Model for E-Government in Bangladesh: A Unique ID Based Approach

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***Abstract*—With the swift progress of information and technology, the notion of e-Government and e-Society has occupied a substantial contour which is now acting as one of the main drivers to reform the prevailing society in different countries of the world. More and more governments around the world chase this phenomenon anticipating to lessen costs, develop services and upturn effectiveness and proficiency in the public sector which signify an ultimate change in the entire public sector structure, values and culture. Though for years e-Governance have boosted the living standard and economies of the developed countries, adoption of e-Government has remained impalpable in the third world countries like Bangladesh. Out of this fact identied, the paper proposes a model system which offers well-adjusted e-Government adoption benchmarks for Bangladesh which involves a blend of electronic and participatory services. The projected system is a generic model which can be replicated to embrace most of the third world countries given the resemblance in the contextual atmosphere. We have shown through our research that unique Citizen Identication Number (cid) based approach can fruitfully eliminate corruption from every level of government services and hence widen the track for the continuance of e-Government or e-Society with a nice feedback.**

***Index Terms*—e-Government, e-Service, e-Society, Citizen Identification Number**

I. INTRODUCTION

E-Government is a new trend in the information renaissance. It is about a drastic amendment within government and in the connection between a government and its citizens. The incredible progresses which are taking place in ICT and web sectors have deeply influenced our relationships with other personalities, with the business communal and more newly, with government. The e-Government paradigm emphasizes internal networking and external collaboration, by putting the full range of services that government agencies offer online so that the services can be easily reached to mass people [1],[2]. The term was nearly unknown even in scientific spheres merely a few years ago which now appears to advance explosively. At the moment, reforming the state without e-Government is not thinkable any more, both in theory and in exercise. Nevertheless, executing e-Government is not just a methodological matter. The implementation of e-Government is fenced by technological, political, cultural, organizational and social disputes which must be measured and treated sensibly to permit this renovation. Consequently, there is no common model for e-Government adoption which can be valid for all countries to ensure achievement. We have tried to study the social and technological trends of the third world countries and hence measured the e-readiness of those countries to adopt e-Government and e-Service. Our findings consequently lead to a model of e-Government in the context of Bangladesh which takes into account the technological progress of this region. We have suggested a unique citizen identification number (cid) for each citizen which will be used as a primary key to implement e-Government and e-Service. This paper illustrates how this model can be adopted in the perspective of technology based government system.

II. MEANING OF E-GOVERNMENT

The term e-Government involves diverse features and multiple extents, and no standard definition can be established from the rapidly rising number of publications on e-Government. Some experts have defined e-Government as digital administration and online services to citizens. Some used the term to denote electronic exchange, namely online communication. Whereas some thinks that at this stage in the evolution of a digital economy and society, too narrow a definition can constrain opportunity and too broad a definition dilutes its value as a rallying force [3]. Public Management principally perceives in e-Government the basis for new systems of communication and new scheme of association for public organizations and their participants. Hence, we can define e-Government as a form of organization which uses conversant information and communication technologies assimilating the connections and the interrelations among government and citizens, public institutions and customers. E-Government is a technology-driven transformation effort, which uses the public information database in order to make government more accessible, effective, and accountable to its citizenry [4]. According

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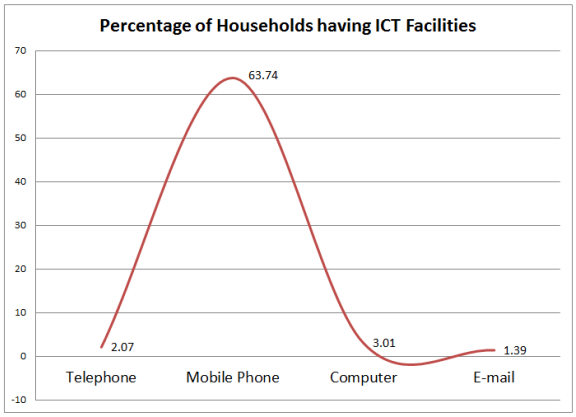

Fig. 1. Percentage of Households Having ICT Facilities [17]

to the World Bank website (2005), e-Government can be defined as: information technologiesthat have the ability to transform relations with citizens, businesses, and other arms of government[and] can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government managementbenefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions [5].

III. E-READINESS OF BANGLADESH

The level upto which a country is prepared to adopt e-Government inventiveness and accomplishments is denoted as e-readiness. There are many outfits in use for assessing e-readiness. These outfits make use of differing constraints that are categorized as infrastructure, access, applications and services, economy, use of the Internet, skills and human resources, e-business climate, pervasiveness (per capita usage), and so forth [6]. The implementation of e-Government mostly depends on the availability of the internet usage facilities. Due to the widespread of the mobile phone network throughout the country, internet facilities have gained a new dimension. However, there is also a satisfactory progress in the use of the broadband internet connection and wireless internet provided by different organizations due to its reliability and enhanced data transfer rate compared to the mobile phone internet. Household Income and Expenditure Survey, 2010 conducted by Bangladesh Bureau of Statistics shows that more than 63% of households were found to use mobile phones. The comparative study of the technology uses of the country can be seen from Figure 1.

IV. RELATED WORKS

The related works which have been done towards the implementation of e-Government in Bangladesh are quite insignificant. Many researches has been done in the context of Bangladesh. Sanaul has studied the respondents awareness about Public Websites and appearance of E-Government Websites in Bangladesh[7]. Jahangir has worked on present problems of e-Government and gave some possible suggestions for future development[8]. Zohurul et al. suggest that e-Government or Digital Bangladesh can be implemented at the grass root level government offices by practicing strategic human resource management, increasing IT infrastructure, minimizing the resource constraint and trained IT personnel[9]. Rokon focuses on the Policy and Regulatory Framework by Government Officials and not to duplicate e-governance endeavours by the private organizations[10]. Rizwan emphasizes on the role of Government and private initiatives as well as NGOs to implement e-Government policy and regulatory framework[11]. Noor recommends to follow the role model countries like Singapore, USA, EU countries etc to establish e-Government in Bangladesh[12]. While some other researchers have pointed out different challenges and demerits towards the adoption of e-Government in Bangladesh. Farhad concluded in his work that the accessibility of the e-Government can be confined to the minor portion of the city dwellers if the e-Government cannot be spread widely[13]. Some attempts are also taken in Bangladesh among which Electronic Voting Machine (EVM), Machine Readable Passport (MRP), Mobile Based Transaction, Online based Job Application, exemption of tax on Computer items, Computer education in schools, Computerization of government offices, Launching of websites of government offices, (e.g. gov.bd), Use of Computers at the sub-district level etc. are remarkable. The major IT projects those have been taken by the government are briefly discussed below-

Electronic Government Procurement (e-GP): conduct entire public procurement activity undertaken by the government online which was a partially successful project.

Electronic Voting Machine (EVM) : carry out the entire voting procedure electronically Successful Bangladesh Bank computerized a number of internal processes and launched an information-rich, dynamic website which was a successful project.

Machine Readable Passport: Transformed the passport into machine readable layout which was a successful project.

Ministry of Religious Affairs : launched an collaborative website for Hajis that comprehends services for searching Hajis & respective flight and for sending and receiving messages or death bulletins which was a successful project.

Department of Roads and Highways: launched website that includes topographies such as regional operations, related contact information, searchable database

of suppliers, tenders, and schedule of rates which was a successful project.

Rajshahi City Corporation: launched an Electronic Birth Registration System convoying with health and schooling services provided by the city which was a partially successful project.

Election Commission Secretariat: bring out a national project to produce a computer-based ID card for each registered voter which almost failed.

Ministry of Foreign Affairs (MOFA) : launched a website that comprehends searchable databases of Bangladeshi missions abroad and foreign embassies and missions in Bangladesh which was a partially successful project.

Ministry of Science and ICT (MOSICT) : deputized to provide vision, direction and facilitation to ICT-related events in the country which was partially successful attempt.

Parliament Secretariat: digitalized various important bills & ordinances, computerized Parliament Library, and created computer centres for Parliament which was partially successful.

V. ILLUSTRATION OF OUR MODEL SYSTEM

Our model system can be described from three view point :

1) Profile Creation
2) Profile Update
3) E-Government & E-Services using citizen database

- **Profile Creation :**
  Profile creation is the initial step of our system. There will be a citizen database for keeping the profile of every citizen of the country. Initially no profile will be associated with any one. After the birth of a child the midwife or nurse involved with the child birth will have to send a SMS request for registering the child with the database. The SMS should contain father cid, mother cid and place of birth. As soon as the SMS request is received, a unique cid will be generated for the newly born child and their parents will be notified through SMS. The parents should take their child to nearby birth registration center and provide necessary information for the childs profile. At that time a fingerprint scan of the child will be done which will be stored in the database. If all the necessary information are given correctly then a profile will be created for that child which will be used later on.
- **Profile Update :**
  The profile of a citizen will be updated time to time due to various reasons. In that case the cid will act as the primary key for insertion of data. The various reasons for which the profile of a citizen will be updated are stated below:

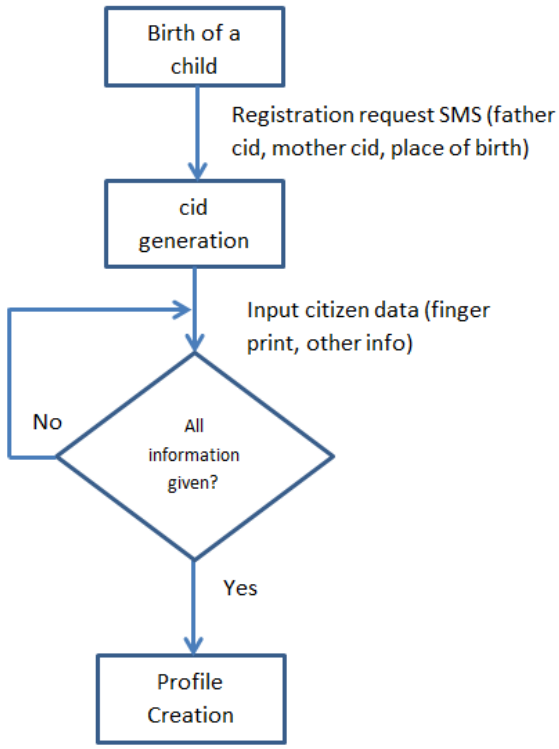

Fig. 2. Profile creation of a newborn child

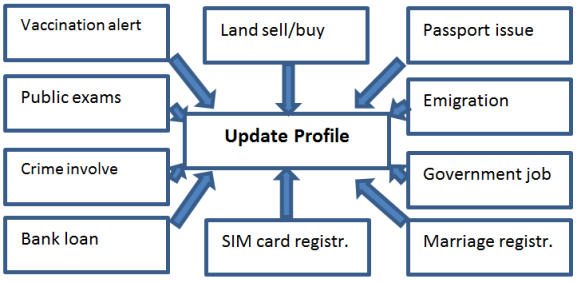

Fig. 3. Profile update

- **Vaccination update**
  The vaccination teams throughout the country will submit the cid of the children who have gone under the vaccination program and accordingly the corresponding profiles will be updated.
- **PSC, JSC, SSC, HSC registration and result publication:**
  During registration of public exams like Primary School Certificate (PSC), Junior School Certificate (JSC), Secondary School Certificate (SSC), Higher Secondary Certificate (HSC), the cids of the participating candidates will be submitted by the respective schools or colleges and the database will be updated. The database will also keep the record of the results of these public exams.
- **Involvement in a crime**
  If any citizen is involved in any punishable

crime and got a sentence for that then the cid of the corresponding citizen will be submitted by the jail authority. Accordingly the database will be updated.

- **Taking bank loan**
  During taking any loan from the bank, the profile will be checked whether the person has no previous loan and if none then the data regarding the loan will be send to the database. Data will be sent when a person clears ones loan. Accordingly the database will be updated.
- **SIM card registration**
  The cid of a person will be submitted during any new SIM card registration. The corresponding mobile number will be saved in the persons profile.
- **Land properties sell and buy**
  The data will be recorded in ones profile either he/she wants to sell his/her land property or buy some new one.
- **Passport issue**
  After the issuing of passport, the passport number of a citizen will be saved in his/her profile.
- **Emigration to other countries**
  If any citizen emigrates to other countries then the emigration data will be recorded in his/her profile using the cid.
- **Getting Government job**
  After getting any government job a persons database will keep the record of that.
- **Marriage registration**
  The profiles of the husband and wife will be updated after the registration of their marriage.
- **Death**
  After the death of any citizen the profile will be closed being notified by his/her relatives.

- **E-Government and E-Services Using Model System:**

  - **Vaccination alert**
    As our model records the data of every newborn child, we can easily find out the cid of the children eligible for vaccination within certain age range and notify their parents about the vaccination program. Thus the vaccination rate can be satisfactorily improved.
  - **Public exam result**
    The public exam results of the candidates can be notified to their parents through SMS using cid of the candidates.
  - **Public interaction**
    Government can convey any message regarding public awareness to the eligible group of people by simply finding out the cids of those people and sending SMS to them. Hence the Government can directly interact with the root level people and the fruitfulness of E-Government can be perceived.
  - **Crime control**
    Different types of crimes like threatening or demanding money through mobile phone, unwillingness to pay bank loan and other crimes can be controlled successfully by tracing the person using his/her cid.
  - **Statistical data**
    Many types of statistical data which requires months to collect can be find out within a fraction of a minute from the database. Government can run any query as per necessity just by accessing the database. For example, if anyone wants to find out the number of people within age range 18 to 25, he can just run a SQL query and the corresponding data can be obtained.
  - **Voter notification**
    When a citizen becomes 18 years old, he can be notified through SMS to complete his/her voter registration and become eligible for voting.
  - **Investigation by law enforcement agency**
    In any time the law enforcement agency can investigate any persons profile and find out the history of that person. As a result the actual information of any person cant be hidden.
  - **Employment circular**
    The Government can pass the circular of any employment vacancy through SMS to the eligible people. As a result efficient candidates can be find out very easily without much effort.

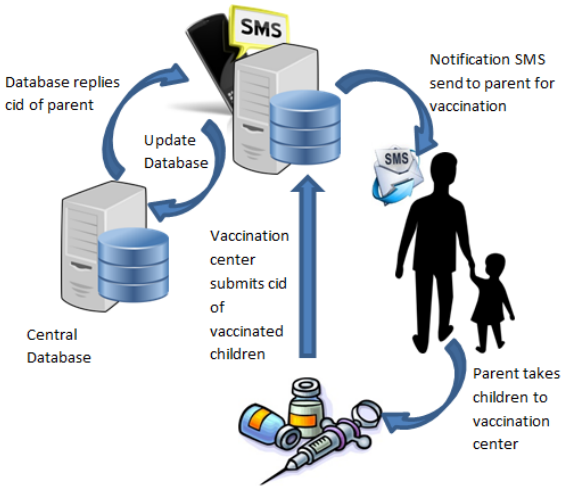

Fig. 4. e-Vaccination through SMS using cid

VI. CHALLENGES TOWARDS IMPLEMENTATION OF E-GOVERNMENT

Being exposed to poor IT infrastructure, lack of consistent and reliable electricity, telecommunications, and Internet access, lots of people in developing countries do not have access to information and communications technology, even if the arrangement exists. The Digital Divide is ever present, and there is a large gap between the educated elite who can afford technology, and the uneducated poor who cannot [14]. Jaeger asserted that an e-Government system would fail if the government did not take an active role in educating citizens about the value of e-Government[15]. E-Government would also miss the mark if the consumers did not have the skill to use the technology to support access of convenient information and services. This would lead to a low consumer involvement, as the system would not be equally reachable by all citizens. Another crucial factor for the failure of e-Government oriented projects is the budget failure. Many of the projects which are launched under the development budget through financial assistance from donor agencies face serious financial challenges once donor involvement ends. Another key factor for the failure of the long term projects is the political instability and the discontinuity. The life of the projects also ends with the change of the political power that is solely responsible for the failure of any development policy. Due to deficiency of customary means of developing related expertise lots of e-Government implementation projects undergo absence of skilled human resources. Only ICT skill progressions available for the civil servants are not adequate to tie the crack. Lack of executive insight and methodological savoir-faire to evaluate the cost-benefit scenario and failure to calculate financial sustainability of a project is also hindering the countrys e-governance objectives. The other societal traits that come under e-Governance challenges are privation of literacy and a feeble basic education standard; calibration of Bangla for official use; and the Brain Drain of ICT expert human assets from the government. Deficiency of central e-governance synchronizing and monitoring body to regulate the superiority of the e-governance projects persisted as a challenge in Bangladesh.

VII. FEASIBILITY AND PROSPECTS OF OUR MODEL

The executive motives behind the adoption of e-Government include restructuring the public sector, leading to more resourceful government administration with increased liability and transparency. There are many other ins and outs behind the adoption of e-Government. The recent rate of development of Bangladesh in e-Government readiness index and e-Government development index clearly support the feasibility of our model.

TABLE I
E-GOVERNMENT READINESS INDEX 2012 [16]

Rank	**Country**	**e-Governence readiness index**
1	Sweden	0.9157
4	USA	0.8644
6	Republic of Korea	0.8317
8	Australia	0.8108
10	UK	0.7872
95	Maldives	0.4491
101	Sri Lanka	0.4244
113	India	0.3814
122	Pakistan	0.3042
142	**Bangladesh**	**0.2936**
World Average		0.4514
Southern Asia Region Average		0.3395

About 70% of the people now uses mobile phones which can be seen as a most favorable ambient towards the adoption of our model system and hence promote the advancement towards e-Service based Government system. Current advancement towards the maintenance of large scale distributed database system and our extensive study in the context of Bangladesh show that the adoption of our model will lessen the current cost of Government activities. Nevertheless, our model will increase citizen involvement in political progressions, building reliance between citizens and their government by improving the governments appearance and conceivably facilitating self-governing features by enabling the direct interaction between citizens and Government. Furthermore, services can be more readily fetched to all citizens crosswise the country, particularly those with special necessities and the elderly by permitting citizens to obtain government information through a single doorway at any time and from any location equipped with mobile phone access. This can help diminish corruption and inhibit many (but not all) of the human inaccuracies that manual treating involves.

VIII. CONCLUSION

The model system we have presented has the prospective to afford a basis for e-Government at native community, and in so doing promote knowledge to an extensive range of approach and planning schemes. E-Government faces many encounters if the public sector is to utilize the potential of ICT in accompanying its business. Nevertheless, e-Government is a comparatively new research

planetary. As a consequence, its stages, definition, and requirements are all still exposed to argument. Regardless of the rapid implementation of e-Government, there is no worldwide model that can be functional in all countries. This is because each country has its own state of affairs which echo its environment, together with factors such as the economic, political, cultural and social schemes which might impact the embracing of e-Government in the mark country. The paper presented an impression of e-Government physiognomies, counting its definition, stages and the readiness of Bangladesh to adopt this. Our proposed model system is pragmatically a new concept in Bangladesh. Each country is distinctive in its circumstances and factors. Hence, the strategy makers and developers of e-Government projects must take into negotiation these impetuses to be mindful of the factors that might simplify or hamper e-Government adoption. This paper aided to bung up some gaps by providing comprehensions into the sensation of e-Government from the perspective of a third world country, Bangladesh, by means of a convincing study. Having identied the fundamental constrains the government needs design a policy to implement comprehensive strategies that address these imperative requirements.

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