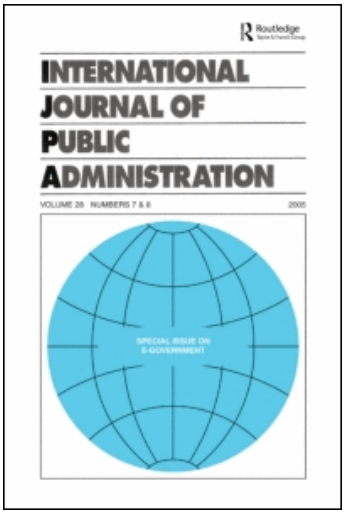
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E-Government Development and China's Administrative Reform

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Abstract: This article examines the impact of electronic government (e-government) development on China's administrative reform. The article begins with a review of major management and policy issues about the E-government development. The article then introduces some problems of China's old cadre system and major strategies of China's recent administrative reforms. Based on the E-government development issues and the Chinese administrative problems, the article analyzes important opportunities and challenges associated with the E-government development.

Keywords: administrative reform, Chinese government and reform, e-government

Electronic government (e-government, EG) has become one of the major components of recent public management reforms in many countries to improve the operation of public management and to enhance the relationship between citizens and their governments. The improvement of government operation is based on the traditional concern of administrative efficiency, while the enhancement of citizen-government relationship has to do with the new interests in citizen participation, customer satisfaction, and government trust.

In the United States, for example, President Clinton announced a series of EG initiatives in 2000 to establish an integrated online service system. The system is useful for the access of one single website (www.firstgov.gov) and the one-stop access to federal grant and procurement opportunities. In the 2001 President's Management Agenda, President George W. Bush identified "Expanded Electronic Government" as one of the five major government wide initiatives. Many state and local governments have adopted the similar approach and emphasized the improvement of their information technology

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(IT) capacity and the development of EG to promote better public management and services.

Similar to the U.S. experience, the topic of EG or IT development has become one of the top priorities in China's administrative reforms. For example, Ji Guo, President of Chinese Public Administration Society, maintained that the EG development is one of the major methods to improve the effectiveness of government administration and the transaction of government functions.[1] EG is useful in addressing such issues as: openness in public policy, transparency and standardization, efficiency and equity, easy and better access, supervision and accountability, anti corruption and cost reductions, and better connection between the public and the government.

Following the government's reform policies, Chinese public administration researchers have studied many technology, management, and policy issues about the EG application. The topics of their studies include, for example, the influence of IT on the development of public management,[2] the relationship between IT and performance evaluation of public organizations,[3] the impact of IT on the quality of government service,[4] and the discussion of information security and legal protection of the e-government affairs.[5]

This article examines the impact of EG development on China's administrative system and reform. Unlike previous studies, this article provides a comprehensive analysis of EG literature to assess the opportunities and limitations of EG development in China. The article consists of three sections:

1. the review of critical research issues about the EG development,
2. the discussion of major problems in the Chinese administrative system, and
3. the examination of opportunities, contributions, and limitations associated with the Chinese EG development. These issues are important to researchers who are interested in the studies of EG development and the application of EG in China's administrative reform.[6]

E-GOVERNMENT DEVELOPMENT ISSUES

Previous studies of EG development have examined various issues related to development concepts, management operations, and policy concerns. The concept issues refer to the evolution and functions of EG development. The management questions are related to the EG operation in public organizations and its contribution to public management. The policy concerns focus on the influence of EG on the democratic society in terms of equity, privacy, and participation.

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Concepts and Functions

Previous researchers have introduced different definitions and development stages to describe the function and evolution of EG. For example, EG has been explained as "the application of the tools and techniques of e-commerce to the work of government."[7] or as "government's use of technology, particularly web-based Internet applications to enhance access to and delivery of government information and services to citizens, business partners, employees, other agencies and government entities."[8] From a broader perspective, we can understand EG in terms of four concepts:

1. e-service (i.e., e-delivery of the government information, programs, services over the Internet),
2. e-management (i.e., use of the information technique to improve the management of government from streamlining business processes to improving flow of information within government offices),
3. e-democracy (i.e., use of e-communication vehicles such as e-mail and Internet to promote citizens participation in the public decision-making process), and
4. e-commerce (i.e., the exchange of money for government goods and services).[9]

Closely related to these definitions, researchers have indicated that the development of EG consists of several stages. For example, Howard identified three stages about ED evolution:

1. publish — referring to the stage that the government has an electronic presence and publishes their information about itself and activities;
2. interact — showing the stage that the government interacts with citizens form simple e-mail to chat rooms; and
3. transact — indicating the final stage that the government enables citizens to receive services through the Internet.[10]

Layne and Lee suggested a four-stage model of EG functions:

1. cataloging — creating e-presence, presenting information about agency (with least amount of functionality);
2. transaction — providing information, requests and services (with more functional then e-presence, but very fragmentary);
3. vertical integration — moving toward the transformation of government services (e.g., three levels of vertical integration —federal, state and local are integrating); and
4. horizontal integration — integrating silos from different agencies (i.e., the highest type of functionality).[11]

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Similarly, Moon used five stages to reflect EG degree of technical sophistication and interaction with users:

1. simple information dissemination (i.e., one-way communication by posting data on the websites for constituents to view);
2. two-way communication of request and response (i.e., the interactive mode between government and constituents by incorporating email systems and data-transfer technologies into the websites);
3. service and financial transactions (i.e., replacing public servants with web-based self-services by putting live database links to on-line interfaces);
4. horizontal and vertical integration (i.e., pushing information and data sharing among different functional units and levels of governments for the enhancement of efficiency, user friendliness, and effectiveness); and
5. political participation (i.e., the use of government websites for online voting, online public forums, and online opinion surveys for more direct and wider interaction with the public).[12]

These researchers have generally agreed that EG operations in public organizations have not reached to the final stage of integration and participation.

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Management Questions

From the management consideration, we want to know if the implementation of EG will improve the management of public organizations. Supporters of EG claimed that EG development can have such advantages as: increasing efficiency (by streamlining government business processes), improving internal communication, providing better customer services, and keeping up with citizens demand and expectations.[13] Empirical studies of the EG application, however, have provided mixed results about these advantages.

On the one hand, West used the survey data of chief information officers in state and federal agencies and reported that the adoption of EG has improved service delivery, reduced costs, and made government more efficient.[14] Other studies also supported the contribution and impact of IT on performance management and on red tape reduction.[15] Edmiston explained that, for public management, the efficiency concern is not only simply minimizing the government's cost of providing a given level of public services, but also minimizing social cost or the cost to constituents in using or receiving public services.[16] EG has promoted the efficiency of public organizations in the areas of remote service delivery, remote procurement, and fraud reductions.

On the other hand, Moon used the ICMA survey data and indicated that EG has not been effective as its rhetoric would suggest.[17] Many municipalities are still at an early stage of the EG development and municipal EG has not

made significant contribution to cost savings, revenue generating, and downsizing (even though EG has brought changes in procedural practices and task environments). Another study of the impact of IT on public organizations also reported mixed findings. IT adoption has direct effects on the performance of the organization and decision making, but little impact on agency's structure and communication.[18]

While providing different findings, these studies have emphasized similar challenging issues regarding the development of EG in public organizations.[19] The issues mentioned include for example, the lack of expertise in technology, web research and marketing operation, the lack of financial resources in supporting duplicate services (i.e., offline and online services) and in providing front-end costs, the lack of political support (or the inconsistent support) due to the election cycle, the differences in management cultures between the vertical control (emphasized in public organizations) and the horizontal collaboration (required in the EG operation), and the difference in employee attitudes and believes (between technical employees and administration staff).

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Policy Concerns

Besides previous management questions, researchers also raised several policy concerns about EG development. Three concerns about accountability, equity, and privacy are particularly important to this study. First, accountability in customer services has been one of the major components of recent public management reforms.[20] The development of EG will promote the accountability requirement because of the emphasis on transparency principle through the improved access to government programs and services, improved opportunities to contact government officials, and improved participation of citizens in the policy decision making process. Through the EG operation, citizens will receive better customer services due to the enhanced administrative and political accountability.

The second policy concern has to do with the equity issue of EG development, i.e., the issue of digital divide. Digital divide refers to the perceived gap in computer and Internet access across economic, demographic, geographic, or social lines.[21] It is a serious public policy issue if several disadvantaged groups in the society will be unable to receive government services with the EG development. It is also important to know that the digital divide includes not only the traditional concern about access gap, but also new questions about differences in using patterns and perceived gratifications, and in interpersonal trust attitudes between the users and non-users.[22] To address this policy concern, it is necessary for the government intervention in providing additional funds for private IT development, creating regional technology access and distribution centers, and establishing a digital brigade to educate citizens about disadvantages of non-using IT.[23] For example, one cost-effective

way suggested is to provide public Internet kiosks and email outlets in public locations (e.g., libraries, employment and service centers) to help those who do not have private access.

The issue of privacy and security is the last policy concern in this study. Citizens and social groups have concerned about the Internet privacy and the weakness of government websites. First, they are concerned about the availability of their personal data (e.g., driving records, property and deed records) on the Internet, even if the information is on the public record or the release is for the consideration of public safety and health. In addition, Internet security breakdowns have become common for many public and private organizations. Along with the technology development, hackers are able to get into the system and change data and records to seek self interests or to create public crises. The privacy issue will continue to be one of the major policy concerns in the future because it is not easy to overcome this issue in the short run and it requires the collaboration of legal, technical, social prevention and control mechanisms.

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PROBLEMS IN THE CHINESE ADMINISTRATIVE SYSTEM

To understand the application of EG in the Chinese administrative system, we used this section to analyze major problems of the Chinese administrative system. The analysis consists of there areas: system problems before the reform years (beginning in the late 1970s), major characteristics of the reform strategies, and new issues in the transition years.

System Problems

China's administrative system before the reform years was considered by researchers as inefficient and as one of the major impediments to economic development.[24] From the management perspective, the system encountered many problems because it was run not by competitively recruited civil servants but by cadres recommended by the Chinese Communist Party (CCP). The powers of cadre management do not belong to the state but to the CCP as it controls the cadres through the Party committees and organizational departments at various levels. Two major characteristics of the cadre management system are that

1. the cadres did not possess the knowledge and expertise necessary for managing the economic development and
2. they were politically committed and heavily involved in political and ideological campaigns and struggles.[25]

Many researchers have reported some bureaucratic dysfunctions about China's old cadre system. For example, Bing criticized the old system as rigid, overcentralized, inefficient, and suffering from rampant corruption.[26] Chow described the system problems in terms of unresponsiveness, lack of innovation, inefficiency, and corruption.[27] Similarly, Burns provided a comprehensive list and described the problems as: authoritarianism, routinism, elitism, corruption, shirking responsibility, deceit, laziness, talentlessness, formalism, red tape, nepotism, seeking special privilege, overstaffing, duplication, and ineffective overcentralization.[28]

The researchers also explained sources or factors about the bureaucratic problems. Burns identified three sources of the problems: traditional official rules prior to 1949, scarcity of material resources, and structural defects in the management and personnel system of state and party organizations (e.g., life tenure, inadequate recruitment, performance and retention criteria, and lack of an administrative responsibility system).[29] Chow related the bureaucratic problems to interrelated factors in three areas: environmental (e.g., political turmoil and centralization), behavioral (e.g., prevalence of corruption norm and the norm of reciprocity), and organizational (e.g., the lack of the norm of professionalism, lack of an objective performance appraisal system, and a weak perverse reward and punishment system).[30] Finally, Fang explained that the problems are related to three issues: subjective and dogmatic elements in Marxism, the exclusiveness of historical heritage, and the dictatorship of the party and the government that excludes criticisms.[31]

Reform Strategies

Since the late 1970s, China has gradually reformed its administrative system to support the national goal of modernization and development. Major reform strategies that have been implemented are: decentralization of decision-making power, separation of economic enterprises from administrative agencies, simplification of administrative structures, and establishment of a civil service system.[32]

The decentralization strategy refers to the effort of the central government to decentralize decision-making powers to local administrative units. At the beginning of the reform, this strategy gave local governments more authority in issues relating to both the supervision and coordinating functions within their jurisdictions and the operation of economic planning, resource management, and foreign trades.[33] In recent years, the decentralization strategy has been expanded to other areas and organizations. For example, the financial reform of 1994 has established a basic tax system to specify financial authorities and responsibilities between central and local governments. The decentralization of decision-making power has also been emphasized in the reform of social-intermediate organizations and other public affairs organizations (e.g., school, hospitals).

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The establishment of a civil service system is essential for the Chinese administrative reform. As explained previously, China's traditional cadre management system suffered many bureaucratic problems that made the system inefficient and unprofessional. The cadre system includes some questionable and unprofessional recruitment, performance evaluation, and reward methods. To develop a modern civil service system, the government adopted the Provisional Regulations on State Civil Servants in 1993 to addresses major personnel issues such as the duties of civil servants, job categories, recruitment procedures, appraisal procedures, performance rewards, discipline, promotion and demotion policies, transfer, pay, resignation, and retirement.[34]

In recent years, many scientific and professional personnel management concepts and methods have been emphasized and required in the civil service system at both the national and local levels. For example, many governments now adopt the open examination and selection methods in the recruitment and promotion of government employees and the use of performance measurement system in the evaluation of employee and agency performance.

The separation of economic enterprises from administrative agencies is unique for China's reform. In the old economic system, governmental agencies not only owned many economic enterprises but also controlled economic activities based on the consideration of political requirements and conveniences. The result of this control system was the problem of overadministration, inflexibility and nonaccountability.[35]

The post-Mao reformers have gradually changed this situation. At the beginning of the reform, enterprises were allowed to separate from government bureaucracies and become autonomous economic units. Enterprises have the authority to make decisions regarding business management and operations, such as resources control, manpower allocation, levels of production, and prices of products. In recent years, the separation strategy has been expanded to the reform of state-owned enterprises to support the development of a market economy. New measurements emphasized in the SOE reform include clear definitions about property rights relationships, explicit obligations and responsibilities, separation between enterprise management form government functions, and the use of scientific and professional management in enterprise mangement.[36]

After becoming a member of the World Trade Organization, the Chinese government has further improved administrative operations and regulations to meet new requirements from the international organizations and to enhance the administrative capacity in the global competition market. Since 1998, the government has developed a number of policies to transfer functions from government to economic enterprises, corporate some departments, and change other departments into trade associations or councils with broad regulatory powers. For example, at the central government, a number of industrial economy administrative departments have been reformed and many functions have been transferred from the department of the State Council to local governments,

enterprises, and intermediary organizations to reduce the intervention of government in micro operational issues. At the same time, the government has strengthened the functions of many economic commissions and agencies (e.g., the Ministry of Finance, and the People's Bank of China) within the State Council to improve the effectiveness of their macro-regulation functions.

New Challenges

These reform policies are essential for China to develop a modern and professional administration system to support the goal of economic and social development. In recent years, China's administration system has encountered new challenges after the improvement of economic condition and the change of social environment. Three of the issues are discussed here: the reform of administrative examination and approval system, the pervasiveness of official corruption, and the management of social and public affairs. These interrelated issues affect the process, culture, and structure of the Chinese system.

The reform of administrative examination and approval system is one of the recent policies designed to continue the reform of government functions for the purpose of improving administrative efficiency and supporting economic development. While the function of administrative examination and approval is common to many governments (e.g., similar to administrative regulations in other countries), the administrative examination and approval system in China has resulted in many economic and social problems due to its unique nature.

The administrative examination and approval was based on concepts and practices of the old economic system and is inefficient and obsolete in its operation. The system encountered both quantity and quality problems. On the quantity side, the numbers and types of the examination and approval cases are enormous, including requirements based on the national laws and regulations, specific department orders from the State Council, as well as laws, regulations, and orders from the provincial and local governments. On the quality side, the old system emphasized the command and control approach, which was associated with criticisms of overlapping functions and black-box operations. The consequences of the poor system included negative effects on business investment decisions, protection and development of self interests among government agencies, and opportunities for the official corruptions.[37]

The reform calls for the development of an open and transparent system to make scientific and objectives decisions in such areas as the reduction of cases or items required for the examination and approval, the clarification of concerned standards, the specification of conditions for the approval, the enhancement of the supervision capacity, and the development of accountability requirements.

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Closely related to the previous issue, government corruption has been recognized by Chinese leaders as one of the major problems in recent government reforms. Corruption existed before the reform era and was seriously criticized by Chinese leaders during the pre-reform social movements (e.g., the Three-Anti campaign in the 1950s and the Socialist Education Movement in the 1960s).[38] The development and achievement of economic reforms have increased the level of corruption, in terms of both scope and frequency.

The causes of corruption are related to many changes in the traditional system and the implementation of reform strategies. The changes in the traditional system have resulted in the weak supervision and control operations during the reform years because of the removal of old government supervision and control units and the lack or ineffectiveness of new system operations. The implementation problems refer to the situation that government officials have many opportunities to conduct illegal or unethical deals because of their impact on the restructure of government agencies and the redistribution of economic resources.[39] For example, some officials used the opportunity to separate enterprises from governments to benefit themselves by either serving as consultants for companies or setting up shadow companies. Other officials may selectively implement or enforce new rules or policies as a tool to gain or strengthen their power and control. To overcome the corruption problems, Chinese leaders have emphasized many legal based methods, including the promotion of good work style to prevent unethical activities, the enforcement of laws and rules to regulate the official's behavior, and the prosecution of corrupted officials at all levels of the government.

The final challenge issue in recent reforms has to do with the improvement of government management in the areas of social and public affairs (e.g., school, health, safety, and welfare). The concerns of government social management activities are closely related to changes of economic and social environment after the economic reform and development. Since the late 1970s, China has successfully transformed its planned economic system to a market-based system (with Chinese characteristics) and has achieved outstanding records in many key economic measures (e.g., gross national products, high growth rates, international trades).

But, along with the economic reform, the Chinese economy has suffered many growth-related problems such as: inflation pressure, income gap, regional imbalance, and unemployment concerns. The Chinese society has also experienced many problems in the areas of school education, public health, public safety, and social welfare. In recent years, many negative reports about illegal or unethical practices have been noticed in public education (e.g., additional fees or charges to students), public health (e.g., various types of food or drug poison), public safety (e.g., increasing

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crimes in murders, robberies, kidnapping, and drug trafficking), and social life (e.g., increasing divorce rates, concerns about retirement and insurance support).

These problems are sophisticated in their nature and are new to the government because they are related to many changes in the current society:

1. changes in social control (e.g., the removal or decline of many traditional control mechanisms to promote flexibility and efficiency),
2. changes in social mobility and fluidity (e.g., the increased mobility between the rural and urban areas as well as between the interior and coastal regions),
3. changes in individual and social ideology (e.g., the demising role of the state in guiding daily life of the Chinese people, the rising materialism and commercialism in the Chinese society), and
4. changes in the public's attitude (e.g., the perception of social inequality, the feeling of falling behind the advance of others, the desire for immediate success and wealth, the lack of empathy for other groups, and the increase of social hostilities and conflict).[40]

Chinese leaders have recognized the seriousness of these social problems and the potential detrimental impact of these problems on economic development and social stability. To address these problems, they emphasize such reform measures as: the development of an early detecting and responsive system, the improvement of public service systems, and the application of scientific performance evaluation system.[41]

ELECTRONIC GOVERNMENT AND CHINESE PUBLIC ADMINISTRATION

As emphasized at the beginning of the article, the development of EG has been identified by Chinese leaders as one of the major reform strategies to improve the effectiveness of government administration and the transaction of government functions. In recent years, EG has been introduced and implemented in different administration systems (e.g., taxing and banking systems) and at all levels of governments (e.g., central, provincial and local governments).

This analysis of EG impact on Chinese administrative reforms is based on findings and from previous two sections. The review of EG development issues has revealed several technology, management, and policy issues and concerns. The discussion about Chinese administrative system has shown systems before the reform years and new challenges in the transition years. This section about the EG impact focuses on three areas: development opportunities, major contributions, and potential challenges.

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Development Opportunities

Similar to the EG development in other nations, the development of Chinese EG is in its early stages as many government agencies use the EG for simple information dissemination (e.g., posting data or forms) or some forms of communication and interaction (e.g., incorporating email systems and data-transfer technologies). Several local governments are able to provide some access and response functions in their EG systems to seek input and feedback from the public on issues related to pubic safety and health. But, most of the EG systems have not advanced to the final stages of comprehensive system integration and active political participation. The advancement of EG operation requires the support from both objective and subjective environments. The former includes the improvement in technology research and development and the investment in human and financial capitals, while the latter has to with the nature of government reforms and the attitude of citizens and officials.

From the objective environment consideration, China is in a very good position for the EG development because of the rapid development of the IT industries in both hardware and software systems. On the hardware development, for example, China has become one of the major producers of desktop and laptop computers in the global market. For many years, Chinese IT industries have achieved high growth rates in software developments (e.g., Internet business services) and other related communication techniques (e.g., mobile phones).

The successful technology development is based on the investment and development of human and financial capitals. Recognizing the importance of IT development, many Chinese universities and technology institutions have emphasized their education, research, and training programs to develop and promote technology and Web expertise. Many talent college students passed the national competition examination and selected computer and IT related subjects as their academic majors. Other high quality engineering and business students have also selected IT related subjects as minor studies to support their career development. For many government organizations, they have included computer and IT skills as one of the required items in their employee training programs. The employees, especially young men and women, appreciate the opportunities for IT trainings because of the opportunities for better position, pay, and promotion opportunities, inside and outside the public sector. The support for human capital and technology development is strong in China.

Besides technology expertise and human capitals, the issue of adequate financial support is important for public organizations to promote the EG development. The financial support is required in purchasing, designing, and updating new equipments and software programs and also in providing trainings to employees about the technical skills and the cooperation attitude. Financial support has been a major challenge for many public organizations in their EG development experience.

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In China, the success of economic development for more than two decades has created a strong market to support the IT development. But, the challenge is the uneven development and resources among local governments and between different agencies. While the governments in the rich coast area may have financial resources to support the EG development, many governments in the poor interior region need to seek external support for their development. Similarly, some types of government agencies (e.g., taxation bureau) are in a better position than other departments in their funding support for the EG development. Considering their own situation, many local governments have to work with the national government to seek financial support from some international assistance organizations (e.g., United Nations Development Program). They may also work with domestic IT companies to develop the EG system to support the operation and development. Focusing on the huge Chinese market and the potential commercial interests, many foreign IT companies and management consultant groups are interested in providing technology, finance, and management resources to do businesses with Chinese governments.

EG development is also promising from the consideration of subjective attitudes among the officials and the citizens. First, Chinese leaders have emphasized scientific principles and approaches in their reform policies and strategies. They are especially interested in the application of new management philosophies and techniques in the reform because they are good tools to improve the operation without significant changes of the political system. The development of EG has been considered as one very good reform strategy as it involves scientific and technical advancement and has been emphasized in recent public management studies.

From the citizen perspective, Chinese employees and the general public have a positive and optimistic view about the EG. China is in the process of major transitions. In the transitional period, changes, large or small, are normal practices for Chinese officials and citizens. The officials and citizens have shown an open and welcome attitude in using modern IT techniques (e.g., mobile phones) in their business operation and daily life activities. They view these new technologies and related services as good opportunities for the improvement of their career development and quality of life.

Major Contributions

As explained previously, EG has been used as one of the major strategies to improve the management of public organizations. The improvement refers to the enhanced administrative efficiency through better operation and services among government agencies and easy communication and access to the services for the public. For Chinese public administration, the EG development will certainly improve the management of public organizations.

Chinese public administration has experienced two interrelated problems before the reform year and during the transition period: lack of efficiency and constant changes. The efficiency and change problems before the reform year resulted from negative consequences of the planned economic system and the political campaign and movements. During the transition period, the efficiency and change problems refer to the time and resources used in abolishing old practices, introducing new policies and programs, learning new operations and attitudes, and avoiding (or minimizing) confusions during the implementation stage.

The application of EG will enhance administrative efficiency because public managers will be able to check the daily operation and assure the required accountability based on the functions provided with new technologies. By using the EG, both citizens and public employees will be able to clarify many confusions and uncertainties associated with new policies and changes. The EG development is certainly valuable in promoting transparency and enhancing accountabilities to reform the examination and approval system and combat official corruption and unethical practices.

The contribution of EG to administrative efficiency is also based on the improvement of communication in public organization management. Through the EG development, public managers can promote good communication within their organizations, among different agencies, and between the government and the society. In China, good communication is especially important in the implementation of decentralization strategy and the development of public social management. For example, in the administration system, one of the challenge issues since the beginning of the reform has been the central-local relation and the competition among local governments. The application of EG can help the internal communication between the central and local governments in terms of clarifying new policies and programs and addressing new public issues/challenges (e.g., SARS). The recent emphasis on public social management will require good communication between different departments (e.g., education, health, social welfare) at all levels of government. For the external communication, the EG operation will assist public and business communities to understand policy changes regarding the removal of old requirements and the development of new regulations.

Moreover, it is important to recognize the potential contribution of EG in reducing the gap of administrative capacity among Chinese local governments. As explained previously, China has a huge administrative system and has experienced major disparities (i.e., economic, social and administrative aspects) between the Eastern (coastal) and the Western (inland) regions and between the urban and the rural areas since the economic reforms. Many governments in the Western or rural areas are falling behind in terms of local revenues, administrative operation, and social services.

The consequences of the gap will be the equity issue of digital divide as discussed previously. The disparity reduction will require huge investments in

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Western and rural regions in almost every aspect of public management. To avoid the situation of digital divide and to enhance the administrative capacity, many new investment policies have been developed and additional resources have been provided to assist these governments and communities. But, it is not easy and it takes time to reduce the gap in a short period of time. At the current situation, the EG development will offer some help for public managers in the poor region as they can easily learn new management ideas and seek crucial assistance from their counter parts in the rich region. The challenges for them are to seek financial and professional supports from all possible avenues (e.g., the central government, other local governments, domestics or international businesses) to develop their EG system. The EG development in the rural and poor region offers the opportunity to improve the effectiveness of public management on the one hand and to avoid the potential consequence of social inequalities on the other hand.

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Potential Challenges

Despite positive opportunities and contributions, Chinese EG development may face some challenges and limitations because of the nature of EG and the condition of Chinese society. EG is basically a technology-based management tool designed to improve the operation of public organizations. The successful development of EG depends on not only the support of technology, finance and human capitals, but also the influence of many organizational, social and political factors and conditions. For the Chinese society, the development of EG will be affected by the transitional nature of China's administrative culture, social values, and the political system. This section examines challenge issues in these areas.

From the management perspective, the application of EG will not be able to change the traditional culture of public organizations, especially the negative side of bureaucratic attitude and practices. Previous studies of EG have recognized such limitations and have emphasized the importance of attitude and culture trainings for employees. In China, the administrative system before the reform years has been criticized for many bureaucratic problems, such as unresponsiveness, lack of innovation, inefficiency, and corruption. During the reform years, the improvement of government operations and public management, especially those related to economic activities, is one of the major factors contributing to the success of Chinese economic development.

But, at the same time, some government agencies and public organizations have used the development and implementation of reform policies to create new rules and procedures (formal requirements or informal practices) to seek self interests for their leaders, employees and organizations. The results of these activities are such problems as agency protectionism and official corruptions. The protectionism will affect the development of EG if

government agencies do not want to share their data and other resources or if they have controlled and manipulated the distribution of the data and resources. The corruption issue results from many factors and requires a comprehensive approach and many strategies (e.g., legal, moral, and economic strategies) to combat corruption. The use of EG may be able to help public managers dealing with many symptoms of bureaucratic problems, but it will not resolve the fundamental problems of bureaucratic corruption and dysfunction. It is easy to introduce the EG in daily operation, but it will be difficult to change the traditional bureaucratic attitudes and agency culture in a short period of time.

Next, the development of EG will experience policy concerns such as digital divide (social inequity) and privacy protection (individual rights). While they are common issues to all nations and societies, these concerns are especially important to Chinese governments because of the transitional nature of the society. As explained, the digital divide issue may be serious to the Chinese society because of the increasing gap between the rich and the poor as well as between the developed Easter region and the underdeveloped Western region. The use of EG will certainly help citizens and governments in the rich region, but it also increases the competition among governments for limited resources.

On the privacy issue, the Chinese society has shown the increase of illegal activities and unethical practices since the beginning of the reforms. These social problems are related to not only new opportunities and incentives brought by economic reforms, but also the removal of old control mechanisms and the lack (or ineffectiveness) of new legal system. While the application of EG will enhance the government's ability to address these social problems, many groups or individuals with special resources and skills will use EG (and other related technologies) to check public records and invade citizen privacy for their self interests. Without a good supporting system, the development of EG may bring unintentional negative effects to the general public and business communities. The situation is especially critical in China as we have already seen many illegal and unethical problems related to commercial interests (e.g., intellectual property right violations).

The final challenge issue has to do with political implications of the EG development. Will the development of EG in China change the power structure of the Chinese administration system? The development of EG will provide an important opportunity and a required tool to promote citizen participation in the public policy making process. But, the question is whether such development will change the power structure of the Chinese political system. In China, the political system is still dominated by one major party and government agencies operate under the influence of the Chinese Communist Party. Major public policy decisions have been first identified and emphasized by party officials through the party system. After party decisions, the administration system will follow up to implement these policies and

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programs. During the implementation stage, we still see the influence and intervention of the party on many operational issues and activities. While the one-party dominated administrative system has some advantages of clear communication and operational efficiency (especially in dealing with emergency issues such as SARS), the system has resulted in many negative problems (e.g., corruptions) because of the total control of resources and distributions. The problems will be serious if the internal and external supervision and control mechanisms become weak and out of date.

Along with the development of economic reforms, the Chinese government has embraced many new ideas of public management (e.g., performance measurement, learning community) and has emphasized professional knowledge and approaches in dealing with new challenges (e.g., public health emergencies). The EG development will certainly make great contributions to the modernization of the Chinese administrative system.

The EG application, however, will not change the one-party dominated political environment and will be unable to address negative consequences of its influence in the short run. The potential impact of EG in promoting democracy and full political participation may be considered first within the party operation. In other words, if emphasized by party larders, the EG operation will be able to promote some participation among party members in the decision making process and limited participation in local election and policy activities. The final EG development for the full scare of citizen participation in major public policies issues will be based on the reform of the party system and the changes of legal, political and administrative systems.

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CONCLUSION

This article has reviewed major concept, management and policy issues in the EG development and has also analyzed the impact of EG development on the Chinese administrative system. The review showed that most of EG operations have not reached to the final stage of integration and participation; EG has improved public management in terms of easier and better services and communication and has contributed to the enhanced administrative and political accountability; and EG development has resulted in new concerns about digital divide, privacy and safety protection.

The analysis of China's EG operation has revealed many problems and challenges of the Chinese administration system and possible contributions and limitations of the EG application. One of the major contributions of the EG development is the increase of transparency and accountability and the improvement of communication for government operations. Through the EG development, Chinese citizens, businesses, and social groups are in a good position to access public programs and services, to monitor the operation of governments, and to enhance the administrative capacity among all local

governments. The EG development will be limited to the change of bureaucratic culture, equity and privacy problems, and political factors. Theses issues are related to the traditional problems of the Chinese system and the transitional nature of the Chinese society.

The study of Chinese EG development has provided a conceptual and theoretical framework to support further investment and research. On the investment part, EG presents a good opportunity for the Chinese government to improve the current administrative system and to address the challenge issues of reforming the administrative and examination system, combating bureaucratic corruptions, and improving the management of public and social affairs and organizations. On the research part, the literature about the EG development is still in its infant stage and many studies of the EG are based on subjective observations of EG operations. Future researchers need to apply objective data and quantitative and qualitative methods and consider a multidisciplinary approach to examine the full scale of EG intervention and impact.

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