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E-government: A Possible Solution to the Problems of the Agricultural Input Market in Bangladesh?

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Although e-government offers unique opportunities for streamlining good governance, there remains considerable skepticism about its applicability in developing countries due to their lack of required level of infrastructural, technological, legal and human development. This paper argues that developing countries can introduce e-government practices by re-engineering their existing infrastructure rather than waiting for massive investments and perfect technological advancements. Using Bangladesh- a developing country- as an exemplar, this paper assesses the applicability and prospects of e-government practices in dealing with the problems in the agricultural input sector which is predominantly associated with poor, marginalised and semi-illiterate farmers. The utilization of the Bangladesh case study has important implications for examining and highlighting the probable introduction of e-government practices in developing countries.

Key Words: Agriculture, Bangladesh, Developing countries, E-government

INTRODUCTION

E-government has been described as the second revolution following managerialism transforming the public sector work practices across both developed and developing nations (Criado, Hughes and Teicher, 2002:2) E-government has the potential to foster democracy, facilitate transparency, enhance participation and overcome inefficiency in many aspects of government (Scacco, 2003:28) These all have important implications for streamlining good governance – the lack of which is viewed as the most fundamental problem common to all developing countries. However there are also challenges of e-government i.e. the digital divide, privacy and security issues, blurring of responsibilities, which until now remain unresolved. The fact that e-government offers opportunities as well as challenges. It is increasingly becoming a public policy debate how to create an e-governance infrastructure. The main challenge for developing countries is to create a governance model to address these challenges and allow an informed and empowered society to evolve where important stakeholders can play role in a functional democracy to elevate poverty and improve public service delivery systems. E-government in developing countries should be viewed not as a solution to the serious structural problems of the public sector, but as a means of providing government services to the public in a more efficient manner. Structural reforms in the civil service must take place in developing countries. E-government will not immediately reduce
public sector expenses, but it can provide quantum boost in the efficiency in resource utilization, while other conventional cost-reduction reforms could fill the vacuum.

In this paper, Bangladesh— a developing country—is used as a case study to assess the potential of e-government in dealing with the problems in agriculture sector which centre on governance issues and information flow. Low levels of corporate social responsibility and inadequate information flow leading to sale of the contaminated\(^1\) agricultural inputs and decreased profitability of the farmers are among the major problems faced by the agricultural input market in Bangladesh. These problems which seem to be on a rise are not only overshadowing the positive impact of the market-based reforms undertaken in this sector but are also preventing the reforms from reaching their potential. The agricultural input sector which is predominantly associated with the farmers most of whom are poor and marginalised and not literate enough provide an extreme case of difficulties associated with the introduction of e-government practices. The utilization of the Bangladesh case study is therefore a useful basis for examining and highlighting the probable introduction of e-government in developing countries.

The first section of the paper commences with a definition of e-government and its applicability in agriculture sector in developing countries. The second section provides a brief account of the agriculture sector in Bangladesh and the market-based reforms that have led to a shift away from a state dominated agricultural input management system to an open market system followed by a review on the impact of the reforms highlighting the problems. The third section develops a conceptual e-government model based on existing facilities and needs of the farmers and analyses its applicability and potential to deal with the problems faced in the input sector. This is then

\(^1\) Recently, the sale of contaminated agricultural inputs has become quite common in Bangladesh. There are reports in local newspapers that dealers were selling contaminated agricultural inputs i.e. fertilizer mixed with cement granules, low quality seeds and pesticides (The Independent, 14-2-04). In addition, the incidence of providing less weight is not only common for agricultural inputs but almost in all the commodities
followed by the challenges of the implementation of the proposed e-government conceptual model and the conclusions of the study.

**E-GOVERNMENT: ITS APPLICABILITY IN AGRICULTURE SECTOR IN DEVELOPING COUNTRIES**

E-government involves the use of information and communications technologies (ICT) to transform government by making it more accessible, effective and accountable to citizens (Dempsey, 2003:22). E-governance however is not simply about technological or physical application for public affairs but about the way in which political and social power are organised, how the citizens interact with the government or influence the legislation or public sector processes (Kim, 2005:101). E-government not exclusively includes internet related services i.e. internet, intranet, extranet, databases, and wireless computing, it also has a non internet aspect that includes TV, radio based delivery of government services, fax, mobile and landline telephones.

In developed countries, information and communication technologies have transformed the agriculture sector. Most activities in the agricultural market place are now mediated by web-linked databases specifying prices, qualities, and quantities, enabling access of the farmers to credit, government programs, and technical assistance. This has been possible because of the advantage of having high literacy rates, developed transportation systems, readily available electricity, well functioning telecommunication system and easy access to IT system (Winrock International, 2003:10).

In contrast, the agriculture sector in developing countries has not been able to realize the benefits of ICT with the exception of a few countries. The agriculture sector employs nearly two-thirds of the labour force in low-income developing countries and is dominated by poor farmers with small fragmented lands, having comparatively limited involvement with markets, and limited access to information (Paul, Katz & Gallagher, and 2004:23). The lack of well developed transport systems and infrastructure facilities has made the middlemen almost indispensable in most of these countries as they compensate for the infrastructure gaps along the supply chain and therefore deprive the
farmers by making large profits themselves. In addition, in the absence of an effective regulatory framework and an unstable business environment, the privatisation of agricultural input services has sometimes been associated with the sale of contaminated, low quality, underweight inputs at higher price by the traders as reported in Bangladesh and discussed later.

Information and communication technology has the potential to address the problems of lack of market information flow and low levels of corporate social responsibility in the privatized input delivery system faced in the agriculture sector in developing countries. However, the inherent problems of developing countries in terms of tendency to continue old traditions, unreliable or non-existent power supplies, weak educational systems and unequal access to technology threaten their application. This explains why the developing countries have taken a limited number of e-government initiatives as compared to the developed countries. Heeks (2001:1) also argues that the valuable potential of e-governance in meeting good governance goals in developing countries remains largely untapped because of poor human, organizational and technological infrastructure and inappropriate approaches taken by donors, vendors and governments.

In order to be applicable and sustainable e-government in the developing world must accommodate certain unique conditions, needs and obstacles inherent to each country. Heeks (2001: 5) argues that, there is no ‘one best way’; each country must find its own ‘best way’ depending on their values, structures and infrastructures. As developing countries lack the required technological and infrastructural development, the non-internet aspect of e-government is more relevant and practical for them

**MARKET–BASED REFORMS IN BANGLADESH AGRICULTURE SECTOR**

Bangladesh is a developing country in South Asia in terms of a large population, low per capita income, and an agriculture dominated economy. As in other developing countries, the agriculture sector is vital not only for its overall economic development and food security, but also for stable
social and political conditions. Although the share of agriculture in GDP is gradually declining (40% in the 70s), agriculture still plays a very important role in the economic growth of the country in terms of its contribution to GDP (23% in 2003), foreign earnings (10%), employment (63%) and is also related to the development of other sectors of the country through input supply and demand linkages (Ministry of Finance, 2003:54).

The country has increasingly moved towards a market-based economy since the mid 1970s as a result of receiving assistance under structural adjustment programs of the World Bank and IMF. The reforms have been most pervasive in the agricultural input sector resulting in a shift away from a state dominated system to a privatized system. Until the agricultural reforms that started in the late 1970s, the Bangladesh Agricultural Development Corporation (BADC) —a state agency with branches all over the country— had the monopoly of sales and distribution of agricultural inputs i.e. fertilizer, irrigation equipments, pesticides and seeds to farmers. By the early 1990s, agricultural input delivery services had been privatized and these inputs are now being delivered to the farmers by private sector (Ahmed, 2000:49). The reform policies involved reductions in subsidies and increased private sector involvement in sales and distribution of agricultural inputs of through liberalization, deregulation and privatization.

**Review of the Reform Measures**

The reforms were undertaken with the aim to increase efficiency of the delivery system, increase access by farmers to inputs at a reasonable price, increased food production and decrease the budgetary burden of subsidy. It was expected that these benefits would ‘trickle down’ and lead to improved food security, crop sector profitability and socioeconomic conditions of the farmers. In Bangladesh, the reforms in the agriculture input sector have been successful to some extent in creating: the necessary platform of a market in terms of creation of the concept of market; some awareness among people to view the market as alternative service delivery mechanism; institutional changes; distribution networks; and the necessary infrastructure. The reforms have also led to increased agricultural production, improved food security and easy access to agricultural inputs.
Despite the natural calamities, which are a regular phenomenon adversely affecting agricultural production, Bangladesh has been successful in changing its state from a food deficit country to a country which is self-sufficient in food production in a span of less than three decades. Ahmed argues that without the market reforms, the country would have reverted to the historical situation of regular food crisis and high prices (Ahmed, 1995:126).

Although agricultural production has increased, studies have found that there has been no significant impact on socioeconomic conditions of the ‘very poor’ farmers (Bhattacharya and Titumir, 2001:89-92) This has been due to both lower prices for agricultural produce and the rise in the cost of agricultural production due to increased prices of agricultural inputs. This situation is made worse by the recent incidences of the sale of low quality inputs by private suppliers who do not accept responsibility for the social impact of their actions i.e. they demonstrate low levels of corporate social responsibility. These poor quality inputs not only decrease the yields but also affect the micro-nutrient component of the soil, adversely affecting the health of the soil and its productivity, leading to loss of soil fertility and biodiversity (SAPRIN, 2002:124). This in turn is having a significant adverse impact on agricultural yields, bringing into question the sustainability of the positive impact of the reforms.

In addition, lack of market information by the farmers on price trends, the poorly developed transport system, the existence of middlemen who help the farmers to sell their produces but also exploit both the farmers and the buyers by profiteering and the lack of awareness among the farmers of their rights are other factors that are creating an unfavorable system for the farmers, preventing them from realizing the benefits of increased production.
PROPOSED E-GOVERNMENT MODEL: ITS APPLICABILITY IN BANGLADESH AGRICULTURAL INPUT SECTOR

The low levels of corporate social responsibility practiced by suppliers, inadequate information flow in the input sector and the lack of awareness among the farmers of their rights are major problems preventing the reforms from achieving their potential and are also threatening the sustainability of the reforms. E-government has the potential to counter with all these problems. However, in common with other developing countries, the lack of technological, infrastructural, legal and human advancement in Bangladesh discussed below restrict the introduction of e-government and also pose challenges to successful implementation.

Bangladesh’s teledensity (telephone lines per 100 people) in terms of fixed line is about 0.70 percent and taking into account the mobile phones, the figure stands at little over one percent. This density is concentrated mostly in urban area, whereas 80 percent of the populations live in rural areas comprising more than 85,000 villages (Ahmed and Rahman, 2004:2) Although teledensity rates are one of the lowest in the world, access to telephones is increasing rapidly with the diffusion of mobile phone services. In terms of electricity, approximately 33% of the population has access to electricity with per capita commercial energy consumption being 144 kWh- among the lowest in the world (USAID,2004). Although the government has permitted private, independent power producers to enter the Bangladeshi market since 1996, the condition remains far from satisfactory. The rural literacy rate in Bangladesh has been estimated as 45.1% which means that more than half of the rural population is still illiterate (Bangladesh Bureau of Statistics, 2002:571). As in many developing countries, the legal environment is weak, legal procedures are slow, expensive and out of the reach of most people and enforcement of contracts has not been very easy.

Despite these shortcomings, waiting for massive investments in infrastructure and technological advancements seem to be impractical given the country’s poor access to resources. Instead Bangladesh can re-engineer and make use of its existing facilities- the mobile phone network and
non-internet related aspects of e-government. Because of the poor telecom and ICT facilities, e-government in this particular sector is proposed to be based on non internet aspects as, mobiles, TV and radio. The Pacific Council on International Policy (2002:16) also recommends that in developing countries where problems of low connectivity and human resource development (including low ICT literacy) are severe, creativity and careful planning can develop specific applications, services and information that can be delivered in a targeted, useful way to identifiable audiences. It is also argued that the emergence of very low cost wireless networks and access devices can help bridge infrastructure gaps in rural areas i.e. voicemail and voice recognition software can help bridge the literacy gap, enabling service delivery to and transactions with illiterate or semi-literate people (Prahald & Ham mond, 2003:16).

Due to the lack of availability of land-based networks in Bangladesh, mobile phone network has penetrated the villages, playing a vital role in establishing communication with the rural remote parts. The "Village Phone"\(^2\), an innovative concept developed jointly by Grameen Telecom & Grameen Bank-the village-based micro-finance organization, has been successfully providing mobile telecommunication services to the poor people in remote villages. Till now, the Grameen Phone project that started in March 1997 has been able to provide about 110,000 Village Phones, in some 44,000 villages around the country (Alauddin, 2005). The Village phones have proven to be extremely successful not only in linking the rural population with the rest of the world but are also having a positive socioeconomic impact in terms of generating jobs and income, allowing rural farmers to check prices and coordinate medical needs, and have also challenged the traditional power held by landowners and intermediaries over rural economies and power (Kenny, 2001: 1;

\(^2\) Under this project, Grameen Bank (GB) leases cellular mobile phones to successful members, generally a woman member. This 'phone lady' is responsible for extending the services to the customers for both incoming and outgoing calls, collection of call charges according to prescribed rates and proper maintenance of the telephone set. Grameen Bank provides necessary organizational & infra-structural support to Grameen Telecom towards selecting the Village Phone operators from amongst its members and also by collecting the phone bills (Baes, Braun and Akhter, 1999).
Alauddin, 2004: 4). Although some of the farmers are using mobile phone services for marketing their products, this is not being done in an integrated way.

Bangladesh needs to draw lessons from neighbouring developing countries. Many developing countries like India, Pakistan and Thailand, are using e-government practices in agriculture to provide farmers with a variety of information that include market prices, weather reports and farming best practices (Digital Dividend Analysis, 2004). India has successfully implemented several e-government projects e.g. Gyandoot, Drishtee in the villages of its different states for developing rural communication and development through intranet connected kiosks in villages where roughly 60% of the population live below the poverty line (Drishtee, 2000:4).

Bangladesh can start with a pilot project that can be created in line with the Indian models and based on their success (Bhatnagar 2006, Mishra, 2005 and Pathak, 2005). A pilot project can be replicated at district levels. With the existing mobile technology successfully introduced in Bangladesh and along with non internet aspects i.e. radio and TV, an e-government model is proposed in Fig-1. As the farmers in Bangladesh are not that literate and do not have access to electricity in most cases, a kiosk network- the most popular application of information technologies in developing countries-can be used to mediate access by the farmers to agriculture information.

Village kiosks can be set with joint collaboration between the government, private sector and NGOs. These kiosks, in addition to having mobile phones, radios and TVs, can have intranet services connected to the districts if they have access to electricity. In cases where internet services can be established these kiosks are proposed to be run by trained young villagers who can act as operators to assist users given the low rate of literacy in rural areas. The NGOs can assist the operator to buy a computer, the modem and printer through bank loans while the government can help them in providing the phone line. Villagers can be made to pay a nominal charge for each service according to a set price list which can serve as the salary of the operator. India is also using rural intranets in a similar way (Drishtee, 2000).
The service provided could include i). Commodity marketing information service i.e. prices, quality and quantity requirement in surrounding areas ii). extension services/advices, like use of pesticides, fertilizers, seeds, new technology, advice on farming best practices iii) weather information iv) services information— the availability of services in the area i.e. credit facilities, labor supply and demand and v). public grievances redressal regarding complaints for substandard inputs, crisis or price hikes of inputs. This would require the government to post the related information online and also update it regularly.

In cases where the internet does not seem to be feasible, mobile phones, radios and TVs can be used. All the above services can also be provided with the help of mobile phones. The government extension agents can be provided with mobile phones to ensure their contact with the farmers in times of need. Radio and TV can also introduce promotional and awareness programs more oriented towards the needs of the farmers in term of providing information on available services, extension services, after sales customer services, commodity marketing information and public grievances redressal.
Setting up a project like this could have multitude advantages. It would not only help the farmers to bypass intermediaries, deal directly with end users and get better sale prices of their products, it could also ensure their access to extension services regarding the use of inputs and new technologies. They can also get information on credit & other related services available in that area, file complaints for poor quality inputs, price hikes etc. The access to information about market conditions, available extension and other services, weather conditions, would all lead towards a more informed decision making and empowerment of the farmers. In addition, as the nature of the Bangladeshi society is collectivist, the farmers gathering in the kiosks could not only be informed
of the quality of the inputs and reputation of the dealers, market and other necessary information but this could also have an effect on improved law enforcement, more rapid and effective communication, creation of awareness and stronger kinship bonding. Ultimately all these would lead to a positive impact on the empowerment of farmers, on their socioeconomic conditions and also on decreasing corruption and low levels of CSR which are the main problem threatening the positive impact and the sustainability of market based reforms undertaken in this sector.

The existing mobile network, the radio and in some cases TV are already existing. Apart from the commitment from the government, what is needed is a planned coordination from the entire sector of governance i.e. government, businesses, and NGOs including the donors. However like any other changes, this might be not very easy to implement and there might be different challenges as described below.

CHALLENGES OF THE SUCCESSFUL IMPLEMENTATION OF THE E-GOVERNMENT-MODEL

There needs to be a strong vision and commitment from the government in implementing the model. According to Pacific Council on International Policy (2002: 16), “e-leadership”-is a prerequisite for any and all e-government objectives and e-leaders need to support e-government initiatives both with words actions, building political support across government, push for change and resources, publicly take “ownership” of the project and commit their time on a sustained basis.

In Bangladesh the government has already declared the IT sector as the thrust sector for the development of the economy and various government regimes till now have taken initiatives to promote IT with the emphasis on providing better services to citizens and increasing productivity (Hasan, 2002:117). Given the limited access to resources by the government this initiative needs to be implemented jointly with the private sector and NGOs. Also, international development agencies like WB and IMF can provide assistance to the government for the implementation of the initiative as a pilot project.
The idea of e-government may seem impractical in Bangladesh where more than 50% of the population is poor and 70% of this population live in rural areas—dependant on farming, semi-illiterate and not even connected to the electricity. However, the previous experiences of the Grameen Bank suggests that the poor in Bangladesh are very receptive, credit worthy and are capable of changing their lives if only they receive some assistance from whatever source. As a majority of the farmers in Bangladesh are poor and marginalized, having a low purchasing power and basic poor education, they assume that the government should be involved in all the activities and have no idea of alternate service delivery. There is a need to create awareness among the population to increase the acceptance of self-service models. Familiarizing the farmers with the concept of e-government may be a challenge but past experiences suggest that the collectivist and homogenous nature of the society can facilitate easy penetration of e-government technology once accepted and that businesses involving the poor are profitable. This is evident through the success of the Village phone model, in terms of its acceptance by the poor and generation of high revenues (Alauddin, 2004:5).

Kernaghan (2005: 124) argues that the culture in public organizations tends to focus on accountability upwards rather than on the horizontal thinking and commitment that are required for effective integrated service delivery. The Pacific Council on International Policy (2002: 17) also views the corporate culture within the government as an important aspect of e-readiness and observes that the level of resistance to change and the level of involvement by officials in setting policies and practices could greatly impact the success of the government process. Thus it remains a big challenge for the public sector organizations to change their culture and administrative procedures towards customer-oriented services, trust, shared commitments and also towards accountability.

Finally, in order to be successful the whole concept needs to be approached in an integrated way involving all the three spheres of governance i.e. the public, the private and the NGOs. The private
sector and the NGOs need to share much of the role of the state in providing training to the kiosk operators and farmers about e-government and its potentials and creating awareness among them.

CONCLUSION

Although the developing countries lack the necessary technological, infrastructural, legal and human capacities, the paper has argued that they can still introduce e-government practices by re-engineering the existing infrastructure rather than waiting for massive investments and perfect technological advancements. To be effective, e-government vision needs to differ between countries, reflecting their specific needs, aspiration and existing facilities. Using Bangladesh as an exemplar, the paper has developed a conceptual e-government model tailored to suit the needs of the rural characteristics of low level of illiteracy, low buying power, inadequate infrastructure, power and telecommunication. The proposed e-government model has the potential to revolutionize life in rural areas at minimum cost as it suits the needs of the rural people and is based on existing facilities. The private sector needs to take new responsibilities embracing e-solutions in the advent of new ICT initiatives in Bangladesh. The private sector can expand its e-coverage very fast day by day. On the other, the government sector can support community groups, civil society and other non-market initiatives to move forward to make the e-government model a reality. These initiatives might face bureaucratic resistance. Political leadership must take bold measures to undo any resistance for the success of any e-government initiative.

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