E-GOVERNMENT, PEOPLE AND SOCIAL CHANGE: 
A CASE STUDY IN CHINA

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Abstract

It is generally believed that ICT has considerable potential to improve governance capabilities and transform relations with customers. China, like many other countries, embraces e-government enthusiastically but encounters big challenges at the same time. Therefore, the successful development of e-government becomes a pivotal issue in China. Through the social study of e-government the author criticises the prevalent technological determinism. Since information systems are social systems, e-government encompasses various political, economic, social, organisational and people issues besides technical ones, so that its application is far more complicated. This paper studies the relevant social and organisational issues of e-government in China, which are important but usually ignored in contemporary Chinese literature. As a lens, aspects of structuration, especially duality of technology is applied into the analysis of the selected Nanhai case. The research focuses on middle-level officials’ views and attitudes towards e-government; explores the ICT-mediated interactions between public organisations and civil servants and implications on social change. Moreover, the research unveils the important role the middle-level officials play, as well as that of senior management in the Information Systems (IS) application.

Key words: China, Duality of Technology, e-government, people, social change

1. INTRODUCTION

In the modern age, Information and Communication Technologies (ICTs) are contributing to enormous progress and impacting on different aspects society. While ICTs have been used universally in businesses and other fields, governments are beginning to apply ICTs into public sectors in order to improve capabilities and transform their relations with citizens and businesses. Such an implementation is called e-government. It is well recognised that e-government has the potential to run government more efficiently and effectively, bring better public services to citizens, improve interactions with business, and empower citizens to access information and participate in public issues.

ICTs can help governments reinvent themselves and run cheaply, faster, better and produce new outcomes (Heeks, 1999), thus many countries all over the world are pushing e-government enthusiastically. The introduction of ICTs into public sector is not only a technical issue but also a social one in that many factors are involved, such as politics, economy, organisation, culture, population and so on. Hence, it is desperately necessary to study e-government in a broader social context.

As many other countries, China is carrying out e-government actively nowadays. According to National Bureau of Statistic (NBS C, 2005), China has invested tens of billions of US dollars in building up e-government, and has achieved some success (CINC, 2003; CINIC, 2002, 2003 and 2005; Dutta et al., 2004). However, some critical problems have arisen at the same time as in many other developing countries, such as lack of use, institutional inertia, e-literacy, asymmetry of regional development, over expenditure, etc (People’s Daily, 2004). To solve these problems, strong debates are ongoing on how to
develop a successful e-government in China. These attempts come from various perspectives, mainly technology-deterministic, economic and political, etc.

Unfortunately, few of the contemporary literature study the influences of institutions or people in e-government. This paper aims to develop these thoughts by focusing on people and organisational issues in the study of e-government. The author conducted a case study of Nanhai e-government project and interpreted the thoughts and comments of middle-level officials on e-government, exploring the interplay among e-government, institutions and civil servants in the Chinese context. In particular, Orlikowski’s (1992) Duality of Technology is used as a lens in which to examine the ICT-mediated interactions between public organisation and people.

The Nanhai case shows the experience of Chinese e-government application. While carrying out the research, the author emphasised the views and attitudes of middle-level officials’ towards e-government, their roles and actions in its application, as well as the initiatives, challenges, social consequences and future development of e-government in the Chinese context.

This study sheds some light on academic research of the multidisciplinary ICT application in public sector, including not only technology itself, but also various political, economic, social, organisational and people issues. Moreover, through introducing people and institutional issues in the study of Chinese e-government, this paper tinkers and develops the theoretical underpinnings for e-government in the China context, thus making practical contribution to its present and future employment.

2. LITERATURE REVIEW

2.1 E-government

The interaction between citizens or businesses with government, which traditionally occurred in an office, has been facilitated by e-government through ‘the use of ICT to improve the efficiency, effectiveness, transparency and accountability of government’ (World Bank). E-government can provide convenient access to information about public services via the Internet and facilitate public transaction services, encouraging citizens to participate in decision-making process and become a medium for democracy (NAO, 2002). In Reffat’s (2003) opinion, e-government initiatives are complex but primarily for the intention of applying new and emerging technologies to support a transformation of government institution.

During the 1970s, some countries encountered problems or even crises within the public sector because of inefficiency, poor responsiveness, mismanagement, corruption, etc. Thus, the old bureaucracy paradigm was replaced by the New Public Management (NPM), which has overthrown the old mode of government. This change was described as “a kind of merger or compromise between public administration and neo-liberal ideology” (Heeks, 1999). This governance reinvention contained one or more components: increased efficiency, enhanced accountability, decentralisation, strengthened resource management, and marketisation (Heeks, 1999).

The adoption of ICT in public sector was believed to facilitate the desire for change and bring tremendous benefits: the delivery of better and integrated public services, bridging the digital dividend, achieving lifelong learning, rebuilding government-customer relationship, promoting economic development and creating a more participative government (Reynolds and Regio, 2001). An OECD report (2003) analyses the reasons for countries promotion of e-government: helping improve efficiency in public sector, enhancing service quality, supporting more effective outcomes, promoting economic policy objectives, bringing forward the reform agenda, and developing trust relationship, etc. Another explanation for e-
government’s contribution is improving government processes (e-administration), connecting citizens (e-services), and building external interactions (e-society) (Heeks, 2001).

The reverse of the coin has shown that various unanticipated side effects of e-government are found universally. Ciborra (2003) contends that e-government emerges only as a means for the industrial countries to govern developing states remotely and predicts the failures and backfires of this approach. Heeks and Keeny (2002) argue that ICT is increasing divergence between the rich and the poor countries rather than supporting a ‘catch up’. While exploring the interaction between the Internet and key dimensions of development, Madon (2000) finds evidence that the return on ICT investment in developing countries’ organisations is dissatisfactory, and those organisations should have capacity to restructure themselves to promote efficiency and effectiveness.

An OECD report (2003) warns that ICTs only create government web portals and do not aid the rearrangement of a fundamental shift in processes or structures. Muid (1994) argues that ICT has the capability either to be a catalyst or an inhibitor for change. Furthermore, Bellamy and Taylor (1994) question the potential of ICT to aid the shift to New Public Management and whether the public departments and agencies can be reorganised both internally and externally, in order to meet the requirement of the full exploitation of e-government.

E-government is not simply an introduction to web-based technologies but a complex social system which covers key social issues. It provides opportunities for the government to reconsider how to deliver better public services and in what way to tailor users’ needs. Fountain (2001) argues that the most important issue for a fully developed e-government is the organisational, social and political institutions, and their co-evolution. Furthermore, It is argued that a successful e-government should be an aggregation of successful e-services, e-management, e-democracy and e-commerce (Sakowicz, 2003), which requires a fundamental change in the manner that government works and how people view in what way government serves them (Reffat, 2003).

### 2.2 Organisational Change

Organisations are complex social systems with well-defined patterns, procedures and processes of interpersonal relationships and structures.

Organisations are constantly struggling with the introduction of IS. An organisation can be viewed as a socio-technical system, which is coordinated with human and technical activities (Leavitt, 1965; O’Brien 1997). Avergou (2001) emphasises the importance of IS research and practice within their embedded international, national and local context. She argues that technology innovation should be considered in its relation with socio-organizational change; researchers should take into account a much broader context; and analysis of an ICT-driven innovation process should consider not only technical rationality but also the cultural, social and cognitive forces.

From an institutional perspective, Avgerou (2000) suggests that the relationship between IS development and organizational change should be considered as an interaction of two institutionalization processes, and argues that sustainability of ICTs implementation in organizations is not simply the contribution of change processes but is mainly attributed to its own institutional forces.

An early approach to the IS-enabled organisational change is Lewin’s (1951) three-stage model. He proposes a simplicistic model and argues that organisations embarking on change should first unfreeze the current system, then change it and finally refreeze it. Hage (1980) provides a similar four-step model of organisational change process: evaluation, initiation, implementation and routinisation. Technology acceptance model came into being...
at 1980s from the MIS business school literature, which argues that if the technology is perceived to be useful and fairly easy to be use, then people will accept it (Davis, 1989).

Other scholars bring forward more dynamic and comprehensive models. Leavitt (1965) proposes a Diamond Model of change. He suggests organisations can be represented in four dimensions: technology, process, people and structure. The interdependence among these four dimensions implies that a change in the technology will have impacts on process, people and structure of the organisation. Whereas, the other three dimensions should be adjusted in order to allow the new technology to be fit in the organisation. Similarly, if an organisation wants to change any one dimension, the other three dimensions have to be changed too. O’Brien (1997) adds an additional dimension in which he emphasises the importance of culture.

Besides the traditional three types of change: planned change, technological imperative and punctuated equilibrium, Orlikowski (1996) develops the concept of situated change, which focuses on an ongoing incremental adjustment and adaptation process by group members of an organisation. This type of change is regarded as an ongoing improvisation enacted by organisational members through their daily experience in using new technologies. Similarly, Ciborra (1999) defines the notion of improvisation, which describes action as situated, pragmatic and contingent; with Ciborra (2002) defining “bricolage” as experimenting with the resources at hand to “leverage the world as defined by the situation.”

2.3 Middle-level Managers in Organisational Change

People play an essential role in IT-enabled organisational change because they have the power, energy and creativity to support, accept or reject a new IS (Angell and Smithson, 1991). Vasiu (2003) argues that good governance capacity is built through people’s knowledge and skills; people are at the centre of the performance of e-government because they provide services and innovation, carry out reforms, and achieve competitive advantage. Therefore, people’s support and understanding of the new system is indispensable (Angell and Smithson, 1991).

Top leadership is often recognized as the crucial factor for organisational change (OECD, 2003; Vasiu, 2003), and the role of middle managers is overlooked since there is a contradictory, confusing and inconclusive image of middle managers in the organisation change process (Thomas and Linstead, 2002). On the one hand, middle managers are frequently considered to be a group of people who have little influence on organisational change, even portrayed as obstructive and resistant to change; on the other hand, some researchers argue that they are able to strategically contribute to organisational change (Balogun, 2003).

Middle managers are regarded as the linage between senior management and operation level people, providing information upwards and receiving strategic decisions and passing them to the lower level (Thompson, 1967). Middle managers play an important role in organisation, especially during the transition. For this reason, if they resist the change, the consequence can be serious.

Middle managers are reported to be the resistance to change frequently because they care for their own interests and reluctant to implement change if they cannot benefit from it (Dopson and Neumann, 1998; Fenton-O’Creevy, 1998, 2001). Scarbrough and Burrell (1996) view middle managers as a blockage to change. In a modern downsized, reengineered and flattened organisation, middle managers are seen to add costs, slow down decisions and block information flow (Dopson and Neumann, 1998; Thomas and Dunkerley, 1999).

In Peterson’ (1998) paper, he classifies people involved in ICT-mediated public administration reform into three categories: saints, demons and wizards. Saints are normally the progressive senior officials who are willing to undertake the change through ICT.
innovation. Demons, exist within staff members of an organisation and are either destructive or apathetic to the ICT-mediated change. Wizards are the technical staff who provide expertise for IS development. He concludes that the reasons for failures of e-government projects in African countries mainly because saints are few but demons are many. He implies that demons can be either middle managers or operational staff where the former can be more destructive than the latter.

Some scholars have different opinions. Balogun (2003) argues that middle managers can be a strategic asset to change. They are not only the conduit for senior manager orders, but also play a strategic role: they use their positions and contacts to gather and synthesise information for senior management, encourage their own department to help facilitate adaptability of change within the organisation and use resources at their disposal to support decisions of senior management (Floyd and Wooldridge, 1994).

Balogun (2003) notices that interpretation is the key task of middle managers since the outcome change depend mostly on how they interpret policy, plans and requirements from upper level and what they can personally do. Furthermore, he argues that middle-level resistance can be perceived from organisational constraints perspective, such as lack of support, funds and time. It is usually these constraints rather than their deliberate intentions that hinder the implementation of change. Therefore, it is necessary to examine possible organisational constraints such as performance management systems, middle-level role structure, empowerment and cultures (Fenton-O’Creevy, 2001).

Balogun (2003) suggests that middle managers can be characterised as intermediaries rather than implementers or recipients of change, and they are carrying out four inter-related roles during change: undertaking personal change, helping others through change, implementing necessary changes in their departments and keeping business going. Furthermore, they interpret the intention of change, which notifies their actions and influences the implementation outcomes.

3. **CONCEPTUAL FRAMEWORK**

The essence of modern technology is not something technical, but firstly a way of revealing, which challenges nature, people, society, and the world; secondly this challenge posed by modern technology enables and aligns all the processes in an organisation (Ciborra, 2003).

This paper studies the application of e-government, its social impact and people issues in the context of China. Orlikowski’s (1992) duality of technology was chosen as an appropriate conceptual framework for this research because it is suitable for the investigation of the interaction between human actions and social structures during information system development and use (Jones, 1999).

Modern social scientists can be traditionally categorised into two opposing ontological continuums of subjective and objective (Burrell and Morgan, 1979). Giddens’ (1984) proposes an integrated structuration theory to challenge these opposing assumptions. He argues that social phenomena were the result of the interaction between human actions and social structures, and these two should be treated as mutually interacting duality rather than independent and contradictory. Furthermore, he suggests that human actions are enabled and constrained by structure, and structure is also both a medium and a result of human actions, and it is continually produced and reproduced by human actions. Human actions and social structure assume each other and therefore are viewed as a duality in structuration theory (Giddens, 1984).
Figure 1: The duality of structure, Giddens’s Structuration Theory (Giddens, 1984).

There are three isolated dimensions of institutionalised social structure in the first row, signification, domination and legitimation, which interact with another three dimensions of human action, namely communication, power and sanctions respectively through the structurational modalities of interpretive, resources and norms. Structured social practices are institutionalised when they become sediment in time and space (Giddens, 1982).

Based on Giddens’ (1984) structuration theory, Orlikowski (1992) proposes a structurational model of technology. She criticizes other change models such as the “technological imperative”, “Strategic Choice Model” and “technology as a trigger of structural change”. Orlikowski (1992) argues that technology is not only created and changed through human actions, but is used by humans to accomplish some other actions.

Orlikowski’s (1992) model depicts the relationship between institutional properties, human actions and IT (Figure 2). IT is the outcome of human actions (arrow A), coming into existence and being sustained through human actions; however, IT is also the medium of human actions (arrow B), IT facilitates and constrains human actions through the provision of interpretive schemes, resources, and norms. Here institutional properties represent organisational structures, norms, culture, power and politics, which influence human actors (arrow C) in their interactions with IT, such as intentions, design standards, professional norms, knowledge, and available resources (time, money, skills). Interaction with IT (arrow D) influences institutional properties of an organization, whose result is to reinforce or transform the organisation (Orlikowski, 1992).
4. **METHODOLOGY**

4.1 **Qualitative Research Methods**

Research can be positivist, interpretive, or critical, depending upon researcher’s underlying philosophical assumption (Orlikowski and Baroudi, 1991).

Positivists normally presume that reality is objective and can be measurable. Interpretivists believe that reality can be only understood through social constructions, such as language, perception and meanings; the interpretive research in IS aims at achieving an understanding of the IS context, and the process whereby the IS influences and is influenced by the context (Walsham, 1993). Critical research supposes that reality is historically constituted, produced and reproduced by people (Myers, 1997).

A research method is a strategy of investigation including philosophical assumptions, research design, data collection and analysis (Myers, 1997). The typical examples of qualitative research methods are action research, case study, ethnography and grounded theory. And qualitative data can be collected through interviews, observation, questionnaires and documents, as well as the researcher’s feelings and reactions (Myers, 1997).

Among the abovementioned methods, case study is an empirical inquiry which carries out the investigations of “a contemporary phenomenon within its real-life context” (Yin, 2002). The case study method is mostly suitable for IS research, since the objectives of IS study are multidisciplinary, including issues concerned with organizational, social factors, and the focus has shifted to organization and social studies rather than only technology itself (Benbasat et al., 1987).

In terms of data analysis, the analysing modes for qualitative research are different approaches to gather, analyze and interpret qualitative data. Overall, the qualitative modes of analysis are mainly concerned with textual analysis of materials gathered through one or more range of methods, such as hermeneutics, semiotics, narrative and metaphors (Myers, 1997).

4.2 **Qualitative Research of Nanhai E-government**

This paper adopts an interpretive epistemology and qualitative research method. The author carried out a case study of Nanhai e-government project in China. Various data collection techniques, were used such as interviews, non-participant observations, and study of various official resources. Since the Nanhai e-government project is regarded as one of the most successful models in China, a lot of people visit Nanhai and study their experience for reference. The author has also been involved in the project since 2002, the author participated in meetings with Nanhai leaders, conducted interviews with Nanhai people as well as carried out non-participate observations on subsystems’ implementation. Moreover, the author studied various official resources, including the local Chinese Communist Party (CCP) and government documents, project proposals, reports, statistic data and other secondary resources. Some data were collected through local public servants mainly by means of email,
telephone or on-line chatting. In 2005, the author conducted 12 interviews with middle-level officials of Nanhai government. These interviews normally lasted between half an hour to two hours; the interviews were conducted in the office, at home, local restaurants and pubs. Most interviews were semi-structured and notes were taken. Issues discussed:

- background of the Nanhai e-government;
- planned and emergent changes;
- interaction between the public organisation and civil servants during Nanhai e-government application;
- impact of e-government on local social change and civil servants;
- views and attitudes towards e-government by middle level management.

5. BACKGROUND

5.1 E-government in China


On 22 January, 1999, the Government Online Project (GOP) was officially launched. The primary purposes of GOP are to establish the foundation for China e-government development, facilitate collaboration across government departments and agencies at different levels, increase public access to government information, reduce public costs by increasing administrative efficiency, promote transparent and effective public procurement, and enhance the informatisation of society and economy growth in China (GOP, 2000). The Government of China has set up the National Informatisation Office (NIO) to promote the progress of ICT implementation.

The GOP includes a three-stage process: in the first stage, individual government departments and agencies of different levels develop their own websites; during state two a number of coordinating authorities will be formed to negotiate the cross-departmental cooperation; in stage three the Government of China exploits the full socio-political potential of e-government through a single central and local government portals (CINC, 2003). Applications of the GOP can be: promulgation of public policy and information; e-commerce; e-procurement; e-payment; e-communication; databases construction; e-documents; e-taxation; and digital citizen identity cards (GOPSC, 2000).

The GOP has been expanding rapidly since its inception. In May 1998, only 145 government websites labelled with a ‘gov.cn’ affix existed, within six months of the GOP’s setting, that figure rocketed up to 1470. There were 5864 in January 2002 (CNNIC, 2002), and this figure kept increasing to 7796 by the following year (CNNIC, 2003). The latest report published in January 2009 presents a figure of 45,555 (CNNIC, 2009), more than 300 times as many as the figure in 1998.

During these years, the GOP has seen significant achievements. In 2003, the World Economic Forum (WEF) conducted a survey of national government websites to assess the quality and sophistication of their online services. In the final report, WEF classed China as being in the highest transaction stage, meaning that e-government in China is able to deliver electronic payments. China is one of the developing countries to attain such a level (Dutta et al., 2004).
5.2 Nanhai e-government Case

Located at the Pearl River Delta in southern China, bordering Guangzhou, Nanhai was a county-level city with administrative autonomy before 2002 becoming in that year a part of Foshan municipality. It consists of 20 towns and districts and 252 villages, covering 1150 square kilometres of land. In 2004, the population is roughly 1.2 million registered residents and another 1.3 million migrant workers (PGND, 2005).

Traditionally speaking, Nanhai has been known as one of the wealthiest places in this area. Since 1978, Nanhai has built up its industries and became a major industrial centre in south China for the production and trade of aluminium, ceramics, home appliances and textiles. From 1990 to 2000, Nanhai’s GDP increased more than 30 percents per annum, and the revenue of city government grew about 36 percents annually. In terms of economic development, Nanhai was ranked no.1 in Guangdong Province and no.3 nationwide during the 1990s. It was evaluated as one of the most developed county-level cities in China (PGND, 2005).

The Nanhai e-government was launched much earlier than that of GOP. In 1995, Mr Deng, the CCP secretary of Nanhai city, appealed that informatisation was a crucial factor for Nanhai to enhance economic competitive advantage and sustain comprehensive social development. Once a consensus was achieved about this issue, the city government set up a mission statement which hoped to ‘accelerate modernization by means of informatisation’.

After a few years’ development, Nanhai e-government has won a high reputation. The National Informatisation Office (NIO) regards Nanhai as an “E-government Model City” in China. Because of its representativeness, a case study of Nanhai e-government is conducted in the following section.

6. Case Findings

This case study focuses on the local middle-level officials’ views and attitudes towards Nanhai e-government. A large number of interactions between public structures and civil servants occurred during the e-government application in Nanhai, producing various social changes, such as economic growth, industry restructure, public administrative reform, better public service delivery, people change, culture transformation, comprehensive social development, etc. Since e-government is a complex social system, it inevitably intertwines with a number of political, economic, social and organisational factors (Avergou, 2001); and a fully developed e-government is the co-evolvement of those institutions (Fountain, 2001).

6.1 E-government and Local ICT Development

In 1996, Nanhai started to build its first narrowband network infrastructure followed by the launch of a broadband fibre optic network – Nanhai Comprehensive Information Network (NCIN) in the next year, for the interconnection of all government departments and agencies within the city. By the end of 1998, Nanhai government had set up an ambitious plan of ‘building a digital city’, and expanded the ICT application from public sector to all aspects of the local society. Soon after some towns and districts set down their plans for ICT industry development, a high-standard Nanhai Science and Technology Park was established in the same year.

By the end of 1999, when the Government of China officially launched GOP, most of the government departments and agencies of Nanhai city and its subordinate towns and villages’ authorities had already applied ICT to their daily routines. They process their office work through intranet and reach all relevant departments and agencies at different levels. Many departments and agencies have built up their Internet-connected websites and most of them can perform bilateral communication, even transaction with their customers, in the virtual world.
Although local ICTs infrastructure and e-government develop rapidly, the application is insufficient. Quite a lot of civil servants still prefer working in the real world than utilising e-government facilities. They usually use computers for word processing and exchange internal information electronically, but so far they continue to print paper files. According to an internal study, less than a half of departments have timely online interactions with customers and more than one third of government websites have no regular updates (Interviewee 1).

Furthermore, since Nanhai government introduced ICTs into the local society, they have shifted their industry emphasis from traditional manufacturing to emerging ICT industry. Some middle-level officials agree with this strategy and believe that it will help Nanhai gain advantage in the new information economy and trigger a “second wave of economic booming” (Interviewee 1, 2, 5, 12); while some others show their anxiety about the industrial reconstruction:

“I think this is a serious problem because Nanhai’s economy is traditionally dominated by manufacturing industry, which is our competitive advantage. Of course we can introduce new ICTs into our manufacturing industry to improve efficiency, quality and productivity. As for the ICT industry itself, it is high tech and new for us. We have no advantage at all. Although we can build up ICT infrastructure because we have money, we still lack of high-quality human resource and other necessities.” (Interviewee 8).

“...it seems like a gamble that shifting our emphasis to ICT industry, it pays more and loses easily, and we can’t afford it.” (Interviewee 10).

6.2 E-government as a Catalyst for Public Administrative Reform

Apart from introducing ICT into public sector, e-government is also a catalyst for public administrative reform. The traditional governments of developing countries cost more but deliver less, they are not sufficiently responsive or accountable. E-government is a means to solve these problems and achieve efficiency, accountability, decentralisation and marketisation (Heeks, 1999).

Nanhai reinvented the public administration structure through the aid of ICTs. On the one hand, the city-level top leadership redesigned the horizontal administration structure and merged some departments with similar functions, such as the merger between City Construction Bureau with City Real Estate Administration, and the merger between City Information and Science Bureau with Intellectual Property Bureau. On the other hand, the city flattened its vertical administrative structure from five levels to three levels, being city – departments, towns and districts – villages from the former city – departments – towns and districts – second level departments – villages structure. Thus it increased the automation and flexibility of second level authorities, and enhanced the direct administration of city-level top leadership with the side effect of significant reduction in the power of city-level departments.

This structural redesign of public administration is in accordance with the plan of central government reform, and to a large extent welcomed by town level authorities.

“...Obviously it is a great reform, it enhances the capability of second level authorities. With more autonomous jurisdiction, we can set down and carry out our own plan smoothly, as well...
as implementation of upper level policy. Our departments would not embarrass different orders from two bosses any more. Further, the city leadership also benefit from the flat administrative structure, because they can expand their control to a broader and more direct extent” (Interviewee 4).

However, people from city level departments have different opinions:

“...this is really bad for us to carry out industrial administrative functions. When we promulgate policy, the second level agencies won’t respond as quickly as before, or sometimes there is no response; and we lack means to handle this situation because we can not control them any more. In this situation, we can do nothing but report to the city leadership, and then they mediate the town level authorities. Flattening the structure? In fact, it is increasing the coordination” (Interviewee 9).

“...the city-level top leadership enjoy consolidating their power and enlarging their direct control, do they enjoy the increasing boring work emerged from their actions of centralisation as well?” (Interviewee 11).

Two significant examples of ICT-mediated public administration reform are the establishment of City Administrative Services Centre (CASC) and City Financial Accountancy Centre (CFAC), which largely broke down the traditional bureaucracy of local government and brought serious impacts on the local civil society.

CASC was established in January 2002. This centre centralised 22 government services offer to enterprises and citizens, such as enterprises registration, tax payment, land use, import and export license, household, etc, which used to be provided by relevant departments separately before. Since the operation of the CASC, those functional departments must arrange staff to work at the centre together in order to provide “one-stop shop” public services. CASC provided advanced computer networking for all the main offices of these departments so that staff can work in the centre as they do in their own offices. A number of single service portals were opened in the centre for customers to choose any one to deal with government affairs. CASC is highly praised by customers because it facilitates public administration, enhances inter-departmental communication and coordination, provides better public services and improves efficiency and transparency (Interviewee 1, 2, 3, 7, 8).

CFAC, equipped with advanced computer network, was opened in March 2002. A month later, all individual finance sections of city-level government agencies were removed and became under the control of CFAC directly. With the aid of ICT, CFAC centralised the finance of all these agencies, worked on their bookkeeping and carried out the transactions with their bank accounts. The establishment of CFAC brings significant benefits in reducing administrative costs, increasing transparency of public expenditures, improving governmental efficiency, and most importantly, enhancing the capability of anti-corruption (Interviewee 2, 3).

Here, some impressive comments on the ICT-mediated public administrative reform are quoted:
“...one of the reasons that traditional administration system lack of response and efficiency is mainly the conflicts between vertical [industrial] and horizontal [regional] administration. ...e-government reengineers the public structure and inevitably encounters fierce conflicts of power and interest as predicted. ... the main challenge [of e-government] is how to break the barriers of different functional departments which build up for their own interest, otherwise the new system can not become an effective networking system with shared information and transparent operation. ...money and power are two chief issues; if these two are under supervision, e-government will come into force, so the CFAC and CASC become the must” (Interviewee 1).

6.3 The Role of People in Nanhai E-government
It is generally believed that city-level top leadership, particularly Secretary Deng, played an important role in Nanhai e-government development (Interviewee 1-12). They consecutively promoted e-government application by setting down an agenda for informatisation and initiating ICT application within the local public sector; making ICT infrastructure investment decisions; launching public administrative reform, overcoming institutional inertia, etc. it is the top leadership’s strong commitment that kept e-government going further and further (Interviewees 1-4).

However, middle-level officials show different views and attitudes towards e-government. Few of them either fully support or fully resist the project. They generally agree to apply ICT to improve the efficiency of daily routines (11 out of 12 interviewees) and support the notion of providing better public service through innovation, such as CASC (9 out of 12 interviewees). Furthermore, 8 interviewees are convinced of ICT as a driving force for economic growth, and 7 of them hold positive attitude towards the CFAC. Their views on other ICT-enabled changes, such as the reengineering of public organisation, restructure of local industry, and huge investment on ICT infrastructure, are quite controversial. In terms of the role of middle-level officials in the ICT-mediated public change, it can be concluded that they are also key factors for a successful e-government in Nanhai context.

“...I remember when we were working for the interconnection of independent subsystems, some departments did neither cooperate nor share their data, insisting their data needed high security” (Interviewee 5).

“If the heads of department resist change, the results would be much worse. The staff of that department would be very likely to stand against the new system as well. On the contrary, if they support the decision, those departments would be their own business” (Interviewee 1).

A good example is the story of “villages circumvent city”. Serious resistance emerged from middle-level bureaucracy in the inception phase of e-government. The city leadership found it difficult to carry out the project in some functional departments. Hence they decided to start with lower level authorities. They allocated funds and resources for townships and even village councils, supported them to apply ICT into their daily routines. Soon after the first 30 villages established a Rural Information Management System, all others applied this
system. After the successful implementation in lower level authorities, e-government was finally introduced into some tough middle-level authorities (Interviewee 1, 5).

As an agent of the interaction between public organisation and civil servants, e-government produces and reproduces a series of changes in various social aspects. The middle-level officials of Nanhai government view these ICT-enabled interactions and social changes controversially. The following section provides a structurationa l analysis of those interactions between structures and people, and of their consequences, with people’s actions and attitudes as its focus.

7. ANALYSIS
Change is one of the most significant themes of the Nanhai e-government case, where ICT acts as both the product and medium of human agents who interact with the organisational structure, producing and reproducing the ongoing practice of organisational change (Orlikowski, 1992). Orlikowski’s (1992) duality model of technology is applied here to explore the interplay among e-government, people and social change in Nanhai, China.

Orlikowski’s (1992) argues that technology is created by human actions and also used by humans to accomplish some goals; secondly technology is interpretively flexible so that the interaction between technology and organisations is a result of interworking among various actors and contexts involved in its development and utilisation. Moreover, views based on duality assume that technology is both physically created by human actions in a particular context, and socially constructed by human through different means they accept; however, once it is institutionalised after developed and deployed, technology becomes part of the structural properties of organisation (Orlikowski, 1992). Orlikowski (2000) changes her view and argues that structures are not embedded in the technology and introduces the concept of “technology in practice” – emphasizing practice as generating and reinforcing structures. This analysis is divided into four parts in accordance with the four arrows in Orlikowski’s model.

7.1. E-government as the Outcome of Human Action
Being viewed as a human artefact, which is built within certain social and historical circumstances, ICT reflects the assumptions and objectives of its designers. Orlikowski’s (1992) model comprises includes human agents (technology designers, users, and decision makers), technology and institutional properties, which can include organisational dimensions (structure, strategies, ideology, culture, procedures, expertise, communication patterns, etc.) and environment pressures (policy and regulation from upper level, competitive forces, knowledge of technology, and macro socio-economic conditions).

The agenda of public administrative reform was set by the national leadership. Due to the hierarchical organizational structure and overstaffed bureaucracy, public sector is known to lack efficiency (Tan, 2003). The Government of China consider the reform of public administration as essential for sustaining socio-economic growth within the country.

The emergent ICT provides such an opportunity. Chairman Jiang Zemin addresses the linkage between e-government and administrative reform in the sixteenth CCP Congress Report:

“We should further change the functions of the government, improve the methods of management, introduce e-government, uplift administrative efficiency and reduce costs so as to form an administrative system featuring standardized behaviours, coordinated operation, fairness and transparency, honesty and high efficiency” (People’s Daily, 2002).
Nanhai leadership perceives the potential of ICT as a driving force for local economic growth, so that when e-government came into existence in Nanhai other tasks, such as public administrative reform and industry restructuring were conducted through this ICT application. That is to say, e-government is being sustained through human actions, including top leadership’s commitment, middle-level official’s coordination and cooperation, operational staff’s learning and working, and customers’ recognition and support.

In this case, the city-level top leadership serve as both decision-makers and designers. They launched the e-government project, introduced the advantages brought by ICT, mobilised civil servants to accept and actively involve into e-government application, in which way they built into ICT certain interpretive schemes. Moreover, they exerted their power and allocated huge funding and other resources to push the project ahead; they created relevant policies and regulations.

However, the role of middle-level officials in this case is undetermined and changeable, which largely depends on their self-interest, as well as their views and attitudes towards e-government. They are usually regarded as users of technology, undertaking leadership’s orders, involving and directly guiding operation staff in ICT-mediated organisation transformation. Whereas, they can also act as designers rather than just passive users if they favour the new IS. Since middle-level managers have some power and strong influence within their own departments, they can actively promote the new working concepts, mobilise their staff to carry out new work procedures, provide useful information for top leadership to improvise emergent changes, apply power and allocate resources to support the transformation; thus they can be strategic assets or change intermediaries (Balogun, 2003).

7.2. E-government as the Medium of Human Action
The Nanhai e-government is a top down implementation. It facilitates and constrains human actions through the provision of interpretive schemes, resources, and norms. Furthermore, Orlikowski (1992) emphasises the interpretive flexibility of technology, which is an attribute of relationship between humans and technology, influenced by the characteristics of material artefact, human agents and context.

The application of ICTs in the public sector brings obvious benefits. In Nanhai, it facilitates government’s operation, emancipates civil servants from increasing heavy work, enhances working efficiency and capacity of response, and therefore improves public service quality. Moreover, information has been processed in a more efficient and transparent way with the aid of ICT. All these transformations enhance the government’s capability to prepare for further development.

The introduction of ICTs also enables government to reinvent itself: changing government’s functions and redesigning working procedure, reengineering administrative structures, redistributing power and resources, reallocating government staff, and conforming government action to standards, transcending the traditional relationship between governments and the customers. All these changes aim to form an administrative system that is well behaved and coordinated, fair and transparent, accountable and efficient (Shen, 2003).

Technology is used as a medium of social practices, which means it can only condition (both facilitate and constrain) social practices instead of determine them (Orlikowski, 1992). In similar vein, ICT does not necessarily bring positive impact on Nanhai social change; it is largely influenced even determined by human actions and institutional context. Although ICTs has the potential to facilitate social development in Nanhai, it is difficult to apply it, such as in what way to change other organisational dimensions (structure, task, people, culture) in Leavitt’s (1965) or O’Brien’s (1997) model, in order to cope with the change of technology and organisation.
E-government mediates the Nanhai top leadership’s endeavours for change by interacting with public institutional properties. It helps the leadership to enhance the capabilities and transform the relationship with customers, while it constrains their behaviours within the existing social context as well. In this case, people are very important for ICT-mediated changes. The top leadership’s commitment, as well as strong economic support, is considered as one of the most important driving forces for Nanhai e-government.

In addition, e-government also mediates the actions of middle-level officials. If they support the leadership’s decision, they will undertake part of the designers’ functions and act as users as too. They applied technology into their departments’ operation and used it to influence their tasks. When they resist ICT-mediated change, they resist not only ICTs but also the appropriation of those interpretive schemes, resources and norms. Take the case of “villages circumventing city”, while middle-level people resisted e-government in their departments, the top leadership found they were encountering tough challenges: their power and sanctions seemed to be no more valid; resources were not appropriately used. In this case, they had to execute a pilot project in lower levels before they took action in those departments (Interviewee 1, 5).

7.3. Social Conditions of Interaction between People and E-government

People’s actions such as communication, application of power and sanctions deal with structures of signification, domination and legitimation respectively through modality of interpretive schemes, resources and norms (Giddens, 1984). When people interact with e-government, they are influenced by various social conditions, namely Institutional Properties, including intentions, design standards, professional norms, state of the art in materials and knowledge, and available resources such as time, money, skills and so on (Orlikowski, 1992).

In this case, on the one hand, the realm of social structure refers to the context of Nanhai public sector. The Nanhai e-government is initiated by city-level top leadership, who are influenced by superior management, government functions and structures, their power and resources, legal framework, institution, culture, knowledge, etc. The top leadership, participating middle-level officials and operating staff draw on their institutionalised organisation structure of signification, domination and legitimation, and accomplish their tasks.

On the other hand, the realm of human actions refers to the actions taken by Nanhai top leadership to apply e-government within local public sector; by middle-level officials to support, ignore or resist the change. From structurational perspective, these actions interacting with social structures can be elaborated in three distinctive components respectively.

Orlikowski (1992) emphasizes situated actions shaped by the organisational context more than the planned action. She argues that human’s interactions with ICT (designing, making, implementing, modifying, resisting) are influenced by institutional properties. People utilise existing interpretive schemes, resources and norms to fulfil interaction, and the ICTs’ product they produce and use are embodied by existing social and historical institutions.

Firstly, human actions are conditioned by structures of signification, which refer to rules of the constitution of meaning. Actors not only enable and constrain communication, but also reproduce structures of signification (Giddens, 1984). In Nanhai, top leadership held strong commitment to carry out e-government with the help of better technical support provided by advanced information and communication technology. Whereas, Chinese society is traditionally conservative and reluctant to change, especially the political society, civil servants are used to the current bureaucratic system, from which they can find their positions and benefits. Thus, fear and resistance emerged from middle and lower class society, even quite a large number of civil servants were unknown or unfamiliar with ICT. Elder staff

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feared loss of their long-time accumulated expertise because of the introduction of new technology. Some middle-level officials feared loss of power and influence; some doubted its consequences despite a huge investment on infrastructure; some cared about the fading of culture and conventions, some even feared the breakdown of the existing social and political system (Interviewee 1-12).

While dealing with these structures of signification, human actors undertook a series of communications through various interpretive schemes, including the communications between top leadership and their subordinates in order to achieve consensus of e-government; the communications between middle-level officials and operating staff in order to either support or resist those ICT-mediated changes; the communications among middle-level officials to influence the change either positively or negatively.

The top leadership and middle-level officials who supported the project called energetically for e-government. They propagandised the advantages of ICT and benefits they could bring; persuaded subordinates to support their decisions; held meetings to “unite thoughts”; actively provided ICT education and training courses for civil servants (Interviewee 1, 2, 3). As anticipated, the project was launched and made progress, although in some departments it still stumbled upon resistance and ignorance. In the meantime, they executed a number of improvisations (Ciborra, 1999; Orlikowski, 1996) to ensure the e-government ran smoothly, just like the example of “villages circumventing city”.

Secondly, human actions are conditioned by structures of domination, which refer to the asymmetries of resources that actors draw on in executing power (Giddens, 1984). In Nanhai, after gaining approval of top-level management, city-level officials exerted their formal authority to influence people, and allocated large funds and other necessary resources to implement e-government within their jurisdiction. These conditions provided a good environment for the project, including enough funds and other resources, strong technical support. Whereas, civil servants’ skill of using ICT was not good and time was limited for this project (Interviewee 9, 10).

Even though there was active support for e-government from top-level management, radical changes encountered fierce resistance. Some middle-level officials believed that city-level top leadership broke down long-established bureaucratic system through the aid of ICT, not only to bring the positive results on local society but also to consolidate their own power (Interviewee 8-11).

Because of serious institutional inertia people are concerned about power and interest of their individuals or small groups. Conflicts and sabotages occurred during the advancement of e-government. Through the modality of resources, people dealt with structures of domination with their power. Although powerful people could run upon their domination of power and resources, evidences show that both civil servants and citizens’ passion of e-government were not as rising as that of they did. Indeed, overcoming resistance and building up new institutions is the only way to achieve and sustain e-government development.

Furthermore, human actions are conditioned by structures of legitimation, which refer to norms that actors apply to sanction interaction between themselves and other people (Giddens, 1984). In Nanhai, Secretary Deng reached a consensus within city-level top leadership, communicated with middle-level officials in order to gain their support. Most importantly, their e-government initiatives were consistent with the national strategy of informatisation.

After the blueprint of Nanhai e-government had been approved by municipal government, the Nanhai government promulgated relevant policies and constituted official regulations to defend the legitimacy of their own actions. Moreover, those norms empowered
the decision makers and project designers to govern legitimate and appropriate conduct while sanctioning misbehaviours.

These norms enable different groups of people to deal with resistance through legislation and institution. Customers are changing the subordination position to government and anticipating better public service; middle-level officials can require their department staff to make efficient use of ICT not only through their power but also through formal norms; top leadership can legally execute sanctions against those who are destructive and apathetic to e-government.

7.4 The Transformation of Public Organisation through Interacting with ICT

When people interact with ICTs, it influences the social context, within which it is built and used, and reinforce or transform the organisational structures of signification, domination, and legitimation.

Nanhai e-government changed the local traditional institutions to a great extent. It provided an opportunity for the delivery of better public service, which was essential to attract investment, enhance local economic development and directly increase local public revenue. In Pearl River Delta, now the main revenue of local governments, including Nanhai, is the tax paid by enterprises, although they can get tax from other places, for instances, from labours. If enterprises are not satisfying with the business environment and move elsewhere, the public revenue will decrease. It is believed that public service and efficiency are more important to attract investment than preferential treatment. Moreover, the rapid developing local commune economy contributes greatly to government revenues as well. Such fundamental change of revenue sources and strong competition for investment have been pushing Nanhai civil servants to change the concepts of their privileged roles among civil society and seek various means to improve their efficiency and public services, in order to please customers (Interviewee 6, 8). Emergent ICTs change the Nanhai government from a traditionally Chinese “management-oriented” style to a western “service-oriented” style.

Therefore, the application of e-government does not reinforce but significantly transforms the traditional social context. In Secretary Deng’s words, Nanhai e-government brought a series of social impacts: it enabled public administrative reform improving the effectiveness, efficiency, transparency and trust of local government; provided better public service and developed democracy; reconstructed industry structures, dominated and accelerated the process of informatisation so that sustaining local economic growth; improved e-literacy, changed some bad habits and developed socialistic spiritual civilisation. He added that while introducing e-government, they changed the traditional working procedures from administration oriented to service oriented; civil servants were well supervised and would be sanctioned if they did not work in an efficient and responsible way; and finally government, industry and citizens live in a more harmonious society.

It is believed that, to a certain extent, parts of the above planned changes were accomplished. During the implementation stage, Nanhai also encountered some unanticipated situations due to some design and reality gaps, such as strong resistance from institutions, over-expenditure, difficulty to attain planned goals, cultures and e-readiness issues. Local e-government development largely obstructed by these emergent changes, which resulted from the ICT-mediated interactions between organisation structures and people, the struggle among various interest groups of local civil servants, as well as the constraints on the local social context.

The duality model of technology provides a useful lens in which to explore the interplay among e-government, people and social change in Nanhai. E-government is produced and used by local top leadership and those middle-level officials who support them to facilitate social changes. At the same time, e-government mediates their actions, constrains
those changes and leads to some unplanned consequences. The institutional properties and people are closely related to each other: the institutional properties condition people’s interaction with e-government and people deal with them through modality of interpretive schemes, power and norms. Through the interaction with e-government, people influence the existing institutional properties and make them compatible with the change of technology.

8. CONCLUSION
8.1 Further Discussions
Nanhai e-government allowed for substantial progress in improving government capabilities, providing better public service, introducing democracy, and leading comprehensive social development, as the analysis from a structurational perspective shows. People actively dealt with structures with the aid of ICTs and facilitated a series of social changes: they communicated with project participants using interpretive schemes; influenced the allocation of funds and all other necessary resources to carry out the project; drew on the legal framework to sanction people’s actions, thus to sustain the new institutional properties brought by e-government. These are the successful factors of Nanhai case, which can be generalised to a broader Chinese context, particularly in the rich southeast area and small or medium-level cities.

On the other hand, Nanhai’s achievements could not obscure the existing conflicts and turbulences that still resist the institutionalisation of new ICT-mediated structure properties. Noticeably, different voices from people who are against e-government do not seem to be unreasonable, and the project is to a certain extent vulnerable with a high dependence on leadership commitment and economic support, rigid organisational structures, strong institutional inertia, distinctive individual power and interest. It is crucial for decision makers and designers to realise these potential problems, particularly when they carry out e-government in China. To sum up, the case analysis can help to inform the key factors that influence e-government application.

Besides the practical contributions, this paper also attains academic significance. Firstly, e-government is far more complicated than bringing ICT into the public sector. It is part of a complex social system, which involves various social elements such as political, economic, cultural, organisational change, people. These elements constitute a complex social system as an organic whole, any change of a certain element must lead to the relevant changes on other elements, in order to maintain the balance of the system. In one word, a successful e-government should attain the co-evolvement of ICT and various institutional properties within the existent social context.

Secondly, this paper deals with people. The introduction of ICT into public sector is a human action, through which human actors can achieve their planned goals. Crucially, humans are the main participants of change. As both product and medium of human actions, technology is used by human to facilitate their actions, but it also mediates human’s work, either facilitates or constrains. Therefore, technology is not always favourable in public sector, sometimes it stirs up turbulence and triggers serious crisis. How technology works depends on why and how people produce ICTs, in what way it mediates actions, and how well people realise their anticipated social environment and deal with the institutional structures.

Moreover, during the process of introducing ICT into the organisation, changes are not only planned but to a large extent emergent. Organisational changes are not well anticipated because organisation is a social complex system; its ongoing practice involves many flexible, open-ended, complex, and uncertain factors. Being aware of the different types of changes enables people to deal with them either precautionary or improvisational.

Furthermore, middle-level managers play an important role in ICT-mediated social change. They are usually more numerous in any given organisation; they also have power,
resources and influence, particularly within their departments. Moreover, they act as a link between top people and operating staff. Middle-level management’s influences on changes are dichotomised: either positive or negative. They can be either tough obstacles or effective propellers instead of apathetic outliers. Gaining support from middle-level people is as important as strong top management commitment.

8.2 Limitations of this Study

There are some difficulties in carrying out this research. Firstly, there is limitation in the duality model of technology. Although it is a strong tool for analysis and particularly relevant to this field of research, it still seems more theoretical than empirical. A theory is a way of seeing and not seeing (Walsham, 1993); the theory does not cover most of IS phenomena. For example, it seems difficult to apply this model into the analysis of e-readiness. It seems necessary to apply other pieces of structuration theory or another theory as a complement for this case analysis, such as neo-institutionalism.

Secondly, in terms of qualitative research method, it assumes that interviewing middle-level officials is the appropriate way to gain an understanding of their roles in e-government application. Nevertheless, some deficiencies emerged when the interviews were being conducted. Some interviewees used to tell the interviewer what they want to say instead of answering the interviewer’s questions. Probably because they have been interviewed many times already and were well trained. Some interviewees were reluctant to express their thinking; it may partly because of Confucianism that has a great influence on Chinese people so that they behave in a more reserved way. Another reason may be that public servants are constrained by the government.

Moreover, since the interviews were semi-structured, topics involved in the study were too broad and may have lacked focus. Some interviewees are the author’s friends. Noticeably, the author’s bias towards China e-government might influence the qualitative research method to some extent. While carrying out this research, the author held a critical attitude to investigate Nanhai case.

8.3 Future Research

Although this study makes a certain academic contribution and provides some practical insights, we need more future research because it is an important, interesting but complicated social IS study.

In terms of Nanhai case itself, while undertaking such a research of ICT-mediated interactions between public organization and civil servants, scholars would focus on how to mobilise middle-level officials in an appropriate way, how to overcome institutional inertia and how to make the project self-sustaining without the top leadership commitment and strong economic support. Further, other social factors that may probably influence results of the study should be taken into consideration as contingent factors as well.

The qualitative research method for such a social study can be more diverse, for instance, more methods of data collection should have been adopted, such as questionnaire, survey. And for a deeper understanding, it seems a good attempt to apply ethnography method into research as an alternative to case study. In particular, although this case study of Nanhai project provides substantial evidences and interesting insights for the social IS research of e-government within the China context, further research with various methods in this area should definitely need. For example, since the study focuses on the role of middle-level officials, it is necessary to enlarge the number of interviewees to some top leadership as well as operating staff, in order to gain a comprehensive understanding.

This study also concludes that e-government applications are largely constrained within their social context. Further research could consider how to draw on appropriate
framework which can make e-government application in a broader social context, in order to
generalise much from findings of such a single case and achieve a universal contribution. A
case with more characteristics of the broader social context can be a better choice, as well as
conducting several cases simultaneously and comparing their similarities and dissimilarities
within the same context where they exist.

The emergent ICT brings enormous benefits to modern age and facilitates serious
social changes. Many people are optimistic with the potential of ICT for government to
improve capabilities and transform relations with citizens. The world is not as wonderful as
technological-determinists fantasize, ICTs should be regarded as an ambiguous stranger
rather than a favourable guest (Ciborra, 2002). Whereas, people are always the main
participants of ICT projects, a successful e-government depends largely on understanding
why and how people produce and use ICT, how well they interact with the social context, in
what way they deal with these institutional properties there, and how well these institutional
properties co-evolve.

REFERENCES:
Angell, I.O. and Smithson, S. (1991) Information Systems Management – Opportunities and
the Federal Government, Progressive Policy Institute Technology & New Economy
Avgerou, C. (2000) IT and Organisational Change: An Institutionalist Perspective,
Information Technology and People, 13, 4, 234-262.
Balogun, J. (2003) Form Blaming the Middle to Harnessing its Potential: Creating Change
Intermediaries, British Journal of Management, 14, 69-83
Bellamy, C. and Taylor, J. A. (1994) Reinventing Government in the Information Age,
Public Money and Management, July-September, CIPFA, UK.
Administration: Challenges of Inequality and Exclusion, Miami, USA.
Information and Communication Technology is Transforming Administrative
Heinemann, London, UK.
Chadwick, A. and May, C. (2003) Interactions between States and Citizens in the Age of the
Internet- E-Government in the United States, Britain and the European Union and
the State, Governance: An International Journal of Policy, Administration and
Institutions, 16, 2, 271-300.
Internet development in China.
Internet development in China.


Floyd, S. W. and Wooldridge, B. (1994) Dinosaurs or Dynamos? Recognizing Middle Management’s Strategic Role, Academy of Management Executive, 8, 4, 47-57.


National Bureau of Statistic of China (NBSC) (2005) China National Conditions and Strength. [http://www.stats.gov.cn/was40/detail?record=3&channelid=6697&presearchword=%B5%E7%D7%D3%D5%FE%CE%F1][in Chinese].


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