implications for timeliness of data reporting, extent of data usage and quality (Mosse and Sahay 2001). These are a form of indigenous communication practices and knowledge, which have been noted to be critical to development (Mundy and Compton 1995).

Theoretical views of socially embedded HMIS

Extensive action research conducted under the Health Information System Programme (HISP) has gone some way in trying to understand HMIS implementation challenges (Braa, Monteiro et al. 2004) from a *social embeddedness* perspective (Avgerou 2010). It is important to state that the point of departure and value of socially embedded studies is the richness of social theories deployed to understand the HMIS domain and reconceptualise the goal and contribution of these systems within their wider social context.

Some of the social theories used in HMIS research include complexity, institutional, and actor network theories (Avgerou 2010). Complexity science combines analytical concepts from chaos theory and complex adaptive system (Braa, Hanseth et al. 2007). It proposes that within complex systems such as health care provision, agents adapt to the emergent nature of outcomes as they evolve from a given historical legacy and an unpredictable future. This theory has been used in understanding the challenges of scaling up HMIS implementation and strategies for developing flexible standards to cater for changing healthcare environments and user needs (Braa, Hanseth et al. 2007; Shaw 2009). While there are varied definitions of (New) institutional theories, they generally conceptualise how, through the process of legitimisation, structures of social reality become enduring but over time and space subsequently change, adapt and decline (Hasselbladh and Kallinikos 2000; Scott 2001 in Sahay, Sæbø, et al. 2009; Scott 2004). Noir and Walsham (2007) used this theory to broaden the debate of instrumental, technical rational approaches regarding the way HMIS may improve public health delivery. On one hand, because HMIS is itself an institution (Avgerou 2003) the need to achieve legitimacy is sought by adopting these technologies ceremoniously (Noir and Walsham 2007). The authors contend that in the context of their case study, this tick-box attitude may contribute to inefficiencies and ineffectiveness in the Indian public healthcare sector. On the other hand, they noted that the implementation of HMIS as an ICTD intervention also provided opportunities for social development as poor rural women were given computer training (Noir and Walsham 2007). Other HMIS studies have used this theory to analyse how in former communist countries like Tajikistan, incompatibilities in "institutional logics" have to be resolved through the "deinstitutionalisation" of centralised planning to accommodate decentralised HMIS implementation (Sahay, Sæbø et al. 2009).

Miscione (2007) further employed this theory to account for the views of telemedicine providers as well as perspectives as they are interpreted locally (Miscione 2007). Much of HMIS studies have employed actor network theories (ANT) because they allow researchers to explore situated action as the outcome of interaction between heterogeneous entities without having to distinguish between technological and social artefacts or humans and non-humans but instead conceive of this interaction within a complex web of network nodes. Chilundo and Sahay (2002) explain ANT concepts including *translation* (presenting an idea in a way that resonates with a broader network of similar ideas and therefore garners more support (Johansen and Hanseth 2000)), *inscription* (translation process that leads to the materiality of an idea (Callon 1991)), alignment (predefining a legitimate standard to be followed), and enrolment (expanding the network). These concepts were employed in showing the intricacies of multiple interests and understandings in HMIS implementation and how these heterogeneous networks are implicated in challenges of developing an effective laboratory information system.

HMIS implementation in LDCs

The experience of HMIS implementation in LDCs, both in terms of building a rational health system and improving the performance of health care delivery, have been fraught with challenges and expectations remain elusive and largely unrealised (Heeks 2006; Lucas 2008). For instance, an evaluation of HMIS use in Tanzania revealed it is on the outer periphery of the health system despite a generally positive attitude towards implementing the HMIS (Nyamtema 2010). Some of these challenges have been understood from the viewpoint of not fully optimising the potential of ICTs (Edejer 2000; Chandrasekhar and Ghosh 2001) while others have argued that HMIS implementation requires appropriate organisational structure and institutional arrangements (Braa, Macome et al. 2001; Odhiambo-Otieno 2005; Stansfield 2005; Stansfield, Walsh et al. 2006). These are especially relevant in LDCs where the adoption of the PHC approach resulted in decentralised organisational structures.

HMIS for local action

Decentralisation leads to significant changes in information requirement and restructuring of the organisational design of HMIS (WHO 2004; Kimaro 2006). This requires a reorientation from centralised hierarchical models to HMIS emergent through local interpretation. For example, following the collapse of apartheid in South Africa, the development of HMIS for local action was reconceived radically as a bottom-up collaborative initiative as described in a historical account of the Health Information Systems Programme (HISP) (Braa and Hedberg 2000). The account detailed a series of conflicting rationalities that surfaced in the design of the HMIS. These include the pressure towards collecting data for hierarchical needs rather than local use and the preference for selective PHC demands rather than data for public health promotion and prevention (Braa and Hedberg 2000). Mukama and colleagues presented a similar case of Tanzania MOH where they found tensions between the bureaucratic demands of managing hierarchical health information and locally situated experiences (Mukama, Kimaro et al. 2005). This conflict, they contend, revolves around resource constraints and motivation, leading to donor dependence and asymmetrical power relations (Kimaro and Sahay 2007).

In a bid to support the orientation towards locally relevant data, the HISP initiative identified the development of an essential data set as one of the fundamental criteria of the District Health Information System (DHIS) architecture (Braa 2000). Shaw (2005) further defined its key features in coordinating local action:

> "essential data set, which may be defined as a set of the most important data elements, selected from all primary health care vertical programmes, that should be reported by health service providers on a routine basis, with the aim of being able to generate indicators that monitor the provision of health services in an integrated manner" (Shaw 2005: 632)

From the above definition, the critical advantage presented by establishing an essential data set is the relevance of the data for local level use. It is also clear that establishing an essential (or minimum) dataset would require addressing some questions including how to determine the "most important data elements", according to what criteria, and primarily serving what (or whose) purpose (Bowker and Star 1999). These are particularly complex in the context of LDCs where health systems are typified by a host of uncoordinated donor activities (Mekonnen, Sahay et al. 2009). Achieving consensus or integration in this situation is difficult because of the

multiple stakeholders and interests represented (Madon, Sahay et al. 2007; Smith, Madon et al. 2008; Kanjo, Moyo et al. 2009). Acknowledging the complexity of this process, Shaw (2005) provides a framework for developing an essential dataset using the experience of HISP in South Africa as an illustration. Data collection is stratified according to information needs along a hierarchical structure (See Fig. 2.1 below). This process is organised such that each level (e.g. national, state and local government) collects data relevant to their needs but only return relevant data to the upper levels. Data collection progresses as a bottom-up approach but the minimum national dataset is negotiated and directed from a top-down process (Shaw, 2005). The MDS criteria therefore suggest that HMIS challenges are directly related to the need for balancing the emphasis placed on top-down and bottom-up processes. As this process is essentially conceived as driven by a bottom-up orientation, understanding information dynamics at the local level therefore becomes a matter of great import. This means that the sustainability of HMIS requires flexible design for local customisation and configuration but must also maintain some standardised features. These themes are explored in more detail in the next section under "sustainability"

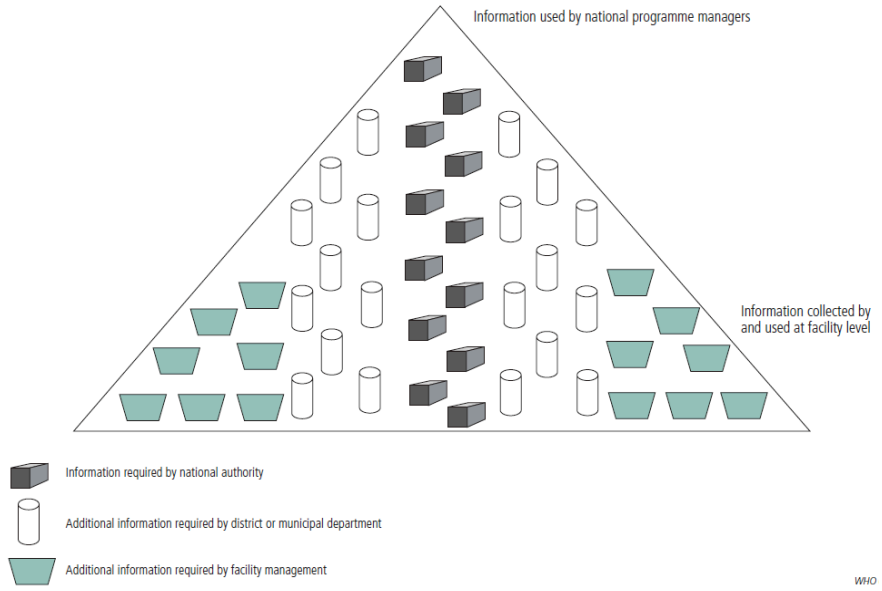


Fig. 2.1: Developing an essential data set (Shaw 2005)

HMIS sustainability

HMIS sustainability is a key challenge in developing countries and has received considerable attention from the HISP research network (Kimaro and Nhampossa

2004; Kimaro and Nhampossa 2005; Jacucci, Shaw et al. 2006; Kimaro 2006; Kimaro 2006). Sustainability constitutes both a conceptual and practical challenge. Given the potential of HMIS to improve healthcare delivery and the fact that most implementation initiatives are driven (or initiated) externally, these studies try to conceptualise how we can understand the transformation process required for short-term HMIS implementation projects to metamorphose into long-term institutional infrastructures especially after direct external support ends. Simply put, how can national governments develop ownership of HMIS and pursue its intended objectives in the delivery of PHC? In essence, sustainability focuses on the capacity of "user organisations to identify and manage risks that threaten the long-term viability of the HIS, following the withdrawal of external support" (Kimaro and Nhampossa 2005). This definition implies the need for 1) a specific kind of value-system regarding information, 2) a need-based HMIS design to support this value system and 3) the convergence of multiple (or dominant) interests around this value system. We will discuss these respectively under information culture; adaptability and scalability; and institutionalisation, integration and participation.

Information culture

The implementation of a new HMIS embodies values that would demand the "cultivation and institutionalisation of a new kind of culture" (Kimaro and Nhampossa 2005: 276). HMIS implementation studies address the process of developing an intrinsic institutional culture that values data and uses it to make informed decisions (Aqil, Lippeveld et al. 2009). The evidence of an information culture is apparent, as the HMIS becomes a part of the operational day-to-day fabric of the "institutions" using them. The dynamic notion of culture has evolved from static entities of antiquity and is conceived as "contestable, temporal and emergent … constantly interpreted and reinterpreted, and is produced and reproduced in social relations" (Avison and Myers 1995: 52). In essence, "through appropriating technologies, cultures can be redefined and strengthened and cultural identities changed and made more robust" (Westrup, Jaghoub et al. 2003: 21). ICTs, within a socio-technical construct, are therefore conceived as outcomes shaped by a multiplicity of agents who can then enact various uses (Law, 1987, Avgerou, 2002, Ciborra and Lanzara, 1994, Orlikowski, 1996) with unpredictable and unintended consequences (Westrup et al, 2003). The implications of this dynamic notion of

culture when applied to HMIS institutionalisation is two-fold: first, it suggests that HMIS are not just value-free technological artefacts but embody particular values which are taken for granted in the culture where they are designed; secondly, the outcome of an information culture in itself is constantly being produced and reproduced through power negotiations among multiple stakeholders at different levels and intersections of the health care delivery system.

Adaptability and scalability

HMIS designs are often "transferred" from one context to another. Using actor-network theory (Latour 1988), Nhampossa (2006) reconceptualises HMIS from "technology transfer" to "technology translation". He argues that the problem with the transfer and diffuse approach is that the concepts are conflated. He proposes that the translation perspective illuminates the practical challenges faced implementing HMIS across different contexts i.e. developed to developing countries (Nhampossa 2006). Importantly, the installed base of legacy information systems and information infrastructure (Lungo and Nhampossa 2004; Nhampossa 2004) are incorporated to represent the macro technological context (Braa, Monteiro et al. 2004). Findings from these studies emphasise the need for "political brokering" in order to successfully introduce and sustain the new HMIS (Sahay, Monteiro et al. 2009). Nevertheless, even when HMIS transfers occur between developing countries (i.e. south-south), they still face the same problems (Kaasboll and Nhampossa 2002). Some of the difficulties highlighted from a translation framework are cultural (e.g. language), technical (e.g. differences in length of name strings) and organisational (e.g. institutional capacity and knowledge). For instance, the sustainability of HMIS is often threatened by a lack of appreciation for the quality of infrastructure and human resource capacity available in the target context (Kimaro 2006). These problems signal the imperative to consider the local adaptation of these systems (Jacucci, Shaw et al. 2006; Soriyan, Korpela et al. 2009). HMIS must be designed and developed in a flexible way to accommodate changing user needs and requirements e.g. in terms of its scalability (see Bergqvist *et al.* 2006, Braa *et al.* 2004, Mengiste and Nielsen 2006, Sahay and Walsham 2006). A comparative study of scaling HMIS in Nigeria and Ethiopia reveal overlapping complexities related to defining an essential data set, building required human capacity and developing appropriate technological

infrastructure (Shaw, Mengiste et al. 2007). Essentially, translation and any corresponding scaling of HMIS require a balancing-act between standardised technological features and infinite malleability for local customisation (Nhampossa 2004; Sahay and Walsham 2005). First and foremost this refers to the appropriateness of the HMIS artefact (mostly technological but can also be paper-based) and then its implications for the level of human resource capacity (quality and quantity) demanded. The sustainability of HMIS requires a set of standardised functionalities, which are easily adaptable to local needs while the essence of the functional design retains its relevance (Nielsen and Nhampossa 2005). The challenge of balancing standardisation and local adaptability is brought to the fore by the inability of target countries to address the fragmentation effect of donor policies (Kimaro and Nhampossa 2005: 276-277). This is evident in the dependency of most countries, like Nigeria, on external aid to support HMIS implementations (Akinde, Soriyan et al. 1997; Soriyan, Ajayi et al.).

Institutionalisation, integration and participation

The institutionalisation of HMIS is contingent on social relational dynamics across global and local institutional levels. This is particularly because of the significant role played by donors in the process of HMIS institutionalisation and the corresponding impact of their activities on the sustainability of these systems (Kimaro and Nhampossa 2005). For example, the sustainability of HMIS open source software is analysed in terms of the institutional, technological and influence of donor-driven projects in Kenya (Bernardi 2009) while the "historicity and heterogeneity" of HMIS shows that the alignment of key HMIS stakeholders - in particular donors, MOH and software developers (Kimaro and Nhampossa 2004) - are important in the sustainability of these systems (Aanestad, Monteiro et al. 2005). In practice, health workers collect numerous datasets for different overlapping projects without an overarching plan or design for their accessibility and use (McGrail and Black 2005). A participatory and collaborative approach is important for integrating the resulting fragmentation of the HMIS (Kanjo, Moyo et al. 2009). This fragmentation is however not just as a result of technical or managerial challenges but divergent interests, goals and objectives making integration socially complex (Chilundo and Aanestad 2003; Chilundo and Aanestad 2004; Smith, Madon et al. 2008; Kanjo, Moyo et al. 2009;

Mekonnen, Sahay et al. 2009) and inherently political (Sahay, Monteiro et al. 2009). The design of participation in HMIS implementation is also found problematic by Kimaro and Titlestad (2005) who argue that the notion is imbued with assumptions from a Western context regarding basic computer skills, human resource capacity, motivation and mature democratic ideals of local empowerment. As these are often not applicable in the context of most poor countries, they maintain that it is important to rethink participation through the concept of "participatory customization". This approach, they propose, incorporates on-the-job basic computer training as participants are allowed to focus on contributing to adapting the software in a locally relevant way (Kimaro and Titlestad 2005). As pertaining to HMIS in PHC delivery, multi-level interactions between organisations, HMIS research institutions and individual users constitute challenges that underlie participation efforts (Nhampossa, Kaasboll et al. 2004). Nevertheless some studies (such as one carried out in Nigeria) have advocated for the necessity of community participation in PHC HMIS implementation (Korpela, Soriyan et al. 1998). The main point however is that there are no prescriptive principles of participation that can be applied universally (Puri, Byrne et al. 2004). Central or external planning of routine data collection has been shown to result in minimal participation and relevance at local levels (Walsham 1992; Lippeveld, Sauerborn et al. 2000; Lippeveld 2001). Indeed, participation extends beyond the requirements of computer-based HMIS but also incorporates systems such as community outreaches that disseminate health information through which communities are directly informed and educated about their health choices (Pomerantz, Muhammad et al. 2010). Community participation is at the heart of the PHC ideology and HMIS conceived as supporting this decentralised organisational structure. HMIS once institutionalised, are relied upon to support the generation and use of locally relevant information (Kimaro 2006). The institutionalisation of HMIS into the day-to-day processes of users has far-reaching sustainability implications, which requires the meshing of information cultures and negotiations between global and local actors. These negotiations are implied in accountability arrangements that reflect divergent objectives and interests.

HMIS and accountability

HMIS implementation in LDCs navigates the tension between hierarchical accountability, donor vertical programme priorities and the need for a community-based focus (Braa and Hedberg 2000). Donors' priorities and hierarchical demands are underpinned by objectives aimed at improving financial accountability, transparency and performance. Within the overarching performance-based accountability arrangements, there are also attempts to understand accountability through the views of communities. In this next section we review the literature on these two views.

Performance management

Reflecting an enduring challenge of disease-focused global health initiatives (Tangcharoensathien and Patcharanarumol 2010), HMIS are largely developed as silos of compartmentalised systems (Braa and Hedberg 2000; Aanestad, Monteiro et al. 2005). This approach is justified by the need to monitor short-term donor projects in order to satisfy donors' financial accountability to their stakeholders (Okuonzi and Macrae 1995). Collaboration between donors and national governments is nevertheless perceived as desirable (Lee 1998; Peters and Chao 1998; Cornwall, Lucas et al. 2000; Elzinger 2005) because uncoordinated donor projects lead to duplication of efforts and wastage of resources (Buse and Walt 1996). The suggested framework for coordinating donor activities rely on pooling donor funds into a "health sector basket fund" and integrating vertical programmes through a health sector-wide approach (SWAp) (Brown 2000; Brown 2001; Hobbs 2001). The expectation is that national governments will allocate these resources based on their health policies and defined priorities while donors concentrate on governance and accountability (Handley, Higgins et al. 2009). In LDCs, challenges of PHC delivery are keenly linked to the proposition that accountability arrangements are weakened by the impunity of bad governance in poor countries. This is echoed by critical development economists who contend that donor aid is channelled to governments with a history of corruption and mismanagement of public funds (Easterly 2006; Moyo 2009). The results are apparent in the pronounced weakness of governance and accountability structures (Khan 2008) that see health systems riddled with corruption

(Olowu 2001; Lindelow, Kushnarova et al. 2006; Savedoff and Hussmann 2006). Consequently, good governance (Kaufmann, Kraay et al. 2007; Kaufmann, Kraay et al. 2007; Kaufmann, Kraay et al. 2009) in health care delivery is seen as a way of improving financial and managerial performance (Mimicopoulos, Kyj et al. 2007) as well as reducing the extent of institutional corruption (Lewis and Pettersson 2009). Expounding on governance and corruption in West Africa, Olowu (2001) maintains that

> "Most countries have initiated democratic decentralization programs in the 1990s but only a few have actually transferred all three key essentials of effective decentralization: responsibilities, resources and accountability systems to the localities. The development of effective systems of accoutability at community levels, backed up by state leaders and state institutions to promote public and not private interests will most likely be a prerequisite to the reduction of institutionalised corruption in central government" (pg. 116).

The complexity of governance within a decentralised primary health care system (Handley, Higgins et al. 2009) is exacerbated by the intricacies of conceptualising accountability (Brinkerhoff 2004). Nevertheless, as decentralisation is a key component of governance (Huther and Shah 1998) it has been used in analysing accountability structures that impact on health system performance (Bossert 1998; Mitchell and Bossert 2010; Bossert and Mitchell 2011). Using theoretical concepts such as principal-agent theory and "decision space", Bossert (1998) notes that accountability can be framed according to how principals influence local decisions towards achieving the performance goals of the health system. Capacity of agents and institutional accountability arrangements are therefore imperative to health systems performance (Mitchell and Bossert 2010; Bossert and Mitchell 2011). For instance, a study found that the weak capacity of local officials (Olukoga, Bachmann et al. 2010) and the national HMIS in Nigeria's decentralised health system significantly compromised planning and budgeting processes (Nnaji, Oguoma et al. 2010). HMIS studies have also shown that lack of capacity is a major factor in weak accountability in LDCs (Kanjo, Moyo et al. 2009). Therefore, because the capacity and accountability mechanisms of many LDCs are weak, donors continue funding vertical programmes (Hobbs 2001; Tangcharoensathien and Patcharanarumol 2010) as a means of ensuring project accountability. Using Malawi as an example, Kanjo, Moyo et al (2009) argue that due to the weakness of the national HMIS, the health system is riddled with vertical programmes in spite of stakeholder buy-in to integration and

harmonisation. Similarly, decentralisation is often not fully devolved as critical functions are still carried out with technical assistance from the centre (Kimaro 2006; Kimaro and Sahay 2007; Venugopal and Yilmaz 2010). HMIS are implicated in the need to improve human resource capacity and institutional arrangements (Hanmer 1999) that impact and are impacted by accountability mechanisms. These accountability structures are nevertheless biased towards performance management targets set by donors and/or superiors (principals) within the PHC administrative hierarchy. The influence of the good governance agenda (Williamson 1990; Stiglitz 1998; Williamson and Kuczynski Godard 2003; Kaufmann, Kraay et al. 2007; Kaufmann, Kraay et al. 2007; Kaufmann, Kraay et al. 2009) in terms of the conditionality stipulated by most donor programmes (Santiso and Nitze 2001) produces ambiguous accountability structures and lacks the necessary creativity for designing HMIS as a social system catering for the demands of diverse stakeholders (AbouZahr and Boerma 2005). In essence, HMIS are conceptualised as increasing transparency, accountability and bureaucratic performance (AbouZahr and Boerma 2005; Stansfield 2005) to meet hierarchical demands or donors' conditions. However, HMIS are also implicated in local accountability arrangements that are centred on community views.

Community monitoring

Community health monitoring initiatives represent efforts to improve localised information use and local accountability. Community monitoring is a key initiative, which aims to improve accountability through local participation especially in the context of decentralised public services (Cyan, Porter et al. 2004). In primary health care delivery, community monitoring gives citizens a greater voice by establishing a platform to access health status data and provide feedback regarding their satisfaction with the quality of local health care services (Báez and Barron 2006; Madon, Krishna et al. 2010). The National Rural Health Mission (NRHM) in India is a significant scheme in this direction of local accountability (Husain 2011) and is currently piloted in nine states. Community ownership of services and local accountability are the main priorities. The NHRM therefore established groups such as Village Health and Sanitation Committees (VHSC) and *Rogi Kalyan Samiti* (RKS) for ensuring communities are formally involved in local accountability arrangements (Sri, Sarojini

et al. 2011). Evaluation of the impact of these established platforms on community participation and accountability however reveals a more complex social process, especially at the PHC level. For instance, the constituted membership of these associations is not necessarily pro-participation e.g. power-asymmetries (Sri, Sarojini et al. 2011), lack of transparency and deviations from the objectives of the association (Husain 2011). Challenges are generally amplified at the PHC level first in terms of coordination between health facilities and higher district programme management units (DPMU) and in terms of adequate authority to address administrative concerns like staff underperformance. There have also been corresponding challenges reported in developing an effective HMIS in terms of scaling up (Seshadri 2003), coordinating vertical programmes, and in monitoring and supervising the performance of the NRHM by disadvantaged rural community groups (Mallipeddi, Pernefeldt et al. 2009). Some of the problems were attributed to high burden of managerial data, lack of data tools, weak capacity and disconnection between data reporting and feedback (Husain 2011).

The complexity of HMIS implementation is reflected in the need to balance hierarchical accountability demands and an orientation towards local accountability (Véron, Williams et al. 2006) in the provision of PHC services. As yet, this area has not received much attention in HMIS research. This study therefore suggests that it is fruitful to unpack how HMIS is implicated in the complexity of local sense-making practices within the overarching structure of an instrumental approach to PHC delivery.

Synthesising the literature review and addressing research gaps

The literature reviewed reveals the conceptual and experiential complexity of implementing HMIS to support PHC delivery in LDCs. There are opposing ideologies regarding the developmental objective of PHC and these are reflected in a dialectic relationship between the instrumental and context-sensitive role of HMIS in health policy and decision-making. As a key health policy in LDCs, the decentralisation of health care delivery marks a radical shift in information requirements and architecture to supports this organisational structure. One of the key features of this radical shift is

the conception of HMIS as instruments of accountability used by multiple agents to diverse ends. The main themes of the literature review are summarised below after which we discuss the gap in the literature.

Summary

The developmental view of PHC as originally conceived at Alma Ata was based on a participatory model where individuals and communities were actively involved in decisions that affected their healthcare provision. Consequently, significant emphasis was placed on a holistic approach to health that advocated the necessity of human development: this included social, political and economic opportunities that expanded the capacity of citizens to effectively participate in matters relating to the delivery of their health care. In this sense, the design and outcome of PHC delivery evolved from local problematisations reflecting contextually defined priorities. In contrast, the influence of neoliberal ideology and the introduction of the good governance agenda in health care produced a modulated selective PHC approach as the preferred model in LDCs. SPHC resonates from a modernisation ethos of development conceiving of health as a commodity instrumental to economic growth and the absence of disease as the primary goal of health interventions. Therefore, prioritisation of health care delivery focuses on tackling major diseases that represented a high burden on economic growth e.g. malaria (Gallup and Sachs 2001). The implications of this ideology reveal an instrumentality that predefines the goal and problems of PHC delivery and also prescribes technological tools to achieve and address these. We however find that the reality of health and health care delivery is often divergent from the theoretical expectations of this rationality.

The gap between theory and practice is pronounced in constructing the role of information and knowledge in health policy and decision-making. Here, the literature shows that there are limitations in the analytical foundations of an instrumental approach. Indeed, empirical findings proffer a more tenuous relationship between information and decision-making processes. The implications are that the formal HMIS constitutes only a component of the actual HMIS, therefore decisions and actions are a product of a far more diverse and complex social process that are based on both the formal and informal HMIS. In LDCs, the implementation of HMIS for local action is particularly intricate as a result of the multiplicity of global and local interests that negotiate and contest objectives and outcomes of PHC delivery and

HMIS implementation. These interactions highlight the value-laden character of an HMIS implementation. As such, its sustainability is dependent on developing an information culture but also in the flexible design of the HMIS to adapt to local particularities and changing needs. There is a noted tension in this process that is consequent on the influence of donors in the institutionalisation of HMIS in LDCs. This tension occurs as a result of the complexity of harmonising objectives and goals of multiple donors with the HMIS of the target country. Against the background of multiple interests, we find that one of the predominant views of HMIS objectives is to improve accountability according to measurable performance indicators such as health service coverage, utilisation and cost effectiveness. These accountability arrangements are usually tuned towards the interest of donors or hierarchical administrative demands. Community monitoring however represent initiatives that redirect accountability to reflect the experience of local communities. We therefore suggest that this represents the possibility of alternative forms of accountability arrangements in addition to the predominant performance-based view. However, this has not received much attention in the literature i.e. the nature of PHC accountability arrangements that are implicated in HMIS implementation in LDCs. We therefore expand on this gap in the next section.

Gap in the literature

There are two broad gaps in the HMIS literature: the first is related to a peripheral analysis of developmental ideologies in studies that are based in LDCs; the second is regarding limited research based on a critical view of accountability and the role of HMIS.

HMIS and Development

Observations are made in the literature that ICTD research do not explicitly and sufficiently engage the development dimension of their study (Thompson and Walsham 2010). This line of thinking is influential in the recent call for ICTD studies to engage more in understanding their transformative potential (Walsham 2010). HMIS studies as a type of ICTD lack studies analysing their transformative role in LDCs. Due to this shortcoming and with specific reference to the African continent, Thompson and Walsham (2010) call for ICTD studies to engage more closely with the notion of transformational development or "developmental ICT" which they

define as the "conception, development, implementation, and use of ICT as an explicit vehicle for furthering developmental aims – where ICT functions both as enabling artefact and enabled set of social behaviours" (pg 113). Given the dire state of development in Africa, the authors surmise that it is often not clear how ICTs can make a real difference and therefore very little research is directed at illuminating this knowledge gap. This dearth of knowledge is equally applied to HMIS studies in LDCs. These studies do not often engage with the problematic concept of accountability in substantive depths to adequately problematise the accountability arrangements underpinning PHC delivery and the implications these have for HMIS implementation and their developmental potential. Thompson and Walsham assert that the fundamental requirements for this sort of study rely on a zooming-out approach to address macro structures such as global actors, "broader institutional and political infrastructures, policy-level debate about the transformative potential of ICT in building civil society" (pg 113-4). These are conceived as "strategic dimensions" where HMIS can potentially play a developmental role in Africa by strengthening institutions, governance, accountability and civil society (Thompson and Walsham 2010).

HMIS, Governance and Accountability

Therefore if HMIS research is to respond to this challenge it will be critical to study the role these systems play in empowering state and citizens (Thompson and Walsham 2010; Walsham 2010) within the context of PHC delivery. This is in a sense what community monitoring of PHC delivery is all about. For instance, in improving public health in Africa, Thompson and Walsham (2010) propose that ICTs can play a role in strengthening institutional infrastructures if implemented as part of a multi-sector developmental strategy such as coordinated investments in health and education. HMIS outcomes can therefore be framed in terms of promoting social opportunities and strengthening transparency mechanisms (Walsham 2010; Thompson and Walsham 2010). These institutional infrastructures are akin to the VHSC and RKS in India's NHRM and the Ward/Village Development Committees in Nigeria's PHC system. Developmental goals are conceived in light of the effectiveness of institutional arrangements for providing public services and the engagement of poor communities with relevant political and bureaucratic institutions.

Essentially, for HMIS implementation studies, strategic ICT dimensions can be reconstituted as accountability arrangements, which strengthen state-society relations. Propositions of how this is done include, promoting good governance, supporting a more open and accountable public administration and "informating" (Zuboff 1988 in Walsham 2010) a civil society to demand better governance and accountability (Thompson and Walsham 2010). Different approaches to governance lead to different conceptions of accountability. For instance, as we alluded to earlier, a good governance approach promotes performance-based accountability arrangements. Transformative development through governance and accountability arrangements are understood as the extent to which they reflect or incorporate the views of poor communities. We therefore propose that we can study the developmental role of HMIS, by exploring how they are implicated in the governance and accountability structures underpinning the delivery of PHC services to poor communities.

Accountability occupies a prominent conceptual role here because it broadens HMIS analysis by providing the means to illuminate the socio-cultural, political and institutional dimensions of health care delivery within a PHC system. More importantly, it provides a rich and useful context for studying HMIS implementation in its wider role of strengthening PHC delivery and by extension improving health status (which is an important developmental indicator). The primary research question of this study is therefore restated:

"T*o what extent can HMIS improve accountability arrangements of primary healthcare delivery in LDCs?*"

By synthesising the main themes from the literature review the next chapter develops a concept of governance and accountability to be employed in this study as a theoretical framework.

Chapter 3: Conceptual Framework

Governance, Accountability Arrangements and HMIS

Introduction

The primary research question of this study is addressed in this chapter by presenting theoretical propositions that unpack accountability from a developmental viewpoint and illuminate the challenges and potential contributions of HMIS implementation. These concepts will be used to guide the interpretation and analysis of subsequent empirical findings. This chapter is divided into two broad sections. In the first section, we lay the foundation for our conceptual framework by presenting *governance ideas*, *instrumental accountability* constructs and *socialising forms of accountability* that we find useful for this study. In the second section, we attempt to tease out the analytical interdependencies between the distinctly presented theories of the previous section. Therefore, we construct a more nuanced accountability framework that, (1) synthesises governance, instrumental and socialising forms of accountability; (2) introduces a dual view of accountability through concepts of *Representation, Visibility and Responsiveness* (these unpack the complex process underlying accountability objectives, mechanisms and outcomes respectively); and (3) provides a way of re-conceptualising accountability in HMIS studies.

Governance Ideas

Governance is a conceptually vague and variedly-employed term (Doornbos 2003). In the context of LDCs, governance relates to legitimising the institutions of rule and the means of holding political agents accountable. Accountability arrangements in public administrations are therefore central to conceptualising governance (see for example World Bank 1992; UNDP 1997; International Monetary Fund 1998; Grindle 2004; Hyden, Court et al. 2004; Grindle 2007). Different views of governance however have different implications for how accountability is conceived. For instance, donor communities tend to focus on the notion of *good governance,* which emphasise a form of *instrumental accountability* in government institutions (Doornbos 2003). This emphasis is marked by the necessity to measure the effectiveness, transparency and

performance of recipient countries in the use of donor aid (World Bank 1998; Nanda 2006). This understanding of governance highlights a fundamental thinking that accountability arrangements play a critical role in evaluating economic and democratic development (Sangudi and Epstein 2003). Others have emphasised the dynamics of state-society relations, defining *governance as interaction* (Kooiman 2003; Hyden, Court et al. 2004). Following this approach, there have been conceptualisations of the importance of governance being interpreted from the perspective of those who are being governed (Corbridge, Williams et al. 2005; Cornwall, Robins et al. 2011). This view unpacks how diverse and dispersed governance instruments are being reconstructed through interpretations that are locally situated (Kooiman 1993; Rose 1999; Cornwall, Lucas et al. 2000; Kooiman 2003; Corbridge, Williams et al. 2005). This type of governance lends itself to *socialising forms of accountability*. As a sensitising construct, it promotes a contextual appreciation for how local communities make sense of evolving and socially constructed accountability arrangements that underpin the provision of public services. It is critical to note that in practice, HMIS implementation is implicated in both instrumental and socialising forms of accountability. What we attempt to emphasise is that governance as interaction helps us to gain a richer understanding of the outcomes of the good governance agenda, by locating it within its institutional, socio-political and cultural context. The distinctions that follow are therefore made for analytical purposes.

"Good governance"

Good governance as a concept provides the global economic and political discourse through which LDCs structure and define their role as a developmental state. The good governance agenda addresses both democratisation and public management, including "legitimacy and voice, direction, performance, accountability and fairness" (UNDP 1997; Graham, Amos et al. 2003). This ideology is reflected in measuring indicators such as transparency and corruption, accountability of public officials and inclusiveness of democratic institutions (Bovaird and Löffler 2003). Donors increasingly depend on this *tehnicalisation* of governance as illustrated in the Worldwide Governance Indicators (WGI) which set out to quantitatively measure

aspects of governance[2] (Kaufmann, Kraay et al. 2009) that constitute the instrumental basis of associating economic growth with public sector performance (Mimicopoulos, Kyj et al. 2007). As a result, poor governance is conventionally proffered as an explanatory factor for why most LDCs' deregulation and liberalisation policies have not yielded growth or better health conditions (Cornia 2001). This translates to a critical focus of reducing the extent of institutional corruption (Lewis and Pettersson 2009) by improving managerial (including financial) performance and accountability mechanisms in public institutions. Hasselskog (2009:96) in his thesis analyses this discourse by proposing that, "governance reform packages, widely agreed on among donors, are legitimised by scientific rationality and presented as instrumental and inevitable solutions or tools to address technical problems". What we find useful in this conception is that *the instrumental and normative character of good governance seeks to objectify, quantify, evaluate and compare the quality of public service provision between and within LDCs in terms of their contribution to the quality of life of citizens* (Bovaird and Löffler 2003; Grindle 2004). Within this governance context, *HMIS are introduced to improve instrumental accountability where the goals of PHC delivery are predetermined with objectives and problems defined within a techno-managerial policy framework.* As discussed in Chapter Two, this instrumentality resonates with the ideologies underpinning selective primary health care. The challenges and practical experience of implementing these policies (see Jabes 2002; Grindle 2004; Grindle 2007) however suggest that the actions of national governments, sub-national governments, organisations, international agencies and civil society combine to have a complex and unpredictable impact on democratic and economic conditions (Sangudi and Epstein 2003). We find that this is closely related to the theme of unpredictability in information use, which we presented in the previous chapter. To understand these governance contingencies, other approaches proposed focus on the social interaction dynamics of governance (examples: Kooiman 2003; Hyden, Court et al. 2004; Kjær 2004).

[2] These indicators are "voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption"

Governance as interaction

Bevir (2009) notes that a social science perspective of governance studies the interdependencies and interactions between state and non-state organisations. Kooiman captures the idea of governance as interaction in the term "social-political governance" (Kooiman 1993; Kooiman 1999; Kooiman 2003). Governance from this stance includes a network of state and non-state actors, blurring the conventional divide between state and society (Easton 1965 in Kjær 2004; Kooiman 1993), leading to what is identified as an ongoing debate regarding "democratization, state capacity and the nature of state-society relations" (Peters 2000 in Kjær 2004: 17). This notion of governance incorporates cultural and socio-political variations, balances the need between universal and contextual conceptualisations (Hyden, Court et al. 2004) and "provides the context in which policy and administration are carried out" (pg 8). Hyden *et al* surmise that

> "Governance is a structurally contingent activity in the sense that agency is not completely free but to varying extents shaped by structural and/or institutional factors that are specific to time and space (pg. 2)."

This idea of structural contingency is fundamental to our understanding of the relationship between governance as interaction and good governance. We see these notions as co-constitutional: the hierarchical framework of good governance sets an overarching performance agenda, which is socially interpreted at the local level and its outcome contingent on particular institutional and contextual dynamics. In essence, governance as interaction gives us a way of incorporating a situated understanding of diverse local governance practices within the broader discourse of global health policy. Kooiman (2003), Corbridge *et al.* (2005) and Cornwall *et al.* (2011) approach governance as a socially emergent perspective of how citizens and local actors experience and interpret governance arrangements (more discussion on this later).

Hyden *et al.* employ six conceptual schemes to scope the dynamics of governance: "1) civil society, 2) political society, 3) bureaucracy 4) government, 5) economic society, and 6) judiciary. Civil society relates to the space where people take up interest in public matters and how rules at play might influence the way society gives voice to its demands and concerns. Political society has an aggregate function where

the summation of citizens' interests is "packaged into specific policy demands and proposals" (pg. 77). The bureaucracy includes all state organisations and is fundamental in policy formulation and implementation, regulation and the delivery of public services. The government arena focuses mainly on national security. Economic society conceptualises the relationship between the market and the state. The judiciary, addresses conflict-resolution systems and institutions. As the last three concepts are not a focus of this study, our attention is mainly on political society, civil society and the bureaucracy. This is because these are most useful analytical tools in illuminating contextual accountability dynamics in primary health care delivery (World Bank 2003). Theoretical concepts in each of these will be discussed next.

The effectiveness of political society evaluates the responsiveness of the system in "adopting and processing political demands from civil society" (pg. 90). Therefore, the extent to which elected officials live up to the norms associated with representative government is critical even though politics is often perceived as the preserve of rich, educated elites (Hyden *et al*. 2004). Political society is key to this study because it allows us to delve into the accountability dynamics implicated in representing the interests of citizens, the implications of being able to make demands on political society and how political society responds to citizens' demands, particularly for PHC delivery. Accountability within political society examines the mechanisms at the disposal of voters to punish legislators for non- or poor performance. However, as far as developing countries are concerned most incumbents have state resources at their disposal and are able to use these to campaign for re-election usually through giving bribes (Hyden *et al*. 2004).

Civil society is not without problems in its use; however, at the heart of its evolution are different notions about the relationship between state and society (see Hyden, Court *et al.* 2004: 59 for analysis of historical process). For this study, civil society relates to how people engage in public policy formulation and the way society articulates its needs and priorities (Hyden, Court *et al.* 2004). In addition, the historical contexts from which civil society evolves, has an impact on their functioning in demanding accountability. This in turn is implicated in the nature and extent of political rights exercised (Hyden *et al.* 2004). The authors note that in developing countries, the ability of civil society to influence policy varies according

to whether the activities of civil society actors are institutionalised within a democratic order or whether action has been inevitably "forced" upon civil society due to the weakness of the state (Hyden *et al.* 2004).

Hyden *et al* (2004) argue that in the provision of public services (like health care), the bureaucratic system must be seen to be meritocratic and bureaucrats in their dealings with the public, to be transparent. Therefore, "the rules that determine procedures in the bureaucracy, formal and informal, are especially important for public perceptions of how the state operates" (pg. 121). A number of literature attribute poor development in sub-Saharan Africa to a weak bureaucracy and the problem of political patronage where governments offer "jobs to family, friends and supporters" (Hyden *et al* 2004 quoting a World Bank report: 125).

What Kooiman describes as first-order governance, i.e. the experiential understanding of how individuals navigate governance challenges, is akin to both Corbridge *et al's* (2005) governance framework of how individuals view the state and Cornwall, Robins et al's (2011) notion of citizenship through interaction. Corbridge accepts that perceptions are notoriously slippery concepts given that they are formed "against the sightings of other individuals, communities and institutions" (Pg. 45). Notwithstanding, propositions of how citizens in LDCs interact with and therefore come to view the state go some way in illuminating how governance and accountability arrangements are being constructed within the overlapping spaces between the bureaucracy, political and civil society (Cornwall, Lucas et al. 2000; Hyden, Court et al. 2004; Corbridge, Williams et al. 2005).

We draw on these governance ideas to conceptualise health governance and accountability.

Health governance and accountability

A health governance model (See Fig. 3.1 below) addresses the need to balance accountability relationships between the state (including policymakers and politicians), health service providers and citizens (World Bank 2003). Brinkerhoff

(2007) using this model, proposes that there are two routes to accountability: the short route where citizens hold service providers to account through monitoring of services; and the long route where citizens participate in the democratic space where politicians are held accountable for responding to health priorities by providing adequate resources and a bureaucracy (i.e. MOH) capable of formulating and implementing appropriate policies. These therefore serve as the basis of mutual accountability between actors responsible for the provision of health care services. Service providers are held to account to the state in terms of information and reporting and the state is held to account in the formulation and implementation of appropriate policies and provision of adequate resources; and service providers are accountable to citizens in terms of health services (Brinkerhoff 2007). RTI International used this framework to observe that accountability to citizens is usually weak in this balance of power (RTI International Not Dated). In the context of strong states, Wlodarczyk (2009) uses the Polish health system as an example to argue that the state sometimes wields considerable influence vis-à-vis service providers. The author contends that politicians may use terror and intimidation against service providers and in addition, bureaucrats in the health sector are often prone to widespread corrupt practices (Savedoff and Hussmann 2006).

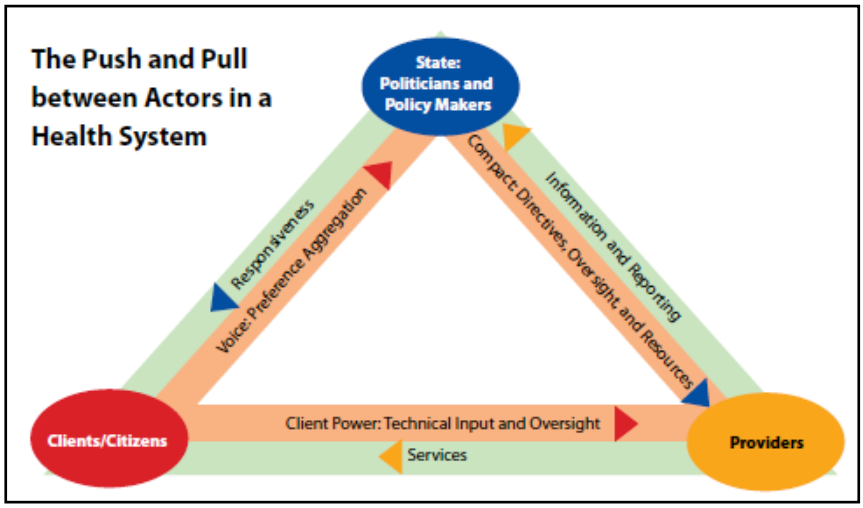


Fig. 3.1: Health Governance model (RTI International Not Dated - adapted from World Bank 2003)

Cornwall and colleagues contend that citizens' (or civil society's) influence in political society extends beyond their voting power and must be understood within the

historical context of a community's political culture and how it evolves over time. This constitutes an overlap between political and civil society as this historical context gives rise to particular political cultures in which the chaotic world of political society is sometimes inhabited by '(un) civil society' (Cornwall, Robins et al. 2011). To further show the nuanced interplay between civil and political society, Corbirdge *et al* (2005) note how an authoritarian imposition over a subjugated civil society is not only limited to military rule but also extend to democratic regimes that merely pay lip service to the electoral process. Therefore, the protection of social and economic rights of civil society (Hyden, Court et al. 2004) can also be conceived in light of citizenship i.e. how the state is seen to be responding to public priorities (Corbridge, Williams et al. 2005; Cornwall, Robins et al. 2011).

As a way of synthesising the concepts presented from the health and governance framework, our approach to analysis is guided by the notion that modern governance does not afford the parochialism of 'either-or' conceptualisations but requires a robust analytical framework (Kooiman 2003). Our analytical framework is therefore constructed in the spirit of Kooiman's (2003) submission that

> "creativity, intuition and experience are just as important as goal-directedness, criteria of efficiency, and 'working according to rules'. Emotions play a part, as does power, calculation as well as coping with uncertainty" (pg. 4).

Development view of governance and accountability

We adopt Corbridge *et al's* (2005) conceptualisation of the interaction between the state, lower level officials (service providers) and citizens. Instead of the state being conceived as a discrete entity, they are constituted of "bundles of everyday institutions and forms of rule" (pg. 5). In this regard lower level officials socially construct, make sense and contextualise hierarchical demands. The state is also conceived as a structuring technology of rule that classifies and categorises citizens (using tools such as Demographic and Health surveys and National Population Census) according to social designations through which they encounter government agencies providing public services. We can therefore see how the formal rules of meritocracy and transparency in the bureaucracy resonate with Kooiman's (2003) description of interventionist form of governance interaction; these are formalised

hierarchical controls, setting the tone of communicative exchange. Within this rule-based interaction, health governance requires transparency in policy formulation, allocation of resources and performance (Brinkerhoff 2007). On the other hand, the informal rules of the bureaucracy, understood within their cultural and historical political context, like in the case of post-colonial Africa, point to the necessity of patrimony and clientelism as a means of holding powerful state actors accountable (Cornwall, Robins et al. 2011). This is analogous to Kooiman's conception of "interplay" as another form of governance interaction where there is the relative absence of hierarchical or power influences. Corbridge *et al.* further note that it is important to understand how different actors, including state employees, experience the state in the mutually influencing interaction between state and society. The authors propose that studying how three key actors experience the state can enlighten our understanding of the developmental state in context or practice. The actors they propose broadly correspond with those introduced in the health governance model. We provide an analytical level through which we present our structure for data analysis by relating these governance levels to 1) a hierarchical view which correspond to the state in health governance, development community and senior bureaucrats in governance interaction; and 2) localised interpretation of the bureaucracy and citizens (see Table 3.1 below).

As mentioned earlier, accountability arrangements reflect specific governance ideologies. The interventionist and interplay perspectives of governance can be construed to correspond to instrumental and socialising forms of accountability respectively. These accountability structures are defined by roles and responsibilities, rules and understandings, and are interpreted along the relational network of diverse global and local actors. These accountability arrangements form the nucleus of primary health care systems, which aim to improve PHC hierarchical performance as well as responsiveness to communities' locally defined health priorities.

Analytical levels	**Health governance**	**Governance Interaction**	**Developmental proposition**
Hierarchical View	State: politicians and policy makers	Practitioners from the development community and senior bureaucrats	Objectified and universalist notions of health care and instrumental role of HMIS implementation;
Localised interpretation: bureaucracy and citizens	Service providers	Government officials and individuals in political society	Influence of political patronage on bureaucratic rules and performance (Hyden *et al.* 2004) "…growing importance of visuality and presentation in the promotion of an anti-poverty agenda. Politicians need to be seen to be active on behalf of the poor" (Corbridge *et al* 2005: 10*)*
	Clients/citizens	Poor as citizens and marginalised members of the political society	"…poorer people very often see the state because the state has chosen to see them" (Corbridge *et al* 2005: 10) "Communitarian citizenship"; "…citizenship experienced as a deficit" (Cornwall *et al.* 2011)

Table 3.1: Conceptualising level of analysis

Instrumental Accountability

Instrumental accountability helps us to analyse how PHC delivery challenges are rendered technical and the ways and means through which HMIS are deployed as rational management tools for addressing these technical problems. Global health policy goals often emphasise measurable performance and HMIS co-opted - by multiple actors including donors, NGOs and national governments - in providing evidence for evaluating health care delivery. Global and national polices subscribe to decentralised organisational structures as central to improving performance of primary health care delivery. Decentralisation is generally thought of as a more depoliticised notion compared with democratisation and as such can be approached as a technical concept (Jørgensen 2006 in Hasselskog 2009:110). HMIS are therefore implicated in both the organisational and relational dynamics of PHC delivery. The former relates to performance target setting and evaluation while the latter is concerned with how individuals are held to account through regulatory mechanisms. The concepts introduced below are not discrete in practice but for the purpose of analysis, they are presented as neatly bounded concepts.

Administrative Decentralisation

Our presentation of administrative decentralisation is primarily confined to analysing the hierarchical context of instrumental accountability. This illuminates the expediencies of performance related goals, the accountability of agents to multiple principals, and the role of information demands within a hierarchical structure.

Decentralisation is a key component of governance (Hasselskog 2009) mostly targeted "to the subdivision of state and allocation of political and administrative institutions" (Peckham, Exworthy et al. 2008: 561) and has been used in analysing health system performance (Mitchell and Bossert 2010). From a principal-agent theory, Bossert (1998) developed the concept of "decision space" to investigate the impact of decentralisation on the performance of PHC systems (Bossert 1998; Bossert and Beauvais 2002; Bossert and Mitchell 2011). At the heart of this conceptual lens is the accountability arrangement that obtains between the principal (this could be a state, donor, non-state organisation etc) and agent (local level) (Atkinson, Cohn et al.

2008). The decision space construct is two-pronged but only the principals' perspective is relevant in this section (the agent's perspective is discussed under socialising forms of accountability). The principals' perspective helps to analyse instrumental accountability by addressing the hierarchical relationship where agents are accountable to fulfilling the objectives of the principal. This construct also proposes that there are often multiple principals holding agents accountable. It is noteworthy that within the dynamics of this relationship, information plays a crucial role in accountability arrangements. In this case, the principal predetermines the information requirement and the agent is accountable for capturing and reporting this against set targets.

To further explore this informational relationship, it is useful to employ Roberts' (1991) notion of hierarchical distance. This proposes that information demands are required to mirror a context of remote subordinates. Hierarchy is comparable to the role of principals in determining data requirements. Distance denotes the requirement of securing accountability through information without necessarily being in close proximity. Roberts notes that this form of information "is usually produced at a distance from the contexts which it purports to mirror" (Roberts 1991: 361). Hierarchical distance seeks to individualise in order to clearly define responsibilities. The primary task of the subordinate is to fulfil the role of collecting and reporting data that provides a mirror representation of the health status of their domain. This is often one-way reporting from the subordinate to higher levels. Using the principal-agent concept we further explore these multilevel accountability relations.

The instrumentality of these concepts is that it has predefined targets, which tend to analyse empirical links between decentralisation and performance without much consideration for wider social contexts (Peckham, Exworthy et al. 2008). Some studies either argue that this relationship is inconclusive (for example Bossert and Beauvais 2002), contingent on factoring in the "broader context of institutional capacity building and resource management" (for example Regmi, Naidoo et al. 2010: 361) (pg. 361) or augmenting institutional capacity with appropriate accountability arrangements (for example Mitchell and Bossert 2010). Nevertheless, the theme that runs through global health policy concerns performance related goals of PHC delivery, which are often skewed towards measurable indicators such as equitable

access, managerial efficiency, service quality, cost effectiveness and development goals (Atkinson 1995). Through these indicators healthcare workers and local service providers are required to account by a multiplicity of powerful stakeholders.

We now examine analytical concepts that shed light on the mechanisms of instrumental accountability.

Regulatory mechanisms

The decision space is the formal authority that is conferred on local officials to make choices about health care delivery. It is derived from the constitution or a comparative legal process. This legislative act defines the administrative boundaries, directives, obligations, discretions and privileges of local government actors in the health sector. The legislative environment is crucial to enforcing PHC policies and can be analysed in terms of supporting or constraining the accountability mechanisms underpinning PHC delivery. This provides a way of better understanding the form and effectiveness of enforcement arrangements between principals and agents. According to Bossert (1998), the theory can be used to understand how the central government as principal can persuade local agents to achieve performance targets through a mechanism of incentives and sanctions. It is important to note that the principal-agent theoretical structure is dependent on the principal being able to ascertain and assess the performance of the agent in order to respond with the appropriate action. As a result,

> "Information and monitoring are crucial for the principal to evaluate how and whether the agents are achieving the principal's objectives. But information and monitoring have significant costs. However, the agent's control of information is crucial to the negotiating power of the agent vis-à-vis the principal" (Bossert 1998: 1523).

This necessitates the assessment of "*how much information is available to the central authorities, the capacity of the central authorities to process this information and the quality of the information*" (pg. 1523: [*emphasis mine*]). Analysis focusing on the role of the principal denotes instrumental accountability to the extent that they are conceived in light of their direct impact on the performance of the local health system.

Roberts' (1991) idea that information is employed to systematically render local subordinates subjects of unequivocal responsibility under a *sanctions and rewards system* resonates with Bossert's conception of the principal-agent accountability arrangement. Roberts introduces the concept of disciplinary regime to explain the mechanisms through which information is used to secure hierarchical accountability (which we refer to as instrumental accountability). While making reference to accounting information, we suggest that the same principle applies to health information in that "… the subordinate accounts for himself to the superior rather than reciprocally…" (Roberts 1991: 361). Employing Roberts (1991) idea of what constitutes this regime, we are able to further shed light on the dynamics of information generally and HMIS specifically in instrumental accountability arrangements. Within the discourse of incentives and sanctions, conferment of (non) recognition and (non) acceptance "are not achieved once and for all but are constantly at stake in the *rituals of hierarchical accountability*" (Roberts 1991: 358 [*emphasis mine*]). This system is three-pronged in that it first ascribes clear responsibility to individuals or institutions (e.g. targets set for an individual); secondly, it assesses performance based on target; lastly it sanctions or rewards based on the outcome of this assessment.

> "Disciplinary power is exercised through its invisibility; at the same time it imposes on those it subjects a compulsory visibility. In discipline, it is the subjects who have to be seen. Their visibility assures the hold of the power that is exercised over them. It is the fact of being constantly seen that maintains the disciplined individual in his subjection" (Foucault 1979:187 quoted in Roberts 1991: 359)

Health workers and programme managers are routinely being evaluated on the basis of the information they report (or not). Processes of collecting and reporting health information from primary care centres are used "in the rituals of routine accountability" (Roberts 1991: 359) in a bid to provide a mirror image of a health worker's performance in relation to others. This comparison is in itself a form of disciplinary regime used to exclude non-performing workers or to reward performers with recognition and acceptance. This disciplinary regime when exercised keeps others in line through the fear of similar sanctions. On the other hand, other workers are also kept motivated when the same system recognises and praises them, giving them the anticipation of career promotions (or other valued rewards).

Understanding accountability from a binary distinction of principal-agent theories are constraining in light of the plurality of social actors (Roberts 2009) and the cognitive limitations to fully account for one's actions (Messner 2009). Moreover, Bossert (1998) observes the informational bargaining power agents exert over the principal while Roberts (1991) suggest that the antidote for redressing inherent communicative distortion is the provision of a dialogue forum where all participants are seen as relative equals. The crucial implication of these observations leads us to present accountability as "a vital social practice" (Roberts 2009: 969). This theme is taken up in the next section discussing socialising forms of accountability.

Socialising forms of accountability

As a contrast to the impersonality of hierarchical accountability that individualises, socialising forms of accountability reconstitute accountability arrangements as evolving from people-centred, face-to-face interactions (Roberts 1991). These interactions are within the bureaucracy but also involve community participation. In the case of the former, accountability involves downward accountability from superior officials to lower level workers. The other form of socialising accountability expounds on understanding the formal and informal participatory mechanisms, from a citizens/civil society viewpoint, used to hold public officials to account (Rowe 1999). For our study, we consider concepts of democratisation processes to highlight the institutional and socially embedded dynamics of accountability, and participatory mechanism concepts through which we analyse accountability processes and outcomes.

Processes of democratisation

Analytical concepts presented in this section are related to the institutional and contextual interactions that characterise socialising forms of accountability. These concepts provide tools to empirically study the perceptions of citizens regarding their influence and engagement of political society for their healthcare needs; analyse how the characteristics of service providers influence accountability outcomes (Bossert

1998); and examine the institutional context from which civil society and intermediaries operate, including the role of donors in these institutional structures (Cornwall, Robins *et al*. 2011).

Democratisation presupposes a form of state-society dialogue where an active and capable community/civil society holds public officials responsible for the provision of public services (Mehrotra 2006). This construct captures a dynamic three-way interaction between the central government, local authority and civil society (Tendler 1997 in Kjær 2004). In terms of PHC delivery, local governments require adequate resources while individuals and civil society need a centrally established forum to engage local functionaries and political agents for the delivery of health care services. The platform or institutional structure through which civil society and individuals engage political representatives is central to socialising forms of accountability. This includes formal mediation organisations as well as informal community groups in the interaction between citizens, state, and donors/NGOs in the provision of public services. Mehrotra (2006) proposes that formally established institutional platforms are required for citizens to package their needs, vocalise their priorities and hold public officials accountable for the provision of public services. He further asserts that community voice is made possible through the institutionalisation of a formalised platform that gives citizens the opportunity to engage with powerful state actors in responding to their public service needs. Hyden *et al.* (2004) contend that civil society is able to influence policy more significantly if they are formally institutionalised rather than informally constituted to make up for state weakness. Notwithstanding, Madon and Krishna (2010) propose that both formal and informal arrangements are essential in conceptualising the link between the local bureaucracy, political officials, service providers and civil society. The authors go on to emphasise the importance of informal organisations in how civil society engages with bureaucratic and political agents for much needed resources. Cornwall writes that community groups created by donor agencies are able to foster interaction from a partnership perspective:

> "Focussing on co-management institutions, community groups created by donor driven health sector reform […], shows how in principle these institutions are to provide the basis for new partnerships between service providers, users and local government. In practice, however, deliberative processes fail as poor people experience their own agency as limited by the local relations of dependency within which they remain locked. Yet, it

> would be important to know whether the poor themselves always experience relations of dependency as debilitating and disempowering, and whether or not it is possible that dependency might allow the client to make demands on the patron (Cornwall, Robins et al. 2011: 21).

This partnership perspective is reminiscent of Kooiman's (2003) description of modern governance where a variety of actors are required. Community groups are implicated in the interaction between poor communities and local government. In the ICTD literature this is also a key proposition in terms of the role of information in enhancing agency capabilities (Zheng 2009; Thompson and Walsham 2010; Walsham 2010). The tenor of these propositions is the role played by intermediaries in the interaction between service providers, the bureaucracy and citizens (Madon & Krishna 2010, Walsham 2010) in the provision of health services.

The motivations, capacity and goals of agents (Bossert 1998) open up the analytical space where we can study how agents use their discretion in either better serving their communities, being accountable to principals or otherwise for self-interest. They come to bear on the analysis of HMIS for PHC delivery. Bossert and Mitchell (2011) note that local officers who use more of their discretion tend to have more capacity and are often more accountable to elected officials for the choices they make. The usefulness of this construct is that it helps to explore factors that underpin the exercise of agents' discretion as it relates to the provision of PHC services to communities, and reporting of health information.

These concepts help in studying how social accountability arrangements are emergent through dynamic interactions that underpin the provision of primary health care services. We therefore turn to the participatory mechanisms that illuminate the processes implied in socialising forms of accountability.

Participatory mechanism

Roberts' (1991) socialising forms of accountability is characterised as dialogue within a forum where asymmetries of power are relatively absent (Roberts 1991). This dialogue is a means through which the bureaucracy becomes more accountable to its workers as well as improving civic engagement. This form of accountability is opposed to the objectified impersonality of instrumental accountability by

"*humanising the experience of work"* through personal social interactions. Roberts (1991) note that:

> "At the heart of accountability is a social acknowledgement and an insistence that one's actions make a difference both to self and others" (Pg. 365)

The interaction between citizens/civil society, service providers and political officials is based around mutual understanding and consensus even though it might be temporary. Roberts (1991) submits that even though dialogue can sometimes achieve some sense of stability this is often ephemeral. We interpret the temperamental nature of this interaction in light of a political society that is often always messy and chaotic (Cornwall *et al.* 2011). Consequently, a critical component of dialogue is the political environment through which citizens make demands for accountability. In this regard desperately poor citizens in communities though shy away from open confrontation, depend on organising "weapons of the weak" for covert political scheming (Scott 1985 in Corbridge 2005: 45). Although Scott developed a comprehensive framework of how peasants resist forms of oppression and repression from the ruling class (Scott 1985), what we find useful for our framework is the idea and sensitivity to how poor people in practice make a stand in non-compliance.

Cornwall *et al.* (2011) explain that the historical context from which political cultures are formed suggest that in post-colonial Africa, "communitarian forms of citizenship" are mostly preferred because they are evoked in order "to hold powerful state actors, traditional leaders and patrons accountable…" (pg. 12). They note that citizens identify more with tribes and communities rather than with a national identity. Our understanding of communitarian citizenship is that it presupposes a highly contextual and situated accountability arrangement. This highlights Roberts' concerns that the multiplicity of local priorities is often impossible to reconcile in the absence of an overarching structure. Hyden *et al.* (2004) also refer to the necessity of structural contingency when conceiving of governance arrangements and local accountability.

Participatory mechanism constructs provide a way of understanding the challenges of instrumental accountability. Both Roberts and Bossert highlight the social complexity of instrumental accountability. Roberts note that the nature of hierarchical interaction is prone to *distortion* due to social contingencies that impact on the dynamics of the exchange. He states that the presence of asymmetrical power relations make it unlikely for subordinates to be completely free, open and honest where this might

result in sanctions. The implication being that, information exchange between subordinates and their superiors are often doctored, producing a misrepresentation of health status and PHC delivery services.

Bossert similarly point to the presence of an *informal decision space,* which results from weak enforcement mechanisms. The weak application of sanctions and/or incentives between principals and agents and the lack of an effective accountability framework leads to the exercise of local agents' discretion outside formal rules. Within this space, public officials often do not discharge their responsibilities according to the terms of their engagement.

These analytical concepts provide insight into the interplay between social and instrumental accountability. The central proposition of this thesis that both instrumental and socialising forms of accountability are required to analyse PHC delivery finds resonance in Madon, Krishna et *al's* (2010) work where the authors conceptualise the role of HMIS within bureaucratic and political decentralisation. This is presented briefly as an introduction to the synthesised analytical framework developed for this study.

Conceptualising HMIS and Accountability

De facto and Democratic accountability

The analytical framework for this study builds on research conducted by Madon, Krishna et *al's* (2010). They note that the provision of healthcare, as a public service to communities, is contingent on relational dynamics between communities, political and bureaucratic institutions (Madon, Krishna et al. 2010). In this relationship, HMIS is conceived as potentially playing a role to support either de facto or political decentralisation (See Fig. 3.2 below). The former is concerned with data reporting for managerial or performance-related accountability mainly in terms of resource allocation and efficiency. The latter centres on democratic accountability conceptualised through the enlisting of intermediaries to strengthen responsiveness to community-defined health priorities (Madon, Krishna *et al.* 2010).

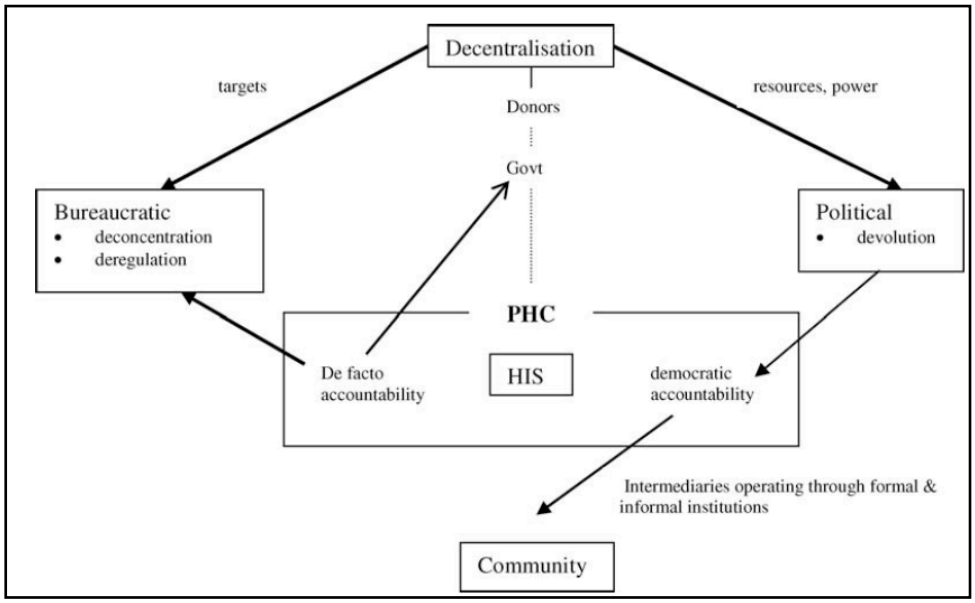


Fig. 3.2: Linking HIS, decentralisation and democratic accountability (Madon, Krishna et al. 2010)

De facto accountability in essence is responsiveness to superiors or principals who wield the authority to reward or sanction performance. The authors submit that HMIS performance targets are determined at a distance through deconcentration and deregulation of health care services, which is typified in administrative decentralisation. Under a democratic accountability arrangement, the authors propose that HMIS can be expanded to include qualitative contextual data, serving as a repository for a better understanding of the health profile and needs of a community and also used to facilitate a better accountability structure and linkage between local health facilities and the community they serve. Although broadly overlapping, this study refers to instrumental and socialising forms of accountability rather than de facto and democratic accountability.

To conclude this first half section, we provide a theorisation of the relationship between instrumental and socialising forms of accountability.

Instrumental and socialising accountability

A major commitment of this study is that both instrumental and socialising forms of accountability are required to make sense of the complex field of accountability especially in LDCs. Our understanding of this relationship is based on similar

theoretical approaches that seek to provide capacious analytical frameworks to study dynamic social phenomena (for instance, fusing of economic, human and social parameters as constitutive of development (Sen 1999))*;* accountability studies echoing the need for both hierarchical and socialising forms of accountability in a 'real-world' context (Roberts 1991); HMIS studies advocating the need to address both top-down and bottom-up requirements of establishing a minimum data set (Shaw 2005). Our observation in developing this relationship is that concepts so far introduced, are implicated in the duality of accountability, which are a feature of the complex, paradoxical nature of a social order. In essence, these concepts can be thought of as mutually influencing and co-constitutive. We suggest that socialising forms of accountability can help provide useful understandings of the challenges of defining objectives, activating mechanisms and interpreting outcomes of instrumental accountability. In addition, socialising forms of accountability also help to broaden the conceptual landscape of studies in this domain as it yields richer insights and provides robust means of capturing nuances and subtleties otherwise missing from a purely instrumental view. In a nutshell, socialising accountability sheds light on the challenges and limitations of instrumental accountability and provides broader analytical capacity to incorporate contextual influences.

We propose that for HMIS studies, instrumental and socialising forms of accountability can be synthesised around concepts that similarly have dual associations: *representation, visibility and responsiveness*. In the next section, we will show how we relate these terms to concepts previously discussed and then develop a framework for how they will be used in this study.

Towards a synthesised accountability framework

Introducing Representation, Visibility and Responsiveness

Representation is conceived as the *objective* of accountability. These objectives have both an instrumental and socialising angle. With respect to the former, representation attempts to *mirror* the status of PHC service delivery, in order to take decisions and actions to strengthen the system. In understanding the challenges of this mirroring process we turn to the socialising theme of representation, which is about the *mediation* of diverse interests from global to local concerns. We therefore broaden our

understanding of the objective of mirroring by placing it within its institutional, political and socio-cultural context and introducing relational dynamics that modulate these objectives. Understanding the process through which PHC - and consequently HMIS - objectives are defined, provides potentially valuable analysis regarding the implementation of these objectives. We therefore frame HMIS implementation challenges and potentials through the duality of representation.

The *mechanism* of representation is *visibility*. Once accountability objectives are determined (or more accurately, constantly negotiated), visibility focuses on strategies for achieving these objectives? Visibility mechanism is also related to instrumental and socialising forms of accountability. Visibility in the case of the former is for the purpose of *discipline*. That is, unambiguous identification of accountable agents for a clearly defined deliverable in order to legitimise the reward or sanction of performance. Visibility also has connotations of direction, where it is necessary to "see" from the perspective of those who account (and those to be accounted to), in order to understand locally defined priorities and challenges. Visibility therefore sustains the mirroring process through disciplinary mechanisms, where the emphasis is the accountability of subordinates to superiors. Mediation on the contrary requires directional visibility for gaining situated understanding of how accountability is socially evoked at the points of service delivery.

The *outcome* of these accountability arrangements is *responsiveness*. Instrumental accountability prioritises performance-driven targets while socialising accountability is people-centred. We conceptualise HMIS in terms of the former through emphases on developing an *information culture*. In terms of the latter we examine how we can broaden the conceptualisation of HMIS to improve responsiveness of PHC delivery to community health priorities by supporting a *dialogue culture*.

It is useful to reiterate that the primary research question of this thesis is, "To what extent can HMIS improve accountability arrangements of primary healthcare delivery in LDCs?" To answer this question, we formulate three sub-questions to be individually addressed through the theoretical concepts introduced. Accordingly, we will now present how these individual concepts relate to the theories presented in the previous section and what component of the primary research question they address.

Representation as mirroring and mediation

The sub-research question, which our representation construct attempts to address is, *"How are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?"* We approach this question by proposing that mediation sheds light on the distorted communication challenges of mirror representation and provides broader analytical capacity to incorporate contextual influences of health providers' (informal) decision space, a chaotic political society and an (un) civil society. To capture the development component of this question, we structure our framework around experiences at three different analytical levels (see Fig. 3.3 below), drawing on the schema introduced earlier in Table 3.1 (pg 65). Analysing experiences at these levels improve our understanding of the developmental state in context or practice.

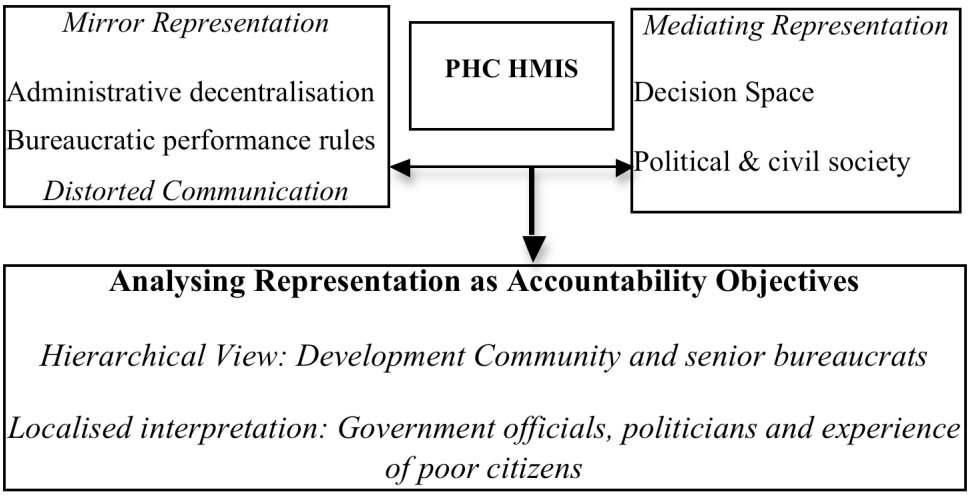


Fig. 3.3: Synthesising Representation as Accountability Objective

For ease of the analytical narrative, we provide a mapping of these overlapping levels to our representation concepts. For instance, the focus of our analysis in administrative decentralisation is from the hierarchical view of senior bureaucrats and the wider development community; we discuss bureaucratic performance and decision space from the perspective of localised interpretations of government officials and politicians. The perspective of poor citizens becomes central under political and civil society. We however note that mediating representation concepts will be used extensively to analyse findings from mirror representation. These concepts will be

employed to understand how HMIS is conceived within the dynamic of defining accountability objectives. Next, we summarise the theoretical concepts that are combined to constitute our representation construct.

Hierarchical View

Administrative decentralisation

From an instrumental accountability perspective, administrative decentralisation is framed as being supported by HMIS as a management tool employed in evaluating the performance of subordinates according to *hierarchical information* criteria determined at a *distance* (Madon, Krishna et al. 2010). This resonates with Robert's hierarchical distance and conceptions of decentralisation as deregulation and de-concentration. *Mirror representation* from this viewpoint constitutes *accountability objectives* biased towards a *global health approach to PHC delivery*. These global health policies reflect SPHC management ideology towards disease prioritisation. The important point is that *what is to be represented is determined centrally* by hierarchical superiors and principals. As such, we introduce the idea of *multiple principals* negotiating *diverse and divergent demands* for representation (i.e. deciding the data that is to be collected).

Distorted communication

We use the notion of distorted communication to explain misrepresentation or poor quality data reporting. Theoretically, this is an intrinsic challenge of mirror representation, consequent on hierarchical relations within an instrumental accountability structure. In relation to HMIS for PHC delivery, this is reflected in accountability arrangements that misrepresent local health priorities and the status of PHC delivery. Through a socialising view of accountability, we analyse distorted communication as a consequence of *interest mediation*.

Localised interpretation

Bureaucratic performance rules

Performance of the bureaucracy in implementing PHC policies, translates into the adequacy of PHC services provided and the quality of mirror representation (i.e. accuracy of HMIS data in reflecting services provided). For this, instrumental

accountability requires transparency and a *meritocratic system of recruitment and promotion* of health workers and government at state and district levels. Bureaucratic performance therefore lies at the interface between mirror and mediating representation. The focus on rules and performance derives from a hierarchical view. However, the actual experience of the bureaucracy shows that these rules are flexibly interpreted locally. This is to be expected in the context of LDCs where the literature notes the strong influence of political society on bureaucratic rules. We therefore consider how bureaucratic performance is mediated through political society (discussed below).

Decision Space

As a decentralisation concept, decision space helps us to explore how local agents interpret and exercise their discretion in relation to demands made by principals. While principals determine the data to be collected what data is actually collected and reported is within the domain of an agent's discretion. Agents exercise their discretion either within the formal decision space or through an informal decision space, in view of varying levels of *resources* provided by different principals. Through the mediation of *agents' characteristics, motivation and capacity*, the objectives of accountability i.e. mirror representation, are navigated, contested and constructed.

Political and civil society

Political society illuminates the *mediation* of demands made by citizens for public services. These demands are made as citizens and civil society engage local functionaries and political agents through formal and informal institutions and intermediaries. The extent through which civil society influences political society is related to the degree to which they were constituted as a consequence of state weakness. This proposition sensitises our analysis to interpret the extent to which citizens perceive that their *interests* are *represented* and how the historical context from which *political culture* evolves, expand or restrict the landscape of this representation. *Patrimony and clientelism* are political cultures in Africa that conflict with the rationality underpinning the formal rules of bureaucratic performance. This conflict impacts on the capacity and motivation of agents, reflecting negatively on the adequacy of PHC services provided and the quality of HMIS mirror representation. Citizens / (un) civil society activate "*weapons of the weak"* (Scott 1985 in Corbridge

2005: 45) as a means of mediating their interests within this (chaotic) political society.

Expected insights

The combined use of these theories provides tools to conduct a robust analysis of HMIS implementation challenges in terms of data quality, reliability and use. By framing instrumental and socialising accountability as co-constitutive, we are able to unpack how contextual understandings can contribute to formalised HMIS and vice versa. These also have policy implications for the role of multiple principals in HMIS PHC delivery, especially highlighting the involvement of international partners and the wider donor community. These policy implications provide guidance on strengthening institutional structures and intermediaries that advocate local developmental priorities with a view to balancing the bias of global health expediencies on formal hierarchical systems.

Visibility for discipline and direction

The sub-component of the primary research question addressed by our visibility concept is: *"How can we better understand the challenges of HMIS implementation in LDCs through the complexities of accountability mechanisms?"* The dual nature of visibility is closely related to representation. Visibility can be thought of as the mechanism of representation. From the instrumental perspective of mirroring, visibility is primarily for the purpose of *discipline*. These mechanisms, through formalised *legal instruments*, render agents unambiguously accountable for the delivery of PHC services and the reporting of data that is used to evaluate performance. The practical experience of instrumental accountability is conceived within the *rituals of routine accountability* as performance is evaluated against set targets so that *sanctions or rewards* can be meted out accordingly.

From a socialising sense, visibility is driven by the need for *direction* through mutual recognition and respect i.e. "to be seen". These entail mechanisms employed by health workers' to *humanise work* and make them feel that their input counts and evoking *communitarian citizenship* in order for political society to acknowledge and respond to health priorities. Visibility mechanisms for direction operate through *dialogue* processes that increase understanding. We propose that these accountability

mechanisms can be conceptualised through the duality of visibility for discipline and direction.

Hierarchical view

Integrity of regulation

At this level, our theory proposes that a legal framework is required for accountability between the hierarchical levels i.e. federal to states and states to hold LGAs accountable for the provision of PHC services including the reporting of such data as requested up the hierarchical ranks. Bossert's concept of a *legislative framework* is a useful tool for analysing the foundation upon which information (HMIS) is employed for hierarchical disciplinary purposes. We note that within decentralised PHC structures, formal rules that define multilevel accountability arrangements require appropriate legal frameworks. HMIS implementation within the PHC system therefore relies on enforceable legal authority in order for lower level administrators and political agents to be held accountable. Within this legal framework, Roberts proposes that through the *rituals of routine accountability* information is employed to systematically render local subordinates subjects of unequivocal responsibility under a *sanctions and rewards system,* which could be financial or non financial (e.g. a system of recognition and exclusion). This resonates with Bossert's conception of principals holding agents accountable through the demand for information. Roberts and Bossert both highlight socialising factors that impact on the *integrity of regulation*.

Localised interpretation

Dialogue

At this level we explore forums where diverse agents engage to discuss problems of mirror representation and how they navigate formal accountability structures. The concept of dialogue is helpful in analysing how informal and socialising forums are implicated in locally situated accountability that attempt to improve mutual understanding. Through this understanding we can identify how health workers counter the impersonal nature of bureaucratic demands and construct interpretations of accountability to citizens.

Understanding distortion

Roberts (1991) notes that the nature of hierarchical interaction is prone to *distortion* due to social contingencies and power relations that impact on the dynamics of the exchange while Bossert (1998) similarly point to the presence of an *informal decision space*, which results from weak enforcement mechanisms. These concepts also shed light on the complexity of maintaining the integrity of regulation and are useful for analysing the challenges of HMIS implementation. The theoretical proposition regarding hierarchical information is that it usually results in distorted communication, which is produced as a result of asymmetrical power relations between superiors and their subordinates. From an HMIS perspective this can be expressed as data reporting often being one-way, poor data quality and reporting practices. In cases where enforcement mechanisms are weak, this leads to a pronounced informal decision space through which we can analyse the actions of health workers.

Communitarian citizenship

An important component of our concept of direction is how health workers and citizens engage within political society to achieve visibility and therefore steer the course of PHC delivery towards locally defined priorities. We approach this theme through the construct of *communitarian citizenship*. Visibility underpins goals of civil society to be seen and heard (Báez and Barron 2006; Mehrotra 2006) by the state. Cornwall *et al* (2011) and Corbridge *et al* (2005) conceptualise community voice and engagement with state actors in terms of citizenship. Citizenship, they argue, is constructed from how poor people experience the state. Visibility is particularly critical in most LDC context where there is general neglect and pervasive disconnection of local communities from state provision (Corbridge, Williams et al. 2005; Cornwall, Robins et al. 2011). Cornwall *et al*. coined the term, "*citizenship experienced as deficit*" to explain this situation. Placing this construct within the context of historical political culture, the authors propose the notion of *communitarian citizenship* to describe how citizens evoke communal alliances in their engagement with political society for resources. Visibility that leads to the provision of public services therefore becomes a matter of political patronage and knowing influential state actors who are from the same community or tribe.

Expected insight

Employing our concept of visibility, we attempt to enrich our understanding of how the formal regulatory context of PHC accountability mechanisms is implicated in the challenges of HMIS implementation. We also hope to illuminate the socially constructed, contested and negotiated nature of locally situated accountability mechanisms and their implications for implementing HMIS to support a disciplinary regime.

Responsiveness: Performance and people-centred

Conceived as the outcome dimension of accountability, the sub question to be answered through this construct is: "What kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?" We use the concept of *responsiveness* to critically analyse the (potential) developmental impact of HMIS implementation. An instrumental accountability perspective emphasises efficient *performance* through the development of an *information culture*, while socialising forms of accountability focus on responsiveness to community priorities by strengthening a *dialogue culture*. We propose that the developmental transformation potential of HMIS can be reconceptualised as supporting *responsive performance.* In essence, the developmental contribution of HMIS is not limited by the need to develop an information culture but implicated in the imperative to practically and actively strengthen a dialogue culture.

Responsive performance

The approach we put forward is to gain a better appreciation of the complexity of implementing HMIS by balancing performance oriented goals against strengthening the institutional fabric of dialogue (which is central to democratisation ideals). From a performance perspective, information culture is a useful notion for understanding the challenges of HMIS implementation in terms of data management processes (affecting quality and reliability) and the institutionalisation of information use (affecting sustainability). However, including a dialogue culture highlights the power relations that are implicated in what, how and for whom information is used but also incorporates the socio-political dynamics underpinning HMIS implementation in PHC delivery.

Mirroring

From this perspective, responsiveness is to an extent driven by the imperatives of SPHC based on an instrumental rationality of predetermined objectives of global health. This is underpinned by a performance-based accountability arrangement with a predominantly economic view of development. The influence of social actors with divergent motives lead to tangential outcomes from those expected. We conceive of this intentionality as mediation of self-interest within the hierarchy level. The weakness of an information culture reflects accountability arrangements that are defined by the mediated interests of well-placed and influential actors.

Mediation

We can analyse the *developmental perspective of PHC delivery* through the experience of citizens, intermediaries and civil society. In the humanisation of work, social interaction between health workers and community members yield an understanding of how health must be seen within a *wider developmental context*. Additionally, p*olitical culture* helps us in understanding how citizens perceive their agency within accountability practices for the delivery of PHC services.

In the next chapter we discuss how these theories are implicated in the design of the data collection methods and interviews and our understanding of their role in data analysis.

Chapter 4: Methodology

(Pre) Conception to Analysis

Introduction

This chapter describes and justifies the methodological approach adopted for this study. A number of factors come to bear on the particular path chosen and are informed by the researcher's philosophical leanings, appropriateness of methods for addressing the research problem and personal motivations. The study adopts a realist constructionist view where knowledge is produced as a result of subject (i.e. researcher)/object (domain of study) interaction where the subject engages the object in the process of "making" meaning (Berger and Luckmann 1966). Therefore, what we produce in this research as knowledge is not definitive of what is knowable or what can be known (Sayer 2000). In place of the problematic notion of truth (Goodman 1978), critical realist research expresses this notion in terms of "practical adequacy" (Sayer 2000) or understanding.

This study employs an embedded single-case research which brings different phenomena within the Nigerian PHC delivery system to the fore from the National level to the northern region, to a single state, ward and lastly a community. PHC research have shown how national structures are implicated in local PHC delivery (Atkinson, Cohn et al. 2005; Atkinson, Cohn et al. 2008) while HMIS studies have also argued for the necessity of a aligning macro level data demands and policy with micro level practice (Shaw 2005). While the logic of the case study chosen is not for statistical generalisation, the realist research design allows the theoretical abstraction of findings such that analytical generalisations can be made successfully and with relevance across similar contexts (Klein and Meyers 1999; Sayer 2000; Yin 2003). We locate this research within an interpretivist tradition (Geertz 1973; Walsham 1993; Walsham 2006)

Philosophical leanings: Ontology and Epistemology

To place this HMIS research within its philosophical tradition, this section elaborates on different positions regarding the constituent character of reality and how we obtain knowledge of this reality. Although agreed that the distinction made between one's position on reality (i.e. ontology) and the nature of knowing this reality (i.e. epistemology) can be quite tenuous, it is sometimes expedient to show a firm grasp of the particularity of issues addressed within the separate philosophical domains (Sayer 2000).

Justifying a critical realist ontology

While not exhaustive, we examine three possible ontological worldviews: *empiricism, idealism and critical realism*. Deriving from a naturalist philosophical school, an important claim empiricism makes is that there is a singular reality and access to this reality is constitutive of this reality i.e. if it cannot be known, it is does not exist (Mounce 1999). Therefore, according to this position the only legitimate reality is that which is observable through the researcher's sensory perceptions. For example, death and disease are to a significant degree, objective realities. When we therefore study HMIS and the accountability arrangements underpinning PHC delivery, an empirical view concentrates on HMIS as observable technological artefacts that capture and represent this reality in order to improve accountability. This is what Roberts allude to when he writes:

> "Whilst caught within its own image of itself as objective mirror, accounting can think only to improve the quality of the mirror image - to polish and clarify its techniques."

For HMIS studies, this implies that the end (PHC as disease-focus), means (HMIS as instrumental technologies) and processes (decision-making and accountability as measurable outcomes) are objectified. On the contrary, health (Good 1994), HMIS (Noir and Walsham 2007), decision-making (Mutemwa 2006) and accountability (Roberts 1991; Roberts 2009) are socially constructed and contingent. In explaining the implications from a philosophical standpoint, Searle (1995) argues that observing action is not enough to understand social reality and therefore inferences must be made to the unseen "object/structures" underpinning "causal mechanisms". For instance, while there are proxies designed to render day-to-day HMIS and accountability practice visible in the empirical sense, these observations cannot go far enough to explain how and why these practices take place. Indeed Roberts warns

against the conflation of information-based objectification of accountability with the actual practice (Roberts 1991). Therefore, the ontological 'flatness' of empiricism renders it an unsuitable position in relation to this study's objective of understanding the way a variety of social actors within the PHC make meaning and interpret accountability demands placed on them.

In contrast, idealism denies a single objective reality but proffers a plurality of realities that is constituted within the depth of social structures albeit these structures are exclusive products of human conception (Bhasker 1998). The immediate problem we find with this idea is that accountability practices are not wholly determined by unbounded agents but to some degree are navigated through interactions with institutional structures. This is in the sense of what Hyden and colleagues (2004) describe as governance being structurally contingent. In addition, accountability arrangements of PHC delivery are characterised by institutional realities objectified to the degree that it is impossible for a single individual to "wish" them away (Berger and Luckmann 1966). These realities exist concretely in a manner that does not depend on human consciousness, consequently rendering an idealist position untenable for this study as far as illuminating overarching accountability structures that influence particular course of action at the local level.

In light of the inadequacies of empiricism and idealism, critical realism offers a distinctive philosophical versatility, which is essential to social science research. Although the implications of these wade into epistemological territories, this section addresses the stratification of reality in critical realism. Bhaskar (1998) makes a principal distinction between the "transitive" and "intransitive" domains of knowledge with double implications that: 1) the nature of existence is not dependent on our thoughts (idealism) and 2) our observation (or knowledge) of the world should not be conflated with or equated to the world or the essence of reality (empiricism). In addition to these two distinctions, critical realism proposes three levels of reality: *the empirical, the actual, and the real.* The *empirical* is also referred to as "empirical realism" (Sayer 2000: 11). For example, we are able to observe accountability actions in terms of PHC service provision and data reporting at this level of reality. The *real* in the critical realist sense does not lay claim to an exclusive access to reality but conceptually distinguishes a realm of objective, independent social or natural reality,

their constitutive forms and potency (Sayer 2000). This is where for example health status and cultural practices come into view. As a conceptual distinction, the *actual* refers to possibilities (latent or active) of instantiation, effects and outcomes of the *real* (ibid.). This level attempts to illuminate the result of interactions and interplays, for example, between PHC service providers, civil and political society, local bureaucracy and international aid agencies. By stratifying reality in this way this research is not only able to observe what is happening but also better explore local contingencies (such as motivations and interpretations), structures (such as formal accountability demands) and power relations. In other words, events and outcomes observed empirically, are shaped, influenced or determined by a complex array of latent and activated mechanisms which in turn are given expression according to the form, "object" or "structure" from which they derive their existence and actuality. In essence, a critical realist stance places this study in a position to proffer insight or better still, contributions or problematisations to questions that underlie the role of HMIS in primary health care delivery as far as it relates to interactions between individuals, institutions and ideologies.

Constructionism

To briefly delineate the epistemological traditions within which research activities are located, this section introduces Crotty's (1998) three broad epistemological positions: *objectivism*, *subjectivism* and *constructionism*. The first two are loosely related to positivism and relativism respectively (Easterby-Smith, Thorpe et al. 1991). Nonetheless, it is noted that these epistemologies are not contained within discreet unambiguous boundaries, but come in shades and degrees where through the course of history, different schools of thought have located their conceptions on a continuum of sort.

Objectivist epistemology argues for the primacy of value-free, detached research producing universally indisputable knowledge of facts. The researcher as the subject therefore remains independent from his/her object of enquiry. In this sense the goal of research is nomothetic and the researcher a purveyor of "truth". Accordingly, the search for truth presupposes a definitive single reality which can be known, specified, represented and perfectly communicated. In contrast to objectivism, subjectivism

holds that knowledge is the product of interpretations influenced by mental conceptions, values and predispositions. Therefore there is no objective knowledge because the object of study itself is subsumed in the subject's consciousness. Consequently, we deduce the inherent pluralist nature of subjectivism as it offers multiple realities depending on the subject and not the object. In fact, there is no object without the mental/conscious observation of the subject. This essentially idealist ontology argues that the objective of research is idiographic and the accommodation of relativist views of knowledge, truth and reality is necessary.

It is useful to note that there are varied versions and degrees of constructionism (Hacking 1999). The idea that everything is constructed i.e. "universal constructionism" is more akin to subjectivism and is therefore not concordant with the views of constructionism espoused here. However softer views which posits that knowledge is a social construction to the degree that it is mediated through social actors is amenable with the proviso that there is a limitation to the freedom or interpretation afforded social actors according to the peculiarities of the object of study (Kallinikos 2004). Hacking (1999) argues that when dealing with claims that a "thing" is socially constructed, it is invariably the "idea" of the thing and the "classification" of the idea that is referred to as being socially constructed. This distinction is important because ideas have their roots in and are sustained by a particular social context, which Hacking refers to as the "matrix". The matrix is a complex amalgam of institutions and "material infrastructures". He maintains that these can be categorised as "social because their meanings are what matter to us, but they are material, and in their sheer materiality make substantial differences to people" (pg 10). Therefore, as can be expected, both the idea and classification cannot be conceived independently of the matrix. This is the case with accountability mechanisms. They are socially constructed ideas, which HMIS are being framed to support but they make a significant difference to poor people in the delivery of PHC.

Realist Constructionism

There is a strong case that constructionist epistemology is not mutually exclusive to realist ontology (Hacking 1999) and that insistence on a dichotomy is based on a misinformed premise (Tsoukas 1989). Constructionism therefore proposes the notion

of a world which exists independently of human subjects but embraces the idea that knowledge of this objective world is appropriated and meaningful within the subjective world of social beings (Searle 1995). Through this conceptualisation knowledge is produced as a result of subject/object interaction where the subject engages the object in the process of "making" meaning (Berger and Luckmann 1966). Therefore, what we know is not definitive of what is knowable or what can be known (Sayer 2000). In place of the problematic notion of truth (Goodman 1978), critical realist research expresses this notion in terms of "practical adequacy" (Sayer 2000) or understanding.

We use the schema provided below in Table 4.1 below to summarise how the epistemological assumptions of this study are implicated in the research design and methods of this study.

	Objectivism	Constructionism
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progress through	Hypotheses and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be operationalized so that they can be measured	Should incorporate stakeholder perspectives
Units of analysis	Should be reduced to simplest terms	May include the complexity of 'whole' situations
Generalised through	Statistical probability	Theoretical abstraction
Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Table 4.1: Contrasting Objectivism and Constructionism (Easterby-Smith, Thorpe et al. 1991: 30)

As the observer, the researcher assumes that he is a part of the empirical landscape with preconceptions and biases about the subject matter. The construction of the problem domain is driven by personal interest in the practical and conceptual challenge of HMIS implementation in strengthening health care delivery systems for poor people. Furthermore, explanations of this domain are geared towards how we can better understand the challenges of HMIS implementation in improving lives. The

primary strategy of the research fieldwork was to gain sufficient exposure to the diverse realities of HMIS implementation and as a result build a rich picture of the situation especially in Northern Nigeria. The concepts adopted seek to elicit the perspectives of multiple actors in the field and is reflected in the multi level analysis ranging macro global policies to micro experiences. Theoretical implications for similar research are drawn from the analysis. Particular cases are chosen from Northern Nigeria to highlight challenges of implementing HMIS in desperately poor regions and the problematic accountability practices that are implicated in improving health status.

Critique of philosophical stance

A defence of the realist position has not been made in relation to the criticism of "dual ontologies" (Cruickshank 2004). However, more efforts have been concentrated on illustrating the fit between critical realism and the domain of study as opposed to a philosophical analysis of critical realism. There is also a related contention that critical realism tends to suggest that reality is "out there" while from a phenomenological perspective, life is subsumed in reality. This Heideggerian/Kantian distinction in my opinion is not germane to this research because whether intrinsic or extrinsic, we allude to a reality *independent* of human conception and as such not always fully known. As independence is the operative concept, the elusiveness of this reality to consciousness may be construed as being external at that point in time.

Although adopting a constructionist epistemology, this paper did not explicitly discriminate between social and individual constructionism. Rather, this essay chose to adopt certain author's (i.e. Searle, Sayer and Hacking) conception of the word in relation to the specific object and objectives of this study. We employ the concepts provided in Table 4.2 below, to sum up the implications of a constructionist epistemology on the object and objectives of this study: starting with what an HMIS study in LDCs means for improving health care and development, how my personal interests shape and is shaped by the research design, the diverse methods of gathering data through formal interviews and informal conversations, making sense of the fieldwork data and experience and providing a contribution through better understanding of the problem domain.

	Social Science Epistemologies		
	Objectivism	Idealism	Constructionism
Elements of methods			
Aims	Discovery	Exposure	Invention
Starting points	Hypothesis	Suppositions	Meaning
Designs	Experiment	Triangulation	Reflexivity
Techniques	Measurement	Survey	Conversation
Analysis/Interpretation	Verification/falsification	Probability	Sense-making
Outcomes	Causality	Correlation	Understanding

Table 4.2 Methodological implications of different epistemologies within social science (adapted from Easterby-Smith, Thorpe et al. 1991)

In the next section, we focus and elaborate on the research design of this study.

Framework of the Research Design

Myers (1997), with specific reference to IS research, critically analyses the use of four possible qualitative research methods e.g. grounded theory, ethnography, action research and case study research.

Grounded theory

Grounded theory is an inductive method advocating a creative and iterative process between data collection, analysis and theory formulation (Weick 1989). While this does not preclude the ambition to develop new theories (for example in IS research see Orlikowski 1993) , it seems more fruitful to build on prior work already established in this area (Cornford and Smithson 2006). The reflexive approach of this study however suggest that a deductive approach to research design and data collection is complimented by an inductive strategy which uses data to sensitize further collection of data, to refine and inform the theoretical frameworks used and the research design. Indeed this research project started with theoretical ideas regarding the nature of the relationship between HMIS, decentralisation and community health care (see Appendix 1) but the design of the data collection and fieldwork in 2007 and 2008 were based on being "sensitised" and led by what the data might suggest to be more critical and relevant to this study.

Ethnography

Ethnographic studies rely on extended periods of "participant observation" (Sanday 1979) typically through a longitudinal research design (Pettigrew 1990), in order to develop a deep understanding of the context of study and possible impact of changes over a time period. The importance of context in IS research makes this method quite relevant and appealing (Myers 1999). However, it is outside the remit of this study to explore the dimension of impact. This is for two practical reasons: first , the impact of HMIS on accountability is alleged and will require a study of many years to come to any tenable conclusions for or against such a claim. Second, the developmental impact of HMIS especially in a context where HMIS implementation is still in its nacent stages and will take even longer to study, in my opinion.

Action Research

Action research is extensvely used in HMIS studies in LDCs (for example Akpan, Searing et al. 2004; Sahay and Walsham 2006). The Health Information Systems Programme (HISP) is in itself a "large-scale action research project" (Braa, Monteiro et al. 2004). Action research evolved out of a need within the IS community to make research more relevant to practical organisational problems (Avison, Lau et al. 1999). Researchers immerse themselves in the thick of the situation, guided by theoretical and analytical frameworks they engage in developing effective HMIS, reiterating the process between theory and practice within in a cyclical and mutually informing relationship. Action research studies have access to rich data and are also able to influence outcomes. However, there are also other drawbacks in using this research method for this study. One problem is that of critical distance with the danger of an emotional investment in the projects such that the critical view of the researcher is compromised (Walsham 2006). Action research was a closely suited research strategy especially as access to the field was negotiated based on taking up consultancy with the HISP network. However, the researcher had limited influence over the actual consultancy projects and also felt the need to maintain some critical distance from the HISP project. Nevertheless, the researcher felt that it was possible to combine the richess of access granted by the consultancy with a critical distance required to pursue the objectives of the research. To do this it was necessary to note that the objective of the research and its primary commitment lies in grasping and understanding the

current complexities and challenges of implementing HMIS without necessarily influencing outcomes in the methodological sense proposed by action research. This therefore leads us to a case study research design.

Justifying Case Study Research

Case study as a research method is used to empirically investigate "a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin 2003: 13). This paper employs the three criteria developed by Yin (2003) to argue that this research topic is best investigated using a case study method. The first criteria: the kind of question posed. The main question of this research is "*To what extent can HMIS improve the accountability arrangements underpinning PHC delivery in LDCs?*" Yin (2003) argues that "exploratory" "what" questions of this sort can be investigated using experiment, survey, archival analysis, history and case study research methods. However, related sub question are interested in exploring how HMIS are implicated in accountability arrangements and their complexities. Yin (2003) argues that "how and why" "questions are more explanatory and likely to lead to the use of case studies, histories, and experiments" (p.6). Yin proposes that where the investigator cannot manipulate outcomes and events in the field (as is the case in this research), experiments are deemed unsuitable. Therefore the two options left to consider are histories and case studies. To decide between these two, the third criteria is introduced i.e. "the degree of focus on contemporary as opposed to historical events." Although in building the context of the study it is necessary to include historical and "processual" analysis (Pettigrew 1997), the principal focus of the investigation will concentrate on contemporary challenges of HMIS implementation in PHC delivery. This therefore leaves the case study method as the most suitable option. From another perspective, case studies can also be employed for building new analytical frameworks (Eisenhardt 1989) for understanding the complexity of the role of HMIS in supporting accountability mechanisms and improving PHC delivery.

Embedded single-case design

However, there are still important design considerations to decide when using a case study research method. Yin (2003) proposes four types of designs: 1) "holistic, single-case designs"; 2) "holistic, multiple-case designs"; 3) "embedded single-case

design"; 4) "embedded multiple-case design" (p 40). The most typical case study designs found in the literature are the second and third designs. Studies adopt a holistic, multiple-case design in comparing the complexity of HIS implementation between countries (Nhampossa and Sahay 2005; Shaw, Mengiste et al. 2007), others choose an embedded single-case design to either highlight experiences of HIS implementation in different states within a country in order to make analytical generalisations to the country level (e.g. Akpan *et al.* 2004) or emphasise different phenomena in different districts within a state in order to generalise findings to the state level (e.g. Sahay and Walsham 2006). This study employs the latter research design of an embedded single-case which brings different phenomena within the PHC delivery system to the fore from the National level to the northern region, to a single state, ward and lastly a community.

The circumstance under which it would be suitable to conduct a single case study is when the case is either "critical," "unique," "typical," "revelatory" or "longitudinal," (Yin 2003) although there are grave risks (Lee 1998) of jeopardising the whole research if the single case fails (Yin 2003:41-42). The choice of a single-case design is justifiable from the viewpoint of the case being typical.

Research Methods

From problem domain to research question

There are a variety of influences that bear upon the researcher in choosing a research domain (Easterby-Smith, Thorpe et al. 1991). The authors propose that affiliations with research communities, important stakeholders and outcome of a critical literature review combine with personal motivations and interests in helping to settle on a research topic. In this intensively iterative process, the starting point for this thesis has been what Silverman (2009) described as "social obligation". The researcher was interested in understanding how HMIS can contribute to improving healthcare delivery and implications for the desperately poor. While these interests were at the intersection between health care, development and IS, it was important to narrow down the scope of the research to a manageable research project and specific set of questions. This narrowing was done through a combination of the literature reviewed,

alignment of this study with the HISP research community and convictions from the fieldwork. Literature reviewed and the HISP research community highlight a few problems of HMIS implementation in most LDCs, these included problem of relating to the limitations of pilot projects, inappropriate infrastructure, low management capacity and lack of trained workforce especially at the primary care level (Shaw, Mengiste et al. 2007). The studies conducted in 2007 and 2008 however seem to suggest a systemic problem that pointed to the role of political actors in HMIS implementation as well as the marginalisation of citizens' interest in the process of health care delivery. As a necessity, feedback from these field trips regarding perceptions of critical HMIS implementation issues were reflected in narrowing down the research domain. This was particularly necessary as the views of policy makers and primary healthcare providers were considered as primary stakeholders of this study. A significant objective for the first couple of field trips was to gather empirical data regarding critical challenges faced by policy makers and health service providers in the implementation and use of HMIS. During these trips, there seems to be a convergence and recurring theme pointing to the implications of political and democratic arrangements in both the implementation of HMIS and delivery of primary healthcare. With exposure to different levels of HMIS implementation for PHC delivery over a two-year period, the implications of political and democratic arrangements in the intricacies of HMIS implementation became more pronounced and roused my intellectual curiosity. This led to revisiting the HMIS and PHC literature from a governance perspective. A pivotal point in formulating the research question is traced to the work of Roberts (1991) on *The Possibilities of Accountability*. This work seemed to provide a lucid framework for making sense of the realities encountered in the field. Combining these factors, a primary research question was formulated to understand the challenges HMIS implementation in strengthening accountability arrangements in the delivery of PHCs in LDCs. The intentional inclusion of "LDCs" in the research question reflects the sustained interest in studying HMIS implementation in light of its contribution to improving the lives of poor people. It also attempts to address a more recent and urgent call in the ICTD literature for studies in LDCs to engage more with the analytical dimensions of developmental transformation (Thompson and Walsham 2010; Walsham 2010). Using a both the accountability and ICTD literature, three sub questions were formulated from the primary research question (these are presented in Fig. 4.1 below).

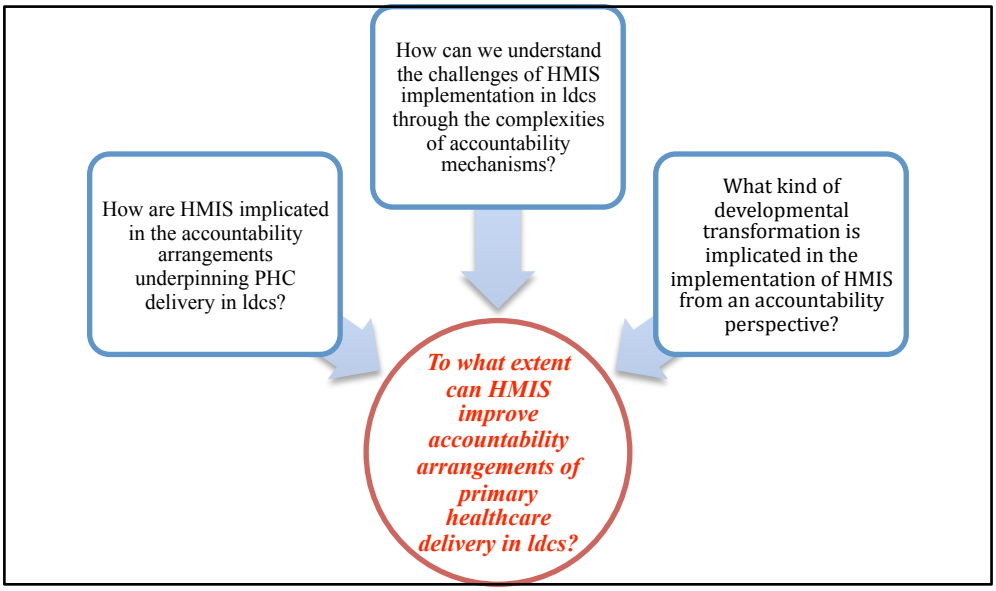


Fig. 4.1: Primary and sub-research questions

Justifying appropriateness of theory for research questions

From a constructionist epistemology, empirical data can be classified as the researcher's interpretation of interviewees' account of reality (Geertz 1973 in Walsham 2006). Limiting error and misunderstanding can be achieved by adopting appropriate theoretical constructs, research methods and valuing the researcher's informed intuition in order to produce data interpretations that are more reflective of reality (Valsiner 2000) or practically adequate. As such, the conceptual framework of *representation, visibility and responsiveness,* adopted for this study are employed as "sensitizing" tools for the research design, data collection (Klein and Meyers 1999) and analysis. While this infers a deductive relationship between theory and empirical data, the inherent reflexivity on theory also suggests a somewhat inductive approach (Eisenhardt 1989). For instance, as part of the Masters programme preceding this study, data analysed from five semi-structure telephone interviews also served as a tool for highlighting points of further interests and questions to be pursued in this particular study. Therefore there is an iterative process between data collection and constructing a theoretical framework.

Theories are drawn from across disciplines in harmony with a critical realist stance that maintains that:

> "Disciplinary parochialism, and its close relative disciplinary imperialism, are a recipe for reductionism, blinkered interpretations, and the misattribution of causality" (Sayer 2000:7).

We have drawn concepts from governance, health care decentralisation in LDCs, and theories on socialising and instrumental accountability, to inform our conceptual framework. We briefly justify the conceptual framework in light of the sub research questions of this study.

The sub questions are constructed to address the primary question examine three aspects of accountability: objectives, mechanisms and outcomes. Conceptualising the objectives allows us to clearly define the intricacies of underlying rationalities that construct understandings of accountability arrangements. As we unpack what constitutes accountability arrangements, we therefore see how HMIS are implicated in these arrangements. This question helps us to empirically locate HMIS within an accountability framework. As the aim of our primary research question is to understand the "extent" to which HMIS is able to improve accountability arrangements, we explore the mechanisms deployed to achieve accountability objectives. In particular, we turn our attention to the practical complexities of these mechanisms in order to analyse the potential and limitations of HMIS within this domain. The last sub question tries to tackle the developmental context of the research question. This is especially from the view of rural poor communities for which the original PHC ideology was formulated. The conceptual tool introduced for this study therefore provide tools to critical analyse the implicit developmental ideologies driving the implementation of HMIS in LDCs. We are more interested in being able to highlight bias in emphasis rather than counterposing one form of development against another. Through the conceptual constructs proposed to address these sub questions, we hope to offer a convincing and coherent analysis of the empirical findings that will help us towards answering the primary research question of this study. Table 4.3 summarises the justifications provided for the theoretical constructs and sub questions developed to answer our primary research question.

Conceptual framework	Research Question	Justification
Representation (Objective)	How are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs	To place the primary research question in context and tease out the nuanced objectives of accountability arrangements underpinning PHC delivery.
Visibility (Mechanism)	How can we better understand the challenges of HMIS implementation in LDCs through the complexities of accountability mechanisms?	As we are interested in the "extent" to which HMIS can improve accountability, the complexities that are inherent in the mechanisms of accountability will provide some indication of the potential and challenges of implementing HMIS within this context.
Responsiveness (Outcome)	What kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?	The primary research question is interested particularly in LDCs. Therefore this construct provides a way of addressing the developmental dimension of accountability.

Table 4.3: Justifying the conceptual framework in light of research questions

These research questions formed the basis of the empirical fieldwork, which included data collection methods, data-requirement/interview themes and potential respondents.

Fieldwork & Case Study

Having considered the substantive elements of the research project i.e. the nature and boundary of what is to be researched, this section details the operational aspects of the research i.e. issues surrounding the empirical investigation and fieldwork. It must be mentioned here that the methodological plans proposed acted only as a guide and were not immutable. The researcher, within the constraints of the research questions, operated with a level of flexibility and improvisation reflecting a situated methodological response to the reality of situations encountered during the fieldwork. The improvisation mentioned here is in the spirit of what Scott (2000) defined as "lived methodology". To begin with, we present our data collection methods.

Data collection strategy for fieldwork

As the overarching strategy guiding the fieldwork is based on an interpretive research paradigm (Walsham 1993) and in particular interpretive case study (Walsham 1995), the researcher's fieldwork objective was to observe, gather views, opinions etc and builds a coherent narrative containing issues addressing the research questions. Interviews are arguably the most significant means of gathering qualitative data and semi-structured interviews the most widely used in information systems research (Myers and Newman 2007). This was supplemented by analysing documents (Yin, 2003) and observations of respondents. Accordingly, the primary data collection method for this study was made up of semi-structured interview and conversations with intentionality.

Access to health workers is difficult because of the enormous time pressures they face on the job. These interviews were designed with the researcher expecting only a limited amount of time per interviewee and also prepared to be flexible regarding how, where and when the interviews are conducted. As a crucial point, it was necessary to work within the interviewees' timeframe and at their convenience without turning out to be a nuisance (Walsham 2006). Where possible interviews were recorded on a dictaphone but where the researcher's intuition suggests that this would compromise the quality of response from interviewees (Esterberg 2002) or when it seemed to distract, note-taking sufficed (Walsham 2006). Although sometimes even note-taking had to wait until later especially where it had been a conversation of relevance to the study. In these situations, notes were taken immediately after or a recap dictated into the dictaphone. Copies of official documentations, project reports and minutes of meetings were taken as part of the data. From a constructivist epistemology, the triangulating of information from different sources for the purpose of methodological rigour (Yin 2003) was not a particular focus as this is more suited to an idealist position. However in terms of reflexivity, the researcher considered responses in light of possible perceptions of the researcher's role. For instance, initial responses from respondents seem to suggest that HMIS was either working reasonably well or completely dysfunctional. In Northern Nigeria, most questions asked were answered in the affirmative to reflect positively on the respondent. At other times such as when the researcher was perceived as representing a donor programme, respondents usually painted a gloomy picture where nothing was working. This made it necessary to ask interrelated questions that may

point to issues with practical adequacy. Once these were revealed, it was much easier to get a clearer picture and deeper insight into the reality of the situation as it is experienced and/or perceived.

Fieldwork interviews and data collection

The fieldwork interviewees were split into different levels according to the analytical levels of governance actors presented in Chapter 3 (Table 3.1). In Table 4.4 we provide an overview of interviewees according to the types of respondents in the different analytical levels and their location.

Analytical Level	Representative Respondents	Location of Respondents
Practitioners from the development community and senior bureaucrats	National and state donor consultants/officers, WHO officials (National level), HMIS consultants, NHMIS officers etc	Abuja, Kano, Yobe, Katsina, Zamfara and Jigawa
Government officials and individuals in political society	CHEWs, health workers, community doctors, LGA M&E officers, State HMIS officers, state DPRS, state Permanent Secretary, PHC Coordinator, Local Government Chairman	Yobe, Katsina, Zamfara and Jigawa
Poor as citizens and marginalised members of the political society	Rural community members, Local Community Volunteers, Ward development committee members, Village Head, Ward Councillor, civil society members, Local engagement officers/consultants	Jigawa

Table 4.4: Interviewees from different analytical levels linked to typical respondent designations and location

Before the fieldwork, interview themes were constructed from the research questions (Silverman 2009) linked to the conceptual framework and analytical levels. This process is presented in Fig. 4.2 below. Each of the three sub research questions is related to an individual theoretical construct presented in the conceptual framework.

These sub questions were then broken down into interview themes depending on the analytical level and type of respondent.

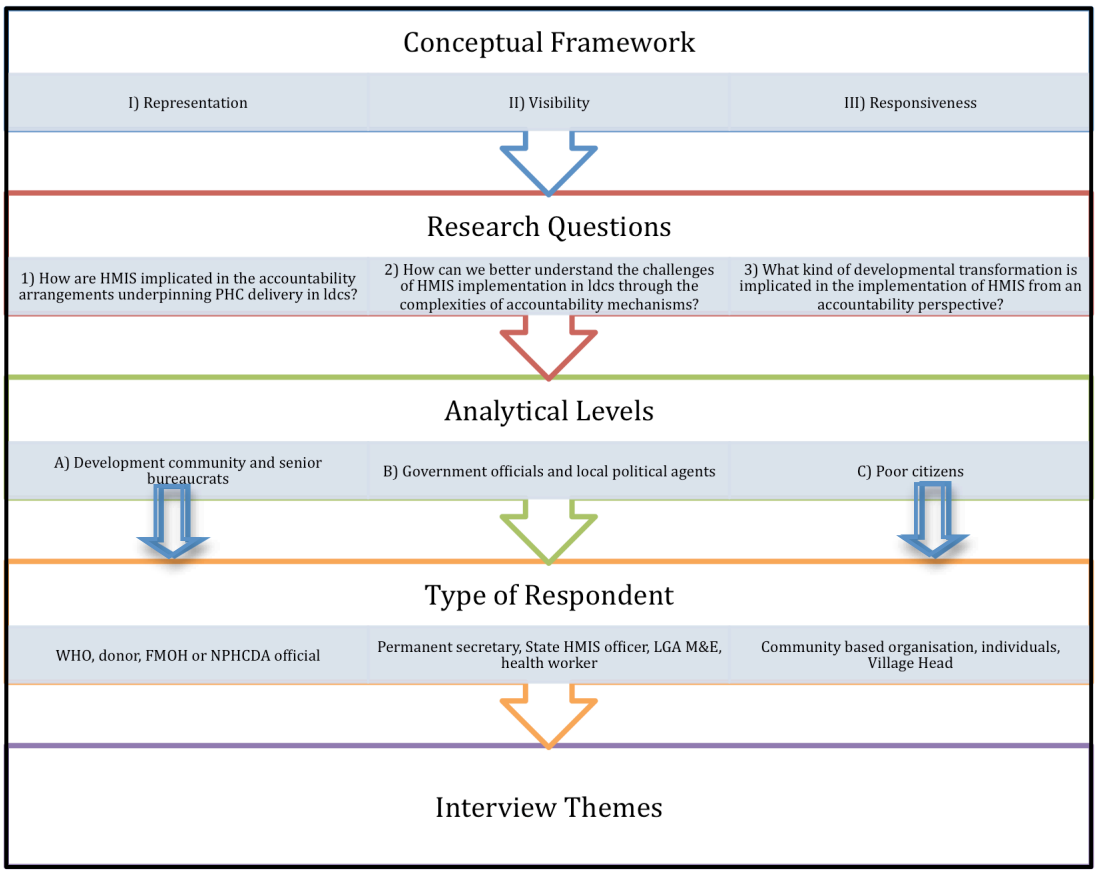


Fig. 4.2: Linking the conceptual framework to interview themes

To give an example of how these themes are constructed, from our analytical construct, there are three research question categories. Interview themes were constructed for each category however the actual interviews were conducted to reflect questions appropriate to the analytical level and particular type of respondent. See Table 4.5 below for research questions and the interview themes/questions sample design used for this study.

Interview theme/question
Research Question 1: How are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?
Main themes Explore the perception of PHC delivery in the country/state/LGA/community. Investigate opinions regarding the intended and actual role of information in PHC delivery. How is policy on HMIS and PHC delivery formulated and implemented and what is the perception regarding their impact? What is the intended, actual or perceived role of HMIS in PHC accountability? According to whose agenda, in light of what evidence and possible examples to substantiate perception. *Understanding the process of health data collection in Nigeria* • What are the main systems used for collecting health data? • How are these systems used? • What sort of data is collected? • Who is primarily responsible for data collection? • How is the data used? • What is the perceived role of information (e.g. data gathering and analysis) in shaping primary care strategies? • What are the attitudes of primary care workers to activities regarding health information? • Is there a transparent link between information provided by health workers and consequent health strategies?
Research Question 2: How can we understand the challenges of HMIS implementation in LDCs through the complexities of PHC accountability mechanisms?
Understanding the dynamics of primary health care provision in Nigeria • Are their strategies and mechanisms employed for enforcing policy implementation of primary health care? What are they? • How do these strategies determine (or detract) from the direction of primary health care delivery? • What are the challenges of providing primary health care? • What is the typical experience of an health official working in a primary care centre *Understanding the factors that shape and influence primary care provision* • To what extent are the policies from the Ministry of Health instrumental in determining actions of local officials providing primary health care • What factors affect choices made about the delivery of primary health care?
Research Question 3*:* What kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?
Understanding the interaction between primary care providers and the community • What are the most influential considerations in terms of decisions made about the delivery of health care services to the local community? • What kind of information is valued at the community level? Why and what purpose are they intended to serve? • What do communities expect in terms of accountability? • How do communities perceive accountability arrangements? What are their views? • In what ways do citizens feel that their needs are responded to or neglected? • Perceptions regarding the main challenges of health care delivery • Perceptions regarding health needs and priorities

Table 4.5: Sample design of research questions and interview themes/questions

Each of the themes starts with a general topic area to allow the respondent to freely discuss around the themes as opposed to closed questions. This is in a sense trying to avoid leading the respondents in particular directions (Esterberg 2002). Also, from the

general discussions more specific follow on questions were asked about responses that seem particularly relevant either in terms of the theoretical constructs or being unexpected. The idea was that the questions and themes were fluid so that the information from interview flowed naturally (Burgess 1984).

The interviews and study were conducted in Nigeria with a particular focus on Northern Nigeria and Jigawa state in particular. According to our conceptual framework, the empirical content draws on fieldwork at different levels of the health system including federal, state, LGA and community. This design has been used in the health systems literature. For instance, Atkinson, Cohn *et al.* (2008) look at how various arrangements from local to national levels affect the propensity towards health promotion and disease prevention within a decentralised health system. Their study in Brazil and Chile found that there are pathways that lead to either "active" or "basic" levels of health promotion and disease prevention activities and initiatives. They state that these have implications at each administrative level of the health system "regarding vertical and horizontal system structures, relationships to local government, management options and human resource incentives" (pg. 153). In the HMIS literature, this multilevel approach has also been adopted (Kimaro 2006).

There were seventeen (17) trips altogether made to the field between October 2008 and September 2011. These totalled over 9 months of being immersed in the thick of HMIS implementation in Nigeria. However, only 12 of these are detailed in Table 4.6 below. While the other five trips were useful in gaining more in-depth knowledge about HMIS implementation in Nigeria, the data yielded were mostly peripheral to the interests of this research.

Out of the twelve trips, we can identify three defining fieldwork trips that shaped the understanding of the research domain: 1) October to December 2008 (mainly senior bureaucrats, international partners and donor community – Analytical level A from Fig 4.5); February to March 2009 (mostly government officials in Katsina, Yobe and Zamfara – Analytical level B); and July 2010 (predominantly community level in Jigawa – Analytical level C).

The first defining phase was fieldwork conducted between October and December 2008 in Abuja, the Federal Capital Territory. Semi-structured interviews and

discussions included 1) a senior official at the National Primary Health Care Development Agency in the Planning, Research and Statistics division; 2) the Health Promotions and Information Systems Officer from the World Health Organisation; 3) Head of the National Health Management Information Systems (NHMIS) at the Federal Ministry of Health; 4) a Community Health doctor from the Department of Community Medicine and Primary Care; 5) a consultant doctor to the World Bank's Health Systems Development Programme. The interviews were in-depth lasting between 75 to 90 minutes each.

Between February and March 2009 a HMIS situational analysis questionnaire was administered to twenty-one local government M&E officers across three Northern States of Katsina, Zamfara and Yobe. In addition a modified version of this questionnaire was also administered at the health facilities to sixty-two Officers in Charge and health workers. A series of semi-structured interviews were conducted at the state level including the DPRS, State HMIS officers, SPHCDA M&E Officer and Permanent Secretary. The researcher conducted interviews at the State level and also to elicit the opinions of fieldworkers who administered the questionnaires.

Dates	Analytical levels	Research Location	Main activities / (respondent types)
9th Oct – 10 Dec 2008	A[3]	Abuja	Research question scoping (FMOH, NPHCDA, WHO
12 Feb – 25 Mar '09	A and B	Kano, Katsina, Yobe and Zamfara	HMIS situation analysis
7 Apr. – 8 May 2009	A	Kano, Abuja	Donor and Federal level view of HMIS (FMOH, NPHCDA, WHO, PRRINN, NPHCDA, PATHS2)
13 – 26 July 2009	B and C	Kano, Jigawa	Observe and interview community level representatives (PRRHAA) and state HMIS officer
26 Sep. – 15 Oct. 09	B	Katsina	Interstate data review involving HMIS representatives from Jigawa, Katsina, Yobe and Zamfara
6 – 14 Nov. 2009	B	Jigawa	Observed state Health Data Consultative Committee meeting and facilitated intrastate HMIS data review
5 – 12 Dec. 2009	B	Katsina	Facilitated Katsina intrastate HMIS data review
5 – 22 July 2010	C	Jigawa	Interviews in Tsakuwawa community
25 – 30 July 2010	A and B	Kano	Training of HMIS officers from Jigawa, Katsina, Yobe and Zamfara and donor officials
16 – 26 March 2011	A and B	Kano	Facilitated interstate data review involving HMIS representatives from Jigawa, Katsina, Yobe and Zamfara
19 June – 9 July	A and B	Abuja, Zamfara	Review of malaria M&E and HMIS system; Involved other states such as Cross River and Nasarawa; Interviewed NHMIS officers at FMOH and WHO officers
July 30 – September	A and B	Abuja	Situation analysis of malaria M&E and HMIS system; Involved other states Zamfara, Cross River and Nasarawa; Interviewed NHMIS officers at FMOH and WHO officers

Table 4.6: Field trips with corresponding analytical level, activities and respondents.

Between 13 and 26 July 2010, a number in interviews were conducted in Tsakuwawa village in Jigawa State. These were usually lasted from early morning until evening; it

[3] Level A=Development community and senior bureaucrats, B = Government officials and local political agents; C= Poor citizens

also included a weekend spent with the community. In addition to the interviews held at the village level, other interviews, data review workshops, meetings of health data stakeholders in the state and minutes of meetings at state and village levels were used to create the empirical narrative of this study. Some of the documents obtained from the fieldwork study are as follows:

Federal level
1- National Health Management Information System, Policy, Programme and Strategic Plan of Action - 2007
2- Revised National Health Policy 2004
3- National Strategic Health Development Plan (National Health Plan) 2010 – 2015
4- Nigeria Vision 20:2020: The First National Implementation Plan
5- Draft National Health Bill 2011
6- Nigeria Health System Assessment 2008
7- Nigeria Demographic and Health Survey 2008
8- Nigeria Demographic and Health Survey 2003
9- Meeting Everyone's Needs: National Economic Empowerment and Development Strategy (NEEDS)
Jigawa State
1- Jigawa State Economic Empowerment and Development Strategy (JSEEDS)
2- Health Data Consultative Committee Minutes of Meeting – November 2009
Tsakuwawa
1- Ward Development Committee Minutes of Meetings

From these data collection methods we turn to the strategy adopted for analysis.

Data Analysis

Data collection and analysis began by transcribing all notes and audio recordings and storing them electronically while hard copies of all relevant documentations were kept. The data were then coded manually according to analytical themes. This is a conventional analytical strategy where specific theory or theories are used to inform the collection of data and subsequent data analysis (Walsham 2006). Within this iterative process the researcher highlights themes from the different data sources,

detailing the most recurring or significantly pronounced themes for the narrative. Data analysis for this study was guided by the theoretical concepts of representation, visibility and responsiveness. Even though qualitative analysis can be conducted using specialist software such as Atlas, NVivo or Nudist (Weitzman and Miles 1994), these software packages are not as formalised as traditional statistical software programs. Therefore the process can be quite cumbersome because they require that the researcher to provide the logic and coding algorithm that would underpin data analysis (Walsham 2006). Hence, the manual coding adopted.

Unit of Analysis

In this study, we have tried to capture the multi-level essence of PHC delivery and HMIS implementation. In keeping with the objective of making sense of the implementation challenges of HMIS in the country, the unit of analysis for this study loosely corresponds to the HISP HMIS strengthening project in Northern Nigeria. With critical distance from the project itself, the researcher extended this remit to the community level in order to explore the developmental impact of such initiatives. According to the constructionism approach of this study, the "unit of analysis" "may include the complexity of 'whole' situations" (Easterby-Smith, Thorpe et al. 1991: 30).

Critique and Limitations

Validity, reliability and generalisability of interpretive research

The design and approach of this study are laden with the researcher's subjective interpretations of data as well as ingrained values and preconceptions. It is therefore necessary to make a statement of defence for the reliability and validity of intensive research design in the IS field and the interpretive nature of the data (Orlikowski 1991). A more operationally subtle methodological complexity is associated with "construct validity" (Yin 2003). That is, linking the questions pursued on the field to the overall research question. However, from the discussion above on interviewee themes, conceptual framework and research questions, this is already addressed. Questions regarding the reliability of the proposed research design address the methodological difficulty of "replicability" (Lee 1989: 35). Adequate allowance is given in this research design by transcribing all interviews, copying all relevant

documents and making the epistemological and analytical assumptions explicit. This is because the reliability of case study research depend on procedural transparency (Klein and Myers 1999, Yin 2003). There is emphatic support for the methodological "validity of idiographic research explanation" (Tsoukas 1989) which not only refutes the proposition that qualitative research designs are only appropriate for exploratory research, but argue that they also have a high utility for explanatory research (Yin 2003). This is especially true of idiographic research designs guided by a realist ontology (Tsoukas 1989). A fundamental difference between nomothetic and idiographic research design in this regard is that while the former makes generalisations based on law-like regularities, the latter depends on another type of logic for example, "development of concepts, generalisation of theory, drawing specific implications in particular domains of action, and contribution of rich insights" (Walsham 1995: 299), "analytic generalisation" (Yin 2003) or "causal tendencies" (Tsoukas 1989: 551) otherwise the single case design of this study might be "scientifically" challenged methodologically (Lee 1989).

Practitioner/Researcher dilemma and language barriers

As alluded to earlier, access to the field was granted through the HISP network already working in Northern Nigeria. There were three dilemmas here but all were resolved to some degree.

The first dilemma was the tension of whether I was a practitioner who was conducting research or a researcher who was also a practitioner. This part of the dilemma was addressed by concluding that there was no need to make this distinction. The most important point was to be fully engaged in the field of enquiry. Practically, I used the consultancy as an opportunity to carry out interviews and conversations with a significant number of people I would otherwise not have had access to, or with great difficulty. For example, during the situation analysis exercise in Katsina state, field participants were asked questions before, during and after. This is especially as there is a lot of waiting for people who are either not able to keep an appointment on time or not showing up. This helped to elicit more information directly related to the interests of this study.

The second problem was in the field with respondents. I was usually introduced as a consultant or from the United Kingdom (UK). With my student card, I had the opportunity to fully explain my role as a researcher. While at first it seemed that this was positive and made the respondents more eager or receptive, before long I realised that responses seemed to be tailored to perceptions of my affiliations. As a consultant, some respondents seemed to paint a gloomy picture while others were keen to present an impressive state of affairs. An additional confounding factor was the neccesity of going through a gatekeeper who facilitated access to particular respondents. This was especially applicable at the local level. The problems were two-fold, first the gatekeeper was invariably from the state level and as such usually a line supervisor or hierarchical superior of the respondent. This often made respondents defensive and answer questions that would not show them up: responses were typically suggesting that everything is as it should be and all the systems and processes are working well. While in no way ideal, gatekeepers recognising the dilemma of the respondents commented telling the respondent to feel free to express all the problems they were facing because if they don't they can't be helped. The suggestion of an intervention would usually reverse the initial position taken by the respondent enthusiastically listing problems including ones not asked about. It was difficult to navigate this especially as I did not want to ask questions in a way that gives the respondent an impression that there was a right or wrong answer. After spending considerable time in the field it was easier to address this issue by asking multiple questions around the same theme and then asking for clarification if there were inconsistencies in the responses. For instance an LGA &E officer responds that he conducts supervision of facilities under his jurisdiction every week. There are about 40 to 50 of these facilities and some are about 50 miles from his station. We calculate with him the implications of his answer which is 10 facilities daily and at least 100 miles on a motorcycle. With this we get a better explanation such as particular health facilities usually those close by or sponsored by a donor programme.

The third problem encountered in the field was the language barrier most pronouced at the community level. The official language in Nigeria is English but in poor rural villages not many speak well enough to converse. Depending on the kind of interpreter I had, there were different problems encountered. In the first instance, there are interpreters who misinterpreted the question asked and by extension the

responses did not seem to entirely make sense. This was however not too difficult to address as it meant taking more time to explain the question to the interpreter. Another kind of challenge I had was with an interpreter who was a health care worker and also a community member where I was conducting the interviews. This interpreter seems to be mediating the responses through his own interpretations and sometime even antagonising the respondents. On some ocassions the questions asked were changed according to his understanding of what should be asked. On an ocassion when I noted that I am interested in the respondents' perception, he said that they were "illiterates" and could not reason along the lines of the questions asked. To address this issue, I would pick up on times when he antagonises the respondents and gently affirm that their views matter.

The extensive conversations and interviews in the field over time helped develop my understanding of the realities of HMIS and PHC delivery in Northern Nigeria. This understanding is essentially my interpretation but one that I sought to render practically adequate through the theoretical framework, research design and methods adopted for this study. In the next section we will introduce the case study narrative with the views of stakeholders represented as this is in keeping with a constructionist epistemology.

Chapter 5: Case Study

Nigeria's HMIS-PHC System: Macro to Micro Level View

Introduction

With an approximate population of 150 million, Nigeria is the largest country on the African continent (World Bank 2011). The country has 36 states and a federal capital territory. These states are divided into six geopolitical zones: North-Central, North-East, South-East, South-South, South West and North-West. There are 776 Local Government Areas (LGAs) in the country with some of the smallest having less than a population of 80,000 (DfID HSRC, 2000). It has a significantly diverse ethnic base with over 200 people groups speaking twice as many indigenous languages and dialects (World Bank 2011). There are three main languages spoken i.e. Hausa (mostly in Northern Nigeria), Igbo (in Eastern Nigeria) and Yoruba (Western Nigeria). The official language is English dating back to British colonial rule. Poverty is endemic in the fabric of the society as there is an estimated 70% of the population who live below the poverty line (Elumilade, Asaolu et al. 2006). With institutionalised corruption, the country was judged to have one of the worst five health indices amongst the WHO member states (Ewhrudjakpor 2008?).

HMIS Development in Nigeria

Historical Context

From the 1960s, the FMOH operated a medical statistics system that provided quarterly or annual data on hospital-based births and deaths, human resource for health care, disease and mortality data, and hospital related programmes (FMOH 2006). At this time the country had not developed a comprehensive plan for health care delivery. By the late 1970s, Nigeria along with other countries signed the Alma Ata declaration and committed to the PHC approach as its main strategy for developing a comprehensive health system. As a result of three military incursions, political instability stalled the formulation of the required national health policy intended to support the overhaul of the health system. Although PHC strategy was adopted by mid-1980s, the health system was characterised by the proliferation of vertical programmes focussing on immunisation, malaria, eradication of guinea worm

and control of leprosy and tuberculosis etc. In addition, an outbreak of yellow fever, revealed a weakness in the information system for disease surveillance and notification (FMOH 2006). The first comprehensive national health policy was not completed until the late 1980s, establishing new organisational structures within the civil service, including the Department of Planning Research and Statistics (DPRS). The policy also advocated a NHMIS across the federation for which the DPRS will be responsible.

The objective of the NHMIS was to develop appropriate information infrastructures with mechanisms for collecting and analysing data. Objectives of the information produced from the NHMIS were set out to:

> "- assess the state of the health of the population; identify major health problems; - set priorities at the local, state and national levels ; monitor the progress towards stated goals and targets of the health services; provide indicators for evaluating the performance of the health services and their impacts on the health status of the population; provide information to those who need to take action, those who supplied the data and the general public." (FMOH 2004; FMOH 2006)

In the 1990s the operational and strategic framework for a paper-based HMIS was developed with assistance from the World Bank and the UK's Department for International Development (DfID) but was not sustained with the subsequent withdrawal of donor support (Asangasi and Shaguy 2009). By the early 2000, an assessment of the HMIS was conducted through a DfID sponsored health systems strengthening project, Partnership for Transforming Health Systems (PATHS). There were numerous problems identified in the assessment. This included the lack of political and financial support, inordinate data requirements that neither reflected priority diseases nor appropriate for lower level use, and "major technical problems" with the Health Information For Action (HIFA) software programme (Heywood 2008).

By the mid-2000s, amidst "high-level negotiations" PATHS states (Kano, Jigawa, Benue and Enugu) whittled down the MDS from over 1000 to 127 data elements, with a slightly moderated version subsequently adopted nationally (Shaw, Mengiste et al. 2007). In addition, the District Health Information System (DHIS) was adopted nationally as the standard NHMIS software (Shaw, Mengiste et al. 2007). From the late 2000s, there have been major efforts to revise the HMIS in a way that would provide better integration across health programmes and improve data reporting. The latest revision in 2010 included data elements on HIV/AIDS, Tuberculosis and

Malaria. It also excluded extensive disease data elements, which overlapped with the Integrated Disease Surveillance and Response (IDSR) data sets. In creating a better harmonisation, the age cohort in the newly revised HMIS has been changed to reflect the categorisation in the IDSR. These forms where applicable are also disaggregated by sex.

HMIS in Nigeria is weak and still burdened by a proliferation of vertical programmes. Donor support for strengthening the health system and HMIS in the country has more recently amplified the need for accountability and the central role information plays (DFID 2011). These are articulated in a number of published statements. For instance:

> "In the current financial climate, we have a particular duty to show that we are achieving value for every pound of UK taxpayers' money that we spend on development. Results, transparency and accountability are our watchwords and guide everything we do. DFID regards transparency as fundamental to improving its accountability to UK citizens and to improving accountability to citizens in the countries in which it works…" (DFID 2011)

Part of this accountability strategy is to publish comprehensive details of projects and programmes while emphasising transparency in Nigeria more widely, by

> "promoting transparent government finance and accountable public institutions to help Nigerians hold decision makers to account; providing information about our current and planned programme to Nigeria's federal and partner state governments, and encouraging other donors to do the same" (DFID 2011)

These emphases come in the wake of a Global Fund investigation into suspected mismanagement of funds up to the sum of one million US dollars by a principal recipient (Office of the Inspector General 2011).

Data flow policy

The NHMIS policy provides a description of the different requirements for health data provision at the different levels of government administration. Data flow policies are formulated under the auspices of the federal Department for Planning Statistics and Research. The system describes data flow practices and feedback (see Fig.5.1 below). Data is collected from communities, collated at the health facilities, and aggregated at subsequent levels of government administration i.e. LGA, State and Federal. The current policy stipulates that health facilities should return data on a monthly basis, LGAs report these aggregated data to the state on a quarterly basis while states are meant to send their data to the federal government biannually.

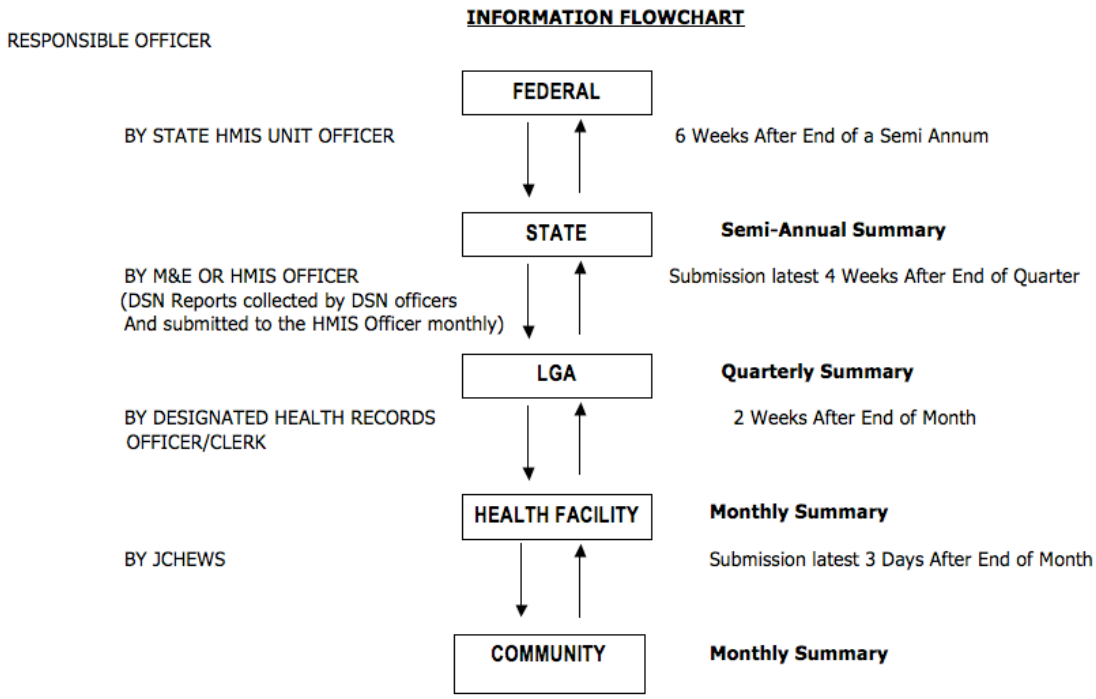


Fig 5.1 NHMIS Data Flow Diagram and IDSR Pathway

At the community level there are nationally designed data collection forms called HMIS 000. These are mainly pictorial and data is captured using a tally system. At the health facilities routine data is captured in different registers depending on the service provided e.g. immunisation, labour and delivery, growth monitoring, antenatal care (ANC) etc. At the end of each month the data in the registers are aggregated in a summary form called the HMIS 001. At the local government level, HMIS 001 summary forms are aggregated in HMIS 002 summary forms and the same happens at state level with HMIS 003 forms. In addition to the administrative requirement to submit data, reports are to be verified and validated at every level. This exercise therefore serves as the basis for downward feedback. As such, all M&E officers from the local government meet monthly at the state level and report directly to the State HMIS officer. The WHO sponsors these meetings around the country because they are used as an avenue for collecting data.

Composition and Organisational Structure

Under the Nigerian concurrent legislative list, the constitution allows the provision of a decentralised health care system across the three tiers of government i.e. federal, state and local. It is constitutionally recognised that local government agents have the principal authority and responsibility for PHC delivery.

At the federal level, the National Primary Health Care Development Agency (NPHCDA) is a parastatal with the mandate to support the community health model. An Executive Director who is a political appointee heads the NPHCDA. The agency has a mandate to mobilise financial, human and technological resources for PHCs throughout the country and provide technical support to states and LGAs. Part of this support is to develop PHC standards and guidelines to monitor, supervise and evaluate the delivery of PHC services across the country. There is an equivalent State Primary Health Care Development Agency (SPHCDA) at the state level but are not active in all states. At the state level the key health players are the Commissioner for Health, the Permanent Secretary, the Director of Public Health, Director of Planning Research and Statistics (DPRS), Executive Chairman of the Hospital Management Board, and the Executive Director of the SPHCDA (in states where active). At local government level, the Local Government Chairman is the political head of the PHC system while the Primary Health Care Coordinator is the most senior public health officer. The Monitoring and Evaluation (M&E) Officers are public officials responsible for health facility data in the area. Depending on the type of facility, there is usually an Officer in Charge, nurse, midwife and a number of Senior and Junior Community Health Extension Workers (CHEW). Health posts usually just have an Officer in Charge who is likely to be a CHEW. A junior CHEW is often assigned to the community who are helped by a number of volunteers like Village Health Workers (VHW). The recruitment and payment of health workers come under the responsibility of State Ministry for Local Government rather than the State Ministry of Health (SMOH).

At the local government level, there is a further decentralised administration in place. This is known as the Ward system. Where functional, there is a Ward Development Committee (WDC), which has members from smaller committees in the villages. At the local government secretariat, they have a management committee, which has representatives of committee members from various wards. Smaller committees include Community Development Committees in villages with representatives at the ward and LG health committee. The Village Health Committee is usually chaired by the Village Head. These committees serve as a gateway to the community. Community health information, opinions and grievances about public services are

also channelled through this body. See Fig. 5.2 for relationship between organisational structure and the NHMIS (FMOH 2006). Community engagement is a central component of the NHMIS policy and all levels of government are required by policy to "devise appropriate mechanisms for involving the communities in the planning and implementation of services on matters affecting their health" (FMOH 2006: 7).

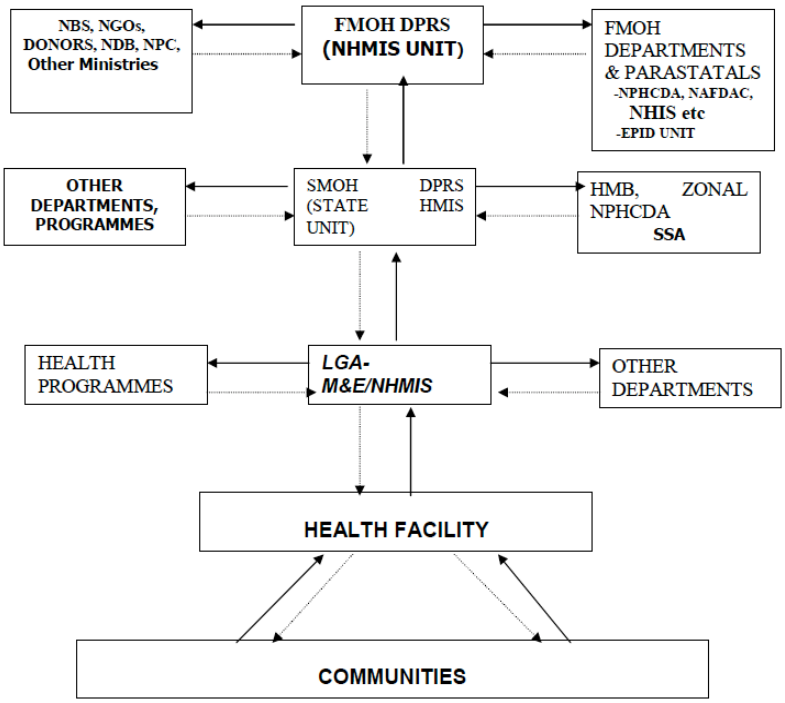


Fig. 5.2 HMIS Operational Organogram

HMIS and PHC Delivery

PHC delivery to communities is usually challenging because they are often isolated without adequate roads, accommodation, electricity, and other social amenities. Consequently, attracting experienced and qualified health workers to rural areas is a problem. The quality of care provided at rural communities is often very poor and the situation is further compounded by the breakdown of supervision arrangements because some of these communities are hard to reach. Accountability to local constituents does not really exist because of an endemic problem with the democratic process.

Historically, there is a widespread lack of appreciation for the need to use data for planning. However, beyond the continuance of a defective legacy practice, an FMOH official noted also that data reveals inefficiencies. Using investment in PHC as an illustration, he expressed the inefficiency of a policy that purports to promote the PHC system but invests more in secondary and tertiary health institutions. While this is known by sheer observation, the lack of hard data prevents a strong evidence-based case to be made against the practice. The subtext is that the actors in influential policy positions are maintaining the status quo through their passiveness in order to protect their interests. For instance, ideological preferences and political gains stand to benefit more from high-visibility status-symbol projects like building tertiary, specialist and teaching hospitals.

As far as HMIS is concerned, there is no incentive for a health worker to be interested in data because this has little or nothing to do with their career progression. There seems to be a constraining environment even for those who are the exception. There is a weak implementation of the data flow structure even though it exists in the country's health policy. The LGA is the most critical level of government as far as information flow is concerned. However, the LGA is deemed the weakest arm of government especially in terms of capacity. There is a strong perception that the LGA is a bottleneck where corruption is rife, jobs are given to unqualified - and most likely disinterested - candidates because of their connections. The LGA chairman is a key stakeholder in the process because his office determines budget allocation. For instance, a health facility might be generating data but the LGA M&E officer might not be able to pick them up because there is no transportation support. In the same light, an LGA Chairman may prefer to build markets rather than invest in health because the latter is deemed intangible. In concluding about the role of communities to effect change through the democratic political process, the Nigerian populace seems to have been militarised and have therefore lost the sense of seeing political leaders as accountable public servants.

Northern Nigeria Context

At a regional level, some insight was shed on HMIS within the PHC system from some northern states in Nigeria. States in Northern Nigeria typically have the most dire health indices in the country especially for maternal and child health.

Challenges of HMIS Policy Implementation

The state M&E officer working within the SPHCDA in Katsina state complained that there are no HMIS forms at the LGAs and health facilities have to resort to writing on pieces of paper. He continues by lamenting the total neglect at the LGA level. He links the poor quality of data to this neglect:

> "If you go to one LGA at three different times, you will get three different data. The problem is that there is no support from the LGA. Nobody is funding them. They are complaining."

Nevertheless, HMIS activities at the SPHCDA are relatively well funded with technical officers given funds to routinely collect PHC data from their designated LGAs around the state. When asked whether this information is used, the state M&E officer explains:

> "They don't use it because, besides PHC data, there is no authentic data of secondary health facilities. They don't have the data. The state doesn't use it for planning."

He goes on to explain the process:

> "We collect the data and show it to my manager. We have a software system now but the unfortunate thing now is that no one trained me to analyse the data… I can collect the data and collate it but I cannot analyse. I can't do it by myself. I have a desktop but the software will not work on it. I have a lot of data in my system at work."

A Local Engagement Consultant (LEC) who is an indigene of the state but also employed by a donor agency to work on HMIS (among other duties) stated the lack of political will and inappropriate institutional arrangements for effective monitoring and supervising of health facility staff as a major problem affecting data flow from communities and health facilities. He sees the problem facing PHCs as a systemic

issue:

> "There is a lack of political will generally at PHC level. This is especially on policy implementation: from Federal to State to Local Government … [For instance] one PHC Centre is 2km away from another while some don't even have any. The policy should be looked into right from the Federal level. For instance every ward should have a primary health centre about 5km away from another."

During an HMIS situation analysis in Katsina state at both LGA and health facility level, in Mani LGA, the state HMIS officer pointed out that resources were grossly inadequate especially human capacity. There were a series of deficiencies which were tied to the lack of political will or support e.g. unavailability of forms and the conspicuous lack of a planning and policy framework for HMIS. With regards to the dissemination and use of information, the state HMIS officer noted that although data quality is poor, "unreliable data is still better than no data." In Mashi LGA, the picture is not materially different. The SMOH officer who conducted the assessment reported that, "there is no consideration for HMIS at all." In fact, speaking about a particular Ward he says that they appear to be neglected and uncared for. The situation doesn't seem to be limited to HMIS but the general welfare of the community as he says the ward "has no water so [health workers] have to struggle going to houses to get water when a woman in labour comes to the health centre."

The Director for Planning Research and Statistics in Katsina state submits that a pervasive absence of data culture results in the lack of support for HMIS in the state. He however points out an irony that policymakers want information but are not prepared to "support the process." It was later clear the information is not sought routinely for use but as a derived demand. For instance when asked how the data is used for planning, the DPRS first laughs and then responds by saying, "Only when the federal want data everyone runs around looking for data." He asserts that the very existence of the HMIS team in the state is made possible through HSDP (World-Bank sponsored) funding. Commenting on the SPHCDA, the DPRS agrees that they are working well because they are funded adequately. However, he complains that data is not shared with the state HMIS unit.

In Yobe State (North East Nigeria) where this HMIS situation analysis was also

conducted, there were similar themes. When the HMIS officer was asked about the adequacy of resources, his response had a touch of surprise at having to state the obvious:

> "[Resource level] is very poor- a health facility in Damaturu LGA said they are 12 in number only 1 of them is in charge of the M&E and they have no knowledge. Equally, with the secondary health facility in Fika LGA, you can rate from the answers he gave that he needs additional training, and a need to go for further education."

The minimal demand for data manifests in the lack of supervision and monitoring for health data reporting and a corresponding apathy from health workers. For instance, the State HMIS officer matter-of-factly stated that, "Government is not paying much attention to the health sector, you can see that people are dying from one disease or another." He adds that, "It is unfortunate that services rendered by donors should really be provided by the Government."

A Demand-Side Programme Officer for one of the donor partners working in the state noted that immunisation data is reported to the WHO because they pay LGA M&E officers. On community engagement she gives an example that the people refused to engage because they did not have confidence in the staff. This was primarily because the community had previously complained about the incompetence of the Ward Head but nothing was done because of his connection to one of the state Commissioners. Consequently, the community refused to turn up during the immunisation plus days (IPD) exercise. She also pointed out that data collected at the health facilities is often doctored in the aggregation process. This was corroborated by the National Communications Strategy Officer for the same donor who was also emphatic in stating that they "take data straight from the clinic not falsified from the LGA."

Speaking to the Permanent Secretary and DPRS about these issues, the problem is once again laid at the doorstep of the LGA:

> "The problem with LGA is that they want us to come and distribute the forms to the facilities. With Local Government, they don't work unless they see money. We sent them all the forms but it is just gathering dust. You are even lucky to meet them at the office. Sometimes the M&E officers take the form to their house including the generator."

On a visit to the PHC Coordinator in Damaturu LGA, we found that he was not in the

office. When questioned about this, the HMIS Officer made a few calls and reported back saying, "he is still at home. There is no work so there is nothing to do here." Proceeding on to the M&E office in the same LGA, we also learnt that the M&E officer does not come to work – and in fact had not been to work in the last 6 months - because she felt her appointment in that particular post was "a political disciplinary action." The State HMIS Officer gave four possible reasons why public servants may not turn up for work: 1) The government doesn't provide the "necessary things to keep people in office"; 2) A qualified staff may be subject of vindictive action by political agents and therefore posted to a remote area. They in turn may decide not to come to work; 3) "If your staff doesn't come to work and you report them, nothing will happen. They can also decide to inform a top official in another Ministry"; 4) "Even if you want to work and identify training workshops to help, there's no funding."

The assistant M&E officer in response to a question about community forms simply stated that there are no community forms "because there are no community workers." In reference to health facilities, he noted that some of these facilities are just buildings; most of them are manned by only one person "who is not even trained to do the job." He concludes by making the following statement:

> "When you show enthusiasm on data collection the feeling is that the M&E officer is getting extra funds for himself... Some don't want to continue collecting data because they are not well resourced… Sometimes they fill the form in notebooks and not official forms. When directed to do otherwise, the LGA doesn't have the forms available to give them."

When the Permanent Secretary was asked whether there was a State HMIS policy, he noted that the state is not without its weaknesses: "Our problem is that for a while we don't give much importance to monitoring we just assume that monitoring is a waste of time. So we don't have any policy."

Picking up on the issue of donor activities in the state and how this impacts data integration, the Permanent Secretary argued that human resources in the health sector in the state and indeed throughout the country is being "overstretched by the WHO." He also made the point that the added incentive given health workers acts as a disincentive to perform their primary duties. He explains:

> "When you call them [M&E Officers] they will run away, they are working against their own people. When we share these views with other colleagues everyone seems to be saying the same thing… WHO overworks our people on IPD for no reason … Even other [donor] partners are accusing WHO."

In Zamfara state, the State Team Manager for one of the donor health projects complained that the "HMIS system is already overloaded." There are many different forms to fill and while there is a positive attitude to capturing data, capacity at the state level is low. The state however only captures data on immunisation, IDSR (monitoring 21 major diseases including cases and mortalities) and ANC. He further explained that the paper trail is difficult because the completed forms on IDSR is sent to the WHO while the LGA M&E officers only capture immunisation data. The only way out of vertical reporting according to him is the introduction and use of the HMIS forms designed by the federal government. But in relation to these forms he says, "We don't have the forms, so how do you want people to perform miracles?"

Jigawa State

Jigawa state in North East Nigeria was created out of Kano State on 27 August 1991 to form one of the thirty-six States in Nigeria (see fig 5.2 below). Jigawa State has 27 local government areas with its capital in Dutse. The State shares boundaries with the Republic of Niger to the north, Bauchi State to the southeast, Yobe State to the northeast, Katsina State to the northwest and Kano State to the west. Its land mass is about twenty two thousand four hundred and ten (22,410) square kilometres. The population of the state was projected to be 4.7m in 2009.

Fig.5. Map of Jigawa state in Nigeria[4]

Composition and organisational structure

The state has benefited from relatively sustained donor assistance for its HMIS development (see Table 5.1). This started in 2003 with pilot projects in eight LGAs. In Nigeria, two states, Jigawa and Enugu, operate a district health system. In Jigawa state it is called the Gunduma. Jigawa State Assembly enacted legislation, which allowed the incorporation of the Gunduma system in 2007.

[4] Source: Wikipedia - http://en.wikipedia.org/wiki/File:Nigeria_Jigawa_State_map.png

Phase	Time period	Activity	Comment
I	Sept 2003 - Jan 2005	Pilot in 8 LGA's	EDS defined, data flow improved, new process of data capture using DHIS1.3 at state level introduced, intense training provided
II	Jan 2005 - Jan 2006	Horizontal scaling across geographic areas (LGA's)	EDS held static and data capture maintained at state level, increase in volume of data (additional LGA's), intense training by local team (demonstrating some capacity been developed)
III	Jan 2006 - Aug 2006	Consolidation period	Efforts directed at improving adherence to data flow and improving data capture process Efforts to encourage use of information Advocacy meetings with senior managers
IV	Nov 2006	Conversion DHIS13 – DHIS14	All else held static – training to be provided on new version of DHIS
V	Jan 2007 onwards	Decentralizing data capture to gunduma	Still to take place, but has been discussed, and planned for about 18 months.

Table 5.1: "Phases in HMIS Strengthening Activities" (Shaw, Mengiste et al. 2007)

This was achieved under a DfID sponsored health systems strengthening programme: Partnership for the Transformation of Health Systems 1 (PATHS 1). The rationale was to make the healthcare delivery system more responsive. Within this system, there are three local governments reporting to a Gunduma Council - making a total of 9 Gunduma Councils - who in turn report to the Gunduma Health System Board (GHSB) at the state level. Health facilities are under the Gunduma Board system. However the HMIS Unit is under the State Ministry of Health (SMOH) and has 8 staff comprising 6 from the ministry and 2 from the GHSB. Among the staff are 1 HMIS Specialist, 4 Statistical Officers, 2 Public Health Officers and 1 Administrative Officer. M & E *Coordinators* are in charge of the HMIS Unit at the Gunduma Councils while Local Government Area (LGA) M & E *Officers* are responsible for HMIS activities at the local government level. The State Ministry of Health recruited 68 Health Records Technician in 2008 to improve data collection in the secondary and some of the primary health care facilities in the State.

Investments for HMIS activities come from various sources such as the SMOH, the World Bank Health System Development Programme (HSDP) II, Gunduma Health System Board (GHSB), PATHS 1, PRRINN-MNCH (Programme for Revitalising Routine Immunisation in Northern Nigeria- Maternal, Neonatal and Child Health) and PATHS 2. There has also been increasing support from the state Ministry of Health e.g. in providing office space. With funds from HSDP and HSDP II initiatives, the

state has also been able to procure some computers. The main challenge is that the use of data for planning is at its nascent stages therefore still minimal. This is in addition to low capacity at the Gunduma Council and LGA levels on the District Health Information System (DHIS). As part of capacity building on the use of DHIS to capture and analyze data all the staff at the State level are trained and currently use DHIS software.

Jigawa has established, in accordance to national policy guidelines, a Health Data Consultative Committee (HDCC). This forum brings together a multi-sectoral cross-section of stakeholders who are the main producers and consumers of health-related data in the state. The committee is a going concern composed typically of representatives from the SMOH, GHSB, Federal Medical Council, and donors partners like PRRINN-MNCH, PATHS2, WHO, State Agency for the Control of Aids (SACA) and Community Participation for Action in the Social Sectors (COMPASS). The committee deliberate on a number of issues at quarterly meetings. At one such meeting the Chairman made a passionate presentation about addressing the need to translate interventions into improved healthcare service delivery and better health status for the people. He stressed the necessity of developing a strategy that redresses the apparent disconnect between health service providers/planners and client communities. This was especially in light of the poor performance of the state in the 2008 Demographic Health Survey. However, other important concerns articulated included the underlying challenges of developing a platform for data sharing among stakeholders. To this extent the committee is yet to become a cohesive unit with established platforms, processes and procedures for sharing information.

The present institutional arrangement where health facilities are under the GHSB while the HMIS team is within the SMOH seems to be potentially divisive. In addition to the underlying tensions at the state managerial level, conflicting accountability arrangement at the local level also make the decentralised system more complex (this is across the country and not just in Jigawa state). For instance, health workers are employed and paid by the Ministry of Local Government while they work directly for the Ministry of Health and report to the Gunduma Council. The difficulty arises either when there are conflicting directives from the Gunduma and SMOH or when sanctions need to be mete out to underperforming staff. Workers are essentially

not reporting directly to the body that pays their wages and as such can afford to skive or put in substandard work without fear of punitive action.

From the perspective of the SMOH, it seems that donor programmes while useful in terms of providing financial and technical resources, are notoriously disruptive. For example the DPRS laments that,

> "Donors have come to impose their agenda at the expense of the state's priorities and pre-scheduled programmes. 80% of the budget is spent on curative rather than preventive care; more money is invested in urban areas than rural areas where you have the most population; 60% of donor funding is on immunisation; most of the donors concentrate on polio… this strategy is supposed to be cost effective but in reality it is proving to be very expensive. There is a total disconnect between funding investments and health needs. Access to health services is very low; maternal, child and neo-natal mortalities are unacceptable; because we can't pay our officers what donors' pay, there is always an underlying conflict. Allegiance is usually to the donor who has the funds. This barrage of programmes is carried out at the expense of our primary duty. "

A donor-sponsored PPRHAA (Peer and Participatory Rapid Heath Appraisal for Action) assessment was conducted in 114 health facilities, 9 hospitals, 9 Gunduma Councils and 1 Gunduma Central Board in Dutse. This assessment is a rapid data-gathering instrument conducted at the health facility and local government levels. It is implemented by health workers, and incorporates a process for peers in the workforce and communities to participate in subsequent appraisal and action planning processes. During a feedback session, which gave assessors an opportunity to discuss their findings from the PRRHAA exercise with Officers in Charge (OiC) of health facilities and community representatives, issues related to data flow processes were distilled in a gallery presentation. From the gallery presentations where strengths and weaknesses were displayed, the assessment of health facilities showed data collection being more or less consistent. However, the lack of data use for planning was also noted across board as a corresponding weakness. The quality of data reported is often unreliable. An interview with the state HMIS officer suggested that data reporting is still problematic and as such LGAs are being encouraged to pick up the data instead of waiting for them to be reported. Furthermore, he expressed notable weakness in the analytical capacity of health facility workers and LGA officers. The state HMIS

officer also reported that data verification is not conducted before reporting and copies of reported data are not kept at the health facilities or LGAs.

Donor-sponsored data review workshops are conducted periodically with the aim of strengthening HMIS in the state. LGA M&E officers, Gunduma Council Coordinators, representatives from the Gunduma Board and the SMOH HMIS unit, attend this workshop. Participants at one of these data review workshops identified that there were problems with feedback at all levels even though M&E coordinators and officers were aware of the feedback process. One of the participants expressed, "We have the mechanisms in place but the question is whether they are utilised". Better performing LGAs shared some practices which they attributed to their success. These practices demonstrate both initiative taking and proactive leadership. Below are a couple of examples:

> "At the end of every month there is a meeting with health facilities to conduct analysis and [there is support from the LGA to penalise Officers in Charge of HFs who don't submit data e.g. by withholding their allowance] …" Gwiwa LGA

> "Photocopies of the forms are made and distributed to the [Officers in Charge] and Ward Focal person who make sure the forms are available at health facilities." Yankwashi LGA

Tsakuwawa Village

Tsakuwawa is a rural village in Miga Local Government under Jahun Gunduma. It has a population of about 7000 people with half of these comprising women and the rest men and children. The only health facility in the village is a health post offering treatment of common conditions, routine immunisation, drug revolving fund, antenatal clinics, minor surgery (stitching) and outreach services. Outreach services are targeted mainly for those who do not attend the health facilities. Routine immunisation is provided on Tuesdays while outreach services are conducted every Wednesday. Some of the services provided at the outreach services include routine immunisation, illness examining and prescribing medicine. This is usually conducted by the Officer in Charge of the health facility and lasts for about 4 hours. Because the

health facility cannot offer delivery services, all deliveries have to be referred to the General Hospital in Jahun.

Civil Society in Tsakuwawa

The village receives support from a donor on community engagement where Local Engagement Consultants (LEC) are employed to act as an interface between the community and health facility. The LEC for HMIS was a first point of call to gain insight about the community. His opinion was that before donor intervention there were no routine immunisation and ANC services were intermittent. With community engagement, demand for ANC increased but the unintended consequence was that many of the health facility staff had to go on training to be able to cope with the increase in demand. Many of the staff left were men and this was unacceptable within the particular cultural context especially when it involved women's health. The local engagement consultant then decided to have a rotational system within the community where a male and female staff will always be available in the health facility. This was a local arrangement, which was not formally designed by the local authority. The LEC explained, "sometimes you have to breach protocol in order to implement a temporary solution after which formal approval can then be sought from the necessary authorities who can put a more permanent solution in place". According to him, the community engagement initiative makes a difference. He states that since June 2009 there are committees meeting monthly and the tracking of new born babies is done ideally on a daily babies but cross referencing can be improved by comparing what the local village volunteers record and the immunisation coverage at the health facility. There was a local consultant engaged by the donor to facilitate the Community Engagement project and oversee the activities of Local Community Volunteers (LCVs). He provided insightful details about the programme and also acted as a translator during the fieldwork. He explained that the main remit of the LCV is to enlighten the community on RI, ANC and polio. They work with TBAs who inform them of births in the community. Once they are aware of a birth, they visit the parents and inform them about RI. Sometimes parents may need persuading. LCVs work in pairs who make it a point of duty to gather 15 people in their assigned settlement to discuss 4 topics over a period of 4 weeks. The topic is about the benefit of RI, the second is the consequences of non-compliance, the third is the side effects of RI and how to overcome these and the last is a dramatisation of how even though

diseases cannot be seen they can still exist. Once the pair of LCVs have covered these topics they find another group of 15 people until the entire settlement is covered then they proceed to a wider catchment. The LCVs are comprised of 20 men and 11 women. The information passed is mostly verbal with lots of demonstration and drama sketches. The Secretary of the LCVs who has always lived in the community provided some background into both the initiative and health development systems in the community. He described that before this Health Partners initiative for community engagement, the community had a high prevalence of whooping cough, polio etc.

There was a Community Development Committee set up informally in 1992. The Village Head (who was quite elderly) set up this committee. It consisted of about 10 of the most respected people in the community. They were people with either political, economic, religious or youth connections. The committee was however dormant because there was no champion to further its agenda. In 2004 the village head handed over the committee to his son. A formal ward development committee (WDC) was started in 2007 following a government directive. This committee typically includes the Village Headmaster, Youth Leader, Women's Leader, TBAs and religious leaders. The WDC meet to discuss medicine stock and upcoming routine immunisation exercises. The Village Head noted that the LGA gives the committee 2000 NGN to 3000 NGN (approximately 10-15 GBP) after every immunisation programme to share among all the members, which comes down to about 150- 200 NGN per person. He adds that this is not done consistently and there is no fund for conducting meetings. In 2008 the Ward Development Committee leveraged the fact that the then Commissioner for Health was from the community to request for water supply and a bigger health facility. The Commissioner provided borehole water. However, expanding the facility was "trickier to achieve" so he ensured that the health facility was equipped with the minimum service package. The LCV Secretary added, "It is rare to find a health post that is able to conduct as many services as this one does."

The Assistant Officer-in-Charge of the health facility (is from South-West Nigeria, but was raised in Jigawa state) had been working in his present role for about 18 months. He explained that there is a lot of persuasion involved in outreach services.

Records of outreach services are not kept unless important information is being disseminated. The problems with outreach services (and causes of ill health in general) are directly linked to the lack of education and ignorance. For instance, he says that routine immunisation is seen as a conspiracy for family planning. He notes, "Some even say that it is HIV being injected". He states that another problem in the community is open defecation. There was an informational programme for educating especially the men in households to build latrines in their houses: "we told them the dimensions, how deep and wide it should be." Communication mode is mainly verbal but there are also pamphlets and posters for immunisation with information on when to bring a child in for immunisation. He asserts that the officer in charge of the health facility tracks dropouts of routine immunisation by sending information to the community through the town crier. Commenting on the community volunteer scheme, he says these volunteers include TBAs who take pregnant women to the hospital when they are in labour and as such mainly discuss improvement of routine immunisation and maternal care during their meetings. He briefly mentions that the observance of cultural Muslim practice called *purdah*[5] does not allow women to come to the health facilities without their husband's consent. He says, "these women usually do not have enough money to buy drugs so the health facility may provide these to the women free of charge as an incentive for them to continue attending the health facility." There is a desire for the health facility to provide in-patient care and delivery services. He is adamant that there is a real need to "expand the health facility here and get more staff but the government is not responding." The Assistant Officer-in-Charge recounted that "there was a problem even in the last 3 months that malaria nets were shared but it was not sufficient so it didn't go round." He stated that this caused uproar among people who felt they were being victimised for supporting a political party in opposition. This theme would be revisited and recalled a number of times as different groups in the community express divergent opinions about the incident.

The Officer-in-Charge of the health facility explained the role of the WDC tracking defaulters (i.e. mothers who have not brought their children to the health facility for

[5] A Muslim practice where married women are insulated from the outside world (see Yunus (2003) for examples of the social implications of this practice to development programmes).

immunisation) with the help of the LCVs. They track all newborns every week: LCVs and health facility staff were both given a book each by a donor to record details of children born in the community. The LCVs record the newborn details in the book and refer them to the health facility for immunisation. The health workers also record details of immunised children into their book. LCVs are therefore able to cross reference their records and the health workers' to find out which children were not brought for immunisation. The Officer-in-Charge states that, "unfortunately, LCVs don't get any support and that is the essence of volunteering". He explained that a donor representative tried "to enlighten the community about taking ownership of our health programmes and knowing our rights." According to the Village Head, the main problem with community engagement is that there are many different interests and motivations and it is very difficult to align these. This is because "people have their own personal problems that do not allow them to be bothered with polio." These are mainly financial problems. The WDC is majorly concerned with health so there is little scope to do anything about socioeconomic problems. When the government provided malaria nets but half of the people did not get any, he explained that people used this as an opportunity to lash back and react against any immunisation programme. He said,

> "The nets were not enough because the government chose to use distribution of cards as a means of estimating how many nets were needed. There were major errors made because these cards were just handed out to youths in the community to distribute and they skipped a lot of houses. The government decided to use this means for political reasons because we had advised against this and recommended that the LCVs should be used for this work."

Another development association set up in village in 1986 is called Tsakuwawa Development Association (TsADA). This association applied for a Junior Secondary school which was granted and created in 1990. Subsequently they applied to the government to have it upgraded to include a senior secondary school and this was done as well. TsADA sponsors children whose parents cannot afford sending them to school. Some of the other primary focus of TsADA is community projects, environmental sanitation, supervising and assessing teachers' performance.

The similarity between the WDC and TsADA is that they both share a common vision

of working for the community. The difference is that TsADA is more concerned with education and sanitation while WDC is more focussed on health, health facility utilisation, immunisation and ANC. The WDC members go around the community informing people about the health facility. There are other committees in the community including the Youth development committee, Education development committee and Religious development committee.

The Village Head also echoes the sentiment that the most critical health problem in the community is poverty: "for instance, as a householder, if I have no money, there is no food also; I would not have any funds for medicine." Illiteracy is also seen as a major contributory factor of health problems in the community. The Village Head surmises that this is why TsADA contributes a small amount towards covering healthcare costs and providing academic grants for community members who need it most. He contends that poverty and ignorance help to sustain the status quo of unaccountable public officials. Education is therefore deemed as a vital catalyst for voice. The traditional chiefs also speak about the problem of ignorance. From their perspective, education is valuable but not everyone can afford to send their children to school. They further argue that while education is free for girls, it is expensive to buy school lunches. One of the mothers attending the antenatal clinic however has a different viewpoint that expresses the mutually reinforcing vicious cycle of "poverty and ignorance." She maintains that parents have to make sure that their children get to school: "Sometimes children abscond, parents don't ask and don't visit. The parents can't monitor their children because they go to the farm [in order to feed the family]."

The local facilitator contended that, "Women in this community don't want to work, there's such an overreliance on their husbands." He further submits that is why the rainy season is such an extremely busy period because the husbands have to farm and get enough food to last their families for the extensive period of time they would not be around. In his opinion, the perception of poverty is sometimes down to attitude regarding work. He attempts to substantiate his proposition by making a comparison as follows:

> "In Ringimm where I come from, there is a stark difference. 70% of the men are educated that is why it is one of the 5 Emirates in Jigawa state. The community has produced eminent Professors, Doctors and Engineers. The

> women are very industrious looking for opportunities to make financial contributions to the home. There isn't much donor presence there so NGOs are more visible."

The Assistant Officer-in-Charge seems to share this opinion as in a different conversation he says, "There is no work the women are doing. They say their religion forbids it. Some can work selling bean cake in their house as long as they don't come out. Others complain that their husbands take the money or borrow it and never return it."

One of the LCVs observes that before the community engagement programme "it was not possible to bring babies to the clinic and I would have to force them to do so in my capacity as Settlement Head." That is no longer necessary because the women are now proactive in this matter. The health worker only needs to inform the women when they are next due for immunisation. The mothers use weeks to keep track of this for instance, four Tuesdays from today. Days are determined from central mosque prayers which take place every Friday. The LCVs just need to remind the women about their scheduled immunisation. According to him, the 4th and last immunisation visits are the most difficult because he thinks the women become negligent and don't keep to the schedule. The LCV scribe makes a point of following the schedule from the cross-referencing done with health facility records and will therefore send notice if a defaulter is discovered in the settlement. He notes that the positive thing about the system now is that "drugs are available and we have dedicated health workers." The downside is that "the community size is too big for the HF and we need a bigger HF." Another negative point expressed is that some people who didn't get malaria nets earlier distributed are saying, "Go with your clinic". While examining the immunisation records kept at the health facility there was an obvious increase in dropout rate in DPT1 and DPT3 between April and June 2010. The local facilitator explained that this is attributed to the net distribution:

> "People in the village began to say that, "the free nets which we can see we did not get but the vaccine which we cannot see we are getting; take your vaccine, we don't want.""

A CHEW living in the village also made a connection about the perceptions of providing people in the community with something tangible they can use as opposed to vaccinations they deem intangible and suspicious:

> "The issue with polio vaccination is seen as excessive. Let government do something new that can help us and benefit us all. What I have in mind is like money to buy food etc. The level of polio victims is reduced so people are tired of it. There are only 7 polio rounds. This is intensive but there is the incentive to give one [bar of] soap for each child you bring to immunise. Sometimes the government is providing the vaccine but not the required number of soap. This makes it disappointing for those who don't get the number of soaps they expect."

The Health Promotions Officer living in the village but working within the Gunduma Council explains that the community "tells us their priority conditions: like during IPD sometimes, they say they want anti-malarial drugs instead of house-by-house IPDs."

One of the female LCVs interviewed expressed that while all aspects of work as an LCV are important she adds,

> "I feel that the most critical is the enlightenment. When a woman delivers, I use the opportunity that we have enlightened them before to actually bring the babies to the clinic myself. This is because by tradition women are not allowed to go out for 7 days after delivery. However the first RI visit is scheduled before 7 days."

She explains that the most problematic issue she faces is the comparison made with polio vaccination and the inherited challenges. Polio had such negative reception because the community members believe that they were infertility vaccines. She therefore concludes,

> "This is why the main cause of health problems in this village is ignorance. People go for traditional medicine when they are sick. Only if they don't get better do they come to me and I refer them to the health facility. We need to educate people but you know that will increase the demand for health services which [means we] will need to improve [the health facility]."

She later made an appeal that "if members of LCV can get support they will do more; I mean support in the way of skill acquisition. Most of the members are unemployed and this will help them to earn a living. The support should come from LGAs and donors." To make effective demands on the government she suggests that all the community development committees in the community must present their case as "one voice." The Assistant Officer-in-Charge in a private discussion expressed some

reservation that while LCVs are somewhat helpful, not all are active. He explained that most of them signed up as volunteers not knowing what it meant. In his opinion he felt that their expectation was probably that the LGA would pay them. But as nothing is forthcoming they are gradually withdrawing. The Village Head's second wife also suggests that it is necessary to provide monetary incentive for the LCVs. A CHEW living in the village explained this situation within a cultural and economic context:

> "Some people describe the Nigerian man as someone who wants you to go straight to the point: Nigerians are not looking for volunteering. If you call someone, they are hoping that there would be something for them. Our people are suffering. For example, if you call me to pass on information, I can agree because I am standing before you. However this would be difficult in practice because people need to make ends meet… If you however give me N500 -N1000 [2 - 4 GBP], you will find that I will work very hard because they can work for one week without making this kind of money."

Following a specific personal experience, another LCV explains that he put himself forward for the role: "When my daughter was sick I took her to a traditional doctor but she didn't get better until I tried the clinic. This enlightenment motivated me to want to let other people know as well. The most important aspect of this work for me is that in addition to the training we gave the 15, I do house to house and I was able to convince my friend to bring their child for RI." As a strategy, evidence of the last measles outbreak is employed to show that the children that were immunised fared much better than those who were not.

From community members, one of the women who was attending the health facility for the first time to receive ANC emphatically stated that the main problem with health is lack of money:

> "If I have money then it does not matter what my husband says, I can go to the health facility. But when we both don't have, then the situation gets worse. Ignorance is also a main problem. This is because instead of sending the boy to school the father will send him to the farm so they can eat."

She explained that in her community there are only TBAs whose role is mainly to cut the cord when a child is born. She mentions that the TBAs also give traditional

medicine and when there is a complication "they will rub the back and pray." In her opinion, training of the TBAs is imperative and she suggests, "Government should provide female workers because many women are at home who can't afford transportation to the hospital." In spite of this, the Officer-in-Charge observed that ANC attendance has almost halved, as women now prefer to go the Jahun Hospital because of the incentive of free drugs.

On the issue of providing female health workers the CHEW who lives in the village explains that there are no female CHEWs because most parents don't like to send their daughters to school after secondary school. "So they just look for marriage for them." This is because there is the perception that "there may not be enough security in the school to prevent immorality." He explains that where there are no female CHEWs in a health facility this prevents the provision of ANC services. The CHEW explained that he has petitioned the Government but there has been no response.

In a discussion with 21 young men sitting under the shade, they argued that the community has no voice and that while the Local Government is a bit responsive it is not doing enough. They see the political system as biased as one points out "If you [your community members] are not under the ruling party, you don't get anything." Some think this was the case with the distribution of nets. Not all think the problem with the net distribution is political. A young man thinks that the distributors sold it. Another says it was related to insufficient card distribution which determined who got a net and who didn't. Another says the cards were sufficient but the distributors hid the cards and gave them to those they like. Nobody writes petitions because they feel that you are petitioning the cause of the problem so they would not listen. The perception is that hiding of cards started from the Local Government. In a similar discussion with 10 elders, the idea that a government could be voted out of office if not responsive to the needs of the people was met with rapturous laughter.

Chapter 6: Case Study Analysis and Discussion

Representation, Visibility and Responsiveness

Introduction

This chapter is divided into two sections. In the first we draw from our accountability framework developed in Chapter Three, to analyse our case study through *representation and visibility constructs*. In the second section, we employ our responsiveness construct to discuss the implications of our case study analysis. As noted in the methodology section of this thesis, our primary aim is to make sense of the complexity of implementing HMIS in LDCs to improve accountability arrangements. We employ r*epresentation* to analyse what these accountability arrangements are in terms of their objectives while *visibility* helps us to examine the mechanisms that underpin these objectives. These constructs respectively address the following sub-components of the primary research question -"*To what extent can HMIS improve accountability arrangements of primary healthcare delivery in LDCs?*" -

1. How are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?
2. How can we better understand the challenges of HMIS implementation in LDCs through the complexities of accountability mechanisms?

In the discussion section we use our responsiveness construct to examine the implications of the case study analysis on the kind of developmental transformation that is implied in the implementation of HMIS from an accountability perspective.

Representation: Mirroring and Mediation

Representation is conceptualised as the objective of accountability. From an instrumental perspective, these objectives are based on narrowly defined criteria such as transparency, cost effectiveness and efficiency. However, from a socialising view, the objectives of accountability are not predefined but emergent and contingent on complex interactions and interests within a local context. We term the former as mirror representation, and the latter as mediating representation. Theoretically, we commit to the proposition that both forms of accountability are required in order to analyse and navigate the reality of PHC delivery in LDCs. However we note that the technical rationality underpinning mirror representation, while vital in placing PHC delivery and accountability within its hierarchical context, does not illuminate the day-to-day negotiations and (re) interpretations by socially embedded actors. Through a technical rationality PHC delivery is objectified and therefore the objectives of accountability are skewed towards measurable goals and a form of organisational structure that defines unambiguous roles and responsibilities against targets and performance requirements. Measurable and a-contextual targets form the basis for which local agents are held to account. HMIS within this accountability arrangement are conceived as supporting mirror representation in two ways: rendering accountability measurable through the transposition of PHC delivery from a complex web of action into relatively simplified data classifications; and from this reductionist process, HMIS is amenable to evaluating the performance of local agents against measurable PHC goals. The objectives of mirroring entail the determination of data sets, the centrality of reporting rates and data quality. From these processes, accountability objectives are determined regarding performance targets and service quality. Within this domain, the objective of accountability is for the HMIS to accurately depict a predetermined reality of PHC services by holding local officials accountable for capturing and reporting data on one hand, and providing the appropriate services on the other. This form of accountability is enunciated through the discourse on HMIS and rational decision-making for health care delivery. From this perspective, HMIS is seen as providing necessary information that allows local agents to make appropriate decisions regarding the delivery of healthcare. This is clearly articulated in Nigeria's NHMIS policy:

> "…the Federal Ministry of Health (FMOH) has initiated a review process anticipated to lead to a NHMIS that would facilitate efficient, effective and accurate planning and evidence based decision making."

The focus of our analysis does not argue against this approach but attempts to unpack the broader socio-political, institutional and cultural dynamics of the local context within which these hierarchical demands are deployed. We also attempt to open up an analytical space that enriches our understanding of the complexities of implementing HMIS to improve PHC delivery accountability. Through our analysis, we attempt to show that we can gain a richer understanding into the accountability arrangements underpinning PHC delivery by illuminating the dynamic socio-political context that bears upon these accountability objectives. In this light, we introduce a socialising viewpoint where the objectives of accountability are socially embedded and as such constructed according to relational power dynamics and diverse mediating interests.

Using the concept of representation as mirror and mediation we conceive of HMIS as implicated in PHC accountability arrangements that go beyond predetermined performance objectives but entangled in a pervasive negotiation of interests that constantly redefine the objectives of accountability in a manner that makes them socially dynamic and unpredictable. By analysing these dynamics we attempt to answer the first sub-question of this thesis: *"how are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?"* To address this question we first consider the intricacies of accountability objectives as defined from a top-down hierarchical view. We show that even though determining accountability objectives at this level is objectified, the process itself is entrenched in power relations. Next, we elaborate on the complexity of these accountability agenda by analysing the localised interpretations of these demands and how accountability is socially constructed and embedded through the mediation of diverse interests and motives.

Representation: Hierarchical View

The hierarchical view of mirror representation distils the technical rationality and instrumental accountability objectives that is inscribed in efforts to standardise and objectify PHC delivery through HMIS policy demands and the implementation of decentralised organisational structures. It encapsulates the essence of PHC delivery

within a global health agenda of disease prioritisation and high-level coordination and direction defined by national and international institutions and agencies. The practical reality of the hierarchical view in the context of LDCs is that, it is also characterised by a weak state mediating its interest through negotiations, contestations and alliances with powerful global health actors. Analysis of these accountability dynamics gives us a means of drawing implications for HMIS implementation.

We employ three theoretical constructs under the hierarchical view, to shed light on our empirical findings: mirror representation, administrative decentralisation and distorted communication. Mirror representation analyses how the hierarchical objectives of accountability are predicated on the objectification of PHC delivery; administrative decentralisation illuminates accountability objectives within the organisational structure for PHC delivery; and distorted communication highlights the inconsistencies deriving from the multiplicity of competing objectives that is introduced through the mediated interests of diverse actors.

Mirror representation

Against the backdrop of a technical rationality, accountability objectives of mirror representation, as analysed here, are constructed through the objectification and abstraction of PHC delivery. Objectification and abstraction from a hierarchical view seeks to provide an overarching accountability structure that renders PHC delivery measurable and sets out a clear course of action for multiple local agents across a wide geographical and cultural context. This rationality is clearly expressed below:

> "The National Strategic Health Development Plan is the first of its kind in the history of the development of the Nigerian Health Care Delivery System which will serve as **the overarching**, all encompassing, reference document for actions in health by all stakeholders to ensure transparency, mutual accountability for results in the health sector" (Federal Republic of Nigeria 2010: 22) [**Emphasis in original**].

There is little or no room for variations or context sensitivity in terms of the set targets. In Nigeria, around 10,000 wards across 774 LGAs in 36 states and the FCT are all brought under a single accountability rule for the delivery of PHC services to a population of approximately 150 million. HMIS are at the centre of this objectification as they provide the tools, techniques and vocabulary that makes it possible to render accountability objectives for PHC delivery measurable through

targets for predetermined health indicators such as the health-related components of the MDGs. The abstraction of accountability objectives for PHC delivery from their local contexts derives from processes that define uniform goals across an expansive and heterogeneous domain. The objectives of accountability are therefore predicated on predetermining universally desirable outcomes of PHC delivery. One of the means through which this objectification is achieved is the definition of an MDS. According to Shaw (2005), this represents the "most important data elements selected from all primary health vertical programmes" (pg 632). Our interpretation of these criteria is that the MDS is underpinned by an instrumental HMIS design that embodies the objectification of PHC delivery and accountability objectives of mirror representation. In the first instance it reconstructs PHC delivery according to a defined dataset and in the same breath subject local agents to this single accountability rule. As we have mentioned before, our analytical aim is not to argue against this objective of accountability but rather to bring it to the fore and critically examine its implications. Indeed, to some extent we show later that this objectification is necessary (probably even desirable). This is in a sense Hyden *et al's* (2004) argument that governance is both contingent and structural such that agents' activities are not without boundaries or constraints. It is also in light of Roberts (1991) proposition that it is crucial to have unifying accountability objectives to stem what would otherwise be irreconcilable interests and goals. We return to this theme later. However, we state at this point that it is important to be critical in examining the extent to which the interests represented in the MDS reflect and balance the developmental needs of poor communities against externally driven global priorities. This is particularly a strong point in Easterly's (2006) critical thesis on the design of developmental programmes in poor countries. The interplay between local and global actors in the definition of an MDS not only implicates HMIS in its objectification role but also in its mediation role. We will therefore analyse this further through our concept of mirror representation.

HMIS as mirror representation

From a hierarchical view, HMIS is designed to mirror PHC delivery therefore its implementation is part and parcel of the parameters for which agents are held accountable. By this, we see that it is not enough to provide health services that communities want or request; at a hierarchical level it is rather that at a minimum, these services are captured in the formalised HMIS and in line with the prescribed

representation objective (i.e. the MDS). The construction of this mirror representation is achieved through the transposition of PHC service delivery into specific indicators representing desirable targets. Thereby local agents are held accountable for PHC delivery through the data they report. As mentioned earlier, we find this reflected in the determination of an MDS for the country. There are however other data sets and information sources that are components of the formal HMIS like those used for disease surveillance (such as the IDSR) and health surveys (like the National Demographic and Health Surveys (NDHS)). The routine HMIS mirrors PHC delivery through indicators such as reproductive and child health, specific disease incidence and prevalence. In terms of data reporting, accountability objectives set at the hierarchical level is the "% of States whose routine HMIS returns meet minimum requirement for data quality standard" (Federal Republic of Nigeria 2010: 96). This confirms Roberts (1991) notion that accountability objectives of mirror representation prioritise data quality. An essential quality target for the HMIS entails 70% of LGAs and health facilities in all states reporting. From the data reported, agents are held accountable according to indicators on PHC service provision, the utilisation of these services and the health status of the population (e.g. through data on maternal and child health, morbidity and mortality). The IDSR as an integral part of the HMIS, mirrors the status of twenty-two priority diseases in the country. Accountability objectives are measured in terms of the "% of States that submit timely disease surveillance reports" (Federal Republic of Nigeria 2010: 96). The DHS evaluates health status of the population against the backdrop of broader socio-cultural factors. In this regard, states' MOH are held accountable for the health component of these surveys.

From the viewpoint of the FMOH and federal level stakeholders, the different HMIS forms and registers produced and distributed across the country are of themselves indicative of the accountability demands placed on lower level officials to report and provide services as required by the data elements and indicators in these forms. Precisely because accountability objectives are embedded in the design and intentionality of HMIS implementation, the hierarchical view emphasises the imperative to improve the quality of HMIS mirror representations. As mentioned earlier, this is precisely Roberts' (1991) point regarding mirror representation when he proposed that the primary goal of this form of accountability is to improve the

quality of representation. Without this quality, accountability objectives of measuring PHC delivery indicators are weakened.

Apart from the challenges of a weak routine HMIS in Nigeria, what we find with the notion of mirror representation is the diverse negotiations that seek to influence what the HMIS mirrors. By analysing HMIS as mediating mirror representations, we see how at the hierarchical level, accountability objectives are negotiated to reflect particular interests and ideological leanings.

Mediating interests within mirror representation

Various actors at the hierarchical level negotiate the representation of their interests in the design and implementation of the MDS (or essential data set: EDS). A national PHC review explained the challenges:

> "The Nigerian NHMIS policy document has already defined an EDS and developed series of indicators, but they are too restrictive while some are too amorphous to address the needs of specific programmes. This has led to many programmes collecting data outside the national EDS as well as the development of parallel reporting systems. The lack of coherence in reporting was observed as far back as 1992 when the review team from WHO concluded that the operation of parallel information systems in Nigeria was a serious problem, which required urgent attention in view of the duplication and waste of time and effort, created particularly at the local level." (HERFON 2007: 304)

In the NHMIS policy document, it was observed that initially, over 50 different forms were required at the federal level alone (FMOH 2005). Health workers at PHC levels had to fill out NHMIS forms requiring over two thousand data elements (PATHS 2 2012). These data elements are determined at the federal level through the Health Data Producers and Users (HDPU) forum (including FMOH, WHO, donors, federal vertical programmes, state representatives etc). The criteria for mirror representation are constantly contested and negotiated especially by partners to reflect their interest in particular vertical programmes. The influence of these negotiations is apparent in the newly integrated HMIS forms. Major changes reflected were the inclusion of HIV/Aids, Tuberculosis and Malaria (ATM) and the exclusion of most of the disease components captured in the IDSR (some data elements still duplicated) but changing the age groupings of the HMIS to reflect the IDSR. A senior official at the FMOH

explains the power relations that underpin this process as efforts are made to whittle down the extensive data requirements:

> "Partners are crying that some indicators and elements are not captured. All partners meet at federal level [for the HDPU forum]; partners have a strong influence [and] we need them because we don't want them printing their forms. Some of them support the state in printing tools so we need to look at their data elements and *make sure that their interests are represented*" [*emphasis mine*].

HMIS are implicated in accountability arrangements that are partly necessitated by the complexity of harmonisation and coordination of data sets at a hierarchical level. This is a form of accountability that attempts to mediate the interest of the FMOH through donors who wield considerable influence over the data PHC health workers and HMIS officials collect and report. By accommodating donor interests, the FMOH attempts to improve the prospects of the routine HMIS mirroring PHC delivery. The harmonisation of interests are however a particular difficulty as explained in the account of this senior FMOH official who expressed this as a primary challenge of HMIS in the country. The first quote below was in 2008 and the second in 2012:

> "Donor partners are interested in funding vertical programmes and not strengthening national health systems. This is money down the drain."

> "We need partners to release control over their data as the HMIS needs a central platform to store data and harness information; there is a need to harmonise data elements and indicators but the major challenge is that partners come with their programme and software."

These vertical programmes are ideologically driven by principles of SPHC and, relative to the routine HMIS, have significantly more financial and technical support from donors and international partners. In a review of the health system, it was stated that disease-specific data that reflect global health priorities are better represented in the country:

> "… recent data on key MDG indicators…are generally available. The data highlights that Nigeria fares relatively well… with respect to timeliness of reporting on key health indicators." (Kombe, Fleisher; et al. 2009)

A senior FMOH official contended that the data interests represented in the MDGs are not necessarily working within the national HMIS:

> "The MDG office has a different channel of communication and we don't get to see what their data looks like. The data they collect will satisfy vertical programme management and do not dovetail into national concerns."

The accountability objectives of these vertical programmes are constructed externally and therefore bring with them a particular expediency for even further objectification and abstraction as comparisons are made not just within countries but also globally. Greater objectification and abstraction necessarily diminishes the contextualisation of health priorities. This is particularly like in our case where resources are channelled to these global health programmes and HMIS implementation skewed towards accounting for the increased investments (Carlson 2007).

We submit that implementation challenges of HMIS in LDCs reflect the complexity of navigating the interests of multiple global and local actors in light of a technical rationality that objectifies PHC delivery. This is primarily because the objective of accountability as mirror representation places a demand on pre-specifying the content to be represented in order to construct tools that mirror these requirements. In other words, hierarchical actors, through ideological lenses and predetermined programme targets, interpret PHC delivery services and then design, support and/or prioritise data tools that seem most appropriate to mirror PHC delivery according to these interests.

We introduce administrative decentralisation in the next section to analyse the instrumental and socialising forms of accountability that are implicated in determining the performance criteria of mirror representation.

Administrative decentralisation

We approach our analysis of administrative decentralisation in light of accountability being *structurally contingent (Hyden, Court et al. 2004)* in that *hierarchical accountability* seeks to provide a unifying objective for potentially irreconcilable local priorities (Roberts 1991). These constructs capture the need for a centralised coordinating mechanism that is able to provide an overarching accountability framework (Kimaro 2006). This aim was expressed in the NHMIS policy:

> "The Federal NHMIS Unit is at the apex of the national health information system and provides a focal point for co-ordinating health information activities nation-wide."

By policy, the NHMIS unit at the FMOH coordinates all decentralised HMIS-related activities that seek to strengthen the PHC system. Horizontally, this is in consultation

with international health agencies, other relevant federal ministries and parastatals like the NPHCDA. Vertically, the NHMIS unit in consultation with other federal level partners provide direction for state HMIS units, LGAs and health facilities. As a distinct feature of hierarchical information, accountability is often upwards from communities to the federal level. This is in concert with the perception of accountability arrangements within the formalised HMIS structure.

Administrative decentralisation necessitates strategies for coordinating multiple activities at sub-national levels through standardisation. The HMIS is conceived to play a central role in this standardisation:

> "The role of government must extend to *ensuring standardization*… of health data infrastructure, especially with respect to *establishing and strengthening relevant organizational structures* for Health Management Information System (HMIS) activities" (FMOH 2006) [*emphasis mine*].

In an interview with an officer at the NPHCDA, there is an echo of this mandate for the hierarchical level to provide a structure within which local officials carry out their duties:

> "Now for the Federal, … as a development agency we are supposed to be the ones to ensure that there is a form of national standard, and a form of national system, maybe with some variation but broadly in Nigeria we are supposed to be able to say this is the system, this is how it operates."

The objectives of accountability for PHC delivery are implicated in the role of hierarchical information, the nature of performance targets, and mediating the interests of multiple principals. The role of hierarchical information is defined through accountability objectives that demand subordinates to collect and report data that provides a mirror representation of the health status of their domain. The emphasis is often unidirectional i.e. upwards. It is within this context that states and LGAs are held accountable for reporting *hierarchical information* that accurately reflects the health status of their populations and also the performance of their PHC service delivery. Communities, health facilities, LGAs and states are required to report HMIS data as designed at a higher hierarchical level. The goal of this exercise points to the instrumental conception of data for decision making as expressed in the NHMIS policy document:

> "For effective management of health care services, efficient National Health Management Information Systems (NHMIS) is required. Government mandate requires that a National Health Information System (NHIS) shall be established by all the governments of the federation to be used as a tool to support evidence based decision making…data collection format consists of a fewer number of summary forms for communities, health facility, LGA and states…"

As the federally published reporting rates of states and LGAs reveal, there are significant challenges in this upward accountability arrangement. A senior official of the FMOH expressed that information does not flow up regularly from states, constraining the ability of the federal level to obtain "a full picture" of the health profile and status of the country. In Nigeria, accountability objectives constructed through performance data on reporting rates, PHC service availability and service utilisation reflect the premium placed on bringing together representation fragments to make up a complete picture.

Our theoretical constructs suggest that at the federal level (being a principal), it is important for senior bureaucrats to have the capacity and resources to process data (fragmented representations) reported. Also, the quantity and quality of information available is crucial to determine the performance of lower level officials in implementing PHC policies. Both of these are mainly lacking in the Nigerian context. In a conversation with a senior FMOH official in 2008, he explained that the NHMIS unit did not have a budget allocation; the analysis of state data (which was not reported by all states and LGAS) could not be published for a couple of years due to resource constraints. While there is a general assent to the principle of using information locally to plan health care delivery, much of the accountability activities at the hierarchical level are based around the FMOH attempting to strengthen data reporting with the hope that through feedback forums this will lead to officials "feeling" responsible in translating the reported data into better service delivery. Even where the FMOH receives scanty data, there are efforts to produce an analysis and feedback to states as a way of encouraging data reporting. The feedback forum convened by the FMOH evaluates the performance of states according to the proportion of their LGAs and health facilities reporting data and their service availability and utilisation rates. What we note here is that within this forum, data reported is used to provide a measure of PHC performance. The implication is that the objectives of accountability are defined by the data reported. In this context, there is

an understanding that most data reported are of poor quality but these data reports are used as a means of sensitising states to improving their data reporting performance. We therefore see a recurring theme of accountability objectives being subsumed within the idea of HMIS supporting the process of mirror representation. Performance within the bureaucracy from a hierarchical view centres on achieving the goals set by the FMOH through a rational process of collection and reporting predetermined data elements up hierarchical levels. There is however another dynamic, which unfolds as we analyse the implications of a multiplicity of principals determining the criteria for mirror representation within a decentralised system.

Administrative decentralisation embodies the instrumentality of *accountability objectives determined at a distance by diverse global and local principals*. The determination of these objectives is underpinned by power relations, which influence the outcome of what is to be represented. As the dependency on donors has become woven into the institutional fabric of public service delivery it is often taken for granted especially in the implementation and strengthening of HMIS (see Table 6.1 below). To illustrate, the HDPU forum as an important HMIS forum in the country did not hold in 2011 because there was no budget for this activity. At a high level presentation by the Head of the NHMIS, the following points were made about funding:

"•As usual finances may be a constraint to the conduct of the HDPU
•FMOH is seeking to obtain funds from NACA [National Agency for the Control of Aids] through the Global fund grant
•It is also expected that partners working within states support the attendance of their government partners within the states"

Table 6.1: Mediation of interests at the hierarchical level

The sourcing of funding through the Global Fund grant is significant as we earlier observed that the newly integrated HMIS tools have given significant prominence to ATM, which is the primary remit of the Global Fund. The influence of donors on what is represented has direct implications for the construction of accountability objectives as mediation of interests. The complexity of data representation shows that where donor interests are not represented, this leads to the proliferation of data tools

in health facilities. We analyse this as the *fragmented representation of (un) accountable practices*. It is a form of "de facto accountability" (Madon and Krishna 2010) where the HMIS is fragmented due to parallel accountability structures introduced by donors. This is especially the case in Nigeria's decentralised health system where donor partnership with states makes it possible to work directly with LGAs and communities. What our analytical lens helps us to understand is that different interests construct different accountability objectives. Therefore, with the proliferation of interests in vertical programmes come the fragmentation and compartmentalisation of accountability practices. In theory, forums such as the HDPU are opportunities for reorienting accountability on the axis of the nation's most dire health needs. As the Head of the NHMIS and an NPHCDA officer commented that the top diseases in the country are known. This was echoed by an official at the WHO noting that the NHMIS does not need to be extensive or sophisticated but scaled down and focused on local health priorities. However, with donors mediating their interests for vertical programmes and the FMOH vying to strengthen its position by creating alliances, the MDS includes extensive data elements that represent the interests of a network of actors. This is why in Nigeria, although the FMOH convenes the HDPU meeting and the rhetoric is that it is driving the efforts, the reality is that the MDS is the outcome of interest negotiations and does not necessarily reflect local health priorities. As the FMOH seeks to address the issue of an overburdened MDS and reduce the size of the dataset, donors invariably proceed to capture their data locally through parallel systems.

The analysis presented above has implications not just for the integration of data requirements in the national MDS but also in terms of accountability arrangements underpinning the reporting of routine NHMIS. With donors setting up parallel reporting structures and providing direct support to states, accountability arrangements are modulated as local interests come into play in light of global actors or principals who provide resources in turn for the information demands they make. A State HMIS officer echoes these sentiments:

> "There are problems with HMIS especially in the North because they don't like spending money on HMIS. They depend on donors primarily and this is not sustainable. When the money for HMIS is released, it is all for sharing. Some donors have problems especially when they deviate from FMOH policy."

While donors might be able to satisfy their need for accountable practices on resources invested, at the same time these public officials do not necessarily account for routine budgets released for HMIS activities or actively motivate for funds. This is a fragmentation of accountability practices as it is not across board.

Using our concept of distorted communication we further unpack the challenges of HMIS in terms of data quality and how the mirroring of local health priorities are modulated through the mediation of interests.

Distorted communication

Distorted communication highlights the intrinsic weaknesses of hierarchical accountability as reflected in poor data quality and the misrepresentation of local health priorities. This can be understood as the anomalies and unintended outcomes within a system that conceives of HMIS as a technical rational process of data sets being designed to be completed and reported by lower levels for decision making higher up the hierarchy. We interpret distortion not just in light of data quality representation but also in term of a misrepresentation of local health priorities, which is typified in the bias towards vertical interventions and moreover practices deviating from the stated goals of an overarching hierarchical demand. As an illustration of the former, the NHMIS policy document narrates the constraining environment of PHC data reporting:

> "It is instructive to note that… data came from 18 out of 8,797 (0.21%) health centres in the country. Yet this information is necessary for planning and monitoring of health services in PHC Centres." (Federal Ministry of Health 2005: 26)

From this context, we can better appreciate the challenges of using information to determine local health priorities for PHC delivery. These challenges were expressed in an interview with a WHO official:

> "Planning has been driven by external priorities, historical evidence, belatedly recognising a problem and then dealing with it. But the one thing it doesn't appear to be is systematic, proactive and based on data that is being generated."

The skew towards a disease focus as misrepresentation is highlighted by a research officer at the NPHCDA who gave an illustration of how parallel programmes constitute a narrow approach to tackling local health priorities:

> "… roll-back malaria programme should be a unit under the department of public health… but now it is even bigger than the [FMOH]: it has its own big building and everything… now they are so big, they go out fashioning their policies and everything to fight malaria, *as if malaria is the only health problem*."[Emphasis mine]

In case of the last form of distortion, noticeably, directives at the federal level do not result in intended performance outcomes at sub-national levels. This translates into the NHMIS not being able to accurately represent health status and the state of PHC delivery in the country. To understand this problem, we consider the misrepresentation of local health priorities by political society. There is a widespread perception that the prioritisation of PHC in Nigeria is only in policy and not in practice. A state HMIS officer alludes to this as he explains that

> "Nigerians are very good on paper [i.e. policy formulation] but when it gets to implementation it's another story. The problem starts when money is released- everyone wants to have a share of the cake."

More directly, a WHO official explains that:

> "The part of the health service that caters to the least of the people gets the biggest budget. Right now [PHC prioritisation is] all words. At the community, there is a total disconnect. What is happening at the federal level does not translate into action at the local level: it's just a disconnect."

At all levels, a major weakness of the HMIS is incomplete and poor data quality. A nuanced understanding of how objectives of accountability are socially constructed is brought to the fore as we introduce how local actors mediate their interests in light of the objectives of powerful principals and international donor partners promoting vertical programmes. To understand this we analyse how donor-supported data collection at the local level attempt to address the problems of data paucity and quality through *selective mirroring*, which we see as another form of distortion. In return for donor support, data collected reflect the priorities of these international partners. We use this concept of selective mirror representation to analyse the accountability implications of a vertical approach. Significant resources are channelled towards specific programmes and efforts are made for data to mirror performance against expected targets. For example, in most health facilities there are conspicuous displays of immunisation graphs and disease surveillance charts (even though these are not necessarily used or even understood locally). Selective mirroring

can be interpreted as supporting the instrumental value of data but in this case it is the interest of those demanding and producing the data. Health workers that seemed to have little or no interest in routine HMIS data display basic but elegantly "out of place" data representations (see Fig. 6.2). The fact that these graphs and charts are present in the most remote and sometimes even dilapidated health facilities, is not easily reconcilable to the reality that some of the health workers had such limited capacity (or motivation) for reporting routine HMIS data. The general sense from the field was that health workers were more accountable in reporting these selective health data compared to routine HMIS data. Selective mirroring often comes with its resources to develop skill sets and/or increase motivation (not necessarily transferred).

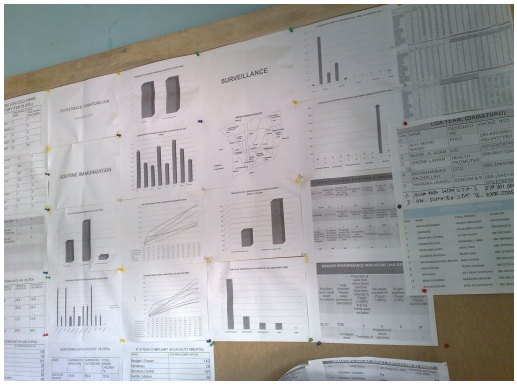


Fig 6.2: Immunisation and disease surveillance data displayed in health facilities.

We submit that the emphasis of mirror representation, either towards general or vertical health priorities, underlies the modulation of hierarchical accountability structures and reinterpretation of information demands according to represented interests at lower levels. In other words, accountability demands to report routine HMIS datasets are reinterpreted in the light of selective mirroring to reflect local interests. These interests are influenced through monetised incentives that direct accountability towards donors and international partners. In a report discussing the impact of duplicate IDSR data elements in the revised HMIS data set, it was stated clearly that health workers would most likely report the IDSR and probably not the HMIS because the former is monetised (Anifalaje 2011). HMIS implementation is therefore implicated in balancing an understanding of the intrinsic value of health data and the accountability mechanisms that draw attention to the local opportunities that are appropriated through the value placed on health data by a patron.

The point we are making in this section is that *mirror representation within a decentralised PHC structure goes beyond the administrative and institutional processes that sets into motion a chain of mirror representations across hierarchical levels, but is implicated in the dynamics of diverse local interests. Accountability objectives of mirroring are therefore modulated through these interests and made sense of in view of the characteristics and motivations of health workers and other local agents.*

We further elaborate on these dynamics in the next section where we analyse the socialising forms of accountability that underpin PHC delivery and HMIS implementation through the way they are contextually defined and redefined; we examine how the objectives of accountability are shaped according to local interpretations of information demands from global and local actors.

Representation: Localised interpretations

We understand localised interpretations of representation through the interaction between the local bureaucracy, political society and citizens in mediating the objectives of accountability. These interpretations provide a situated understanding of actions of local bureaucrats and service providers who manoeuvre within the overarching demands of hierarchical accountability vis-à-vis a political society that mediates its interest through patrimony and citizens employing varied means (such as weapons of the weak and communitarian citizenship) to engage political society and the local bureaucracy for responsive PHC service delivery. Within our theoretical theme of representation, we focus on how the objectives of accountability i.e. the mirroring of PHC delivery, are constructed through mediation. Localised interpretations of accountability objectives therefore shed more light on the complexity of HMIS as mirror representation as they are reconstituted as being mediated through a complex web of social actors who constantly contest, negotiate and construct their outcome. The theoretical constructs we employ here are decision space (both formal and informal), political and civil society. We use decision space to analyse how agents' discretion come into play within a decentralised organisational

structure and their implications for constructing the objectives of accountability. The objectives of accountability as socially embedded are further illuminated as we analyse how political and civil society mediate their interest in the delivery and demand for PHC services.

Decision Space

We identified three broad interactions within decentralised organisational structures that have implications for the situated understanding of accountability objectives. These interactions are within the bureaucracy i.e. hierarchical relations between state officials as principals and local agents exercising their discretion in light of hierarchical information demands for mirror representation; direct interaction between donors partners and the local bureaucracy mediating their interests according to the goals of donor partners; and the interaction between the state and donors interpreted according to their accountability to citizens.

Accountability within weak hierarchical information demands

The nature of accountability mechanisms from a decentralisation perspective implies that information demands made by a *principal* on an *agent* must be legitimised through the provision of resources. HMIS in Nigeria is under-resourced at every level from the FMOH to LGAs. Without providing required *resources*, information demands made by the FMOH (principal) on the state and LGAs (agents), in a sense, has limited effect. While we are not debating the vast and controversial field of health financing for PHC delivery, we are limiting our focus to resource issues that are directly implicated in health workers' ability to capture the reality of PHC delivery and health status and report this to the next level. Our case of HMIS implementation in Northern Nigeria shows that health workers provide services under severe resource constraints. This is particularly evident in the chronic shortage of NHMIS data tools especially at health facility levels. Of the many accounts regarding lack of data tools, an LGA M&E officer describes the situation:

> "There is problems usually with funds. There are Village Health Workers that have been trained to fill in data. But they do not have forms to fill. If

> we had funds we can photocopy the forms and distribute to the clinics. If only I have the forms, I can even use my own funds to go and collect the data. The state promised to send the forms but still have not got them for about a year."

An official at the WHO echoes these sentiments that:

> "…the chances are you can't do your job, there is no money, no vehicle, no forms, if there are forms there is no money to photocopy them when you run out, if you photocopy them you can't get out to pass them around, the people who provide the data are out of the habit of collecting and delivering because it happens haphazardly and therefore forget. So at the end of the month nobody is saying where is the data…"

Some health workers without the necessary forms and registers improvise using notebooks, which they have often purchased themselves and try to adapt the notebook to the design of the formal HMIS register. The improvisation of data tools at health facility level satisfies the LGA M&E officer who exercises an understanding of systemic resource constraints and commends the efforts and dedication of the health worker. On the other hand, as the registers are difficult to replicate exactly LGA M&E officers find that they cannot easily incorporate these data into the predefined format. Some officers decide to exclude the data altogether while others make up phantom numbers. The underlining principle of local accountability in HMIS implementation is that where hierarchical information demands are defined without the necessary resources, improvisations to work around the constraints are deemed highly commendable even though they might not fulfil formal accountability criteria. In this case HMIS data reporting typifies symbolic routine accountability where expectations are low or non-existent and the criteria for evaluation does not extend beyond the presence or absence of data. The shortage of resources promotes opportunistic behaviour where some health workers carry on with other enterprise such as farming and do not turn up for work. It is therefore not just data generation and reporting that is neglected but also the provision of health services to the community.

What this analysis shows is that the challenges of data quality, reliability and use in Nigeria requires an understanding of how the demand for performance is structurally enabled or constrained through the (non) provision of required resources. The quality of mirror representation points to the necessity of mutual accountability.

Accountability objectives mediated through donor interests

Decentralisation of health care in Nigeria means that donors can work directly with states governments in supporting the collection of particular data elements, which may not reflect the national HMIS data set. Therefore donors providing resources for states' and LGAs' HMIS activities effectively become principals. We find this in our case study where Jigawa developed a state-specific HMIS dataset (Shaw, Mengiste et al. 2007) through support from donors working directly with the state. Arguably this means that local health priorities of the state were reflected in their dataset, in addition to any donor specific data to be monitored. From a state level analysis, Jigawa is judged to be making progress in terms of developing its HMIS. However, at the federal level, the evaluation of reporting rates for this state was nil in four reports from January 2007 to December 2008. In a discussion with a senior official at the FMOH, he acknowledged that progress was being made in Jigawa but the required data was initially not captured or being reported according to the criteria and predefined format stipulated:

> "Jigawa was doing things it's own way. They had customized their system but were not reporting what the federal wanted. The HMIS is a state-driven initiative supported by partners so we told them that their data would not be published."

Using a state-defined MDS (Shaw *et al.* 2007), Jigawa state was effectively contextualising its HMIS implementation. However, this did not address the structural accountability demands of hierarchical information. In other words, at the federal level, data submitted which does not conform to the predefined format is not accepted as a valid submission and the state is considered as "non-reporting" and therefore not represented. Following the review of the NHMIS forms at the federal level and the adoption of the DHIS as the national NHMIS software, contextualised representation in Jigawa state became more feasible. Jigawa state was already collecting some of these data elements and therefore only had to include those that were absent. As the NHMIS policy allows states to add data elements and indicators they may consider to be of particular importance to their local context, Jigawa state still retains its state-specific data elements. The DHIS however allows state HMIS officers to extract the data elements required at the federal level and report these biannually. As a result,

Jigawa state data was included in the first 2009 semi-annual HMIS report produced at the federal level. Our analysis suggests that states can become accountable to the federal level as a reflection of donors' interests. This is the case where activity at the federal level makes it expedient for donors to direct state accountability to the federal level. We see this in the publication of non-reporting status of Jigawa state. As a publicly available document, donors invariably find it difficult to defend their performance indicators to their stakeholders where these state-specific improvements are negated at the federal level. As a researcher on my first field trip to the FMOH, it was surprising to find that Jigawa state was not reporting HMIS data when this state was chosen precisely because of the expectation that, owing to donor support, they were far advanced in HMIS implementation. Therefore, to some degree these publications are powerful tools that influence accountability arrangements (this will be discussed in more detail under our section on visibility). We can also deduce from this finding that HMIS implementation creates accountability arrangements that emphasise the role of local interests in the partnership between states and donors. The outworking of this local interest implies that states become accountable to donors in return for resources and support. The perception of a senior official at the federal level is expressed below:

> "Jigawa is doing well because they have support from partners. I hope that when partners pull out the success will be sustained. I have my doubt. Good information does not come cheap. You need to put money into data for decisions; some states cannot do that except through partners that value data but states don't put value on data."

A state HMIS officer in Jigawa sheds light on the tenor of this accountability structure by describing the impact of an interim end of a donor project before it restarted under a new contract:

> "For the 2 months after the initial PATHS project, reporting rate really suffered. We did not have the funds to conduct supervision or data review workshops. If people are not given money they don't report data. Even when funds are linked to data reporting, you can tell that some Gundumas are cooking the books but to address this we need to visit the culprits and investigate but we don't have transport or the means to buy fuel into our personal cars. We don't even have money to print out forms not to talk of supervision."

An LGA M&E officer further illuminates this accountability practice where local interests are mediated through donor incentives therefore creating conflicting understanding and interpretation of hierarchical demands for routine information:

> "When you show enthusiasm on data collection the feeling is that the M&E officer is getting extra funds for himself and the health facility staff as well. Some don't want to continue collecting data because they are not well resourced."

Accountability to citizens on the fringes in state and donor partnership

We analyse how donor mediated accountability structures impact on PHC delivery and health status in Jigawa state. As important components of the NHMIS (Oyemakinde 2007), we provide this analysis through a government official's interpretations of the 2008 Demographic and Health Survey. Against the backdrop of Jigawa's poor performance in the 2008 Demographic and Health Survey, the Chair of the state's Health Data Consultative Committee expressed the need to translate health interventions into improved healthcare service delivery and better health status for the people of the state. He noted the necessity of developing a strategy that redresses the apparent disconnection between health planners and client communities. His submission was that:

> "Jigawa was last in many health areas at a presentation of the Demographics and Health Survey 2008 held in Abuja. The greatest problems in the state are malaria, maternal deaths and immunisation; the highest number of donors are in polio (6 out of 8 partners) which is the least of our problems. A lot of money is given to immunisation but we are still recording zero. Health profile is dire in the state because people are battling with illiteracy and poverty."

In analysing this statement we can conclude that the underlying factors of poor health cannot be divorced from socioeconomic developmental needs. State accountability objectives to its citizens therefore need to reflect these mutual priorities. The implications for HMIS performance in Jigawa state is that data captured does not fully address the developmental health needs of the community; prioritisation of services, rather than reflecting local priorities, are driven by global health imperatives. In the face of weak accountability to citizens, donors' vertical initiatives drive the healthcare agenda, which do not reflect local health priorities.

In the next section we analyse how political and civil society impinge on HMIS and PHC delivery accountability arrangements.

Political and civil society

We introduce political and civil society as theoretical propositions that provide an explanation of some practices at sub-national levels, their practical implications for constructing accountability objectives, and the role of HMIS implementation. Our analysis finds that accountability objectives are constructed through the interaction between political society and bureaucratic performance; we also find that through "weapons of the weak", civil society engages political society in light of the latter's influence on bureaucratic performance.

Political society and bureaucratic performance

We find that the interaction between political society and the local bureaucracy has two negative unintended consequences for performance and accountability objectives. The first is the patrimony of political society that provides employment in the delivery of PHC services; the second relates to local agents exercising their discretion within an informal decision space in response to a negative perception of political meddling with the particular job postings.

In order for local bureaucracies to be accountable in the implementation of PHC policies and provide appropriate standards of health care services to communities, they require the necessary capacity and skill set. Our findings show that in Nigeria (Northern Nigeria particularly) there is a significant shortage of capacity especially at local levels where the responsibility for PHC delivery is primarily located. From the perspective of a senior FMOH NHMIS official, the single most important problem in NHMIS implementation for PHC delivery is capacity. A national health review enumerated these as:

> "…inadequate and ineffective staff training in data analysis, interpretation and use at all levels; misreporting of conditions, poor understanding, low confidence and acceptability; weak monitoring, evaluation and managerial capacity at the periphery and the absence of a strong central coordinating institutional framework " (Federal Ministry of Health 2005 in HERFON 2007: 304)

Although the lack of capacity is a significant problem in implementing HMIS, politicians do not necessarily consider this a priority. Nevertheless, providing jobs to supporters, friends and family is perceived as a political expediency and this

significantly impacts on the mix of available capacity, motivation and accountability arrangements. A community health doctor expressed that for PHC delivery "the major setback is 'politicalisation': if you are not connected, like, to the chairman or other VIP, nothing will be done."

This is reflected in the creation of employment as a major political agenda especially at the local level. However, this might be at the cost of providing the appropriate level of capacity in the health facility. Below, an official at the NPHCDA describes choices that local political officials usually have to make regarding the employment of health workers:

> "The state employ[s]… higher cadre workers whose salaries for 1 person could be equal to 4 times that of the junior worker that the local government would be more inclined to employ; those junior workers are the grassroot workers who the Chairman want to keep happy. Whereas most people the State government employ are usually those who stay in the urban centres and are less likely to want to go to the rural areas."

An explanation by a WHO official captures an aspect of this dynamic and its implications:

> "There are too many people - who do not have a clue about what they are supposed to be doing - in positions that are absolutely critical to the health of a fairly large number of people. You multiply that out and that's what the problem is. We have a problem with human resource capacity and training; people who really shouldn't be there. Nigerian politics is about who [you know], so you get a Local Government Chairman, and he wants to give people jobs... [In the end] you get people who might not only be unqualified for the role but those who might not even be interested, just wanting to draw a salary and to enrich themselves…"

Working within the framework of this political society, local politicians undermine the efficiency of PHC service delivery by recruiting people in healthcare facilities who cannot deliver due to incompetency or apathy. Weak *meritocratic mechanisms* therefore create an alternative social interpretation of performance demands. For example, a respondent at the federal level explained:

> "So at the end of the month nobody is saying, […] 'you've failed to meet your target'. No, it's all to do with the various internal things like 'have you been good enough to your boss'. It is totally mechanistic and [performance] does not [correlate with promotion]".

We can understand this challenge through the notion that, to an extent, the influence of *political society* systemically undermines capacity and motivation for HMIS implementation. This is pertinent because *capacity and motivation* is directly related

to accountability (Bossert 1998), which in turn sheds light on our construct of HMIS as mirror representation.

Another problem is that some health workers interpret their appointment and/or postings as politically motivated punitive action. These prove to significantly weaken accountability as these officers may refuse to turn up for work, even though they receive their monthly salaries. Consequently, absenteeism was a recurring theme during the fieldwork. An Officer in Charge of a health facility lamented that:

> "We have about 50 people officially posted to this clinic. Only about 3 report because the rest don't want to work in this locality for *political reasons*. Nothing can be done even if you report them."

An LGA deputy M&E Officer stated resignedly that the M & E Officer doesn't come to work, and has in fact not been to work in the last six months, because she feels that the appointment was a political disciplinary action. These findings show that political interference in the bureaucracy not only affects performance but also the accountability mechanisms that may be introduced to improve this performance, such as HMIS. Non-reporting or poor reporting of data can be linked to patrimony in political society, which relegates the improvement of performance accountability through HMIS in favour of social and political affiliations. In this case, the accountability of health workers and the local bureaucracy is not derived from formal institutional mechanisms but related to powerful state actors and political patrons. The performance of HMIS in terms of service provision within these accountability arrangements can be understood from the way citizens engage with service providers, the local bureaucracy and politicians.

Civil society's "weapons of the weak" in engaging political society

Our theoretical framework proposes that desperately poor citizens in communities though shy away from open confrontation, depend on organising *"weapons of the weak"* for covert political scheming (Scott 1985 in Corbridge 2005: 45). From our case study, we see non-engagement as a "weapon" that citizens deploy in the attempt to exercise their agency. For instance, where they conclude that health workers are incompetent or nonchalant, citizens refuse to use the health facility. This leads to low

service utilisation, which is a key performance indicator captured by the HMIS. This becomes particularly important in cases where it is in the interest of local politicians, service providers and local bureaucrats to demonstrate improving performance in service utilisation such as immunisation coverage. The global effort to eradicate polio in Nigeria presents a case in point. Especially in Northern Nigeria where there is significant resistance, huge funds are being channelled to states and LGAs to improve the uptake of polio antigens mainly through Immunisation Plus Days (IPD) mass campaigns. Citizens are aware that they hold some form of influence in this domain and use this as a platform to make their voice heard. These citizens attempt to mediate their interest within political society through donor and international partners' immunisation programmes. A community engagement consultant working for a donor programme explained how a community refused to be engaged during an IPD exercise, which is the flagship for polio mass campaign, sponsored by the WHO. She explained that this was because they questioned the competence of the health workers and the suitability of the Ward Head:

> "There was a ward that refused to engage because they did not have confidence in the staff. The Ward Head is connected to the commissioner for Education and therefore nothing was done about this. Consequently, there was no turn out at the IPD."

The sense that *chaotic political society* is sometimes inhabited by *uncivil society* is reflected in how communities refuse to engage when they suspect that their interests have not been represented because they did not support the ruling party. A health worker gives this account:

> "Politics is disruptive in this village (and many other villages in fact). There was a problem even in the last three months that malaria nets were shared but it was not sufficient so it didn't go round. This caused uproar among people who felt they were being victimised for supporting a political party in opposition."

The impact of this disruption was quite visible in the take up of immunisation services as HMIS records held at the health facility showed a significant dip. Explaining the increase in the dropout rate, the local engagement facilitator for the community said:

> "This is attributed to the net distribution. People in the village began to say that, 'the free nets which we can see we did not get, but the vaccine which we cannot see we are getting; take your vaccine, we don't want'."

The Village Head concurred that the most difficult aspect of social mobilisation is that "people are tired of polio immunisation". This was exacerbated when the government provided malaria nets but half of the people did not get any. People used this as an opportunity to lash back and react against any immunisation programme. According to him, the nets were not enough because the government chose to use distribution of cards as a means of estimating how many nets were needed. There were major errors made because these cards were handed out to youths in the community to distribute and they skipped a lot of houses. It was key to note that he felt the government decided to use this means for political reasons because "we had advised against this and recommended that the local community volunteers should be used for this work".

The direct implication for HMIS is related to data quality: there is reportedly widespread falsification of immunisation data at all levels but especially in the aggregation process at LGA and state level. For instance, there are accounts of health workers disposing of polio vaccines and spending time instead under a tree shade, "meticulously cooking the log books" (Anifalaje 2007: 37). At these levels there are remunerations given not just for the recording of data but officers are also held accountable for service delivery. Within political society, citizens' non-engagement is effectively a mediation of their interest through non-representation in the formal HMIS. This non-representation is a form of engagement with political society whose interests are partly defined by their patron's performance targets on service utilisation. In this case, the WHO captures immunisation data through the District Vaccine Distribution and Monitoring Tool (DVDMT), which only requires aggregated data from LGA and state levels. Once again, we come to the trade-off theme between abstraction and contextualisation. As performance targets for these immunisation programmes rely on aggregated data, accountability to citizens is limited and local officers can easily manufacture data to satisfy accountability to international partners. We can understand that the more aggregated data is, the more abstracted it becomes. Therefore, data presented at the LGA level is significantly abstracted from its context. In this arrangement, accountability to citizens is weak as evaluation is constructed based on formal data reported rather than community views.

The challenges of HMIS implementation are related to the influence of a political culture that undermines the performance of the bureaucracy and the bias of

accountability mechanisms towards externally driven targets, which compromises the quality of data produced from the HMIS.

To answer the first sub-question of this thesis (*"how are HMIS implicated in the accountability arrangements underpinning PHC delivery in LDCs?"*), we find that weak accountability to citizens plays a major role in understanding the outcomes of HMIS implementation for PHC delivery. Accountability to donors and global health priorities is locally reinterpreted vis-à-vis hierarchical demands. HMIS data instead of mirroring the status of PHC delivery are modulated into socially defined opportunities for mediating self-interests of health workers, government officials and political agents.

Through our 'visibility' construct, we will analyse how the interplay between hierarchical accountability mechanisms and social forms of accountability illuminate the challenges of HMIS implementation.

Visibility: Discipline and Direction

Visibility as a theoretical construct is introduced to unpack the intricacies of PHC accountability mechanisms and their implications for HMIS implementation. This approach highlights the socio-political complexities of effective regulation through discipline and how participatory interactions improve our understanding of socially constructed accountability arrangements. Therefore, visibility concepts go some way in answering our second sub-question, "How can we better understand the challenges of HMIS implementation in LDCs through the complexities of accountability mechanisms?" We present both a hierarchical view, to analyse the formal accountability tools for PHC delivery, and a localised view that expands on the interactions that define the mechanisms of accountability.

Hierarchical View

This section analyses *instrumental accountability mechanisms* embodied in enforcing the implementation of PHC policies. These are mechanisms deployed for the hierarchical objective of mirror representation. The theories used presuppose the

following: the need to make subaltern agents *visible in terms of responsibilities* for which they will be held to account; hierarchical accountability mechanisms are strengthened through constitutional edicts, policy directives and other *legal instruments*; empirically, visibility mechanisms seek to make government officials and health workers accountable for the reporting of HMIS data and provision of PHC services to citizens. We therefore attempt to understand the complexity of implementing the PHC system in Nigeria from the hierarchical perspective of this visibility lens. We analyse our finding using our theoretical proposition of *integrity of regulation*.

Integrity of regulation

From this perspective, our findings reveal that the challenges of HMIS implementation can be analysed in three broad terms: the legislative context that constrains (or supports) the hierarchical objectives of instrumental accountability; the rituals of routine accountability that conceives of different modes of sanctions and rewards within a hierarchical view; parallel accountability structures that reflect the multiplicity of enforcement mechanisms and interests.

Legislative framework

A legislative framework provides a means to enforce PHC accountability objectives set at the federal level. In the context of Nigeria's PHC delivery system, we analyse the implications of the inadequacy of the constitution to clearly define roles and responsibilities for health care delivery across the three tiers of government. Currently, a draft health bill seeks to improve formal accountability arrangements by providing specific legal powers for enforcing the implementation of PHC policies in the country. According to our theoretical proposition, the bill (if or when it receives presidential assent) is introduced to provide *disciplinary visibility* in the delivery of health care. An extract from the bill reads:

> "There is hereby established for the Federation the National Health System, which shall define and provide a framework for standards and regulation of the health services…" (Government of Nigeria 2011: Section 1.1)

Presently, there is currently no established "framework for standards and regulation of health services" even though the constitution broadly delineates responsibilities by placing health on the concurrent legislative list and thereby PHC delivery as the

fundamental responsibility of the local government. However, there is no legal framework addressing local government accountability for the delivery of primary healthcare. We interpret this ambiguity of responsibility as a product of poor visibility, resulting in the weakening of discipline. This ambiguity has far-reaching implications for the implementation of routine HMIS as a means of supporting PHC delivery and strengthening accountability. The complexity of regulating accountability for PHC delivery in Nigeria can be attributed to the governance complexities of a federal system where state and local governments are to a large extent autonomous, limiting the influence of the federal government (WHO (Africa) 2009) to enforce policies regarding PHC delivery or HMIS. A senior official at the FMOH explained that in cases where LGAs are not submitting data, the best that can be done at the federal level is to pay an advocacy visit to the LGA Chairman and appeal to him regarding the value of health data. One of the direct implications was expressed in a national review of the primary health care system and the health system respectively:

> "Responsibility for the production of the data collection tools remains a contentious issue. It would appear that at the LGA level, there is no investment in the production of the forms. They are dependent on the federal level for supply. The inability of the federal level to meet this need has led to a dearth of these forms across the country." (Lucas 2008: 304)

> "…the constitution's silence on the precise division of roles and responsibilities across the tiers makes for considerable ambiguity in the management of the health system." (Kombe, Fleisher; et al. 2009: 11)

Visibility in the hierarchical sense requires that those held to account are unambiguously identifiable and mechanisms in place to enforce responsibility. In relation to our case, there is a lack of visibility e.g. in terms of defining a legally binding responsibility for the printing of HMIS forms. As a consequence, PHC delivery is underpinned by weak hierarchical accountability due to the absence of an appropriate legal framework.

What the Health Bill proposes to achieve is to make agents more accountable by clearly identifying and creating powers to enforce responsibility through the establishment of appropriate legal instruments. Without this visibility, we observe an immediate impact on the availability of HMIS mirror representation tools. This is significant because these tools are critical in the rational design of PHC delivery and

the evaluation of state and LGA accountability in implementing the national health policy. However, nebulous accountability directives leading to this shortage of supply limits the capacity of the federal level to govern at a distance and create a disconnection between HMIS policy and local implementation. As a result, conflicts of interests are amplified as states and LGAs are expected to expend resources on data tools that may not reflect values placed on health data. In addition, these tools are also part of a disciplinary mechanism that attempt to improve hierarchical accountability and may be at odds with local agents who stand to lose some autonomy in unaccountable practices. Hence, one of the most noticeable challenges of HMIS at sub-national levels is the inadequate supply of data tools, forms and registers. Fierce political lobbying both in favour and opposition to presidential assent for this Bill is an indication of its potential impact on power relations and hierarchical accountability structures for health care delivery in the country. Visibility for discipline brings to the fore, weak hierarchical accountability and limitation of HMIS as mirror representation. This is understood through our concept of an *informal decision space* and *distorted communication*. In the case of the former, states and LGAs *agents* do not exercise their *discretion* in line with prioritising PHC delivery or the expectations of an information-based health care system. Dire health indicators in Northern Nigeria exemplify this, as did a state official from the MOH and a rural community elder in Tsakuwawa respectively:

> "Government is not paying much attention to the health sector: you can see that people are dying from one disease or another."

> "Nobody asks us about our health. We know the work of the Councillor but he might not be interested in this community and not respond. Any problem you take to Councillor, he does not take responsibility if we can't afford drugs or health facility treatment."

As a feature of hierarchical information demands, *distorted communication* takes the form of non-reporting, poor reporting or falsification of data. It is tenable to conclude that in the absence of adequate data reporting tools, HMIS has limited capacity to represent the health status of citizens and provision of PHC services. This limitation has direct implications for accountability to citizens. We can infer that low political will for PHC delivery is evidenced from the overreliance on donors and international partners. A respondent from the WHO provided a critical analysis of PHC planning in the country:

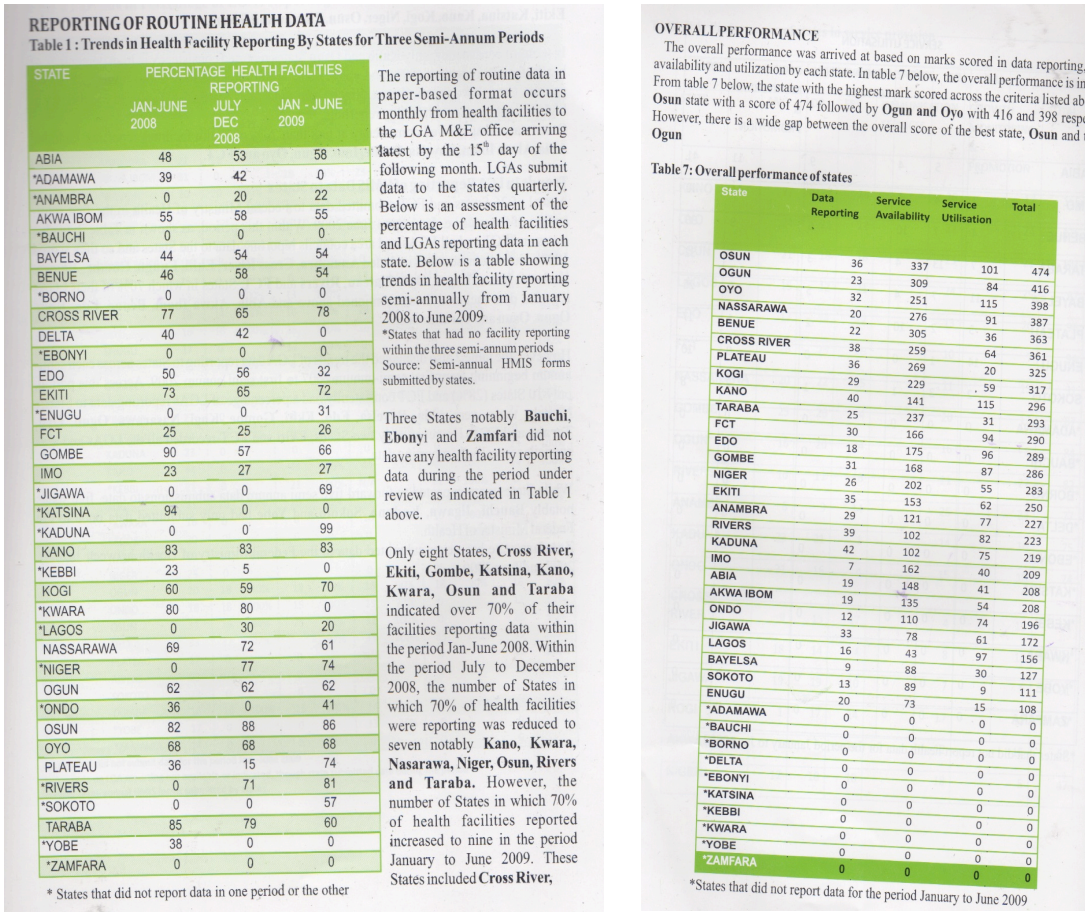
> "Our health agenda is informed by international partners; WHO does national surveys. When you get to levels where you need sophisticated reasoning, like health systems, we should know where our problems are; where resources need to go; which local governments are performing and which are not; where there are infrastructures and where there aren't any."

This analysis can be understood from the governance perspective of *citizenship experienced as a deficit* due to the inability of the state to "see". We propose that HMIS implementation is weak in Nigeria because its instrumental impact on making visible is at odds with interests that sustain the lack of state accountability to citizens in the provision of PHC services. In its current state, the validity of routine HMIS is questioned because of distortions (i.e. data quality issues) but we submit that poor visibility is an expedient of a state that does not want to account to its citizens. HMIS implementation is consequently entangled in disciplinary mechanisms that are defined by the *rituals of routine accountability*.

Rituals of routine accountability

Without a legal framework to effectively enforce PHC priorities, publication of the semi-annual HMIS report by the federal level, can be conceived as a visibility tool deployed as part of a disciplinary mechanism. This publication provides information on how states are performing regarding the reporting of routine data, the provision of basic health infrastructure, available PHC services, and level of service utilisation. Recently (in the last two publication July to December 2008 and January to June 2009), these reports have included the performance rankings of states (see fig. 6.3).

A senior FMOH official alluded to this initiative as a mechanism to enhance visibility: "when the data is published, hopefully it will encourage states to submit data." According to our framework, the ritual of routine accountability operates through *rewarding* good performance through praise (or higher status) and *discourages* poor performance through exclusion. While the first three HMIS semi-annual publications did not include performance rankings of states, the introduction of scorecards to rank performance can be seen as an integral component of routine accountability rituals.



REPORTING OF ROUTINE HEALTH DATA

Table 1 : Trends in Health Facility Reporting By States for Three Semi-Annum Periods

STATE	PERCENTAGE HEALTH FACILITIES REPORTING		
	JAN-JUNE 2008	JULY DEC 2008	JAN - JUNE 2009
ABIA	48	53	58
*ADAMAWA	39	42	0
*ANAMBRA	0	20	22
AKWA IBOM	55	58	55
*BAUCHI	0	0	0
BAYELSA	44	54	54
BENUE	46	58	54
*BORNO	0	0	0
CROSS RIVER	77	65	78
DELTA	40	42	0
*EBONYI	0	0	0
EDO	50	56	32
EKITI	73	65	72
*ENUGU	0	0	31
FCT	25	25	26
GOMBE	90	57	66
IMO	23	27	27
*JIGAWA	0	0	69
*KATSINA	94	0	0
*KADUNA	0	0	99
KANO	83	83	83
*KEBBI	23	5	0
KOGI	60	59	70
*KWARA	80	80	0
*LAGOS	0	30	20
NASSARAWA	69	72	61
*NIGER	0	77	74
OGUN	62	62	62
*ONDO	36	0	41
OSUN	82	88	86
OYO	68	68	68
PLATEAU	36	15	74
*RIVERS	0	71	81
*SOKOTO	0	0	57
TARABA	85	79	60
*YOBE	38	0	0
*ZAMFARA	0	0	0

* States that did not report data in one period or the other

The reporting of routine data in paper-based format occurs monthly from health facilities to the LGA M&E office arriving latest by the 15th day of the following month. LGAs submit data to the states quarterly. Below is an assessment of the percentage of health facilities and LGAs reporting data in each state. Below is a table showing trends in health facility reporting semi-annually from January 2008 to June 2009.

*States that had no facility reporting within the three semi-annum periods
Source: Semi-annual HMIS forms submitted by states.

Three States notably **Bauchi, Ebonyi** and **Zamfari** did not have any health facility reporting data during the period under review as indicated in Table 1 above.

Only eight States, **Cross River, Ekiti, Gombe, Katsina, Kano, Kwara, Osun and Taraba** indicated over 70% of their facilities reporting data within the period Jan-June 2008. Within the period July to December 2008, the number of States in which 70% of health facilities were reporting was reduced to seven notably **Kano, Kwara, Nasarawa, Niger, Osun, Rivers and Taraba.** However, the number of States in which 70% of health facilities reported increased to nine in the period January to June 2009. These States included **Cross River,**

OVERALL PERFORMANCE

The overall performance was arrived at based on marks scored in data reporting, availability and utilization by each state. In table 7 below, the overall performance is in From table 7 below, the state with the highest mark scored across the criteria listed ab **Osun** state with a score of 474 followed by **Ogun and Oyo** with 416 and 398 resp However, there is a wide gap between the overall score of the best state, **Osun** and **Ogun**

Table 7: Overall performance of states

State	Data Reporting	Service Availability	Service Utilisation	Total
OSUN	36	337	101	474
OGUN	23	309	84	416
OYO	32	251	115	398
NASSARAWA	20	276	91	387
BENUE	22	305	36	363
CROSS RIVER	38	259	64	361
PLATEAU	36	269	20	325
KOGI	29	229	59	317
KANO	40	141	115	296
TARABA	25	237	31	293
FCT	30	166	94	290
EDO	18	175	96	289
GOMBE	31	168	87	286
NIGER	26	202	55	283
EKITI	35	153	62	250
ANAMBRA	29	121	77	227
RIVERS	39	102	82	223
KADUNA	42	102	75	219
IMO	7	162	40	209
ABIA	19	148	41	208
AKWA IBOM	19	135	54	208
ONDO	12	110	74	196
JIGAWA	33	78	61	172
LAGOS	16	43	97	156
BAYELSA	9	88	30	127
SOKOTO	13	89	9	111
ENUGU	20	73	15	108
*ADAMAWA	0	0	0	0
*BAUCHI	0	0	0	0
*BORNO	0	0	0	0
*DELTA	0	0	0	0
*EBONYI	0	0	0	0
*KATSINA	0	0	0	0
*KEBBI	0	0	0	0
*KWARA	0	0	0	0
*YOBE	0	0	0	0
*ZAMFARA	0	0	0	0

*States that did not report data for the period January to June 2009

Fig. 6.3: HMIS publication as visibility for discipline

The rationale of exclusion in the case of non-reporting states and the high-ranking status of performing states as a reward is clearly articulated by a senior FMOH official:

> "Ranking of states is a powerful tool because it fosters competition among states and by using a performance scorecard it's creating a lot of storm; we want to give plaque for Best Performing States."

The complexity of this disciplinary mechanism can be traced to the implicit assumption that visibility will engender *dialogue* between states (i.e. "healthy competition" during reviews), which will improve 1) reporting rates and 2) service availability and utilisation. In essence, this formal hierarchical tool relies on the socialising forum of dialogue between states to influence subaltern officials to exercise their discretion in reflecting federal level policy on PHC delivery. However, as this mechanism primarily addresses HMIS as mirror representation (i.e. data reporting), routine accountability is also subject to distortion i.e. poor data quality. Local officials to be held accountable exert some influence as the generator and

provider of data. At the heart of this distortion is the notion that asymmetric power relations do not allow the free flow of information, as there is always the fear of recrimination.

Moreover, there is little or no capacity to verify and validate the information supplied and while the publication itself alludes to data quality issues, this is not addressed within the disciplinary mechanism. There is an expectation that through reviews of the analysed data, state representatives will be motivated to engage more effectively with data reported especially where it reflects negatively on the state due to incorrect reporting. The converse is however not tackled where incorrect reporting reflects positively on the performance of a state. We therefore find that PHC accountability mechanisms in Nigeria is based on hierarchical information demands, which given the lack of a legal framework and resource constraints, emphasise a basic requirement of data reporting. Consequently, the distortion in HMIS data representation is accepted as a necessary outcome of the prevailing socio-political context. There is an acknowledgement that officials expected to meet the set targets for HMIS data reporting are working within constraining environments. An FMOH official explains below:

> "The performance benchmark is for 70% of LGAs and health facilities within a state to be reporting routine HMIS. However, all states must report to the federal level. At the moment not all states are reporting yet because of their status: no HMIS forms and no money. We have written proposals to state governors."

Without the appropriate political commitments to HMIS in terms of resources, accountability mechanisms assume a superficial form where health workers and HMIS officers play to the gallery. For instance, after a visit to Kiyawa PHC in Jigawa state, the following entry was made in the researcher's notes regarding how accountability is navigated through an awareness of hierarchical demands and the ability of local officials to present token representations:

Research notes: 17 July 2009 – A 'form' of accountability maintained

Health workers are aware of the administrative demands of their jobs but only adhere to these superficially as other contingent issues take precedence. While there is a level of awareness about data management processes and use, this only seems to serve as an obfuscation of reality on the ground, which is a major disconnect between data, information and practice. The pride in showing off collated data, charts and graphs

quickly dissipates when you probe around meanings; or their veracity crumbles after basic validation checks. Critical evaluation of data is missing, as officers are either generally unaware or reticent in admitting to problems. The initial story is always that data is collected, collated, validated, and reported to the Officer in Charge who also checks the data quality. A case in point is Kiyawa health facility where the records officer was asked whether data is collected, reported, verified, validated and used. The immediate response was in the affirmative. When the actual records were inspected closely, it was quite evident that the data was not verified neither was it reliable. Some data elements were missing and others were spotted as having too high values. For instance there was an input of over 1000 new ANC attendants in one month. This was a record that presumably had been "verified" and "validated" before being reported. At the Labour Ward it was surprising to find that termites had eaten the forms. Even more surprising was that the Labour ward staff reported that the clinic had no record of maternal mortality. This was because TBAs, who deliver most of the births, do not report data to the clinic but to the LGA as the JCHEWs required to collect data from the TBAs do not do so.

We suggest that through various interactions with donor programmes, local officials have become quite savvy about expectations and are able to clearly articulate how information processes *should* be like while they may not be so forthcoming about how they *really* are. One may also argue that this understanding (of the ideal) is a critical first step for strengthening HMIS in the country. Nevertheless, the complexity lies in being taken in by accounts that depict the ideal rather than exploring under the surface to find possibly hidden realities that are often not so palatable. This was similarly articulated in a technical brief on HMIS in Nigeria:

> "In order to sustain the National Health Management Information System (NHMIS), the gap between rhetoric and practice needs to be reduced so that managers and politicians practically support data collection, processing, analysis and dissemination by allocating and releasing realistic budgets for HMIS" (Heywood 2008).

As mentioned in the methodology chapter, fieldwork interviews were replete with rhetoric and this has been particularly strengthened in Northern Nigeria where there is a high concentration of donor activities.

Parallel accountability structures

At sub-national levels, rituals of routine accountability are more complex as multiple stakeholders engage directly in the use of sanctions and rewards as a means of achieving and maintaining accountability. The challenge here is the level of fragmentation, owing in part to ambiguity in the roles of diverse health ministries and agencies and the influence of international and donors partners. For instance, in

Katsina state, the SPHCDA is reported to have adequate resources for HMIS activities in the state. The state M&E Officer illustrates how *discipline and dialogue* are required for the quality of data representation:

> "Those who send data, send it either weekly or monthly, I compare with past submissions and show them if there are lapses. Sometime I go to them directly to show them what they have done and if there are mistakes I show them and what corrections to make… Sometimes the state calls us for meeting with the LGAs […] asking for explanations on the [data reported] and [to make a presentation]."

> "… we are using Zonal Technical Officers (ZTO). We go with an insider from the local government to assess the data reported. These people are given Twenty-Thousand Naira [GBP 80 monthly] to go round. They have no reason to stay in the office… "If you don't report and something happens, we will query the officer in charge of the zone"".

The potential distortion created by hierarchical distance is somewhat mitigated by the corresponding dialogue that takes place through ZTOs and "an insider" for data collection and feedback. Implementing a robust HMIS in the state is however challenged because there is no legal authority to hold SPHCDA officials accountable for reporting this data to the SMOH. While by policy it is acknowledged that the SMOH should be the repository of all health data generated in the state, power relations and personality clashes add to the complexity of coordination, especially in the context of a poorly resourced SMOH HMIS unit.

At the local level the need for political buy-in is much more evident in the use of sanctions and rewards. An LGA M&E officer in Jigawa state explained this:

> "At the end of every month there is a meeting with health facilities to conduct analysis and [there is support from the local government Chairman and PHC Coordinator to penalise Officers in Charge of health facilities who don't submit data for example, by withholding their allowance] …"

This disciplinary mechanism however points to a parallel accountability structure supported by the WHO, primarily for disease surveillance data and routine immunisation. The monthly data review forum sponsored by the WHO is primarily for monitoring and disciplinary purposes by withholding remuneration in the absence of required reports. We therefore understand these review forums to be fundamental to the rituals of routine accountability where local officials are compared, rewarded and sanctioned according to set targets. Data quality is often perceived as dubious for many reasons but with WHO-supported data, this is seen to reflect calculated attempts

by officials at local and state level to present data that will not jeopardise their financial remuneration. This is especially where the WHO not only pays for submitted data but also the provision of particular services such as supervising immunisation campaigns. It therefore follows that if the data aggregated from the health facilities suggest lower than expected coverage, these returns are manipulated before it is sent to the state level where the same process is repeated. The sentiment expressed by a state Permanent Secretary is that health workers, local and state immunisation officers "manufacture data that is not there". Nevertheless, because this process is more or less routinised and with access to relatively constant resources, donor programmes like PRINN-MNCH interested in routine immunisation try to build a closer integration between this system and the routine HMIS. Problems arise where there is an overlap with data reported from the HMIS usually different from that in the WHO system. This has led to data review workshops to understand the discrepancies. These workshops invite data generators at health facility levels to meet with local and state immunisation officers who are responsible for aggregating the data. These workshops are always impassioned with health facility workers challenging the figures presented by their superiors and revealing the inherent distortions. These forums are convened in an environment relatively free of power asymmetries. Conversations with HMIS practitioners in the field suggest that there is an understanding generated through this dialogue which helps to appreciate the socioeconomic and political cause of communicative distortions and the necessity of operating parallel reporting structures to cope with the uncertainties that underpin routine HMIS reporting. This localised understanding is of externally driven incentive mechanisms, which conceives of data as commodity instead of responsibility. In this case, the value of data is derived from expectations of additional financial incentives for carrying out HMIS activities. HMIS officials and health workers responsible for routine HMIS data find their activities and accountability mediated through monetised incentives provided by donors. The impact is that the state relies on donor-supported mechanisms to generate data to support its HMIS, which is subject to the priorities of the particular donor. In addition, the distortions in the data reflect the nature of incentive schemes provided by the donor.

Through the concepts provided by the integrity of regulation, we were able to analyse how the wider development community, senior bureaucratic officers, local government agents, health workers and politicians navigate and construct PHC

accountability arrangements in the absence of a legal framework and how these dynamics impact on the implementation of HMIS especially through distorted communication. Using concepts from participatory mechanisms, we now turn to how citizens are mutually engaged with political society and service providers in constructing accountability structures for their health services.

Localised Interpretations

Participatory mechanisms

Participatory mechanisms provide analytical tools to help us explore quotidian practices of socialising accountability. We find in the interaction between health workers and communities, accountability mechanisms that are shaped through mutual understanding. These mechanisms *humanise the impersonal hierarchical demands of work*, rely on *dialogue* for constructing mutual accountability arrangements and are activated through *communitarian forms of citizenship* for engaging in political society.

Humanising work within the impersonal local bureaucracy

We analyse the accountability of health workers to the communities they serve as a social practice that aim to validate the relevance of health workers in providing PHC services through contextually sensitive approaches. For instance, the officer in charge of the health facility and his assistant in Tsakuwawa explained that:

> "The main cause of health problems in the community is poverty. They don't have money to take care of their children. One of the most common concerns in the community is the inability of mothers to feed their children and pay for drugs… We have had numerous appeals at the health facility from women requesting credit to buy drugs until their husbands get back… I have to buy paracetamol for some of the women just to encourage them to come."

> "These women usually do not have enough money to buy drugs so the health facility may provide these to the women free of charge as an incentive for them to continue attending the health facility."

From our theoretical lens, we suggest that the need for socialising the experience of work is more intensely sought at the local level and in contexts where health workers and citizens are prone to feeling like *objects within the giant state machinery*. This makes it desirable for individuals to cushion themselves against the harsh impersonality of hierarchical demands. Health workers in Tsakuwawa cushion the harshness of hierarchical demands with the comfort of being appreciated and acknowledged. This was illustrated when the assistant in charge of the health facility spoke about the community being endeared to him, how the women sometimes bring food and are very happy for him to carry their babies (see Fig. 6.4 below).

Fig. 6.4: Humanising work – Ass. OIC of Health Facility

Respondents from the community feel that the health workers were committed and competent. They frequently made contrasting comparisons with previous staff that did not turn up for work and had a nonchalant attitude towards the health of the community. In the humanisation of work, social interaction between health workers and community members yield an understanding of how health must be seen within a *wider developmental context*. For instance, the community identified poor education as a major cause of health problems. A health worker living in the community succinctly explains his perception of this link:

> "There is no development without knowledge and education. This is a big problem to our people. Poverty and ignorance are the main problems of health in this community. To increase the level of awareness in the community is critical for improving health."

Traditional chiefs in the village expressed that prioritisation is important: "until you can eat, before you go to hospital and those that do not have enough to eat are more in

this community - about 80% do not have enough." A group of young men made similar points that the "biggest problem in the community is lack and unemployment." They propose that, "the government needs to help with farming, illiteracy and poverty". Accountability of health workers to the community albeit limited in a developmental sense, is based on the appreciation of community information needs and socio-cultural sensitivity in service delivery. Some of the important information that the community values from the health workers relate to the availability of free drugs. This is disseminated through the town crier letting the community know that the health facility has received stock of free drugs.

What we find is that developmental priorities articulated through contextual data exchanged between health workers and communities rarely feature within the formal HMIS system (Madon, Krishna et al. 2010). The assistant officer in charge of the health facility stated categorically that, "we don't keep records of outreach services unless important information is being disseminated." The "important information" referred to is related to formal hierarchical information needs. As a result, critical information regarding the developmental health priorities of local communities and the contentions regarding formal provision of PHC delivery are excluded from the formal HMIS. Accountability mechanisms underpinning the delivery of PHC services are identified through the social practices of how health workers position themselves to be sensitive to community needs. Health workers and the community in general recognise that interactions are located within the structural context of formal PHC provision. To this end, broader developmental needs are locally acknowledged through informal channels but are not addressed. One of the implications for HMIS implementation challenges is that their relevance at the local level is related to the degree to which they are flexibly conceived beyond the formal demands of selective PHC to incorporate socially contingent developmental priorities of communities that impinge on health and health care delivery. These informal dimensions of community health priorities embody the requirements for developmental transformation of poor communities.

Dialogue as a form of interest mediation

Through dialogue, we explore how participatory mechanisms between citizens and community groups produce understanding and the role of information in this interaction. LCVs are a community group that provide a dialogue forum for community members to express their concerns and fears regarding PHC services. Within this forum the expressions of power relations is limited so that there is a free flow of information, opinions, ideas and contrary views. Responses from both LCVs and community members portray the image of information being used as a way of communicating the health problems of the community and promoting dialogue for increasing mutual understanding of the problem:

> "People listen because they enjoy the dialogue and the evidence. Posters and group discussions in Hausa are the primary means of communication."

> "The most problematic side of dealing with the community is usually when you speak to them the first time. This is due to the association people make with polio. As a strategy we use the evidence of the last measles outbreak to show that the children that were immunised fared much better than those who weren't."

LCVs and health facility staff were both given a book each by a donor to record details of children born in the community (Nsa Not dated,). The LCVs record the newborn details in the book and refer them to the health facility for immunisation. The health workers also record details of immunised children into their book. LCVs are therefore able to cross reference their records with the health workers' to find out which children were not brought for immunisation. The referral of newborns relies on social ties between the LCVs and the community. However tracking defaulters through the book given by the donor, suggests instrumental accountability from health workers and LCVs towards the predetermined priority of the donor. This in a sense explains the expectation of LCVs to benefit from this alliance because there is a perception that they are not just helping the community but also adding value to a donor project. In response to this expectation, the Officer in Charge of the health facility explains that:

> "Unfortunately, [LCVs] don't get [financial] support from any quarters and that is the essence of volunteering. A donor tries to enlighten the community about taking ownership of our health programmes and knowing our rights."

Through our concept of communitarian citizenship, we analyse the mechanisms through which communities take ownership of their health priorities and engage political society for much needed resources.

Communitarian citizenship

Communitarian citizenship is conceived as a form of political culture where political officials are engaged for public services and resources based on an *affiliation with an ethnic group or community* (Abah and Okwori 2005 in Cornwall et al. 2005). The account below illustrates how on one hand this is a highly contextual arrangement and on the other, it undermines equitable public service provision:

> "The NPHCDA planned to build PHCs that are evenly spread around the country. By the time they finished with their planning you found it was all politically directed. If you are a Local Government Chairman, you lobby like hell to make sure it goes into your local government and your ward... So you find a crazy situation where centres are concentrated [in some areas] and some areas are [not] served."

In Tsakuwawa, the provision of a borehole and more recently, the expansion of the health facility, were attributed (rightly or wrongly) to the then Commissioner of Health who was from the community. However, in the same breath people lament political nepotism that benefits other communities. For example a respondent from the community stated that, "the village where the governor comes from is completely modernised. There is money but it is just misappropriated." We find that although communitarian citizenship allow for powerful state actors to be held accountable for the provision of public services, the extremely heterogeneous society that makes up Nigeria, constitutes a problem for this form of accountability as expressed in a review of Nigeria's primary healthcare system:

> "In some respects, Nigeria's record in health development has been disappointing in that smaller, poorer neighbours have outstripped us in the achievements of their health services… Our slow start is in part related to the enormous size of our population, the great diversity of language and culture and the complex political systems in the federal state" (Lucas 2008: xi)

From a localised perspective, Nigeria's complex political system is exacerbated through activities of politicians seeking visibility by engaging in activities that portray them as *pro poor*. This is in light of what Corbridge *et al.* (2005) describe as the need

for politicians to be seen actively engaged in issues regarding the poor. We see this in Jigawa state where the state Governor offered citizens and residents in the state an opportunity to report dysfunctional public services and other public needs by directly sending a text message to his mobile phone. This was intended to address state responsiveness to community needs and also provide a sense that the citizens were valued and visible. Not surprisingly, individuals applauded this effort. For instance, a member of a civil society NGO gave this illustration:

> "For six months we had no power supply. Now we have power supply as a result of many texts to the governor: government is now responding. The governor also acknowledged that the people have been very patient."

It is however a different story with actual state officials who found it to be impractical, reactive and not always respecting constitutionally defined responsibilities across the three tiers of government. A SMOH official reported:

> "The governor has given everyone - the public - his mobile number so that people can send him messages directly about public services in their communities. This is not effective because we are spread so thin as our health care delivery remit is now effectively taking over what is LGA function."

To conclude, we note that the tendency towards communitarian citizenship needs to be balanced by an overarching accountability structure. This suggests that the implementation of PHC policy need to be strengthened in order to provide the required structure within which participatory mechanisms do not compromise the equitable distribution of public services. To answer our second sub-question, we submit that HMIS challenges can be conceived through 1) the limitations of discipline in supporting hierarchical information demands; 2) diverse social constructions of accountability practice and 3) achieving a balance between overarching hierarchical accountability arrangements and the need to support highly situated local accountability structures.

Evaluating this balance is the essence of responsive performance and provides further insight into the extent to which HMIS are able to support accountability arrangements that underpin the delivery of PHC in LDCs.

Discussing implications through responsive performance

In this section we discuss the implications of the case study analysis through our third conceptual construct of responsiveness. The particular question this construct attempts to elucidate is, "What kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?"

Responsiveness is an evaluation construct that attempts to analyse accountability outcomes in terms of implied developmental notions. We present a hierarchical view and a localised interpretation of these accountability arrangements. The former focuses on performance indicators and the imperative of an information culture as instrumental to development. The latter emphasises understanding locally defined developmental priorities through dialogue.

Information culture: performance management

From a hierarchical view, we analyse government policy documents regarding the framework for PHC delivery and how the role of HMIS (and ICTs) are articulated. Using the concept of an information culture, we draw developmental implications from an accountability perspective.

Mirroring

We noted in Chapter Three that mirror representation to an extent is driven by a technical instrumental rationality and a developmental ideology of health as an economic commodity for economic growth. The implication of this notion for our study is that we conceived this hierarchical view as providing an overarching development agenda through which local interpretations take place. The developmental ends that are articulated at the federal level have far-reaching implications for the extent to which HMIS can contribute to accountability arrangements that produce developmental transformations. The more performance focussed the HMIS is, the more abstracted it becomes and the less it contributes to people-centred development. Our evaluation draws this conclusion in our case study.

Important policy documents such as the *National Strategic Health Development Plan (2010-2015), Poverty Reduction Strategy Paper (National Economic Empowerment and Development Strategy), National Health Policy* and the *Vision20:2020* all provide

strong statements regarding the role of information and ICTs in improving both healthcare delivery and development. We observe in these policy documents, the instrumental value of health leading to socioeconomic development:

> "Nigeria recognizes that a healthy population is important for socio-economic development. This has been underscored in the Vision20: 2020, and the National Development Plan" (Federal Republic of Nigeria 2010: 13)

Specifically related to the social sector of which health and education are an important part, the instrumentality inherent in the government's vision is articulated in respect of an investment in human capital which is able to yield economic returns:

> "The social sector is strategic for national development, as it deals with improvements in the quality and capacity of a nation's human resources, which is a critical element for national development. Investment in the social sector is targeted at ensuring that the nation's human resource endowment is knowledgeable, skilled, productive and healthy to enable the optimal exploitation and utilization of other resources to engender growth and development. It is people that drive the economy; improving their productivity, protecting the vulnerable in the society and enhancing their wellbeing and quality of life are the essence of development planning."(Government of Nigeria 2010: 146)

Central to this technical rationality is the need for measurable performance management indicators expressed in the overarching aim of Nigeria's developmental plan:

> "They indicate among others the current situation, challenges to be addressed, the objectives to be achieved, as well as, the strategies that will be employed to achieve the desired results. They also, contain set targets, programmes and projects and investment plan for each of the sectors." (Government of Nigeria 2010: 6)

Not only are objectives, visions and aims rendered according to measurable performance statistics but we also find the *technicalisation* of the challenges that legitimise the rationality underpinning these objectives. For instance, one of the key strategies proposed in the Vision 20:2020 document is based on ICT-led economic growth:

> "Developing a national framework for transforming the nation into a knowledge-based economy is a Key Result Area…This is in recognition of the increasing role of knowledge in engendering economic growth and development as well as social transformation and modernization" (pg 218).

> "This is underpinned by human capital development that will breed better informed citizenry with higher creative capacity to generate wealth, employment and reduce the level of poverty. The adoption and adaptation of new technologies will create longer-term gains in productivity and employment; as well as significantly improve the skills base of the nation's labour force" (pg 219).

As the brainchild of the Bretton Woods institutions, LDCs are required to develop poverty reduction strategies in light of a technical rational approach to development (Craig and Porter 2003). We therefore see this reflected in the National Economic Empowerment and Development Strategy replete with policy statements that underlie an economic view of health and development as represented by SPHC. This is first in terms of an instrumentality that specifies a definite causality between health and development (poverty) and secondly in terms of its orientation towards vertical programmes:

> "HIV/AIDS is a major social and health problem. It also threatens the country's productivity and economy. The plan is to improve the system of health care delivery, with emphasis on HIV/AIDS and other preventable diseases, such as malaria, tuberculosis, and reproductive health–related illnesses." (Pg xi)

> "The goal of the NEEDS health component is to improve the health status of Nigerians in order to reduce poverty… The new policies will target priority diseases, such as malaria, tuberculosis, HIV/AIDS, and reproductive health–related illnesses" (pg 38).

In the Vision20: 2020 document plan, the challenges of the health sector in the country allude to the limitations of a hierarchical structure being able to engender the appropriate responsiveness within a diverse context such as Nigeria:

> "The Nigerian health care system is faced with numerous challenges. These include: Size and diversity of the country: The size of the country, the diversity in culture, social and economic conditions… and health outcomes across the zones of the country are major challenges to health planning in the country." (Government of Nigeria 2010: 160)

Nevertheless, these challenges at the hierarchical level fuel motivations for redress through a technical rationality (at least in policy terms). For instance, the objectives set out in NEEDS implementation plan is to improve the country's evidence-based based approach:

> "Improve existing or set up new mechanisms to generate and use evidence and information for developing and implementing health policy, programmes, and plans… Improve data on the burden and socioeconomic impact of diseases in Nigeria" (Nigerian National Planning Commission 2004: 39).

It is important to reiterate that an information culture relies on a measure of objectivity regarding means and ends. We observe a similar viewpoint from the health sector objectives stated in Jigawa's *State Economic Empowerment and Development Strategy* (SEEDS) document:

> "Development and promotion of health-related information, education and communication activities. This includes the introduction of a strong health management information system to ensure systematic planning and monitoring including surveillance and control of major diseases" (Jigawa State Government Not dated,: 62).

Strengthening HMIS in the country takes pride of place in the government's 2010-2013 strategic objectives:

> "• To provide an effective national health management information system (NHMIS) by all the governments of the federation to be used as a management tool, including monitoring & evaluation, for informed decision-making at all levels";
> • "To utilize research to generate knowledge to inform policy, in order to achieve nationally and internationally health-related development goals;" (Government of Nigeria 2010: 161)

In the above objectives, information and knowledge are conceived as instrumental tools that can be deployed to yield better decisions and development. We note that these objectives also include community participation but as it stresses citizens' responsibilities over their rights it does not necessarily reflect the developmental ethos of government supporting communities to determine the direction of their healthcare provision. This is akin to what Hyden *et al.* (2004) note when they propose that in developing countries the vulnerability of many poor individuals prevent them from exercising their formal rights and as such civic responsibility often take precedence over rights.

Accountability implications

These policy objectives can be better understood in the context of our comprehensive accountability framework. It is especially important to see how at the hierarchical level the objectives, mechanisms and outcome of accountability are implicit in our concepts of *representation, visibility* and *responsiveness*. Table 6.2 below provides an example of how we can classify a number of typical policy goals outlined for strengthening HMIS according to our framework.

From the underlying instrumental rationality of these policies we further see evidence of accountability outcomes of responsiveness towards economic performance. This is especially prominent in the vision for ICT:

> "The increasing globalization driven by ICT makes it imperative for Nigeria as an emerging market to irreversibly consider the application and promotion of ICT strategy to facilitate its rapid growth and development… It would also require the application of the new knowledge to drive other

> soft sectors: governance, entertainments, public services, media sector tourism, et cetera." (Government of Nigeria 2010: 222)
>
> "Deploy ICT in government for transparency and accountability as well as to enhance efficiency, effectiveness and increase government capacity to deliver citizen centred services to attain national competitiveness" (pg 226).

The NEEDS document articulates a view of accountability at the local level:

> "At the local government level, planning and public accountability mechanisms should be institutionalized. State governments are expected to work with local government councils to develop medium-term plans. Such plans should be prepared with the participation of all relevant stakeholders. Periodically (say, every quarter) the local council should convene town hall meetings of all relevant stakeholders—traditional rulers, community heads, ward councillors, and representatives of the private sector, labour, NGOs, and civil society—to discuss the sources and uses of funds, results achieved, challenges, and a road map for the future. Town meetings should help promote good governance, transparency, and accountability at the local government level and greatly improve service delivery and poverty reduction."
>
> "A complaints point will be established in each ministry and state enterprise as well as the Planning Commission, where citizens who receive poor service or are rudely treated in government offices will be able to register their complaints. Services covered include… data and information dissemination […], and services delivered by health…and other institutions that deal with the public. The monitoring by the Service Delivery Unit will be done in collaboration with the relevant supervisory authorities and the Public Complaints Commission. Over time governance will be depersonalized as much as possible, so that the bulk of communication will be through the Internet rather than by mail or by queuing up at government offices. E-governance is the ultimate goal." (Nigerian National Planning Commission 2004: 108-10)

Analytical Category	Accountability proposition	Illustrative Examples of Policy
Representation	NHMIS datasets objectify PHC delivery; are abstracted, as they are determined at a distance; and attempts to construct an accountability objective based on a mirror representation of health status.	"Ensure availability and periodic review of NHMIS indicators/minimum dataset and data collection tools at all levels"
	Administrative decentralisation is supported by the accountability objectives of hierarchical information centrally coordinated.	"Coordinate data collection from all programmes at all levels and ensure smooth transmission to the National Health Management Information System"
	Appropriate capacity is a prerequisite for accountable bureaucratic performance	"To build capacity of health managers and workers at all levels in data management"
Visibility	The integrity of regulation relies on accountability mechanisms of an appropriate legislative framework for hierarchical disciplinary purposes.	"Provide a legal framework for the implementation of the NHMIS policy and strategy"
Responsiveness	The outcome of accountability is directed towards performance management.	"Strengthen existing, and support for complementary data sources for monitoring health system performance"

Table 6.2: Example of hierarchical level analysis of HMIS Policy objectives through Representation, Visibility and Responsiveness

While the above accountability policy goals provide a dialogue platform for citizens to hold service providers, local political agents and bureaucrats to account, the mechanism for effecting this system relies on discipline rather than understanding. The implications are that in addition to the distortion that we expect from hierarchical accountability, the requisite capacity for supporting this forum is weak. More so, the instrumentality that the town meetings should "help promote good governance, transparency, and accountability at the local government level and greatly improve service delivery and poverty reduction" does not bear out in current practice and seems far-fetched from experience. The experience being that these meetings do not actually take place and when they do it is mainly for the mediation of the self-interest of those who attend. Usually, the meeting such as these only take place when there is some form of remuneration for participants. Therefore, we will present the analysis

of perceptions of actual information culture and accountability at the hierarchical level.

A senior official at the FMOH explains the relationship between information culture, HMIS enhancing visibility and accountability arrangements:

> "Our people are not yet used to making use of data for management of health programmes. To that extent they don't demand data or utilise the data given to them. So because they don't demand for the data, the generation of data is poor as well as the quality. There is a chain reaction- no political will at the top; no investment in data, no demand and those who supply don't see the value in doing so, it lacks quality. Nigeria is not used to using data to plan. When we budget it's done on incremental basis, not informed on evidence provided by data; it cuts across all sectors... **Data reveal inefficiencies, for example, how much is put in PHC.**" [**Emphasis mine**]

There is a strong sense that the lack of information culture is in fact the outcome of purposeful action. Not entirely in the sense that there is intentionality in the creation of a poor data culture but that there are strong interests represented in maintaining the status quo of unaccountable public servants. A state HMIS officer contends that policy makers depend on the weakness of the HMIS to remain unaccountable for HMIS resources:

> "I don't know why policy makers are not interested in HMIS. They just let donors do it all. When money is allocated nobody knows but *when it comes down to accounting for the money they say, "Where is the statistics*?"" [E*mphasis mine*]

HMIS at the hierarchical level is more tuned towards performance accountability in a way that distances its outcome from accountability to citizens and the improvement of healthcare delivery. The developmental undertones resonate more with modernisation ideals as opposed to human development. What we focus on is that *HMIS conceived from a technical rationality constrains the creativity required to work in a challenging accountability context like Nigeria. With more prominence placed on accountability to citizens, HMIS implementation approaches will necessarily need to be more context-specific, improvised and flexible especially at sub national levels.* In an interview with the Head of the NHMIS in 2008, there was an overwhelming emphasis on technological development and instrumental accountability in his vision for HMIS development. In response to the question of what the ideal HMIS in the country will look like and be able to achieve, the following was stated:

> "A situation where health facilities generate quality data, local governments capture data electronically and forward it to states and states are able to forward it to the federal NHMIS; NHMIS having a database, feeding data into the database and periodically publishing as a form of feedback to the states; raising up health alerts if there are potentially unpleasant situation for the public. Capturing data electronically even at facility level using PDAs because paper is costly. Infrastructure has to be in place otherwise these will not work and high calibre staff to handle data and making use of data to inform planning."

Over three years after this conversation, a follow up question was put to this senior official regarding the progress and challenges of HMIS implementation since 2008. The positive developments were enumerated in terms of efforts made towards standardisation and hierarchical accountability e.g. harmonised HMIS forms, more frequent feedback to states which is engendering competition and motivation for data reporting, the DHIS more recognised as the nationally adopted HMIS software. The challenges he listed were directly related to problems of an information culture:

> "Funding; data culture very slow to change; demand for data low; political commitment is still poor in state and LGA; and value attached to data is very low"

We therefore note that efforts to develop a culture of information have direct consequences for improving the performance of the HMIS. As we have noted that hierarchical information is employed to render agents visible and accountable, what we find in our case is that, *it is the fact of being constantly unseen that maintains undisciplined (unaccountable) public official*. Consequently, the non-performance of the bureaucracy in implementing HMIS can be related to the mediation of personal and corrupt institutional interests that weaken accountability arrangements in the delivery of PHC services. There are efforts currently underway to streamline organisational structures for PHC delivery. This is tagged, "bringing PHC under one roof" (McKenzie, Enyimayew et al. 2010; National Council for Health 2011) in order to improve accountability in PHC delivery. This administrative restructuring reflects the direction of the National Health Bill so that a PHC board will become responsible for the management of services. Information plays an evaluation role in helping managers to fine-tune their strategic plans for health delivery. The plan also reiterates the needs for all citizens to have access to a basic minimum health package. These are plans in the pipeline that are attempting to refocus PHC delivery on people rather than just performance. As mentioned earlier, the implementation of these plans are directly related to the challenges of the presidential assent for the National Health Bill.

Dialogue Culture: people-centred

Mediation

We analyse localised interpretations through the experience of *civil society* and the role of *political culture* in understanding how citizens perceive their agency within accountability practices for the delivery of PHC services. We show through these analyses, that there is a weak dialogue culture in Jigawa state as efforts are directed more at performance and information culture.

Civil society and political culture

In analysing the health priorities of community members, the findings of this case study show that the rural poor of Tsakuwawa village incorporate health within broader human developmental needs: economic opportunities for self-sustenance, improved health services and infrastructure and better employment prospects through skills development and education. In Northern Nigeria, where there are some scepticism regarding formal Western education, it was surprising that community members not only valued education as a means for escaping the shackles of poverty but also noted its intrinsic value to health and how it affects their ability to participate in decisions that affect the delivery of health care services. The Village Head surmises that:

> "Poverty and ignorance are the main problems of health in this community. To increase the level of awareness in the community is critical for improving health. So that those who are not involved in the system can now be involved."

In a bid to address these priorities, Tsakuwawa Development Association (TsADA), was formed informally in 1986 to support community projects, improve access to education and provide social welfare. The Village Head explained its achievements and objectives:

> "This association applied for a Junior Secondary school, which was granted and created in 1990. Subsequently they applied to the government to have it upgraded to include a Senior Secondary school and this was done as well. TsADA sponsors children whose parents cannot afford sending them to school. Some of the other primary focus of TsADA is community projects, environmental sanitation, supervising and assessing teachers' performance. Our achievements over the years also include getting the government to bring electricity. TsADA contributes a small amount towards covering healthcare costs for community members who need it most."

An important point to note is that PHC accountability mechanisms must be broad enough to respond to defined priorities of poor citizens. For HMIS to be effective and

sustained, it must also be reconceptualised beyond the formal system (Mutemwa 2006) to incorporate citizens' health developmental needs. There is a critical view that poverty and ignorance are calculations helping to sustain the status quo of unaccountable public officials. This theme was clearly articulated by the Village Head who expressed intentionality and calculated political power play:

> "Our people are suffering – poverty and ignorance help to sustain the status quo of unaccountable public officials. Education is a vital catalyst for voice. The situation is desperate. It is a battle for survival on a daily basis. People in power are happy with this state of affairs because it is easy to buy their votes when the time comes."

In this respect, education is perceived as constitutive of and instrumental to development; instrumental in terms of providing jobs and better income and constitutive as far as it is a gateway to reducing the influence of corrupt political practices that diminish the accountability to citizens. With a political society that must be seen to be *pro poor*, the government offers free education to girls in Northern Nigeria. While this is a step in the right direction, the non-coordinated approach to this initiative means that its developmental impact is minimal. For instance, some community members are not aware of the free education provision, others argue that school fees are only a part of the expense as other costs such as school lunches, uniforms and books are beyond their means; more still contend that children are often needed on farms to secure enough income and food for the family. The point being made is that poor people in the community articulated their health needs in a holistic way. For example:

> "The main cause of health problem is ignorance and low income. To address this, parents have to make sure that their children get to school. Sometimes children abscond; parents don't ask and don't visit. The parents can't monitor their children because they go to the farm."

> "[The major causes of health problems are] ignorance and poverty; for instance, this man is sick but he has no money for treatment so he just sleeps at home. If people get business, money and education, this will bring improvement. If we are independent we can help our families and ourselves."

In a conversation with a research director studying health seeking behaviour, he expressed surprise that the preliminary findings of his study showed that women were not happy about having to wait for their husband's permission before they could go to the health facility or delivery ward. This was corroborated directly with a respondent

who expanded on this with the underlying economic reasons that sustain this status quo:

> "The main problem with health is lack of money. If I have money then it does not matter what my husband says, I can go to the health facility. But when we both don't have, then the situation gets worse. Ignorance is also a main problem. This is because instead of sending the boy to school the father will send him to the farm so they can eat."

An information culture primarily addresses the accountability needs of a formalised HMIS. These community views are strong indications that the development of an information culture cannot fully capture information regarding the developmental needs of poor communities. This is precisely because these require context sensitivity and less abstraction. There are no predefined formats or templates but a need to mediate and represent a community's priorities at a given time and place. One of the women volunteers in Tsakuwawa touched on this point as an important means for improving accountability to the community:

> "The only way we as a community can make effective demands of the government is if all the community development committees in the community present their case as one voice."

It is important to seriously consider one of the roles of HMIS as strengthening accountability to citizens and bringing about developmental transformation through the creation of a platform for communities' "one voice". This role is critical because civil societies in poor communities are often weak and fragmented. For instance, c*ivil society* in Tsakuwawa developed as a consequence of the state's inability to make adequate provisions for the developmental needs of the people. In the community, their impact translates to either limited influence of the group and/or membership of the group motivated by self-interest and therefore accountability skewed towards objectives defined by patrons. For instance, because TsADA assumed a civil society role out of necessity and compulsion in response to inherent weaknesses in the state, its influence is limited (this is as suggested by Hyden *et al.* 2004). Therefore, while the association has been able to secure tangible benefits for the community either directly or through petitioning the state, this is chronically limited. For TsADA, this has been limited to only a handful of public goods in over two decades of its existence. As a result the association is not significantly visible within the community itself. A community member stated:

> "I don't know about … TSADA but I have been seeing development around the community. I have been living here for around 45 years. I just felt it was politicians doing the work."

In terms of the formally constituted Ward Development Committee, this has been able to achieve the employment of a female staff to the health facility by petitioning the Gunduma Board. In spite of this, some community volunteers perceive this committee to be dormant because "it did not have clear direction" due to irregular funding for meetings from the Gunduma. Ideologically, these committees were conceived as a participatory approach to health. This platform has been co-opted by global health agenda for selective PHC. This is clearly visible as a community doctor explains that "… the WHO and NPHCDA narrowed the remit of the WDC to focus on immunisation". The content of the WDC meetings illustrate this:

> "The WDC met last month to discuss medicine stock, the upcoming routine immunisation exercise and the positive indication that patient attendance is improving. The WDC has a good relationship with the community because all the dignified people are involved for instance the Chief Imam, the Chief barber, the Chief drummer, the Chief butcher and the Village Head. The LGA gives the committee N2k to N3k [10-15 GBP] after every immunisation programme to share among all the members, which comes down to about N150- N200 per person. This isn't even done consistently. There is no fund for conducting meetings."

WDC members are accountable to the LGA who are provided with donor funds to improve polio immunisation coverage. With the presence of a powerful patron, the committee's accountability to the community is transposed into self-interest. A community engagement senior programme officer explained that:

> "Now that they [WDC] get paid for IPD, this is all the M&E officers and OiCs look for. It affects routine immunisation because all the DSNOs and OiCs are conscripted for this exercise. The LGA is paid about NGN 50k (GBP 200) for social mobilisation but they don't do it. They only share the money because they don't want polio to go."

What we emphasise here is that *in the absence of an accountability structure that addresses health as a holistic developmental need, local institutional arrangements required to mediate the priorities of poor people are driven by the self-interest of intermediaries accountable to external patrons.* We see this particularly in the case of the LCVs. The involvement of a donor setting up a health partners' forum that constituted these volunteers influenced the perception of the benefits of membership. There are subtexts of misaligned expectations on the part of some LCVs as described in the accounts below:

> "Some people describe the Nigerian man as someone who wants you to go straight to the point. Nigerians are not looking for volunteering. If you call someone, they are hoping that there would be something for them. Our people are suffering. For example, if you call me to pass on information, I can agree because I am standing before you. However this would be difficult in practice because people need to make ends meet… If you however give me N500 -N1000, you will find that I will work very hard because they can work for 1 week without making this kind of money."

> "The LCVs are somewhat helpful. But not all are active. Most of them signed up as volunteers not knowing what it meant. Expectation was probably that LGA would pay them. But with nothing forthcoming they are gradually withdrawing."

It is important to note that the expectations of the LCVs are not purely monetary but generally developmental. One of the volunteers made an appeal suggesting that

> "If members of LCV can get support they will do more; I mean support in the way of skill acquisition. Most of the members are unemployed and this will help them to earn a living. The support should come from LGAs and donors."

We observe this in the case of LCVs who volunteered to provide an interface between the community and service provider. In a discussion with the consultant who facilitates some of the community engagement activities, we touched on the subject of the sustainability of the scheme. The following was in July 2010 and the conversation went thus:

> **Researcher**: "There is an issue of sustainability though, for as long as the donor implements this initiative it is unlikely to be sustainable after external support ends."

> **Local Engagement Consultant: "**The donor also realise that it is important to let Gundumas provide facilitators and take ownership since they've already been taught how to budget for such vital activities."

In a follow up telephone conversation in March 2012 about the activities of the LCVs, he stated that the "LCVs need rapid awareness training because they are losing motivation". However this was not only because they were not receiving any remuneration for their activities but also because the demand created was not adequately met by the supply of antigens in the health facility.

Within the framework of a weak civil society, a significant element of instrumentality is involved in the self-interest of intermediaries who seek to fulfil their developmental needs through the opportunity afforded by affiliation to a powerful patron. That is, intermediaries externally supported or constituted through a donor programme become accountable to delivering on the benefactor's predetermined health priorities, thereby hoping to address their own immediate socio-economic needs. We also found that as donors funded most of the community engagement and participation activities, this seems to mutate the distortion of hierarchical distance into compliant dependence. We interpret this as a sort of self-interest mediation that "goes through the motion" in return for (expected or promised) benefits from the patron. For instance, a donor-sponsored review, which was based on wide participation from community representatives, discussed the performance of health facilities across a range of criteria. Scanning through the posters, a significant amount of entries related to the weakness of data use although some had data reporting as their strengths. Subsequently spending time in Tsakuwawa community revealed a sense that data was far removed from their priorities. Fig. 6.5 below shows the Village Head from Tsakuwawa village as a representative in this forum and a typical list of health facility performance assessment. Presence at a forum such as this is highly desirable both symbolically and financially. Therefore, we find that *there are variations and nuances to what might conventionally be classified as dialogue and a forum where accountability reflects community needs but in fact serves an instrumental purpose*. As a proxy for strengthening community participation, the donor measures how many community engagement reviews have been conducted and the scope of participants involved.

It is fruitful to examine how civil society is also a product of historical political culture (Hyden *et al* 2004). We employ our concept of political culture, to analyse responsiveness to community. This is primarily through the perspectives of citizens and how they perceive their agency in engaging political society.

Fig.6.5: Dialogue forum: HMIS emphasis on information culture

Political culture analyses the disposition of citizens to engagement in political society for their developmental priorities and is therefore a useful way of understanding the nature of accountability to communities. This construct suggests that representativeness of the political society is perceived as limited to the interest of a few rich and/educated elites. This is mainly because the democratic process is seen as corrupt through bribes, which effectively diminishes the voting power of citizens established to make local politicians accountable. An encounter during an interview illuminates this challenge by bringing to the fore the perception of communities' agency within political society. Below is an extract detailing the dialogue with a group of community elders:

[Community elders express that their voice can only be heard through external actors like the researcher]
[Interpreter suggests that the community needs to approach the Ward Councillor to voice their health priorities].
Researcher: If government doesn't respond, you should not vote for them next time.
Group of Elders: [spontaneous laughter].
Research notes: [The practice of democracy seems to be perceived as an institutional tragic comedy]

Table 6.3: Democratic ideals as institutional tragic comedy

As an aside, it is striking that during the fieldwork another memorable occasion where a question was met with spontaneous laughter was in a prior interview in March 2009 with the DPRS in Katsina state. The researcher asked a question about the use of data

for planning and was met with an almost uncontrollable laughter. The response eventually was, "Only when the federal want data everyone runs around looking for data."

Our theoretical framework notes that *historical contexts* have implications for the evolution of particular political cultures such as the one above that experience accountability to citizens as a joke, albeit with real and often tragic consequences. Two local engagement consultants working in different LGAs independently referred to historical socio-political contexts to differentiate between a community like Tsakuwawa with relatively weak civil society and the other communities they work with. For instance, the local engagement facilitator for the LCVs states:

> "In Ringim where I come from, there is a stark difference [to Tsakuwawa]. 70% of the men are educated that is why it is one of the 5 Emirates in Jigawa state. The community has produced eminent professors, doctors and engineers. The women are very industrious looking for opportunities to make financial contributions to the home."

Probing further about why he thought Ringim has a more active community voice he mentioned a history of political activism, establishment of primary schools in the 1950s and a generally more educated population. He further mentions that proximity to urban Kano was also a factor that stood the communities in good stead in terms of both economic and social exchange. Another local engagement consultant gave an account to illustrate how Ringim is politically more enlightened:

> "A particular constituency did not respond to a political campaign. The campaign sent emissaries to meet the elders of the village who told them that the problem is that in the last tenure there were no public services rendered."

These accounts contrasts to Tsakuwawa where less than a fifth of the men are educated with the Village Head stating that, "we have been deceived about the necessity of Western education." These are themes that are also explored in the ICTD literature. Walsham (2010) state that there is an overlap between broad development categories. For instance, better lives for the poor in terms of health requires the poor to avail themselves of economic opportunities (i.e. "enhanced economic activity"), social opportunities such as education (i.e. leading to "improved civil society") and effective and efficient healthcare service delivery (i.e. "improved government

services"). These overlaps are seen in the accounts above. For instance, the community in Ringim seem to enjoy a better life as a result of having a more literate population, who are also close to urban Kano and therefore have better avenues for trade. Their education also provides them with a strong civil society. Hyden *et al* (2004) conclude that practically, the state and civil society are from within the same societal pool. The implication being that "the state reflects the quality of its societal base" (pg. 74). This implies that if civil society is educated then the bureaucracy will have a pool of competent individuals to draw from. This will in turn have a positive outcome on the delivery of government services.

Political culture goes some way in helping to explain the historical context in Tsakuwawa that marginalises their interests in political society, leaving their developmental priorities un(der)-represented. With accountability to citizens' weak, this influences the role of intermediaries, volunteers and development committees (i.e. TsADA, LCVs and WDC) who rely on external patrons for achieving their individual developmental aspirations. Within this accountability framework, the formal HMIS is interpreted as self-interest where health workers report data for monetised incentives and government officials benefit from donor HMIS programmes through financial and non-financial remunerations (e.g. capacity development trainings).

Responsiveness is a mediating term that is imbued with the uncertainty and unintended outcomes of interactions and interests. The instrumentality in performance-based accountability is therefore mediated through varying degrees and levels of self-interests: be it of well-placed senior bureaucrats and political actors or locally situated agents who seek to do well for themselves through donor programmes. Accountability outcomes are constructed through the various combinations of institutional accountability arrangements, efforts to strengthen community voice and the day-to-day mediations of individuals' interests to address their developmental priorities.

Chapter 7: Conclusion

Summary of thesis chapters so far

Chapter One introduces the background and motivation for the study, what approaches had been used in prior work, the general problem we intend to address, the ways in which the approach we chose is similar and also distinct from the body of work in this field and how we expected to contribute to current knowledge and practice.

The rationale for choosing to study HMIS was set against the background of dire health status, failing PHC delivery and the weak impact of HMIS in addressing these problems in LDCs. We noted that there have been different approaches to conceptualising and understanding these problems. Some studies frame the problems in terms of a failure to optimise opportunities afforded by modern technological advances, especially the Internet (Edejer 2000). Others highlight economic argument for implementing HMIS (Stansfield 2005). Both approaches are usually based on assumptions that do not consider the social and institutional influences that are implicated in the implementation of HMIS. Another stream of studies conceive of the problem domain in terms of various contextual contingencies that provide a better appreciation of the complexity of HMIS in LDCs. It addresses HMIS as a socio-technical system and conceptualise its appropriateness within the target context.

Particularly, this study identifies with the context-specific approach and intends to build on its findings. The weakness that we identify generally is that there is limited understanding of the role of HMIS in contributing to the improvement in the lives of the poor. We propose that we could gain a better grasp of this problem by studying HMIS through an accountability perspective. We propose that problematising accountability will lead to better understanding of the potential and challenges of HMIS implementation in supporting poor people to attain better lives as defined by them.

Chapter two critically reviews pertinent literature in the HMIS field. The aim is to understand what was already known and the nature of this knowledge so that we

could place our study within its broader scholastic context. In particular, we are interested in the areas that are not satisfactorily addressed in this field. We review four main components of our problem domain. First, we consider how different notions regarding health care delivery are underpinned by different development ideologies. One view conceives of health from a social welfare perspective and from this view primary health care delivery resonates with the principles of participatory development. A biomedical view of health on the other hand advocates a selective primary health care approach through technical and economically viable interventions that prioritise tackling major diseases. We note that this reflects the ethos of development as modernisation and economic growth.

The next body of literature we review is how the link between information, decision-making and health policy has been understood. We present an instrumental view that proposes a perspective of information as a tool that serves to support managers and policy makers in rational decision processes that improve PHC delivery. A critique of this view is presented through studies that have shown that empirical evidence suggests a tenuous link between information and decision-making. Instead, perspectives that argue for information and HMIS being socially embedded provide analytical means to understand the divergence between the expectations of a rational design and actual practice.

Next, we examine socially embedded studies of HMIS implementation in LDCs. These studies discuss the complexity of HMIS supporting local use within a decentralised organisational structure and a context where donors wield significant influence. The main theme in these studies therefore addresses the sustainability of HMIS when donors withdraw financial and technical support. Sustainability was framed in terms of target LDCs developing an information culture, the HMIS being adaptable and scalable, and the requirement for the HMIS to be institutionalised, integrated and strengthened through local participation. The last body of literature turns to the greater emphasis placed on accountability as a result of increased donor investments in HMIS activities. We note that accountability from this perspective has been predominantly related to performance management and the express need for aid recipients to account for finances provided for PHC services. Few studies - with

exceptions such as Madon and Krishna (2010) - address how HMIS might improve accountability to citizens.

From the literature reviewed, we propose that there are two interrelated areas that have not been given sufficient attention: the first is providing a developmental dimension to HMIS studies and the second elucidating on HMIS and accountability arrangements from a developmental perspective. The gaps identified help to formulate our primary research question: "To what extent can HMIS improve accountability arrangements that underpin the delivery of PHC in LDCs?"

Chapter Three develops a conceptual framework for addressing this question. We note that it is important to construct an accountability framework that would be robust enough to capture the developmental, instrumental and socialising dimensions of PHC delivery. To this end we present governance ideas that are implied in instrumental and socialising forms of accountability. We commit to the notion that a robust analytical framework requires a synthesis of both forms of accountability. The concepts discussed are synthesised into a framework that proposes a more nuanced understanding of the duality of accountability. This duality revolves around the three concepts of representation, visibility and responsiveness, which we suggest have dual meanings: representation as the objective of accountability is presented as both mirror and mediation; visibility as the mechanism of accountability employs discipline and direction; and responsiveness evaluates developmental outcomes of accountability as tuned towards performance management and community priorities.

In Chapter Four, we present our methodological approach starting with the philosophical leanings underlying this study as realist constructionism. The main implications of this choice are that this is an interpretive research which is reflexive on the researcher's possible bias, the interpretation and analysis of data is based on sense-making and the purpose of the research methods is to improve understanding of the role of HMIS in strengthening accountability arrangements. The research design adopted is an embedded single-case study. Research methods for data collection are interviews, observations, and document analysis. We present the fieldwork as based in Northern Nigeria with the unit of analysis being multi-level although loosely corresponding to the HISP project to strengthen HMIS in Northern Nigeria. Data

analysis is conducted through iterative cycles informed by the theoretical framework and empirical data.

The Case Study chapter (Chapter Five) is structured according to the multilevel unit of analysis proposed in Chapter Four. We structure the case from a hierarchical view at the federal level, to three states in the Northern region (Katsina, Yobe and Zamfara), to our primary location in Jigawa State and Tsakuwawa village specifically.

Chapter Six analyses the case study data using our theoretical constructs of representation, visibility and responsiveness developed in Chapter Three. These theoretical constructs address three interrelated sub-questions of the primary research question. Through representation we try to unpack how HMIS are implicated in the accountability arrangements underpinning PHC delivery in LDCs; the question tackled through visibility focuses on how we can better understand the challenges of HMIS implementation in LDCs through the complexities of accountability *mechanisms*; and for responsiveness, we ask "what kind of developmental transformation is implied in the implementation of HMIS from an accountability perspective?"

From our representation analysis, we found that at the hierarchical level, accountability objectives for PHC delivery are objectified in the formal HMIS through the definition of a national MDS. Accountability objectives are embedded in the requirement for the HMIS to mirror PHC delivery. With the various actors involved in the process of defining an MDS, we also highlight the mediation of interests represented in the outcome of the MDS as well as the resulting fragmentation of accountability arrangements. Reflecting that these accountability objectives are determined at a distant hierarchical level, we then consider how it is localised and interpreted within a decentralised structure. Through an analysis of the local interpretation of accountability objectives, we find that mirroring is modulated through local interests and made sense of in view of the characteristics and motivations of health workers and other local agents. In addition to the weak accountability arrangements of hierarchical information demands, we find that local agents are able to exercise their discretion and mediate their interests through donor programmes thereby constructing parallel accountability objectives. In this dynamic between donors, service providers and hierarchical demands, accountability to

citizens is usually on the periphery. Nevertheless, we note that one of the subtle ways poor communities engage to demand better services and accountability is through non-participation. Non-participation however feeds back as distortion of HMIS mirror representation. Deriving from the ways in which we find that HMIS are implicated in PHC accountability arrangement, the mechanisms to achieve objectives of representation are analysed through our visibility construct.

The main findings are that in Nigeria the use of discipline is limited in supporting hierarchical information demands because of an inadequate legislative framework. We are able to tease out how rituals of accountability reflect diverse social constructions of accountability practices that range from the visibility tools at the disposal of the federal agents, incentives provided through donors' sanctions and rewards and accountability mechanisms that are evoked on the basis of communitarian affiliations of political society. The complexity of HMIS supporting accountability mechanisms is reflected in the challenges of balancing overarching hierarchical accountability arrangements and the need to support the communitarian form of situated local accountability structures.

Taking this forward, we introduce our last theoretical construct of responsive performance to evaluate the developmental implications of hierarchical performance management through an information culture and community responsiveness through dialogue. The building of an information culture in the context of this study, found visions articulated in policy documents about the instrumental value of information and health, the necessity of fully exploiting advances in ICTs and the link to economic productivity and growth. We find this reflecting the sedimentation of a modernisation ethos of development. Interestingly (but probably unsurprising) is that there is a skew towards an information culture. More significantly, this bias seems pervasive even in dialogue forums where one would expect local expressions of health priorities that could be potentially insightful for reconceptualising HMIS. Dialogue in this research is therefore predominantly understood from community level conversations where individuals are able to speak freely (to some extent) about their view regarding health and human developmental priorities. In the next section, we discuss the implications of these finding to HMIS studies, especially in a development context (ICTD) and IS research generally.

Research Contributions

Walsham (2006) provides useful concepts which can be used to contextualise the framing of a contribution e.g. proposed audiences, target literature, proposition claims and intended use. Walsham (1995 in Barrett and Walsham 2004) further argues that "qualitative generalizations" can be used as content of contributions. Generalisation in qualitative research is a contentious notion (Lee and Baskerville 2003) but Walsham (1995) identifies four types of generalisations: "development of concepts, generalisation of theory, drawing specific implications in particular domains of action, and contribution of rich insights" (p. 299). For our theoretical contribution to HMIS, we draw on accountability concepts we developed (representation, visibility and responsiveness) within the context of LDCs consider. HMIS in LDCs is our primary target literature with ICTD as a secondary target literature. We also contribute to general IS literature given HMIS is a form of IS.

Theoretical Contributions to HMIS research in LDCs

In discussing the theoretical contributions, we present the implication of the accountability constructs developed in this thesis and make three claims regarding HMIS and its role in strengthening accountability mechanisms in LDCs. First, we maintain that it is indeed critical to understand the objectives of HMIS-based accountability as both mirror and mediating representation. Second, we consider the ways in which we can better understand the complexity of HMIS supporting visibility and last, we evaluate the impact of representation and visibility on responsiveness.

Criticality of representation

Representation as the objective of accountability requires a structural framework as well as the flexibility of context sensitivity. We have noted this in various literature such as Hyden *et al's* (2004) governance concept of structural contingency, Robert's (1991) notion of the required interdependencies between hierarchical and socialising forms of accountability and Madon and Krishna's (2010) conceptualisation of democratic and "de facto" accountability. From our analysis we find that HMIS are implicated not just in structurally contingent accountability arrangements but also in

the contingent structure of accountability arrangements. In the first instance, this is about localised navigation of accountability structure within an overarching hierarchical demand. The literature highlights how information is routinely manipulated for the purpose of self-interest (Feldman and March 1981; Feldman 1988; Dean and Sharfman 1993; Mutemwa 2006). This is evident in our analysis with DSNOs, LIOs and SIO. Also, the symbolic rather than objective function of information for decision-making (Mutemwa 2006) is noted in planning and budgeting processes. Data is submitted, charts and health information are displayed in facilities but beneath the surface we find that these are rituals that do not reflect the intrinsic value of information but token representations that fulfil purposes other than better accountability to citizens. What we however find from a hierarchical view is that in addition to agents being subject to structural constraints, the structures themselves are contingent i.e. accountability objectives are dynamic. This is at least in two ways. First, this is as a result of high-level negotiations of interest among the HDPU. These are formalised through policy as we have in Nigeria that the HMIS MDS should be reviewed every two years. Secondly, within a decentralised organisational structure parallel accountability objectives are constructed as a result of particular donor programmes. It is through this perceived contingent structure that we better appreciate the developmental implications of HMIS supporting PHC accountability arrangements. What we mean is that an overarching accountability arrangement either reflects a commitment to health as human development through the definition of a national MDS that reflects local health priorities or externally driven indicators that overburden the MDS with extensive disease focused performance targets of vertical programmes. The level of health abstraction at the national level by necessity must make the MDS minimal and concentrate more on locally defined indicators that reflect particular health needs in individual states.

Although Shaw (2005) notes that an MDS must be defined through a top-down approach, from our accountability perspective we suggest that in contexts where there is widespread institutional corruption, self-interest of senior bureaucrats and politicians will usually compromise this process. The MDS as a representation tool is of value in supporting accountability to the degree that it produces quality data. Were the MDS to truly reflect the local health priorities of the nation, its representation of poor health status then unveils a legacy of neglect and lack of accountability to citizens' basic health needs. It is therefore understandable that the fragmentation of

(un) accountable practices is required to maintain the status quo. As long as donors focus on selective mirror representations that are invariably a form of distortion, accountability becomes selective within the limited frame of donors' project interests while unaccountable practices may flourish in the rest of the country. What we therefore revert to is the continued marginalisation of the majority of poor individuals in matters relating to their health care services.

One of the ways we may think of improving HMIS mirror representation from a developmental perspective, is through a significant institutional overhaul in light of good governance prescriptions. We might indeed opt for a more pragmatic approach of "good enough governance" (Grindle 2004; Grindle 2007). Nevertheless, the main point is that institutional change is often a complex and long-term process. On the other hand we may consider strengthening HMIS mediation representation. This is along the lines of Brinkerhoff's (2007) suggestion that there are two routes to accountability: the short route where citizens hold service providers to account through monitoring of services (as we have in community monitoring); and the long route where citizens participate in the democratic space where politicians are held accountable for responding to health priorities by providing adequate resources and a bureaucracy (i.e. MOH) capable of formulating and implementing appropriate policies. We note from a socialising perspective of accountability that there is often an understanding that citizens appreciate the constraints of service providers who have not been supplied with the required resources to carry out their duties effectively. We see this particularly where community engagement activities lead to increase demand for formal health services but met with inadequate supply of crucial drugs thereby frustrating the whole process. Citizens understand that the stock outs are not the fault of the health workers but a state quantification failure. This therefore leaves the long route where citizens avail themselves of the democratic process to mediate their health needs. With weak democratic institutions we find that this long route also demands a complex social process with considerable time implications. This was a primary conceptual and empirical challenge we faced very early on in the research field when we tried to understand the contribution HMIS could make to PHC delivery from a developmental perspective. Appreciating that HMIS are implicated in these forms of accountability arrangements was a significant factor in pursuing its reconceptualisation and how we understand HMIS. Hence an understanding proposed here of HMIS mirror and mediating representation (in a later section, we will further

explore how HMIS representation may impact on responsiveness). However, at this point we note that the conceptualisation of HMIS as mirror and mediating representation implies that in LDCs, a robust analysis of HMIS cannot be divorced from the socio-political context from which it evolves.

Supporting visibility

Our understanding of HMIS supporting visibility goes beyond the requirements of transparency (AbouZahr and Boerma 2005; Stansfield 2005) to include Corbridge *et al.'s* (2005) and Cornwall *et al.'s* (2011) idea about how citizens see the state (or not) because the state has chosen to see them (or not). In this governance dynamic, we note that HMIS for discipline and direction are weak in LDCs because of a state that does not see its citizens and the widespread experience of citizenship as deficit (Cornwall *et al.* 2011). The complexity of visibility for discipline requires accountability mechanisms defined through appropriate regulatory frameworks. Without this framework, formal hierarchical accountability through the HMIS is significantly weakened. We therefore gain an appreciation for the extensive lobbying to put into place a National Health Bill. We can also understand why there will be fierce opposition and resistance to this Bill as the current status quo protects the interests of public officials who have hitherto remained unaccountable. What is equally interesting to note is that the incorporation of informal, contextual information into the formal HMIS (Madon and Krishna 2010) depends to some degree on how actively engaged communities are in dialogue. With a strong dialogue culture, it is possible to easily formalise the information generated and provide visibility into how the citizens see the state. An example will be the cataloguing of communities' developmental priorities and scoring the local state on its ability to deliver. Just as health indicators and graphs are displayed in health facilities, these could be made clearly visible by displaying them in public places like the health facilities. A major challenge to this notion of making PHC services visible according to the views of poor communities is the "militarisation" and subjugation of most poor communities. There is apathy towards political society after years of military rule and a democratic regime that is unrepresentative because of flawed electoral processes. This is in light of Corbirdge *et al* (2005) arguing that an authoritarian imposition over a subjugated civil society is not only limited to military rule but also extend to

democratic regimes that merely pay lip service to the electoral process. Given a subdued civil society, the disconnection between information as a mechanism for visibility and accountability is even more pronounced. We can further examine the idea of HMIS supporting visibility through information dialogue. This is especially as health information is central to health delivery at community levels. We present community outreach as an example of the interactions that aim to improve visibility in terms of understanding and mutual accountability.

Informational interaction with the community through outreach services can be better understood from the ICTD literature on capability. Specifically, the proposition that the agency of information users is critical in transforming information from a means to an end which will lead to improvements in the quality of their lives and enable them to accomplish their personal goals (Zheng 2006: 76). The ability of people to act profitably on information is determined by their "conversion factors – personal, social and environmental characteristics" (Zheng 2009: 70). Zheng writes that, "conversion factors are conditions that enable people to do what they want with their lives, with or without the facility of ICT" (pg. 79). However Zheng notes that using capability theories in ICTD allow for spaces to contest value systems. One of the critical points in this interaction is that it relies on a "local indigenous approach" (Walsham 2010), operating within the bounds of established cultural etiquette.

Impact on responsiveness

Donor efforts to strengthen the formalised HMIS are often concentrated at the national and state levels and occasionally at local levels. This is understandable because of the increasing resource implications and logistical complexities the lower one goes. Attention is focussed on developing skill sets and data appreciation i.e. building an information culture. No doubt this is crucial; however, these efforts mainly address the concerns of mirror representation and are often divorced from the necessity of responsiveness to citizens' interest. In so doing, there is a seeming reflection of sectorial development that occurred in ICT industries such as global software outsourcing (Heeks and Nicholson 2002; Carmel 2003; Heavin, Fitzgerald et al. 2003) but failed to lead to widespread development. In the case of HMIS strengthening activities, groups of individuals with extensive exposure to donor

capacity development programmes have been afforded opportunities to make better lives for themselves either through remunerations provided directly or better paid employment for a donor. An illustration from the fieldwork shows that this is happening to some degree and may be quite extensive especially in regions where there is an acute shortage of human resource capacity required by donors (as in the case of Northern Nigeria). As a case in point, between February and March 2008 the researcher was involved in conducting an HMIS situation analysis in three Northern states in Nigeria. In two of the states visited there were two HMIS officers in the SMOH who stood out in comparison to the rest of the individuals met. In fact one was credited with long-standing service in the public sector. However, before the end of the assignment, separate donor programmes had recruited both of these individuals. This seems to be quite commonplace. While we are not able to make claims that there is a sizeable industry of this sort, the principle once again is that the desperately poor are further marginalised when developmental programmes are designed to target the not so poor (Yunus 2003).

We however do not offer prescriptions or specific strategies to address the problem of HMIS and developmental transformation through accountability arrangements. While referring to the challenges of development two decades ago, we find that the primary observations of put forward by Thomas (2000) are still relevant:

> "… throughout the 1990s there has been a growing consensus on the need to look more closely at the potential for local groups and individuals to be involved as their own development agents, if only because of the manifest failure of the main theoretical perspectives on development to delivery major improvements in living conditions to the world's poorest individuals and communities" (Pg. 48)

This is in the spirit of Easterly's (2006) proposition that the idea of a solution to the problem of poverty is by necessity based on an impoverished understanding of the complex historical, social and cultural realities that are implicated in achieving any significant or sustainable change. We however would like to extend some of Easterly's suggestions to how we can pursue the developmental potential of HMIS as mediation representation. We particularly agree that this field is in dire need of "searchers" rather than "planners". From a development perspective, searchers represent homegrown, contextual, improvised and responsive approaches while on the other hand, planners epitomise the current status quo of externally driven

interventions, universal aid-dominated strategies and primarily a disjuncture between programme initiatives and the needs of the poor. It is understandable that the basis of Easterly's distinction between searchers and planners have been criticised as gross oversimplification even though they are generally useful (Sen 2006). These provide us with some useful pointers for thinking about approaches that can be adopted in strengthening HMIS as representation. The first is the idea that grand schemes - overtly optimistic and overly ambitious - originating from outside the context of need is often unresponsiveness to actual problems of the poor. This is because they do not have adequate capacity to address the intricacies of *social institutions* and appropriate *incentive schemes*. This brings with it, an imperative for "ground-level" investigation of the problems with a view to constantly searching for creative, useful and productive solutions (Sen 2006). According to Easterly, the defining mechanisms that foster searchers are *feedback* from and *accountability* to the poor or the absence of these in the case of planners. This could therefore be conceived as analogous to Mehrotra's (2006) idea of political decentralisation where the poor have a voice in shaping intervention programmes according to their needs.

Theoretical contribution to information systems

Information systems as a field of study is noted to rely on an eclectic mix of reference disciplines and thereby lacks a distinctive theory or method (Avgerou 2000). As a case in point, we have drawn theories from accountability and governance literature analyse the empirical content of this study. For example, through these reference disciplines, we have shown that the developmental role of HMIS in improving accountability structures implies a complex informational network, which goes beyond technological concerns but involves social norms and cultural values. Through an exposition of how these norms and values are implicated in HMIS implementation, we contribute to IS study debates that advocate the need for context-sensitive analysis (e.g. Avgerou, and Cornford 1998; Avgerou and Madon 2002 argue for the importance of framing the context of IS studies). There is a strong empirical and analytical argument that context in particularly important when studying ICT innovations such as HMIS in LDCs. Another dimension of this debate is interested in how micro-macro interactions produce organisational and/or institutional change and stability over time (Orlikowski 1996; 2000; Hasselbladh and Kallinikos 2000;

Orlikowski and Barley 2001). Similar to arguments made by Hasselbladh and Kallinikos (2000) we also conclude that it is important to consider that while at the micro-level we speak of emergent and situated practices within particular institutional structures, we must at the same time turn our attention to the processes that render these structure contingent. Micro-macro interactions are therefore not only mutually influencing but also relatively fluid.

Policy/practical contribution

Our accountability construct provides tools to conduct a robust analysis of HMIS implementation challenges in terms of data quality, reliability and use. By framing instrumental and socialising accountability as co-constitutive we are able to unpack how contextual understandings can contribute to formalised HMIS and vice versa. These also have policy implications for the role of multiple principals in HMIS PHC delivery, especially highlighting the involvement of international partners and the wider donor community. These policy implications provide guidance on strengthening institutional structures and intermediaries that advocate local developmental priorities with a view to balancing the bias of global health expediencies on formal hierarchical systems.

We propose that the relationship between instrumental and socialising forms of accountability can be conceived through the dual expediencies of *efficiency and relevance*. Mirror representation as the objective of instrumental accountability is defined in terms of an *efficiency* domain and socialising accountability along a *relevance* continuum (See fig 7.1 below). Efficient HMIS is able to provide data, which mirrors a vertical component of PHC delivery accurately. Inefficient HMIS on the other hand is riddled with inaccuracies and is generally unreliable. Relevant HMIS is contextual data determined through local input regarding PHC priorities while irrelevant HMIS lacks context-sensitivity and usefulness either intrinsically or perceptually. We develop representation pathways for navigating these accountability domains. The weakest HMIS quadrant is conceived as distorted representation, which is characterised by both unreliable and irrelevant (or unused) data. This is usually the state where most national HMIS systems are located. It is indicative of the neglect of

rural community health, disconnect between the state and its poor citizens and the superficial commitment to PHC delivery. Active interventions to strengthen HMIS implementation implicitly follow a path either of improving efficiency or relevance. In the case of the former, the goal of HMIS representation is as a mirror. HMIS is introduced through a disciplinary regime supporting hierarchical accountability with priority given to the requirements of vertical programmes. These form the basis of performance management of health care providers e.g. in terms of reporting rates. This is usually the preference of most donor projects and vertical health programmes. It often depends on a reductive approach where specific data elements are chosen and usually only in limited geographical areas. With this bounded remit, visibility is high and the meting out of sanctions and rewards, depending on performance, are efficient. Therefore, while data quality may improve and indicators reported become more representative of this highly selective "reality", the developmental impact is invariably narrow and is usually of minimal relevance locally. In the absence of donor visibility, there is the likelihood that the output of the HMIS will be typically ritualistic with data generated having minimal relevance for the users and the quality mostly unreliable. This is because if the data elements and indicators are determined at a distance, it is unlikely that anyone uses the data locally in which case there is no incentive to make sure quality data is reported only that data is reported.

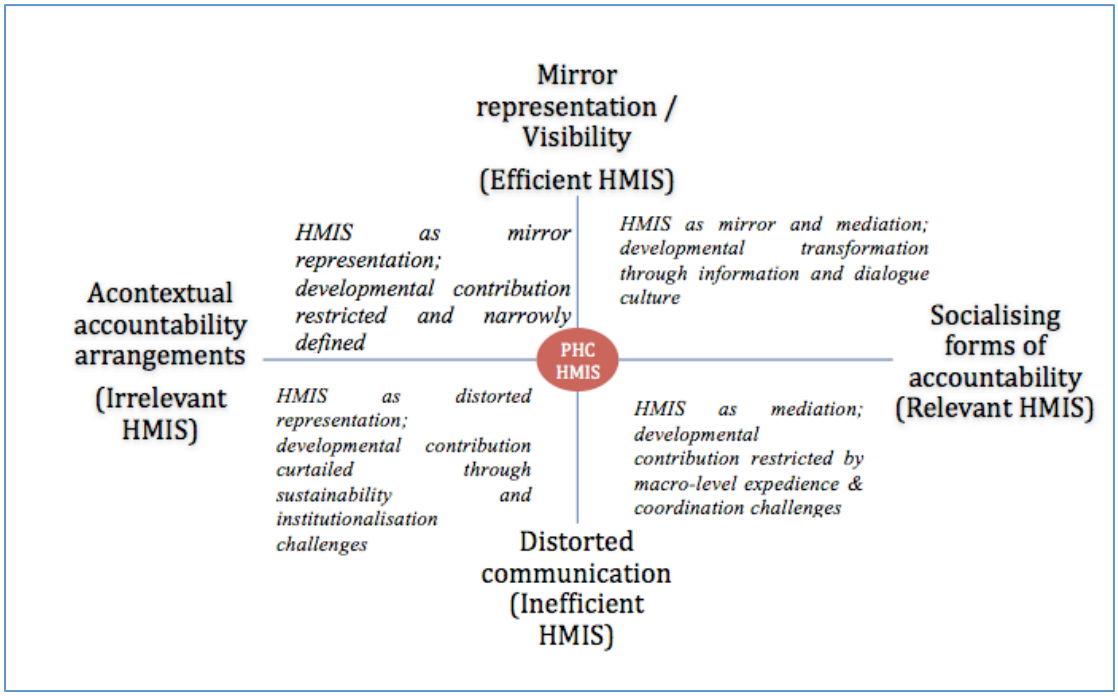


Fig. 7.1: Conceptualising PHC HMIS, Instrumental and Socialising Accountability

Where the *relevance* path is chosen, HMIS representation is conceived as mediation. In this case, there is an active effort to build local capacity to respond to their defined health priorities. Minimum datasets and disease surveillance data are however important for epidemiological and health planning purposes. While locally situated HMIS caters for the specificities of communities it must be sufficiently integrated as required for epidemiological surveillance and response (Smith *et al.* 2008). There is also the risk of fragmentation based on geopolitical alliances as discussed under communitarian citizenship. Some communities may have well-resourced PHC delivery services due to tribal alliances while other are marginalised.

The ideal HMIS quadrant satisfies dual representation through mirroring and mediation. In this scenario, communities are given an opportunity to engage with health providers in articulating health priority needs while fulfilling the demands of the MDS. This interaction also implies that communities through active civil societies can hold public officials accountable for the adequate resourcing on their health facilities. HMIS under these circumstances should be broad with formal data requirements appropriately reported and routine dialogue (e.g. community monitoring) between relevant stakeholders making sure that their veracity is confirmed. The dialogue also produces informal channels of information where the HMIS becomes a repository of community information needs with relevant channels available to address these needs. While the primary health care system accentuates community engagement, it also requires an overarching coordination framework at different levels e.g. regional or national. Therefore while a contextually relevant HMIS might be effective in responding to health needs of a particular community, the geographical spread of diseases are not limited by geopolitical boundaries therefore efficient interventions designs have to take into account the need for regional or national strategies. Consequently, the interdependent relationship between HMIS efficiency and relevance is an important one for instrumental and socialising accountability (see Table 7.1 below for illustration from the field).

1) Efficient but not effective (Ritual)	2) Effective and Efficient (Broadly Developmental)
- Most donor HMIS-strengthening activities; preoccupation with data reporting e.g. IDSR, HMIS, parallel data forms	- Bottom-up contextual information augments top-down essential dataset. -Micro-level capacity building
4) Inefficient and ineffective (Neglect and Disconnect)	3) Effective but not efficient (Narrowly Developmental)
Most government run systems show local PHC system neglect; this is where most donor activity baseline start from	Community –driven health development ward systems

Table: 7.1: Conceptualising PHC HMIS, Instrumental and Socialising Accountability

Limitations and further research

Studying the role of HMIS in improving PHC delivery in LDCs is an ambitious agenda albeit relevant and important. Nevertheless, within the constraint of a study such as this, it is necessary to contain this research domain pragmatically. In this sense, one of the limitations of this study is the methodological design of an embedded single case study. Another possible limitation is the use of multiple theoretical constructs for analysing the case study.

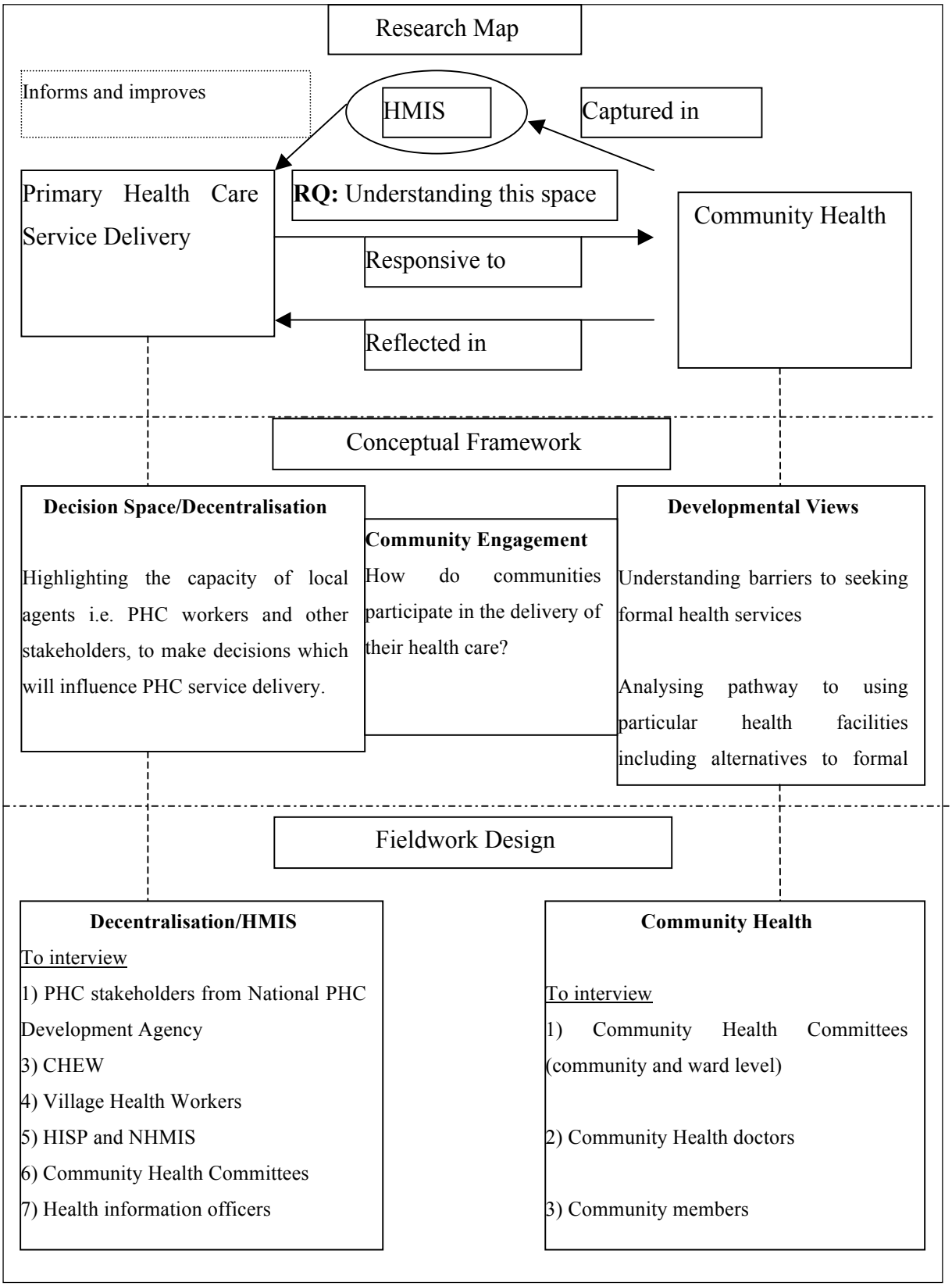
The primary limitation of this research project is that its central focus was on one state (Jigawa) and one community (Tsakuwawa) in Nigeria, limiting our ability to provide statistical generalisations of our finding although as noted we are able to provide analytical generalisation. This is especially so in this case where we have developed accountability concepts and drawn implications (Walsham 1995) for HMIS implementation in Northern Nigeria and LDCs generally. Our methodology section in Chapter Four also indicated that the aim of this study is to provide a way of making sense of the developmental challenges of implementing HMIS. Therefore, the aim we set out to achieve was more of a rich understanding than it was for generalisable conclusions. According to this logic, the researcher decided to immerse himself in the field in order to gain deep insight into HMIS implementation efforts, perceptions of accountability and expressions of developmental priorities. Another methodological concern is the use of multilevel unit of analysis. However, this is legitimised in similar HMIS studies (Such as, Kimaro 2006) as well as studies considering the impact of central level policies on PHC outcomes (Atkinson, Cohn et al. 2005).

In terms of the multiple theoretical constructs used, this has been justified as far as they are not contradictory (Klecun-Dabrowska 2002). In addition, the source disciplines where these constructs have been developed contend that it is imperative for analytical constructs in this domain to embrace analytical frameworks that provide the researcher with an opportunity to explore the contradictions, nuances and complexity of the empirical field in a creative way (Kooiman 2003). Lastly, we noted from our critical realist stance that it is precisely the opposite that produces unimaginative and misleading analysis (Sayer 2000).

It would be fruitful to conduct further research at community level (such as multiple case studies in Northern and Southern Nigeria) especially in light of the socialising forms of accountability constructs presented here.

Appendices

Appendix 1: Initial research Agenda



Appendix 2: Cross referencing respondents in Analysis chapter

Designation	Location of Interview	Date of Interview
FMOH Official	Abuja/London	24.11.08/01.03. 12
NPHCDA Official	Abuja	24.10.08
WHO Official	Abuja	02.12.08
Katsina State HMIS Officer	Katsina State	19.02.09/24.02.09
LGA M&E Officer	Jigawa State	July 2009
Community Health Doctor	Abuja - Gwagalada	28.10.08
Katsina State DPRS	Katsina State	27.02.09
Zamfara STM	Zamfara State	2.03.09
Yobe HIS Officer	Yobe State	9.03.09
M&E Officer Fika	Yobe	01.03.09
OIC – Gashaka	Yobe	01.03.09

Appendix 3: List of Respondents by level and interview period/date

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
1	24/10/08	NPHCDA: Planning Research and Statistics	Interview
2	02/12/08	WHO: Health Promotions Officer	Interview
3	28/10/2008	ABUTH: Resident Dr. Community Medicine	Interview
4	24/11/08	FMOH: Head NHMIS Branch	Interview
5		Health Consultant World Bank Project	Interview
6		FMOH: Epidemiology	Interview
7		NNPC: Medical Doctor	Conversation
8			
9	2009		
10	18/02/2009	PRRINN-MNCH: Communications Strategy Technical Adviser	Conversation
11	19/02/2009	PRRINN-MNCH: Katsina STM	Conversation
12	19/02/2009	PRRINN-MNCH: SPO	Conversation
13	19/02/2009	Katsina SMOH: State HMIS Office	Conversation & Interview
14	24/02/2009	Six officers from Katsina SMOH and SPHCDA Assistant Director Admin and Supply SMOH Katsina	Training, interview and conversation
15	24/02/2009	Katsina SMOH: State HMIS Officer	Conversation & Interview
16	24/02/2009	Katsina LGA M&E Officer	Interview
17	24/02/2009	PRRINN-MNCH: LEC	Interview
18	27/02/2009	Katsina SPHCDA: State M&E Officer	Interview

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
19	27/02/2009	Katsina SMOH: DPRS	Interview
20	2/03/2009	PRRINN-MNCH: Zamfara STM	Conversation
21	2/03/2009	HISP-Nigeria: HMIS Consultant	Conversation
22	2/03/2009	Zamfara SMOH: State HMIS Officer	Conversation
23	2/03/2009	Zamfara SMOH: DPRS	Interview
24	2/03/2009	Zamfara SMOH: PS	Interview
25	09/03/2009	Yobe SMOH: State Logistician	Conversation
26	09/03/2009	Yobe SMOH: State HMIS Officer	Conversation
27	11/03/2009	Yobe Fika LGA: M&E Officer	Conversation
28	11/03/2009	Yobe Gashaka PHC: OIC	Conversation & Interview
29	12/03/2009	Yobe PRRINN-MNCH: SPO Demand Side	Conversation
30	12/03/2009	Yobe Damaturu LGA: M&E Officer	Conversation & Interview
31	12/03/2009	Yobe Damaturu Dispensary: OIC	Conversation & Interview
32	12/03/2009	Yobe SMOH: State HMIS Official	Interview
33	12/03/2009	Yobe SMOH: State HMIS Official	Interview
34	12/03/2009	Yobe SMOH: DPRS	Interview
35	12/03/2009	Yobe SMOH: PS	Interview
36			
37	17/07/2009		
38		Jigawa State Kiyawa PHC: MRO	Conversation & Observation
39		Jigawa State Dutse GH: MRO	Conversation and Observation

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
40		Jigawa State SMOH: DPRS	Briefing & Conversation
41	20/07/2009	Jigawa State Jahun Gunduma: Director	Briefing & Conversation
42		Jigawa State Kafin Hausa Gunduma: Director	Briefing & Conversation
43	21/07/2009	Jigawa State PPRHAA: HF and Community Feedback	Focus group observation - 114 HFs, 9 GH, 9 GHSC, 1 GHSB
44	22/07/2009	Jigawa State SMOH: State HMIS Officer	Interview and observation
45			
46	28/09 - 04/10 2009	Katsina SMOH: DHIS support	State HMIS data analysis, quality audit
47	05/10 - 7/10 2009	Katsina, Yobe, Zamfara & Jigawa HMIS officers	Interstate Data Review
48	14/10 - 15/10 2009	Jigawa State SMOH: State HMIS Office	State HMIS data analysis, quality audit
49	10/11/2009	Jigawa State: Health Data Consultative Committee members	HDCC Meeting Observer
50	11/11/ - 12/11/2009	Jigawa State: HMIS officers, LGA M&E officers, PRRINN LEC and PATHS 2 Consultant	Intrastate data review facilitator
51			
52	7/12/2009	Katsina State: HDCC Chairman, HMIS Unit, PRRINN MNCH STM and SPO	Meetings and conversations
53	8/12/2009	Katsina SMOH: DHIS support	State HMIS data analysis, quality audit

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
54	9/12 - 10/12/2009	Katsina State: HMIS officers, LGA M&E officers, PRRINN LEC and PATHS 2 Consultant	Intrastate data review facilitator
		JIGAWA STATE	
55	5/07/2010	PRRINN-MNCH: HMIS LEC	Interview and Conversation
56	6/07/2010	Tsakuwawa Health Post: Assistant OIC	Interview
57		Tsakuwawa Health Post: OIC	Interview
58		Tsakuwawa Community: LCV Secretary	Interview
59	07/07/2010	Tsakuwawa Health Post: OIC	Interview and Conversation
60		Tsakuwawa Village Head	Interview
61		PRRINN-MNCH: Community Engagement LEC	Interview
62		Tsakuwawa Community: LCV (**Farmer & Head of Lasininayi Settlement)**	Interview
62		Tsakuwawa Community: LCV (Farmer)	Interview
64		Tsakuwawa Community: LCV (TBA)	Interview
65		Tsakuwawa Community: LCV (Unemployed - male)	Interview
66		Tsakuwawa Health Post: Assistant OIC	Interview and Conversation
67	8/07/2010	Tsakuwawa Health Post: OIC	Conversation, observation, data analysis
68		PRRINN-MNCH: Community Engagement LEC	Conversation
69		Tsakuwawa Community: LCV (Town Crier)	Interview

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
70		Tsakuwawa Community: LCV (Farmer in Kofar Gabas)	Interview
71		Tsakuwawa Community: TBA/Potter/bean cake seller	Interview
72		Tsakuwawa Community: LCV (TBA/trader)	Interview
73		Tsakuwawa Community: LCV (Unemployed-female)	Interview
74		Tsakuwawa Community: LCV (Tailor)	Interview
75		Tsakuwawa Community: LCV (bean cake seller)	Interview
76		PRRINN-MNCH: SPO Community Engagement	Conversation
77	9/07/2010	Tsakuwawa Community: Head Sweeper	Interview
78		Tsakuwawa Community: Fisherman/Sweeper	Interview
79		Tsakuwawa Community: Fisherman/Sweeper (Kofar Ariwa Settlement)	Interview
80		Tsakuwawa Community: Fisherman/Sanitation Officer	Interview
81		Tsakuwawa Community: Fisherman/Sanitation Officer (Kofar Ariwa Settlement)	Interview
	10/07/2010	Slept in the village	Observation, reflection
82	11/07/2010	Tsakuwawa Community resident - Health Promotions Officer Jahun Gunduma	Interview
83		Tsakuwawa Community resident - CHEW	Interview

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
84		Tsakuwawa Village Head	Conversation
85	12/07/2010	Jahun Gunduma Research Council	Interview
86		Tsakuwawa Community resident - Health Promotions Officer Jahun Gunduma	Interview
87		Tsakuwawa Health Post: OIC	Conversation
88		SMOH DPRS	Conversation
89		Tsakuwawa Traditional Chiefs	Interview
	13/07/2010	Tsakuwawa Community: Women Attending ANC	
90		From Hantsu Settlement	Interview
91		From Kofar Kudu	Interview
92		Health Facility Security Guard	Interview
93	14/07/2010	Tsakuwawa Health Post: OIC	Conversation
94		Village Head's Wives	
95		Wife 1	Interview
96		Wife 2	Interview
97		Wife 3	Interview
98		Wife 4	Interview
99		21 Tsakuwawa Youths	Interview
100		10 Tsakuwawa Elders	Interview
101		Former State Health Commissioner	Phone Conversation
	15/07/2010		
102		NGO Secretary (RIMCOF)	Interview
103		PRRINN-MNCH: Jigawa STM	Conversation

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
104	16/07/2010	NGO Secretary (KAMALA)	Interview
	17/07 - 21/07/2010		
105		DHIS Manual Developers: PATHS 2 HMIS National Adviser, Health NHMIS Branch, Jigawa State HMIS Officer	Training Manuals and Conversations
	28/07 - 30/07		
106		Jigawa, Yobe, Katsina, Zamfara state HMIS representatives, FMOH NHMIS officers, PRRINN M&E Programme Officers	Training & Observation
	09/12 - 15/12/2010		
107		Location Kano - HISP-Nigeria: 4 HMIS Consultants, Jigawa, Yobe, Katsina, Zamfara state HMIS representatives, FMOH NHMIS officers, PRRINN M&E Programme Officers	Interstate Data Review, Conversations, Observations
	11/01 - 18/01/2011		
108		HISP-Nigeria: 3 HMIS Consultants,	Conversation
	19/03 - 24/03/2011		
109		Location Katsina - HISP-Nigeria: 4 HMIS Consultants, Jigawa, Yobe, Katsina, Zamfara state HMIS representatives	Interstate Data Review, Conversations, Observations
110	01/03/2012	FMOH - Head NHMIS Branch	Interview -Phone
111		HMIS Consultant	Phone Conversation

S/N	*Date/Period*	*Source/Respondent*	*Type of Data collection*
	30/03/2012		
112		PRRINN-MNCH: Jigawa HMIS LEC	Interview -Phone

Type of Data Collection	*Quantity*	*Note*
Interview	64	Not unique respondents, includes conversations and observations with elements of an interview and repeat interviews/conversations etc
Conversations	40	
Others- e.g. observations, meetings, workshops, trainings etc	13	Unique count of type but not sources

Appendix 4: Sample Questions: Hierarchical Level

Head of National Health Management Information System

AIM: to understand the role, difficulties and opportunities for HMIS in Nigerian PHCs

1. Personal Information

Name……..

What is your official title and role?

What are the typical activities that come with your role i.e. your common everyday tasks?

2. Decentralisation

a) Identifying principal/agent interactions

i. What role do ICTs play in the decentralised PHC structure?

ii. Can you give examples of how ICTs are used?

iii. Who are the key stakeholders at this level?

iv. Are ICTs used for monitoring performance targets or other managerial data? E.g. no. of hours worked, visits made, vaccines given etc.

b) Health Information Systems

i. What do you think are the main challenges in developing an effective NHMIS in Nigeria?

ii. With specific reference to the PHC level, what are the difficulties you encounter or perceive in the collection and use of health information?

iii. Is there a feedback structure to help health workers at the PHC level understand how their health data is being used?

iv. Is there a functional system for the monitoring and evaluation of diseases? What role does the NHMIS play in this?

v. Do you feel technology can be used for anything more helpful in the long run?

References

Aanestad, M., E. Monteiro, et al. (2005). "Strategies for development and integration of health information systems: coping with historicity and heterogeneity." Working papers in Information Systems **5**: 1-51.

Abah, O. S. and J. Z. Okwori (2005). A Nation in Search of Citizens: Problems of Citizenship in the Nigerian Context. Inclusive Citizenship. Naila Kabeer. London, Zed Publishing.

AbouZahr, C. and T. Boerma (2005). "Health information systems: the foundations of public health." Bulletin of the World Health Organization **83**(8): 578-583.

Adindu, A. and S. Babatunde (2006). "Health managers' perception of the primary health care management information system: a case of Bama Local Government in northern Nigeria." Niger J Med **15**(3): 266-270.

Africa Public Health. (2009-2010). "2010 Africa Health Financing Scorecard." Retrieved 24 October, 2011, from http://www.who.int/workforcealliance/knowledge/data/apha_financingscorecard.pdf.

Akinde, A., H. Soriyan, et al. (1997). "National Health Management Information System: Issues of funding and support." Methods of Information in Medicine **36**(2): 99-101.

Akpan, T., H. Searing, et al. (2004). Nigerian case study: Lessons learned in piloting the national health management information system in Bauchi, Enugu, and Oyo States.

Akubue, A. (2000). "Appropriate Technology for Socioeconomic Development in Third World Countries." The Journal of Technology Studies **26**(1): 33-43.

Al-Alawi, A. (2006). "Investigating the strategies for successful development of health information systems: A comparison study." Information Technology Journal **5**(4): 626-647.

allWestAfrica. (2010, 17 August). "Nigeria Ranks Second in Lowest Living Condition?" Retrieved 24 October, 2011, from http://www.allwestafrica.com/170820106459.html.

Anderson, T., J Davies, *et al.*, Eds. (1989). Health behaviour research and health promotion. Oxford, Oxford University Press.

Anifalaje, A. (2007). Decentralisation and health systems performance in developing countries: Impact of "Decision Space" on primary health care delivery in Nigeria Information Systems and Innovation Group. London, UK, London School of Economics and Political Science. **Masters:** 53.

Anifalaje, A. (2011). "Interstate Data Reveiw." Retrieved 12 February, 2012, from http://www.prrinn-mnch.org/documents/Interstate_data_2011.pdf.

Aqil, A., T. Lippeveld, et al. (2009). "PRISM framework: a paradigm shift for designing, strengthening and evaluating routine health information systems." Health Policy and Planning **24**: 217-228.

Asangasi, I. and J. Shaguy (2009). Complex Dynamics in the Socio-Technical Infrastructure: The Case of the Nigerian Health Management Information System. Proceedings of the 10th International Conference on Social Implications of Computers in Developing Countries, Dubai, May 2009. Dubai School of Government, Dubai,, Dubai School of Government.

Ashraf, H. (2005). "News: Why countries need health information systems." Bulletin of the World Health Organisation **83**(8): 565-568.

Atkinson, S. (1995). "Restructuring health care: tracking the decentralization debate." Progress in Human Geography **19**(4): 486-503.

Atkinson, S. (2002). "Political cultures, health systems and health policy." Social Science & Medicine **55**: 113-124.

Atkinson, S., A. Cohn, et al. (2008). "Promotion and prevention within a decentralized framework: changing health care in Brazil and Chile." Int J Health Plann Management **23**(2): 153-171.

Atkinson, S., A. Cohn, et al. (2005). "Implementation of promotion and prevention activities in decentralized health systems: comparative case studies from Chile and Brazil." Health Promot Int **20**(2): 167-175.

Atkinson, S., R. Medeiros, et al. (2000). "Going Down to the Local: Incorporating Social Organisation and Political Culture into Assessments of Decentralised Health Care." Social Science and Medicine **51**: 619-636.

Ausse, J., M. A. Omar, et al. (1995). "Developing an information system to support the pursuit of decentralization. The perspective of Ceara State in Brazil." Journal of management in medicine **9**(4): 35-43.

Avgerou, C. and T. Cornford (1998). Developing information systems : concepts, issues and practice (2nd Edition). London, Macmillan.

Avgerou, C. (2002). Information systems and global diversity. Oxford, Oxford University Press**:** viii, 267 p.

Avgerou, C. (2003). IT as an institutional actor in developing countries. The Digital Challenge: Information Technology in the Development Context. S. Krishna and S. Madon. Aldershot, Ashgate.

Avgerou, C. (2010). "Discourses on ICT and Development " Information Technologies & International Development **6**(3): 1-18.

Avgerou, C. and S. Madon. (2002). "Framing IS studies [electronic resource]." from http://is2.lse.ac.uk/wp/pdf/WP112.PDF.

Avison, D., F. Lau, et al. (1999). "Action Research." Communications of the ACM **42**(1): 94-97.

Báez, C. and P. Barron (2006). Community voice and role in district health systems in east and southern Africa: A literature review. EQUINET DISCUSSION PAPER 39, Regional Network for Equity in Health in east and southern Africa (EQUINET).

Bartley, M., D. Blane, et al. (1997). "Socioeconomic determinants of health: Health and the life course: why safety nets matter." BMJ **314**: 1194.

Bellamy, C. and J. Taylor (1994). "Reinventing government in the information age." Public Money and Management **July-September**.

Berger, P. and T. Luckmann (1966). The social construction of reality: A treatise in the sociology of knowledge. Garden City, New York, Anchor Books.

Berman, P., Ed. (1995). Health Sector Reform: Making Health Development Sustainable. Boston, Harvard University Press.

Berman, P. and T. Bossert (2000). A Decade of Health Sector Reform in Developing Countries: What Have We Learned? Data for Decision Making Symposium, Washington, DC

Bernardi, R. (2009). IT innovation in a health information system in kenya: implications for a sustainable open-source software model in developing countries. Proceedings of the 10th International Conference on Social Implications of Computers in Developing Countries, Dubai, May 2009. Dubai School of Government, Dubai.

Bevir, M. (2009). Key concepts in governance. Los Angeles, Calif. ; London, SAGE.

Bhasker, R. (1998). Philosophy and Scientific Realism. Critical Realism: Essential Readings. M. Archer, R. Bhasker, A. Collier, T. Lawson and A. Norrie. London, Routledge**:** 16-48.

Bishaw, S. B. (2008). Institutional strategies towards improving health information systems (HIS) in Sub-Saharan Africa. Social Dimensions Of Information And Communication Technology Policy. C. Avgerou, M. Smith and P. v. D. Bessclaar. Boston, Springer. **282:** 191-207.

Blaauw, D., L. Gilson, et al. (2003). Organisational Relationships and the 'Software' Of Health Sector Reform. Background Paper Disease Control Priorities Project (DCPP) Capacity Strengthening and Management Reform, Centre for Health Policy, School Of Public Health, University Of The Witwatersrand**:** 1-57.

Borgmann, A. (1999). Holding on to Reality. The Nature of Information at the Turn of the Millennium,. Chicago, The University of Chicago Press, .

Bossert, T. (1979). "Health Policies in Africa and Latin America: Adopting the Primary Care Approach." Social Science and Medicine **13**(C): 65.

Bossert, T. (1998). "Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance." Soc Sci Med **47**(10): 1513-1527.

Bossert, T. J. and J. C. Beauvais (2002). "Decentralization of health systems in Ghana, Zambia, Uganda and the Philippines: a comparative analysis of decision space." Health Policy Plan **17**(1): 14-31.

Bossert, T. J. and A. D. Mitchell (2011). "Health sector decentralization and local decision-making: Decision space, institutional capacities and accountability in Pakistan." Soc Sci Med **72**(1): 39-48.

Bovaird, T. and E. Löffler (2003). "Evaluating the quality of public governance: indicators, models and methodologies." International Review of Administrative Sciences **69**(3): 313-328.

Bowker, G. and S. Star (1999). Sorting Things Out: Classification and Its Consequences. Cambridge, MA, The MIT Press.

Braa, J., O. Hanseth, et al. (2007). "Developing health information systems in developing countries: the flexible standards strategy." MIS Quarterly **31**(2): 381.

Braa, J. and C. Hedberg (2000). Developing District-based Health Care Information Systems: The South African Experience. Proceedings of IRIS 23. Laboratorium for Interaction Technology,, University of Trollhättan Uddevalla.

Braa, J., E. Macome, et al. (2001). "A Study of the Actual and Potential Usage of Information and Communication Technology at District and Provincial Levels in Mozambique with a Focus on the Health Sector." EJISDC **5**(2): 1-29.

Braa, J., E. Monteiro, et al. (2004). "Networks Of Action: Sustainable Health Information Systems Across Developing Countries." MIS Quarterly **28**(3): 337-362.

Brinkerhoff, D. (2004). "Accountability and health systems: toward conceptual clarity and policy relevance." Health Policy and Planning **19**(6): 371-379.

Brinkerhoff, D. (2007). "Health Governance: An Overview." Retrieved 5 March, 2012, from http://www.healthsystems2020.org/files/613_file_DB_health_governance_overview_HS2020.pdf.

Brown, A. (2000). Current Issues in Sector-Wide Approaches for Health Development. Strategies for Cooperation and Partnership: Global Programme on Evidence for Health Policy. World Health Organisation. London, Overseas Development Institute.

Brown, A. (2001). Integrating Vertical Health Programmes into Sector Wide Approaches: Experiences and Lessons. Swiss Agency for Development and Co-operation, Institute for Health Sector Development**:** 1-28.

Brunner, E. (1997). "Socioeconomic determinants of health: Stress and the biology of inequality." BMJ **314**: 1472.

Burgess, R. (1984). The Research process in educational settings : ten case studies London, Falmer.

Buse, K. and G. Walt (1996). "Aid coordination for health sector reform: a conceptual framework for analysis and assessment." Health Policy **38**: 173-187.

Callon, M. (1991). Techno-economic Networks and Irreversibility. A Sociology of Monsters? Essays on Power, Technology and Domination. J. Law. London, Routledge**:** 132-161.

Carlson, C. (2007). "Health management information systems." Eldis Health Key Issues Retrieved 3 January, 2012, from www.eldis.org/healthsystems/hmis/index.htm.

Carmel, E. (2003). "The new software exporting nations: Impacts of national well-being resulting from their software exporting industries." EJISDC **13**(3): 1-6.

Chandrasekhar, C. P. and J. Ghosh (2001). "Information and communication technologies and health in low income countries: the potential and the constraints." Bulletin of the World Health Organization **79**: 850-855.

Chatora, R. and P. Tumusime (2004). "Primary Health Care: A Review of Its Implementation in Sub-Saharan Africa." Primary Health Care Research and Development **5**: 296-306.

Chen, S. and M. Ravallion (2004). How have the world's poorest fared since the early 1980s? Washington, D.C., World Bank, Development Research Group, Poverty Team.

Chen, S. and M. Ravallion (2008) "The Developing World Is Poorer Than We Thought, But No Less Successful in the Fight against Poverty " Policy research working paper, 54 p.

Chetley, A., Ed. (2006). Improving health, connecting people: The role of ICTs in the health sector of developing countries. A framework paper, Infodev.

Chilundo, B. and M. Aanestad (2003). Vertical or Integrated Health Programmes? The Consequence for the Laboratory Information Systems in Mozambique. Electronic Proceedings of the IFIP TC8 & TC9 . WG8.2 + 9.4 Working Conference on Information Systems Perspectives and Challenges in the Context of Globalization, Athens, Greece.

Chilundo, B. and M. Aanestad (2004). "Negotiating Multiple Rationalities in the Process of Integrating the Information Systems of Disease-Specific Health Programmes." EJISDC **20**(2): 1-28.

Chilundo, B. and S. Sahay (2002). Clinical Laboratory Information Systems in Mozambique: The great challenge. Proceedings of the IFIPWG9.4 working conference on Information & Communication Technologies and Development: New Opportunities, Perspectives & Challenges, IIMB.

Clarke, K. C., S. McLafferty, et al. (1996). "On Epidemiology and Geographic Information Systems: A Review and Discussion of Future Directions." Emerging Infectious Diseases **2**(2): 85-92.

Collins, C. and A. Green (1994). "Decentralization and primary health care: some negative implications in developing countries." Int J Health Serv **24**(3): 459-475.

Conner, M. and P. Norman (1996). Predicting health behaviour : research and practice with social cognition models Buckingham; Philadelphia, Open University Press.

Corbridge, S., G. Williams, et al. (2005). Seeing the state : governance and governmentality in India. Cambridge, Cambridge University Press.

Cornford, T. and S. Smithson (2006). Project Research in Information Systems. London, Palgrave.

Cornia, G. A. (2001). "Globalization and health: results and options." Bulletin of the World Health Organization **79**: 834-841.

Cornwall, A., H. Lucas, et al. (2000). "Partnership Models in the Health Sector." IDS Bulletin **31**(1): 113.

Cornwall, A., S. Robins, et al. (2011). "States of Citizenship: Contexts and Cultures of Public Engagement and Citizen Action." IDS WORKING PAPER **363**.

Craig, D. and D. Porter (2003). "Poverty Reduction Strategy Papers: A New Convergence " World Development **31**(1): 53-69

Criado, J., O. Hughes, et al. (2002). E-Government and Managerialism: A Second Revolution in Public Management. 6th International Research Symposium on Public Management. University of Edinburgh.

Crotty, M. (1998). The Foundations of Social Research. Londn, Sage.

Cruickshank, J. (2004). "A Tale of Two Ontologies: An Immanent Critique of Critical Realism." The Sociological Review **52**(4): 567-585.

Cueto, M. (2004). "The Origins of Primary Health Care and Selective Primary Health Care." American Journal of Public Health **94**(11): 1864-1874.

Cyan, M., D. Porter, et al. (2004). Devolution in Pakistan: Overview of the ADB/DfID/World Bank study.

Dean, J. and M. Sharfman (1993). "Procedural rationality in the strategic decision-making process." Journal of Management Studies **30**: 587-610.

Deaton, A. (2003). "Health, Inequality, and Economic Development." Journal of Economic Literature **XLI**: 113-158.

DFID. (2011). "DFID Nigeria: Operational Plan 2011-2015." Retrieved 31 January, 2012, from http://www.dfid.gov.uk/Documents/publications1/op/nigeria-2011.pdf.

Doornbos, M. (2003). ""Good Governance": The Metamorphosis of a Policy Metaphor " Journal of International Affairs **57**(1): 3-17.

Dunleavy, P. and C. Hood (1994). "From Old Public Administration to New Public Management." Public Money & Management: 9-16.

Easterby-Smith, M., R. Thorpe, et al. (1991). Management Research: An Introduction. Thousand Oaks, CA, Sage.

Easterly, W. R. (2006). The white man's burden : why the West's efforts to aid the rest have done so much ill and so little good. Oxford ; New York, Oxford University Press.

Easton, D. (1965). A framework for political analysis. Englewood Cliffs, N.J.,, Prentice-Hall.

Edejer, T. T.-T. (2000). "Disseminating health information in developing countries: the role of the internet." BMJ **321**: 797-800.

Eggleston, K., R. Jensen, et al. (2002). Information and Communication Technologies, Markets and economic Development. The Global Information Technology Report: Readiness for the Networked World. G. Kirkman, OUP**:** 62-74.

Eisenhardt, K. (1989). "Building theories from case studies." Academy of Management Review **14**(4): 532-550.

Elliott, P. and D. Wartenberg (2004). "Spatial Epidemiology: Current Approaches and Future Challenges." Environmental Health Perspectives **112**(9): 998-1006.

Elumilade, D. O., T. O. Asaolu, et al. (2006). "Appraising the Institutional Framework for Poverty Alleviation Programmes in Nigeria " International Research Journal of Finance and Economics(3): 66-77.

Elzinger, G. (2005). "Vertical-Horizontal Synergy of the Health Workforce." Bulletin of the World Health Organisation **83**(4): 242.

Enogholase, G. (2010, 28 October). "Nigeria's health system ranks 197 of WHO's 200 nations – NHIS." Retrieved October 24, 2011, from http://www.vanguardngr.com/2010/10/nigerias-health-system-ranks-197-of-whos-200-nations-nhis/.

Escobar, A. (1995). Encoutering Development: the Making and Unmaking of the Third World. Princeton, NJ, Princeton University Press.

Escobar, A. (2002). The Problemitasation of Poverty: The tale of three worlds and development. Development: A Cultural Studies Reader. S. Schech and J. Haggis, Blackwell Publishing. Chapter 8.

Esterberg, K. (2002). Qualitative methods in social research. Boston, McGraw-Hill.

Ewhrudjakpor, C. (2008?). "Poverty and its alleviation: The Nigerian experience " International Social Work **51**(4): 519-531.

Federal Ministry of Health (2005). National Health Management Information System, Policy, Programme and Strategic Plan of Action.

Federal Republic of Nigeria (2010). National Strategic Health Development Plan (National Health Plan) 2010 – 2015. FEDERAL MINISTRY OF HEALTH. Abuja.

Feldman, M. (1988). "Secrecy, information, and politics: an essay on organizational decision making." Human Relations **41**: 73-90.

Feldman, M. and J. March (1981). "Information in organizations as signal and symbol." Administrative Science Quarterly **26**: 171-186.

Finau, S. (1994). "National health information systems in the Pacific Islands: in search of future." HEALTH POLICY AND PLANNING **9**: 161-170.

Fine, B. (2001). Neither the Washington Nor the Post-Washington Consensus: An Introduction Development policy in the twenty-first century beyond the post-Washington consensus. B. Fine, C. Lapavitsas and J. Pincus. London, Routledge**:** pp 1-27.

Fine, B., C. Lapavitsas, et al. (2006). Development policy in the twenty-first century : beyond the post-Washington consensus. London, Routledge.

FMOH (2004). REVISED NATIONAL HEALTH POLICY. Federal Ministry of Health. Abuja.

FMOH (2006). NHMIS Policy Document: Revised Policy- Programme and Strategic Plan of Action. Department of Health Planning and Research. Abuja, Federal Ministry of Health.

Foucault, M. (1979). Discipline and Punish Harmondsworth, Penguin.

Gallup, J. L. and J. D. Sachs (2001). "The Economic Burden of Malaria." The American Society of Tropical Medicine and Hygiene **64**(1,2): 85-96.

Gardner, K. and D. Lewis (1996). Anthropology, Development and the Post-Modern Challenge. London, Pluto Press.

Garrett, L. (2007). "The Challenge of Global Health." Retrieved 1 March, 2007, from http://www.foreignaffairs.org/20070101faessay86103/laurie-garrett/the-challenge-of-global-health.html.

Geertz, C. (1973). The Interpretation of Cultures. New York, Basic Books.

Gething, P. W., A. M. Noor, et al. (2006). "Improving imperfect data from health management information systems in Africa using space-time geostatistics." PLoS Medicine **3**(6): 0825-0831.

Gething, P. W., A. M. Noor, et al. (2007). "Information for decision making from imperfect national data: Tracking major changes in health care use in Kenya using geostatistics." BMC Medicine **5**.

Gilson, L. and H. Schneider (2010). "Managing scaling up: what are the key issues?" Health Policy Plan.: czp067.

Godlee, F., N. Pakenham-Walsh, et al. (2004). "Can we achieve health information for all by 2015?" THE LANCET **367**(July 17): 295-300.

Gonzalez, C. L. (2005). "Mass Campaigns and General Health Service." Bulletin of the World Health Organisation **83**(4): 317-319.

Good, B. J. (1994). Medicine, Rationality, and Experience. New York, Cambridge University Press.

Goodman, N. (1978). Ways of worldmaking. Indianapolis, Hackett.

Government of Nigeria (2010). Nigeria Vision 20:2020: The First National Implementation Plan. Sectoral Pans and Programmes. Abuja, Nigeria, National Planning Commission. **II**.

Government of Nigeria (2011). Draft National Health Bill 2011.

Graham, J., B. Amos, et al. (2003). Principles for Good Governance in the 21st Century. Policy Brief No.15. Ottawa, Canada, Institute On Governance.

Gray, A. and B. Jenkins (1995). "From Public Administration to Public Management: Reassessing a Revolution." Public Administration **73**(Spring): 75-99.

Green, A. (1999). An Introduction to Health Planning in Developing Countries, (2nd Ed.). Oxford, Oxford University Press.

Grindle, M. (2004). "Good Enough Governance: Poverty Reduction and Reform in Developing Countries." Governance: An International Journal of Policy, Administration and Institutions **17**: 525-548.

Grindle, M. (2007). "Good Enough Governance Revisited." Development Policy Review **25**(5): 553-574.

Gruening, G. (2001). "Origin and theoretical basis of new public management." International Public Management Journal **4**(1): 1-25.

Gulrajani, N. (2009). "The Future of Development Management: Examining possibilities and potential." Destin Working Paper Series. London School of Economics. Development Studies Institute No 09-99.

Hacking, I. (1999). The social construction of what? Cambridge, Mass, Harvard University Press.

Hall, J. J. and R. Taylor (2003). "Health for All Beyond 2000: The Demise of the Alma-Ata Declaration and Primary Health Care in Developing Countries." Medical Journal of Australia **178**(1): 17-20.

Handley, G., K. Higgins, et al. (2009). Poverty and Poverty Reduction in Sub-Saharan Africa: An Overview of Key Issues. Working Paper 299 Results of ODI research presented in preliminary form for discussion and critical comment. London, Overseas Development Institute.

Hanmer, L. (1999). "Criteria for the evaluation of district health information systems." Medical Informatics **56**: 161-168.

Hasselbladh, H. and J. Kallinikos (2000). "The Project of Rationalization: A Critique and Reappraisal of Neo-Institutionalism in Organization Studies." Organization Studies **21**(4): 697-720.

Hasselskog, M. (2009). Development Intervention on the Ground: Inherent rationales of aid and their encounter with local dynamics in three Cambodian villages School of Global Studies. Gothenburg, University of Gothenburg. **PhD:** 309.

Heavin, C., B. Fitzgerald, et al. (2003). Factors influncing Ireland's software industry. Organizational Information Systems in the Context of Globalisation. M. Korpela, R. Montealegre and A. Poulymenakou, Kulwer Academic Publishers.

Heeks, R. (1999). Reinventing Government in the Information Age London, , Routledge**:** 9-22.

Heeks, R. (2006). "Health information systems: failure, success and improvisation." Int J Med Inform **75**(2): 125-137.

Heeks, R. and B. Nicholson (2002). Software export success factors and strategies in developing and transitional economies. Development Informatics Working Paper Series, Paper No. 12, University of Manchester, IDPM.

HERFON (2006). Nigeria Health Review 2006. Abuja Nigeria, Health Reform of Nigeria.

HERFON (2008). Nigeria Health Review 2007. Abuja Nigeria, Health Reform of Nigeria.

Heywood, A. (2008). Technical Brief: Developing an Information-based Culture: HMIS and PATHS 2003-2008, Department for International Development (DFID) - PATHS.

Ho, A. (2002). "Reinventing local governments and the e-government initiative." Public Administration Review **62**(4): 434-444.

Hobbs, G. (2001). The health Sector-wide Approach and Health Sector Basket Fund, Economic and Social Research Foundation.

Hood, C. (1991). "A Public Management For All Seasons?" Public Administration(69): 3-19.

Hood, C. (1995). "The "new public management" in the 1980s: Variations on a theme." Accounting, Organizations and Society **20**(2-3): 93-109.

Husain, Z. (2011). "Health of the National Rural Health Mission." Economic & Political Weekly **XLVI**(4): 53-60.

Huther, J. and A. Shah (1998). Applying a simple measure of good governance to the debate on fiscal decentralization. Washinton, DC, World Bank**:** 1-28.

Hyden, G., J. Court, et al. (2004). Making Sense of Governance - Empirical Evidence from Sixteen Developing Countries. Colorado, Lynne Rienner Publishers, Inc.

Idowu, P., D. Cornford, et al. (2008) "Health informatics deployment in Nigeria [Electronic Version]." Journal of Health Informatics in Developing Countries **2**, 15-23.

International Monetary Fund. (1998). "Good Governance: The IMF's Role." Retrieved 9 February, 2012, from http://www.imf.org/external/pubs/ft/exrp/govern/govern.pdf.

Jabes, J. (2002). On the (F)Utility of Governance Indicators: Lessons from Countries in Transition. Assessing Good Governance. International Institute of Administrative Sciences New Delhi.

Jacucci, E., V. Shaw, et al. (2006). "Standardization of Health Information Systems in South Africa: The Challenge of Local Sustainability." Information Technology for Development **12**(3): 225-239.

James, W. P. T., M. Nelson, et al. (1997). "Socioeconomic determinants of health: The contribution of nutrition to inequalities in health." BMJ **314**: 1545.

Jamison, D. and W. Mosley (1991). "Disease control priorities in developing countries: health policy responses to epidemiological change." American Journal of Public Health **81**(1): 15-22.

Jane Dreaper - BBC News. (2011). "Millennium Development Goals on health 'will not be met'." Retrieved 20 September, 2011, from http://www.bbc.co.uk/news/health-14974145.

Jigawa State Government (Not dated,). Jigawa State Economic Empowerment and Development Strategy (JSEEDS). Jigawa, Nigeria, Jigawa State Government.

Johansen, M. and O. Hanseth (2000). Implementing open network technologies in complex work practices: A case form telemedicine. Organizational and social perspectives on information technology. **:** 355 - 369.

Johnson, C. P. and J. Johnson (2001). GIS: A Tool for Monitoring and Management of Epidemics. Map India 2001 Conference, New Delhi.

Jørgensen, B. (2006). Development and 'the other within'. The culturalisation of the political economy of poverty in the Northern Uplands of Viet Nam. Göteborg, University of Gothenburg **PhD**

Kaasboll, J. and J. Nhampossa (2002). Transfer of public sector information systems between developing countries: south-south cooperation. Social Implications of Computers in Developing Countries. S. Krishna and S. Madon. Bangalore, India, IFIP**:** 507-517.

Kallinikos, J. (2004). Farewell to constructivism: Technology and context-embedded action. The social study of information and communication technology. C. Avgerou, C. Ciborra and F. Land. Oxford, Oxford University Press**:** 140-161.

Kanjo, C., C. Moyo, et al. (2009). Towards Harmonisation of Health Information Systems in Malawi: Challenges and Prospects. IST-Africa 2009, Uganda.

Kaufmann, D., A. Kraay, et al. (2007). The worldwide governance indicators project : answering the critics. Washington, D.C., World Bank, World Bank Institute, Global Programs, and Development Research Group, Growth and Macroeconomics Team.

Kaufmann, D., A. Kraay, et al. (2007). Governance Matters VI : aggregate and individual governance indicators, 1996-2006. Washington, D.C., World Bank.

Kaufmann, D., A. Kraay, et al. (2009) "Governance Matters VIIII : aggregate and individual governance indicators, 1996-2008." Policy research working paper : 4978, 105 p.

Kawachi, I. and B. P. Kennedy (1997). "Socioeconomic determinants of health : Health and social cohesion: why care about income inequality?" BMJ **314**: 1037.

Khan, M. H. (2008). Building Growth-Promoting Governance Capabilities. The Least Developed Countries Report 2009: The state and development governance. UNCTAD. London, UK, SOAS, University of London.

Kimaro, H. (2006). Decentralization and sustainablity of ICT based health information systems in developing countries. Faculty of Mathematics and Natural Sciences. Oslo, University of Oslo. **PhD:** 129.

Kimaro, H. (2006). "Strategies for developing human resource capacity to support sustainability of ICT based health information systems: A case study from Tanzania." The Electronic Journal of Information Systems in Developing Countries **26**(2): 1-23.

Kimaro, H. and J. Nhampossa (2004). The challenges of sustainability of health information systems in developing countries: comparative case studies of Mozambique and Tanzania. Proceedings of the 12th European Confernce on Information Systems. T. Leino, T. Saarinen and S. Klein. Turk, Finland, ECIS - The European IS Profession in the Global Networking Environment.

Kimaro, H. and J. Nhampossa (2005). "Analysing the Problem of Unsustainable Health Information Systems in Less-Developed Economies: Case Studies from Tanzania and Mozambique." Information Technology for Development **11**(3): 273-298.

Kimaro, H. and S. Sahay (2007). "An institutional perspective on the process of decentralization of health information systems: Case Study from Tanszania." Information Technology for Development **13**(4): 363-390.

Kimaro, H. and O. H. Titlestad (2005). Challenges of user participation in the design of a computer based system: The possibility of participatory customization in low income cuontries. Enhancing human resource development through ICT, Abuja, Nigeria, IFIP.

Kjær, A. M. (2004). Governance. Cambridge, Polity.

Klecun-Dabrowska, E. (2002). Telehealth and informatin society: a critical study of emerging concepts in policy and practice. Department of Information Systems. London, London School of Economis. **PhD**.

Klein, H. and M. Meyers (1999). "A set of principles for conducting and evaluating interpretive field studies." MIS Quarterly **23**(1): 67-93.

Kleine, D. (2010). "Ict4what?—Using the choice framework to operationalise the capability approach to development." Journal of International Development **22**: 674-692.

Kombe, G., L. Fleisher;, et al. (2009). Nigeria Health System Assessment 2008, Abt Associates Inc.

Kooiman, J. (1993). Modern Governance: new government-society interactions. London :, SAGE.

Kooiman, J. (1999). "Social-Political Governance Overview, reflections and design." Public Management: an inlefnational journal of research and theory **1**(1): 67-92.

Kooiman, J. (2003). Governing as governance. London :, SAGE.

Korpela, M., L. Hanmer, et al. (2004). "How can African healthcare facilities get appropriate software? Sociotechnical research in the INDEHELA-Context project."

Korpela, M., H. Soriyan, et al. (2000). "Activity analysis as a method for information systems development: General Introduction and Experiments from Nigeria and Finland." Scandinavian Journal of Information Systems **12**: 191-210.

Korpela, M., H. Soriyan, et al. (1998). "Community PArticipation in Health Informatics in Africa: An experiment in tripartite partnership in Ile Ife, Nigeria " Computer Supported Cooperative Work **7**: 339-358.

Kothari, U. and M. Minogue (2002). Critical perspectives on development: An Introduction. Development Theory and Practice: Critical perspectives. U. Kothari and M. Minogue. Hants, Palgrave.

Krieger, N. (2003). "Place, Space, and Health: GIS and Epidemiology." Epidemiology **14**(4): 384-385.

Krishnan, A., B. Nongkynrih, et al. (2010). "Evaluation of computerized health management information system for primary health care in rural India." BMC Health Services Research **10**.

Latour, B. (1988). "Mixing Humans and Nonhumans Together: The Sociology of a Door-Closer." Social Problems **35**(3): 289-310.

Lee, A. (1989). "A Scientific Methodology for MIS Case Studies." MIS Quarterly **March**: 32-50.

Lee, K. (1998). "Shaping the future of global health cooperation: where can we go from here?" Lancet **351**: 899–902.

Lewis, M. and G. Pettersson (2009). "Governance in Health Care Delivery." The World Bank Development Economics Department & Human Development Department Policy Research Working Paper **5074**.

Leys, C. (1996). The rise and fall of development theory. London, Currey.

Lindelow, M., I. Kushnarova, et al. (2006). Measuring corruption in the health sector: what we can learn from public expenditure tracking and service delivery

surveys in developing countries. Global Corruption Report 2006. J. Kotalik and D. Rodriguez. London, Transparency International**:** 29-36.

Lippeveld, T. (2001). Routine Health Information Systems: The glue of a unified health system. The RHINO workshop on issues and innovation in routine health information in developing countries, The Bolger Center, Potomac, MD, USA.

Lippeveld, T., R. Sauerborn, et al., Eds. (2000). Design and implementation of health information systems. Geneva, WHO.

Loewenson, R. (1993). "Structural adjustment and health policy in Africa." Int J Health Serv **23**(4): 717-730.

Lozano, R., H. Wang, et al. (2011, 20 SEPTEMBER 2011). "Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality: an updated systematic analysis." Lancet, from http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673611613378.pdf?id=5bbe37e152166496:-18e7225c:1328642de05:49941316517188419.

Lucas, A. (2008). Forward: Nigeria Health Review 2007. Nigeria Health Review 2007. HERFON. Abuja Nigeria, Health Reform of Nigeria.

Lucas, H. (2008). "Information and communications technology for future health systems in developing countries." Social Science & Medicine **66**(2008): 2122-2132.

Lungo, J. and J. Nhampossa (2004). The Impacts of Legacy Information systems in reporting reoutine health delivery services: Case studies from Mozambique and Tanzania. International ICT Workshop. Dar es Salaam**:** 91-113.

Macfarlane, S., M. Racelis, et al. (2000). "Public health in developing countries." The Lancet **356**: 841-846.

Madon, S. (2000). "The Internet and Socio-Economic Development: Exploring the Interaction." Information Technology and People **13**(2): 85-101.

Madon, S., S. Krishna, et al. (2010). "Health Information Systems, Decentralisation and Democratic Accountability." Public Administration and Development **30**(4): 247-260.

Madon, S., S. Sahay, et al. (2007). "E-Government Policy and Health Information Systems implementation in Andhra Pradesh, India: need for articulation of linkages between the macro and the micro." The Information Society, **23**: 327-344.

Magnussen, L., J. Ehiri, et al. (2004). "Comprehensive Versus Selective Primary Health Care: Lessons For Global Health Policy." Health Affairs **23**(3): 167-176.

Mallipeddi, R., H. Pernefeldt, et al. (2009). Andhra Pradesh Health Sector Reforms A Narrative Case Study. Role of the Private Sector in Health Systems in Developing Countries: Technical partner paper. Hyderabad, Andhra Pradesh, India, ACCESS Health Initiative.

Maokola, W., B. A. Willey, et al. (2011). "Enhancing the routine health information system in rural southern Tanzania: Successes, challenges and lessons learned." Tropical Medicine and International Health **16**(6): 721-730.

March, J. (1982). Theories of choice and decision making. Reader 1990. General and strategic management. Glasgow, Strathclyde University Open Learning.

March, J. (1988). Ambiguity and accounting: the elusive link between information and decision-making. Decsions and organizations. J. March. Oxford, Blackwell.

McGrail, K. and C. Black (2005). "Access to Data in Health Information Systems." Bulletin of the World Health Organization **83**(8): 563.

McKenzie, A., N. Enyimayew, et al. (2010). "Workshop on 'Bringing PHC under one roof." Retrieved 12 February, 2012, from http://www.prrinn-mnch.org/documents/ExecutiveSummary_WkshoponbringingPHCUOR_Apr10.pdf.

McMichael, C., E. Waters, et al. (2005). "Evidence-based public health: what does it offer developing countries?" Journal of Public Health **27**(2): 215-221.

Mehrotra, S. K. (2006). "Governance and Basic Social Services: Ensuring Accountability in Service Delivery through Deep Democratic Decentralisation." Journal of International Development **18**(2).

Mekonnen, S. M., S. Sahay, et al. (2009). The role of Social Capital in the Integration of Health Information Systems Proceedings of the 10th International Conference on Social Implications of Computers in Developing Countries, Dubai.

Messner, M. (2009). "The limits of accountability." Accounting, Organizations and Society **34**(2009): 918–938.

Mills, A. (1995). "Improving the Efficiency of Public Sector Health Services in Developing Countries: Bureaucratic versus Market Approaches." Health Economics and Financing Programme **HEFP working paper 01/95**: 1-38.

Mimicopoulos, M., L. Kyj, et al. (2007). Public Governance Indicators: A Literature Review. New York, United Nations Department of Economic and Social Affairs.

Mintzberg, H. (1975). "The manager's job: folklore or fact." Harvard Business Review **53**: 49-61.

Miscione, G. (2007). "Telemedicine in the Upper Amazon: Interplay with Local Health Care Practices." MIS Quarterly **31**(2): 403-425.

Mitchell, A. D. and T. J. Bossert (2010). "Decentralisation, Governance and Health System Performance: 'Where you stand depends on where you sit'." Development Policy Review **28**(6): 669-691.

Mo Ibrahim Foundation. (2011). "2011 Ibrahim Index of African Governance." Retrieved 8 January, 2012, from http://www.moibrahimfoundation.org/en/media/get/20111003_ENG2011-IIAG-SummaryReport-sml.pdf.

Mosse, E. L. and S. Sahay (2001). Counter Networks, Communication and Health Information Systems. A case study Mozambique. Proceedings of the 24th Information Systems Research Seminar in Scandinavia.

Mounce, M. (1999). Hume's Naturalism. London, Routledge.

Moyo, D. (2009). Dead aid : why aid is not working and how there is another way for Africa. London ; New York, Allen Lane.

Muhammad, Y. (2003). Banker to the poor: the autobiograhy of Muhammad Yunus, founder of Grameen Bank. London, Aurum.

Mukama, F., H. Kimaro, et al. (2005). Organisational culture and its impact in information systems development and implementation: A case from health information systems in Tanzania. Proceedings of Information Systems Research Seminar in Scandanavia (IRIS 28th), Kristiansand, Norway.

Mundy, L. and P. Compton (1995). Indigenous communication and indigenous knowledge. The cultural dimensions of development. D. Warren, D. Slikkerveer and D. Brokensha. London, Intermediate Tehnology Publications.

Mutemwa, R. (2006). "HMIS and decision-making in Zambia: re-thinking information solutions for district health management in decentralized health systems." Health Policy and Planning **21**(1): 40-52.

Myers, M. (1997). "Qualitative Research in Information Systems." MISQ Quarterly **21**(2): 241-242.

Myers, M. (1999). "Investigating Information Systems with Ethnographic Research." Communications of the Association for Information Systems **23**(2): 1-18.

Nanda, V. P. (2006). "The "Good Governance" Concept Revisited." The ANNALS of the American Academy of Political and Social Science **603**: 269-283.

National Council for Health. (2011). "Memorandum to the national council for health: 'bringing phc under one roof' (phcuor) in line with the requirements of the new national health bill." Retrieved 12 February, 2012, from http://www.prrinn-mnch.org/documents/ExecutiveSummary_WkshoponbringingPHCUOR_Apr10.pdf.

National Population Commission and ICF Macro (2009). Nigeria Demographic and Health Survey 2008. Abuja Nigeria, National Populaton Commission and ICF Macro.

Nhampossa, J. (2004). The challenge of "translating" heath information systems from one developing country context to another: case study from Mozambique Proceedings of the 12th European Confernce on Information Systems. T. Leino, T. Saarinen and S. Klein. Turk, Finland, ECIS - The European IS Profession in the Global Networking Environment.

Nhampossa, J. (2004). Strategies to deal with legacy information systems: a case study from the Mozambican healh sector Innovations through information technology. IRMA. New Orleans, Louisiana, Idea Group Inc**:** 475-479.

Nhampossa, J. (2006). Re-thinking technology transfer as technology translation. Faculty of Mathematics and Natural Sciences. Oslo, University of Oslo. **PhD:** 198.

Nhampossa, J., J. Kaasboll, et al. (2004). Participation in the information system adaptation process in the public sector in Mozambique. Artful integration: Interweaving media, materials and practices. A. Clement, A. Oostveen, D.

Schuler and P. Besselaar. Toronto, Canada, Association for Computing Machinery, Inc. (ACM)**:** 84-88.

Nhampossa, J. L. and S. Sahay (2005). Social Construction of Software Customization: The Case of Health Information Systems from Mozambique and India. Enhancing human resource development through ICT. A. Bada and O. Adelakun. Abuja, Nigeria, IFIP**:** 339-347.

Nielsen, P. and J. Nhampossa (2005). Internationalization of Information Infrastructures and control: Cases from Mozambique and Norway. Enhancing human resource development through ICT. A. Bada and O. Adelakun. Abuja, Nigeria, IFIP**:** 220-230.

Niessen, W., E. Grijseels, et al. (2000). "The Evidence-based Approach in health policy and health care delivery." Soc Sci Med **51**(2000): 859-869.

Nigerian National Planning Commission (2004). Meeting Everyone's Needs: National Economic Empowerment and Development Strategy. Abuja, Nigeria, Nigerian National Planning Commission.

Nnaji, G. A., C. Oguoma, et al. (2010). "The challenges of budgeting in a newly introduced district health system: A case study." Global Public Health **5**(1): 87-101.

Noir, C. and G. Walsham (2007). "The great legitimizer: ICT as myth and ceremony in the Indian healthcare sector." ITP **20**(4): 313-333.

Nolen, L., P. Braveman, et al. (2005). "Strengthening health information systems to address health equity challenges." Bulletin of the World Health Organisation **83**(8): 597-598.

Norman, P., C. Abraham, et al., Eds. (2006). Understanding and changing health behaviour : from health beliefs to self-regulation (2nd Ed.). London Routledge, Abingdon.

Nsa, C. (Not dated,). "A simple exercise book and increased government funding save lives in Jigawa." Retrieved 12 February, 2012, from http://www.prrinn-mnch.org/pdf/Newborn-registers.pdf.

Nyamtema, A. S. (2010). "Bridging the gaps in the Health Management Information System in the context of a changing health sector." BMC Med Inform Decis Mak **10**: 36.

Odhiambo-Otieno, G. W. (2005). "Evaluation criteria for district health management information systems: Lessons from the Ministry of Health, Kenya." International Journal of Medical Informatics **74**(1): 31-38.

Odhiambo-Otieno, G. W. (2005). "Evaluation of existing District Health Management Information Systems: A case study of the District Health Systems in Kenya." International Journal of Medical Informatics **74**(9): 733-744.

Office of the Inspector General (2011). Audit & Investigation Reports issued by the Global Fund's Office of the Inspector General on 1 November 2011. Washington, DC, Global Fund.

Okuonzi, S. A. and J. Macrae (1995). "Whose policy is it anyway? International and national influences on health policy development in Uganda." Health Policy and Planning **10**(2): 122-132.

Olowu, D. (2001). Governance and Corruption in West Africa. Where Corruption Lives. G. E. Caiden, O. P. Dwivedi and J. G. Jabbra. Virginia, Kumarian Press**:** 105-118.

Olowu, D. and United Nations Research Institute for Social Development. (2001). Decentralization policies and practices under structural adjustment and democratization in Africa. Geneva, United Nations Research Institute for Social Development.

Olukoga, A., M. Bachmann, et al. (2010). "Analysis of the perception of institutional functions for health sector reform in Nigeria." International Health **2**(2): 150-155.

Orlikowski, W. J. (1991). "Studying Information Technology in Organizations: Research Approaches and Assumptions." Information Systems Research **2**(1): 1-28.

Orlikowski, W. J. (1993). "Case Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development." MIS Quarterly **17**(3): 309-340.

Orlikowski, W. J. (1996). "Improvising Organiational Transformation over Time: A Situated Change Perspective." Information Systems Research **7**(1): 63-92.

Orlikowski, W. J. (2000). "Using technology and constituting structures: a practice lens for studying technology in organizations." Organizational Science 11(4): 404-428.

Orlikowski, W. J. and S.R. Barley (2001). "Technology and Institutions: What can research on information technology and research on organizations learn from each other?" MIS Quarterly 25(2): 145-165.

Orubuloye, I. and O. Yoyeneye (1982). "Primary Health Care in Developing Countries: The Case of Nigeria, Sri Lanka And Tanzania." Soc Sci Med **16**: 675-686.

Osa-Eloka, C., B. Nwakoby, et al. (2009). "Enhancing data management skills of primary health care workers in enugu state, Nigeria." Niger Postgrad Med J **16**(1): 14-20.

Oyemakinde, A. (2007). Nigeria National Health Information System. FMOH. Abuja, Epidemiology Division, Department of Public Health, FMOH **8:** 8-11.

Paglin, M. (1974). "Public Health and Development: A new Analytical Framework." Economica, New Series **41**(164): 432-441.

Pappaioanou, M., M. Malison, et al. (2003). "Strengthening capacity in developing countries for evidence-based public health: the data for decision making project." Social Science & Medicine **57**(2003): 1925-1937.

PATHS 2. (2012). "Strengthening Health Management Information Systems for Better Health Planning: The Jigawa State Success Story." Retrieved 01 March, 2012, from http://paths2.org/index.php?option=com_content&view=article&id=198:strengthening-health-management-information-systems-for-better-health-planning&catid=73:case-studies&Itemid=114.

Peckham, S., M. Exworthy, et al. (2008). "Decentralizing Health Services in the UK: A New Conceptual Framework." Public Administration **86**(2): 559-580.

Peters, B. G. (2000). Governance and Comparative Politics. J. P. (Ed).

Peters, D. and S. Chao (1998). "The Sector-Wide Approach in Health: What is it? Where is it going?" International Journal for Health Planning and Management **13**: 177-190.

Pettigrew, A. (1990). "Longitudinal Field Research on Change: Theory and Practice." Organization Science **1**(3): 267-292.

Pettigrew, A. (1997). "What Is a Processual Analysis?" Scandinavian Journal of Management **13**(4): 337-348.

Pieterse, J. N. (2000). "My Paradigm or Yours? Alternative Development, Post-Development, Reflexive Development." Development and Change **21**(2): 175-191.

Pomerantz, K. L., A. A. Muhammad, et al. (2010). "Connecting for health literacy: health information partners." Health Promot Pract **11**(1): 79-88.

Puri, S., E. Byrne, et al. (2004). Contextuality of participation in design. A developing country perspective. Artful integration: Interweaving media, materials and practices. A. Clement, A. Oostveen, D. Schuler and P. Besselaar. Toronto, Canada, Association for Computing Machinery, Inc. (ACM)**:** 42-52.

Reerink, I. H. and R. Sauerborn (1996). "Quality of Primary Health Care in Developing Countries: Recent Experiences and Future Directions." International Journal for Quality in Health Care **8**: 131-139.

Regmi, K., J. Naidoo, et al. (2010). "Understanding the effect of decentralisation on health services: the Nepalese experience." J Health Organ Manag **24**(4): 361-382.

Roberts, H. (1997). "Socioeconomic determinants of health: Children, inequalities, and health." BMJ **314**: 1122.

Roberts, J. (1991). "The Possibilities of Accountability." Accounting, Organizations and Society **16**(4): 355-368.

Roberts, J. (2009). "Global Accountabilities: Participation, Pluralism and Public Ethics." European Accounting Review **18**(2): 408-412.

Roberts, J. (2009). "No one is perfect: The limits of transparency and an ethic for 'intelligent' accountability." Accounting, Organizations and Society **34**(2009): 957–970.

Roemer, M. (1986). "Priority for primary health care: its development and problems." Health Policy and Planning **1**(1): 58-66.

Rose, N. S. (1999). Powers of freedom : reframing political thought. Cambridge, Cambridge University Press.

Rostow, W. W. (1960). The Stages of Economic Growth: A non-communist Manifesto. Cambridge, Cambridge University Press.

Rowe, M. (1999). "Joined Up Accountability: Bringing the Citizen Back". Public Policy and Administration **19**(2): 91.

RTI International. (Not Dated). "Good Governance for Better Health Outcomes." Retrieved 5 March, 2012, from www.rti.org/brochures/rti_idg_health_gov.pdf.

Sachs, J. (2001). "A New Global Commitment to Disease Control in Africa." Nature Medicine **7**(5): 521-523.

Sachs, J. (2002). "Interview: An economist's view of health." Bulletin of the World Health Organization **80**(2): 167-169.

Sachs, J. (2004). "Health in the Developing World: Achieving the Millenium Development Goals." Bulletin of the World Health Organization **82**(12): 947-949.

Sahay, S., E. Monteiro, et al. (2009). "Toward a Political Perspective of Integration in Information Systems Research: The Case of Health Information Systems in India." Information Technology for Development **15**(2): 83-94.

Sahay, S., J. Sæbø, et al. (2009). Interplay of Institutional logics and Implications for Deinstitutionalization: Case Study of HMIS Implementation in Tajikistan. Proceedings of the 10th International Conference on Social Implications of Computers in Developing Countries,, Dubai, IFIP.

Sahay, S. and G. Walsham (2005). Scaling of Health Information Systems in India: Challenges and Approaches. International Federation for Information Processing Working Group 9.4 Conference Abuja, Nigeria.

Sahay, S. and G. Walsham (2006). "Scaling Health Information Systems in India: Challenges and Approaches." Information Technology for Development **12**(3): 185-200.

Sambo, M., I. Lewis, et al. (2005). "Quality of record system in primary health centres of Tafa LGA, North Central Nigeria." Annals of Nigerian Medicine **1**(1): 15-18.

Sanday, R. (1979). "The Ethnographic Paradigm(s)." Administrative Science Quarterly **24**(4): 539-550.

Sangudi, G. and R. Epstein (2003). "Editors' Forward: Good Governance Concepts." Journal of International Affairs **1**(Fall): viii - ix.

Santiso, C. and P. H. Nitze (2001). "World Bank and good governance: good governance and aid effectiveness: the World Bank and conditionality." The Georgetown Public Policy Review **7**(1): 1-19.

Savedoff, W. D. and K. Hussmann (2006). Why are health systems prone to corruption? Global Corruption Report 2006. J. Kotalik and D. Rodriguez. London, Transparency International**:** 4-13.

Sayer, A. (2000). Realism and Social Science. London, Sage.

Schech, S. and J. Haggis (2000). Culture and Development. A Critical Introduction. Oxford, Blackwell.

Schön, D. (1996). From technical rationality to reflection-in-action. Boundaries of Adult Learning (Adult Learners: Education & Training). R. Edwards, A. Hanson and P. Raggat. London, Routledge**:** 8-33.

Scott, J. (1985). Weapons of the Weak: Everyday Forms of Peasant Resistance. New Haven; London, Yale University Press.

Scott, W. (2001). Institutions and Organizations. Thousand Oaks, Sage Publications.

Scott, W. R. (2004). Institutional Theory: Contributing to a Theoretical Research Program. Great Minds in Management: The Process of Theory Development. K. G. Smith and M. A. Hitt. Oxford UK, Oxford University Press.

Searle, J. (1995). The construction of social reality London, Penguin.

Segall, M. (2003). "District heath systems in a neoliberal world: a review of five key policy areas." International Journal of Health Planning and Management **18**: S5-S26

Sen, A. (2006) "The Man Without a Plan." Foreign Affairs.

Sen, A. K. (1999). Development as freedom. New York, Knopf.

Sen, K. and M. Koivusalo (1998). "Health care reforms and developing countries: a critical overview." International Journal of Health Planning and Management **13**: 199-215.

Seshadri, S. R. (2003). "Constraints To Scaling-Up Health Programmes: A Comparative Study Of Two Indian States." Journal of International Development **15**: 101-114.

Shaw, V. (2005). "Health information system reform in South Africa: developing an essential data set." Bulletin of the World Health Organization **83**(8): 632-636.

Shaw, V. (2009). A Complexity Inspired Approach to Co-evolutionary Hospital Management Information Systems Development: Case sudies for the "South". Faculty of Mathematics and Natural Sciences. Oslo, University of Oslo. **PhD:** 173.

Shaw, V., S. Mengiste, et al. (2007). Scaling of health information systems in Nigeria and Ethiopia - considering the options. Proceedings of the 9th International Conference on Social Implications of Computers in Developing Countries, São Paulo, Brazil.

Silverman, D. (2009). Doing Qualitative Research (3rd Edition). Thousands Oak, CA, Sage.

Simba, D. O. (2004). "Application of ICT in strengthening health information systems in developing countries in the wake of globalisation." African health sciences **4**(3): 194-198.

Smith, M., S. Madon, et al. (2008). "Integrated health information systems in Tanzania: experience and challenges." Electronic Journal on Information Systems in Developing Countries **33**(1): 1-21.

Soeftestad, L. and M. Sein (2003). Chapter 4: ICT and Development: East is East and West is West and the Twain may yet Meet. The Digital Challenge: Information Technology in the Development Context. S. Krishna and S. Madon. Hants. England, Ashgate Publishing Limited**:** 63-82.

Soriyan, H., A. Ajayi, et al. (2007). The context of MINPHIS development and deployment in Nigeria. Helina: Bamako 2007 E-Health.

Soriyan, H., M. Korpela, et al. (2009). "Developing Appropriate Healthcare Information Systems for Africa:The Made-in-Nigeria Primary Healthcare and Hospital Information System Project." Retrieved 31 March, 2012, from

http://dspace.cigilibrary.org/jspui/bitstream/123456789/9825/1/Developing%20Appropriate%20Healthcare%20Information%20Systems%20for%20Africa.pdf.

Soucat, A., Levy-Bruhl, D., de Bethune, X., Gbedonou, P., Lamarque, J.-P., Bangoura, O., Camara, O., Gandaho, T., Ortiz, C., Kaddar, M. and Knippenberg, R. (1997). "Affordability, cost-effectiveness and efficiency of primary health care: the Bamako Initiative experience in Benin and Guinea. ." The International Journal of Health Planning and Management **12** S81–S108.

Sri, S., N. Sarojini, et al. (2011) "Maternal Deaths and Denial of Maternal Care in Barwani District, Madhya Pradesh: Issues and Concerns."

Stansfield, S. (2005). "Editorial - Structuring Information and Incentives to Improve Health." Bulletin of the World Health Organisation, 83 (8), pp. 562-563. **83**(8): 562-563.

Stansfield, S., J. Walsh, et al. (2006). Information to improve decision making for health. Disease control priorities in developing countries S. Stansfield, J. Walsh, P. Ndola and T. Evans, The International Bank for Reconstruction and Development/World Bank**:** 1017-1030.

Starfield, B., L. Shi, et al. (2005). " Contribution of Primary Care to Health Systems and Health." Milbank Quarterly(3pp): 457–502.

Stiglitz, J. E. (1998). More instruments and broader goals : moving toward the post-Washington consensus. Helsinki, United Nations University, World Institute for Development Economics Research.

Szreter, S. (1997). "Economic growth, disruption, deprivation, disease, and death: on the importance of the politics of public health for development." Population and Development Review **23**.

Tangcharoensathien, V. and W. Patcharanarumol (2010). "Global health initiatives: opportunities or challenges?" Health Policy Plan.

Tarimo, E. and F. Fowkes (1989). "Strengthening the backbone of primary health care." World Health Forum **10**(1): 74-79.

Tendler, J. (1997). Good government in the tropics. Baltimore, Johns Hopkins University Press.

Thomas, A. (2000). Meanings and Views of Development. Poverty and Development: Into the 21st century. T. Allen and A. Thomas, Open University and Oxford University Press. Chapter 2.

Thompson, M. and G. Walsham (2010). "ICT Research in Africa: Need for a Strategic Developmental Focus." Information Technology for Development **16**(2): 112-127.

Thompson, M. P. A. (2002). "Cultivating meaning: interpretive fine-tuning of a South African health information system." Information and Organization **12**: 183-211.

Tsoukas, H. (1989). "The Validity of Idiographic Research Explanations." Academy of Management Review **14**(4): 551-556.

UN Millennium Project (2005). Investing in Development: A Practical Plan to Achieve the Millennium Development Goals. Overview. New York**:** 1-48.

UNDP (1997). Governance for Sustainable Human Development. New York, United Nations Development Programme (UNDP).

Unger, J.-P., P. D. Paepe, et al. (2003). "A code of best practice for disease control programmes to avoid damaging health care services in developing countries." The International Journal of Health Planning and Management **18**(S1): S27-S39.

UNICEF (2009). The State of the World's Children - Special Edition. Celebrating 20 Years of the Convention on the Rights of the Child New York, United Nations Children's Fund (UNICEF)

UNICEF. (Not dated). "The Bamako Initiative." Retrieved 19 September, 2011, from http://www.unicef.org/sowc08/docs/sowc08_panel_2_5.pdf.

United Nations Development Programme (2001). Making New Technologies Work for human Development. New York, UNDP, 2001.

Valsiner, J. (2000). "Data as representations: contextualizing qualitative and quantitative research strategies " Social Science Information **39**(1): 99-113.

Venugopal, V. and S. Yilmaz (2010). "Decentralization in Tanzania: an assessment of local government discretion and accountability." Public Administration and Development.

Véron, R., G. Williams, et al. (2006). "Decentralized Corruption or Corrupt Decentralization? Community Monitoring of Poverty-Alleviation Schemes in Eastern India." World Development **34**(11): 1922-1941.

Waitzkin, H. (2003). "Report of the WHO Commission on Macroeconomics and Health: a summary and critique." The Lancet **361**: 523-526.

Walsham, G. (1992). Decentralisation of information systems in developing countries: power to the people". Social implications of computers in developing countries. S. C. Bhatnagar and M. Odedra-Straub. Dehli, Tata McGraw-Hill.

Walsham, G. (1993). Interpreting information systems in organizations. Chichester, England, John Wiley and Sons.

Walsham, G. (2006). "Doing Interpretive Research." European Journal of Information Systems **15**: 320-330.

Walsham, G. (2010). "ICTs for the broader development of India: An analysis of the literature." EJISDC **41**(4): 1-20.

Weick, K. (1989). "Theory Construction as Disciplined Imagination." Academy of Management Review **14**(4): 516-531.

Weitzman, E. and B. Miles (1994). Computer Programs for Qualitative Data Analysis. A Software Source Book London, Sage.

Westrup, C., S. A. Jaghoub, et al. (2003). Taking Culture Seriously: ICTs Culture and Development. The digital Challenge: Information Technology in the Development Context. S. Krishna and S. Madon. Aldershot, Ashgate Publishing Limited.

WHO (1978). Declaration of Alma-Ata. International Conference on Primary Health Care, Alma-Ata, USSR. 6-12 September.

WHO (2000). Commission on Macroeconomics and Health. Macroeconomics and health: investing in health for economic development. Geneva, WHO.

WHO. (2000). "World Health Report 2000- Health Systems: Improving Performance." Retrieved 24 October, 2011, from http://www.who.int/whr/2000/en/whr00_en.pdf.

WHO (2004). Information Support for New Public Health Action at the District Level: Report of a WHO Expert Committee. Technical Report Series, No. 845. Geneva, World Health Organization**:** 1-31.

WHO (2004). World Report on Knowledge for Better Health: Strengthening Health Systems. W. H. Organization. Geneva.

WHO (2009). World Health Statistics 2009. Geneva, World Health Organisation.

WHO. (Not Dated). "WHO Health Observatory Data Repository - Nigeria." Retrieved 19 September, 2011, from http://apps.who.int/ghodata/?vid=15000&theme=country# Last accessed 19 September 2011.

WHO (Africa) (2009). WHO Country Cooperation Strategy 2008 - 2013: Nigeria, World Health Organisation, Regional Office for Africa.

Wild, L. and P. Domingo (2010). Accountability and Aid in the Health Sector. London, UK, Overseas Development Institute.

Williamson, J. (1990). What Washington Means by Policy Reform. Latin American Adjustment: How Much Has Happened? J. Williamson, Peterson Institute for International Economics.

Williamson, J. and P.-P. Kuczynski Godard (2003). After the Washington consensus restarting growth and reform in Latin America. Washington, DC, Institute for International Economics**:** xii, 373 p.

Wilson, G. and R. Heeks (2001). Technology, Poverty and Development. Poverty and Development: Into the 21st Century. T. Allen and T. A, Open University and Oxford University Press.

Wlodarczyk, C. (2009). Governance in health sectors: interests, corruption, sanctions – and a better prospect?

World Bank (1992). Governance and Development. Wahington, DC, The World Bank.

World Bank (1998). Assessing Aid: What Works, What Doesn't and Why. Washington, DC, World Bank.

World Bank (2002). Building Institutions for Markets. New York, Oxford University Press.

World Bank (2003). Making services work for poor people. World Development Report 2004. Washington, DC, World Bank.

World Bank. (2011). "Nigeria: Country Brief." Retrieved 31 January, 2012, from http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/NIGERIAEXTN/0,,menuPK:368906%7EpagePK:141132%7EpiPK:141107%7EtheSitePK:368896,00.html.

Yin (2003). Case Study Research: Design and Methods (3rd Edition). London, Sage.

Zheng, Y. (2009). "Different Spaces for e-Development: What Can We Learn from the Capability Approach?" Information Technology for Development **15**(2): 66-82.

Zheng, Y. and G. Walsham (2008). "Inequality of what? Social exclusion in the e-society as capability deprivation." Information Technologies & People **21**(3): 222-243.