

**Exploring Management Information System in Community Health Service  
for a Developing Country**

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## **Abstract**

The objective of this report is to outline the current progress of my PhD research project and reflect on the philosophical and methodological implications. Following the introduction of the guidelines, the theme of this work is to develop research design and conduct an empirical study in terms of the theory and practice relationship.

**Keywords:** E-government, Healthcare Informatics, Community Health Centre, Research Design and Research Methodology

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### 1. Introduction

The community health service has been pursued for several decades by governments across the world (Smithies and Webster, 1998). In China, this issue has been reemphasized after the Chinese government learned lessons from SARS in 2003 (He, et al 2004; Sun, et al 2004). Community health service centres have been set up throughout the country based on the establishment units of 50,000 people. Every service unit is based on local councils in urban areas or country towns in suburban or rural areas. The centre was set up to produce good public health service such as policy making support, healthcare education distribution, etc (Wang and Gong, 2004). However, the community health service, in fact, did not perform as well as expected during the recovery work of the Sichuan earthquake in 2008, which killed 69,197, and 374,176 injured, with 4.8 to 11 million people left homeless (Xinhua, 2008). Health authorities did not have accurate data for earthquake recovery. For instance, they lacked information about how many doctors were needed for one area, etc (Li, 2009).

Many cases show that appropriate information and communication technologies (ICT) are able to enlarge the capability of public sectors to meet the requirement of modern governance

(Cai, 2006). Therefore, this Ph.D. project aims at understanding the community health service informatics and exploring how it affects people's life and provides significant support for new public management in China.

New public management is calling for innovative change reengineered by ICT (Andersen, 2006). China, as a typical developing country, has been trying to develop and ensure that E-government supports the public healthcare service enabled by Technology (Li and Song, 2008). E-government is the provision of information and services by governments to citizens, using a range of ICT. It is based on technology innovation in management; since IT is relevant to all areas of government. E-government is not simply a matter of technology. It is vital to understand the context in which government works (Stamoulis, et al 2001).

A literature review for this idea has found that community health service informatics can bring benefits for public health service. This PhD research follows two research questions as explorative themes: 1) Whether community health service informatics has a crucial part to play in efficient and comprehensive strategy making for public health in China from three different perspectives: public health service delivery, medical and disease research and personal or family healthcare information profile (Li, 2007). 2) How can Chinese community E-health services provide substantial and accurate information support for crisis management in public health from three different perspectives: data source, decision making and information sharing. Themes are fundamentally considered as guidelines to carry out the further research.

## **2. Research Philosophy**

This section focuses on the philosophical implications. Philosophical framework of social researchers effects on their understanding and perceiving all social phenomenon and behaviour. For example, philosophy effects on research topics, designing and methodology (Saunders, et al 2006). Researchers make a number of philosophical assumptions when they choose their topic and approaches. Cresswell (2003) has identified four classical main components of a philosophical perspective. The first one is alternative claims about what exists, namely, ontology. It clarifies researchers believe phenomenon they study exists independently or its existence depends on whether human being believe on it. The second one

is epistemology, which cannot obtain observation of phenomenon directly. Axiology and methodology are the other two choices of methods.

Bryman and Bell (2001) pointed out that the epistemological and ontological considerations and their associated methods are the most essential issues for social research. Positivism and interpretivism are two main epistemological positions that advocate the application of the methods in the study of social reality (Benton and Craib, 2001). On the contrary, objectivism and constructionism are two important ontological positions that assert the social phenomena and their meanings have an existence, which is independent of social actors (Bryman, and Bell, 2001).

Community health informatics has variety of impacts of change in the work of health service delivery (Luo and Li, 2007). There is a consequent need to understand Community health informatics change issues in organisational management. Also, there have been numerous studies of this area by Chinese social scholars who have adopted different perspectives and methodologies (Bao, et al. 2005). Positivism and interpretativism perspectives based on this issue will be critically reviewed.

### **2.1 Positivism Reflection**

Positivist sociologists state that the behaviour of human beings can be objectively measured (Hussey and Hussey, 1997). Phillips and Burbules (2000) presented people cannot be “positive” about claims of knowledge when studying the behaviour and actions of humans. We can discovery that the most significant theme of positivism is the separation of fact and value. It aims to work within a neutral attitude. Moreover, positivism is the most often treated as a supporting quantitative method (Bryman and Bell, 2001). By contrast, qualitative research methods are less used in positivism. It does not involve value judgments. It does not require an understanding of culture background of the research either.

The disadvantage of positivism is constricted by its nature, and it only concerned with phenomena, which can be observed and measured. It does not examine the underlying causal mechanisms. In order to understand these mechanisms it has to require researchers knowing how to grasp the underlying value (Bryman and Bell, 2001).

## 2.2 Interpretativism Reflection

Interpretativism proves the world is constructed by the participants. Individuals explore the world where they live and work. They develop subjective meanings of their experiences within certain objects. This has an early formulation mentioned by Mannheim (1997), which was largely reinvented and applied to living life in 1960s (Berger and Luckmann, 1967). Later on, Guba and Lincoln (1985) enriched this research. Currently, it has been becoming more and more popular to support the qualitative methods with understanding of human society. Interpretativism is appropriate as social facts, where this prevailing view is held by the majority of society.

The disadvantage of interpretativism is relying heavily on subjective explanation. This flaw resulting in bias and simplification has to be aware. Otherwise, it would lead to relativism since there are multiple perspectives leading to conflicting views as to what is “really” happening (Bryman and Bell, 2001).

Positivism and interpretivism can be distinguished in numbers of different ways. The summarised table was drawn by Weber (2004) currently accepted widely.

Table 1: Differences between Positivism and Interpretivism (Weber, 2004).

<b>Metatheoretical Assumptions About</b>	<b>Positivism</b>	<b>Interpretivism</b>
Ontology	Person (researcher) and reality are separate.	Person (researcher) and reality are inseparable (life-world).
Epistemology	Objective reality exists beyond the human mind.	Knowledge of the world is intentionally constituted through a person's lived experience.
Research Object	Research object has inherent qualities that exist independently of the researcher.	Research object is interpreted in light of meaning structure of person's (researcher's) lived experience.
Method	Statistics, content analysis.	Hermeneutics, phenomenology, etc.
Theory of Truth	Correspondence theory of truth: one-to-one mapping between research statements and reality.	Truth as intentional fulfillment: interpretations of research object match lived experience of object.
Validity	Certainty: data truly measures reality.	Defensible knowledge claims.
Reliability	Replicability: research results can be reproduced.	Interpretive awareness: researchers recognize and address implications of their subjectivity.

Source: Class notes provided by Jörge Sandberg.

### 2.3 Adopted Perspective

This PhD study is an exploratory research in nature to investigate the changes of the community health service delivery enabled by ICT. It centres on a point of organisational change including decision making, operational reprocess, customer satisfaction and decentralization issues, etc. Ontology tries to explain how people explore their real life and make meanings of it.

Making interpretation and conclusions from source material of transcript of interviews is to be considered about for this research, which objective is to eventually reproduce the meanings of the realities as seen by interviewees. According to Weber's note (2004), "Interpretivism can be seen researcher and reality are inseparable and knowledge of the world is intentionally constituted through authors' experience in terms of ontology and epistemology." Thus, the ontology and epistemology of this PhD study belongs to interpretivism. Interpretivism enables researchers providing interpretations for support research views based on the behavior of people.

## **2.4 Critical Realism Reflection**

Critical realism is an alternative philosophical perspective and other possible research designs, which is a realistic approach to social research but adopting a critical or activist principle. The critical realists accept an ontology which includes observable entities and underlying structures, which are similar to positivists and interpretativists (Bhaskar, 1998). It encourages a dialectical approach to social research and leaves open the choice of methodology to the practitioner. This, however, does not often insist upon any particular methodological approach (Lopez and Potter, 2001). Either the quantitative approach or the qualitative approach might be suitable depending on research topics.

## **3. Methodology Review**

Qualitative and quantitative researches are two main streams of methodology in social science. Quantitative research is deductive in testing of theory and focuses on quantification in the collection and analysis of data (Bryman and Bell, 2001), which concentrates on words, views from participants, emergent theory, unstructured and natural settings (Sundberg and Sandberg, 2006). Quantitative research focuses on numbers, researchers' opinions and theory test, etc. Qualitative research provides a deeper understanding of social phenomenon than numerical data (Silverman, 2000). However, as qualitative research is underpinned by descriptions, quantitative researchers have argued that research outcomes from qualitative study are not precisely or accuracy as statistical results.

Hybrid strategies involving qualitative and quantitative together can also investigate the same theme with regards to information management, according to diversities of research objects and questions. However, Bryman and Bell (2001) argues that in the early of the stage of theory for a subject, qualitative research is better rather than quantitative. In order to systematically and scientifically investigate the issues or theory of E-health theory, this PhD research employs a qualitative approach, which is taken to study real world interventions.

### **3.1 Research Approaches**

Two fundamental research approaches are inductive and deductive (Saunders et al, 2006). The inductive approach method is to develop theory based on the analysis of the data. This approach owes normally to interpretivism, which is able to explore the reality of study from

emotion, action and intention (Arbnor, 1997). The deductive is using data to develop theory based on hypothesis testing (Hesse-Biber, 2004). Positivism is usually adopted in deductive research approach. This approach discovers those studies followed by scientific or physical principles. Deduction is often used in testing theory.

With a newly emerging research issue, it might be appropriate to choose induction method (Creswell, 1994). In the foregoing literature review, it is indicated that there is a gap in community health service and public information management in E-government. Consequently, the present study will adopt the inductive approach.

### **3.2 Research Strategies**

Case studies from ICT dimension are about to be a way of investigating empirical topics. Case studies can be able to enrich the theory, confronting a real-life problem (Yin, 2003). This study adopts empirical, longitudinal and multi-cases study, seeking the answers for the research questions. In accordance with the literature review, cases will selected from two sides, successful community health service informatics case and the failure ones, which enable a better perception of research based on comparison. Secondary data from documentary source were official reports and papers for reviewing the history of health emergency cases in China.

Data collection for this research is based on two community health service centres in Chaoyang district, Beijing and Rongcheng district, Jieyang. Data will be collected from 24 semi-structured interviews. The interviewees will be selected randomly from different job positions within each city and the service centres. These will be senior civil servants in health authorizes, general practitioners, nurses, IT technicians, patients and academic researchers in the public health field. These interviews will be completed within a period of 6 months. All the transcriptions in interviews are digitally recorded for later analysis under the permission from the interviewees.

Narrative analysis will be introduced for data analysis and interpretation. The analysis of evidence for study is followed by theoretical propositions (Yin, 2003). The proposition reflects on the theoretical gaps. The analysis of strategy is expected to generate meaningful findings that can contribute to the theory. A coding scheme and an index will be developed. Through reviewing the coding interview scripts, developing the interviewee's knowledge,

expertise, experience and attitudes can be drawn out. The expectation outcomes of this research is to grounded a theoretical framework of an effective and efficiency model to help take information strategies into practices for developing countries.

#### **4. Conclusion**

Different research philosophy and methodology have different strengths and weaknesses from points of view. The positivist approach is suitable when the subject matter involves less subjectivity. The interpretativist approach is suitable when there is a “shared reality”. Hence, the chosen perspective also relies on the research objectives, research questions and expected outcomes. The choice of subject, how it is investigated and the way in which the results are presented are all matters in which value judgments are made.

This study takes a reflection on various research philosophies and methodologies and formulating the research approaches and strategies. Different methods have been reviewed. Critical analysis has applied to the research design of the PhD project.

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