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## **E-Business Models for use in e-Government for Developing Countries**

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**Abstract:** E-government is the use of ICT to transform government by making it more accessible, effective, efficient and accountable. This ranges from providing wider access to government information and promoting civic engagement to providing development opportunities. Following political commitment for reform, one of the important elements is availability of proper infrastructure including telecommunications infrastructure as well as legal framework. Another element is changing and improving the process in which the government interacts with the governed. In other words automation of existing processes. If these contributory elements are not reviewed properly inefficiencies and waste of resources will be the ultimate result of any e-government initiative. Therefore selecting and applying a suitable model for e-government implementation is essential. Another important issue is civic participation. There are number of barriers which keep citizens away from participating in electronic government. This is particularly evident in cases of developing countries. To overcome these barriers and identify participating elements of electronic government model it is possible to adapt electronic models from other businesses. The main objective of this paper is to examine the applicability of e-business models to e-government by identifying and evaluating those aspects that could be applicable to e-government, particularly focusing on applications for developing countries.

**Keywords:** Electronic business models, Electronic government, Developing countries

### **1. Introduction**

Electronic government as a theoretical construct is not properly defined. It can be considered as anything from the publication of government information online to any use of information and communication technology by the government. Number of approaches toward understanding electronic government has been presented (Whitson 2001, Layne2001, Gil-García 2005, Wimmer 2001, Zhou 2004 and Burno2002). These approaches can be may be categorize into at least three different groups to understanding e-government are presented in the literature.

Lanvin (2002) provides a visionary definition of the main characteristics and elements of e-government. According to this, e-government can be defined as the use of information and communication technology to transform government by making it more accessible, effective, efficient and accountable. E-government includes range of activities from providing greater access to government information and promoting civic engagement to providing development opportunities. Citizens, businesses and government agencies are benefiting from electronic government practice. Whitson et al (2001) have defined e-government as implementing cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online.

Second approach, originally presented by Wimmer (2001), explains different views on e-government in the progress of a public service development.

'Different Views' described as Cultural, societal and political view, Legal view, Process view, organizational view, user view knowledge view, security and privacy view and Technical view. This approach clarifies the concept of e-government by including progress of a publication service, abstraction layer and different views of stakeholders.

Third view is to identify the different applications of e-government as a way to explain this concept (Garcia, 2002). These applications include facilitating e-knowledge, e-service and e-governance (Zhou, 2004).

A fourth approach defines e-government by the help of different stages which appear in developing e-government, (Layne, 2001). These stages are cataloguing, transaction, vertical integration, and horizontal integration. This approach suggests that e-government is an evolutionary phenomenon and therefore e-government initiatives should be accordingly derived

and implemented in each stage. In each stage some challenges come to surface. Some of these challenges can be resolved by the help of specific electronic business model. There are number of challenges in deploying electronic government projects. Janssen (2006) considers creating an enterprise architecture which sets direction for future, ensures uptake of future initiatives and adapt and evolves when environment changes as key challenge for deployment of enterprise architecture in public sector.

In this paper first some of appropriate business models will be revised and after that a model is proposed for developing electronic government in developing countries. This model is extension of forth approach (as discussed above) to electronic government with consideration of specific issues in developing countries. In this model different stage of developing electronic government will be identified and in each stage, specific challenges will be brought into consideration. Applicability of each electronic business model in each stage is discussed individually. After discussions in each stage conclusion is derived at the end of paper.

## 2. E-Business Models

Jackson (2001) argues that *E- government is akin to e-commerce, but set within a multi-institutional and public setting with different expectations, financing and technological requirements* and Gordon (2004) states Business models are applicable to electronic government. When business model applies to electronic businesses can be named electronic business model. Gordon (2004) categorizes business models according to their features into number of different groups namely: Producer, Distributor, Aggregator, Market Maker and Infomediary. Adding “E” to business models offers number of advantages to standard business models which will be discussed in details in following section. And in final discussion, applicability of these models for addressing electronic government challenges in developing countries will be examined.

### 2.1 Producer Business Model

Producer model is a business model in which revenue is earned by selling service or product which is produced by producer itself.

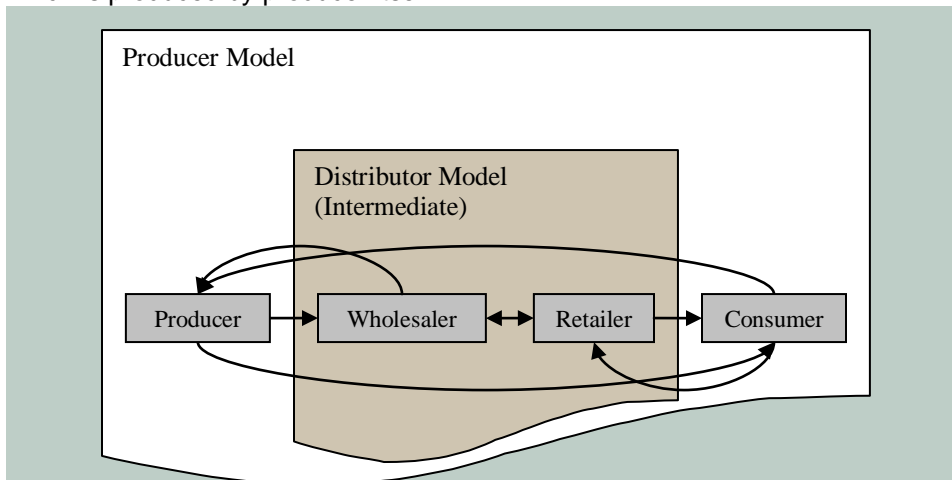


Figure1. Producer and Distributor business models

### 2.2 Distributor model:

Distributor is business model which buys products and services in bulk and sell them in smaller quantity. Going Online has changed the way in which this business performs. Since distributors major roll is acting as intermediate between producers and consumers and by going online producer can contact consumers directly. If distributors don't adapt with new situation they will go out of business. The main challenge which distributors are facing by going online is disintermediation. Disintermediation occurs when consumer are provided whit the chance to

communicate with producers directly. An example of distributor business online is Expedia which has survived the treat of disintermediation. Expedia provides its services by giving them more than just ticket and provides accommodation and other services to its customer. Expedia facilitates reintermediation by proving services which can not be obtained by buying ticket directly from airlines.

### 2.3 Aggregator model

Aggregator is a business that adds value by providing one stop shopping (Gordon 2004).In this model conductors buy services and products from different distributors and producers and selling them again in the market.

By taking aggregator model online, we can benefit from disintermediation in supply side which enables them to buy from suppliers directly. They can also optimize their inventory hence cut inventory costs in the case of providing physical goods.

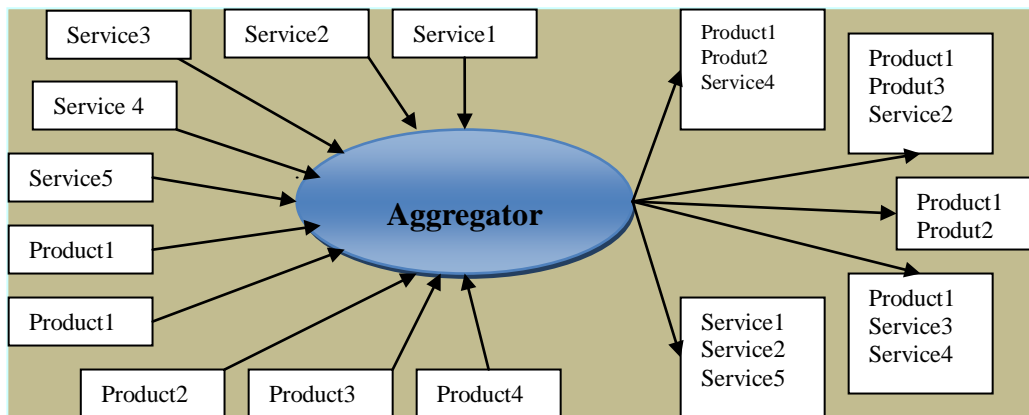


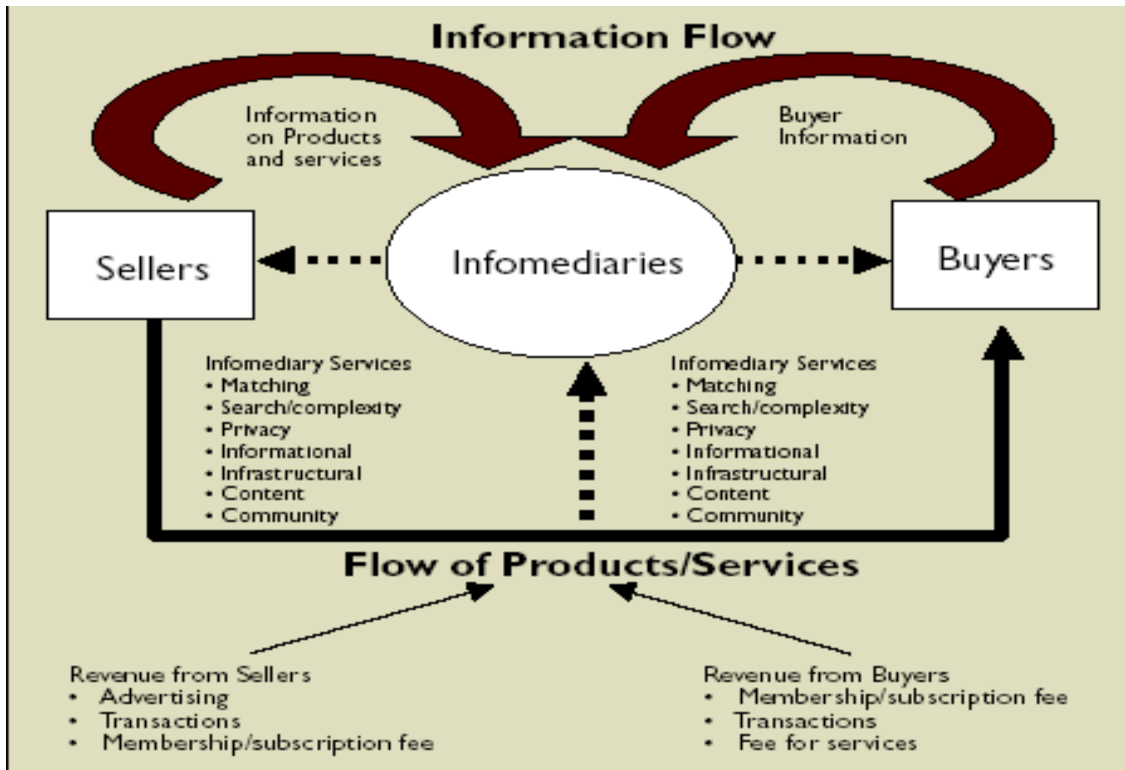
Figure2. Aggregator business model

### 2.4. Market Maker Business Model:

In this Business model revenue is earned by bringing together sellers and buyers. Generally market makers do not buy or sale, products or services and earn income by charging buyer or seller or both of them. B2B Exchange and Electronic Auction are two types of online market maker businesses. B2B Exchange brings specific industries or regions together to buy or sale from each other. Electronic Auction is an electronic business model which connects buyer and seller. Good example of this model is auctioneer eBay.

### 2.5 Infomediary Model:

Information is the most valuable aspect of any business. An infomediary is business in which conductor collect information and sell them for earning revenue. This information is about customers and their buying behaviour. Information can be analyzed properly and provided in ready to use format to buyers. Infomediaries try to get more and more users by introducing free software and free internet access. In this way infomediary can monitor its consumer habits and behaviour online. Following figure by Varun (2001) shows role of infomediary in flow of services and product between sellers and buyers.



**Figure3.** Infomediary Model – according Varun (2001)

### 3 E-government developments in developing countries:

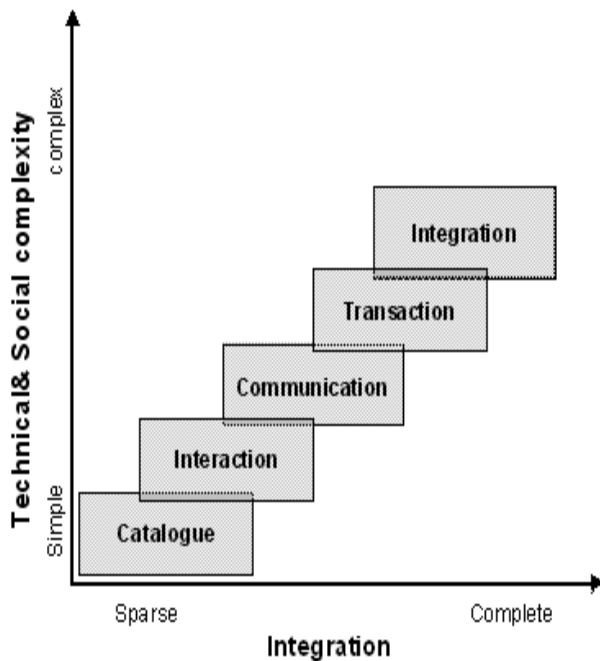
In any of the four different approaches discussed in the introduction section, e-government is about transforming government in its interaction with itself, businesses and citizens. Identifying the main elements of this transformation has great effect on the result of any electronic government projects.

E-government can improve efficiency, effectiveness and accountability of government by use of information and communication technology. Developing countries are facing more challenges in developing electronic government (Heeks 2004). In this section some of these challenges are discussed. Proper telecommunications and legal infrastructures, supported by the political will for reform, are essential for the success of any e-government project. E-government strategies in developing countries should first target the improvement of their operations and processes and also the level of a government's ability to cooperate. After preparation of such a platform developing functional electronic government systems can begin. The model proposed here addresses the need for this staged development and comprises the following five stages.

#### Cataloguing stage:

In this stage government puts some of its information online and tries to create an informational web site which enables citizens to find government information online.

By doing so government starts to get familiar with online business and starts training its staff to become e-literate. This informational presence of government helps citizens to find out what to do to obtain specific government services.



**Figure4.** Proposed E-government model for developing countries- adapted from Lanye (2001)

In this stage main technical challenge is management and designing information access for e-government. (Dawes 2004) presents array of consideration for designing information access. This array focused on the public policy goal of initiative, analyses problem and data management, organizational issues and users capabilities and requirements. Infomediary can contribute to this stage by analysing data and categorizing them accordingly. Data about citizens and their online behaviour can be used for citizen centered organization of government information. Infomediary can analyse and pass this data to government agencies in cataloguing stage. Changes in citizen behaviour in future stages of developing electronic government can be recorded and analysed by this business model. Government agencies can use this information for improving their services to e-government stakeholders.

**Interaction stage:**

Encouraging citizens to participate in electronic government development is vital factor in success of electronic government process. In first stage, government information has been provided online in specific formats. If citizens do not participate in this process, the whole concept of electronic government will be meaningless. On the other hand involving citizen in the process of developing electronic government will contribute to build public trust in government. Corruption, lack of transparency in government procedures and high level of bureaucracy in developing countries makes it more difficult to move forward in this stage (Lanvin 2002) Reengineering of governance processes must be considered by developers in this stage. To encourage citizen's participation, government has to overcome social and technological barriers. Showing citizen that their contributions and comments are effective and transparency in government procedures which makes it easier for citizens to understand these procedures are motivating factors. Another obstacle to complete this stage is overcoming digital divide. Bertot (2003) has reviewed two views on digital divide, first one is access point of view and second view is Economy divide in the society. Blanger (2006) has viewed digital divide as a distinction between those who have both the access and skills needed to take advantage of this technology, and those who do not. There are extra dimensions of digital divide in developing countries. In addition to issues of accessibility, economy and skill, the differences between developed and developing countries must be considered as another dimension of digital divide. These differences could be differences in skills (e.g. IT literacy), accessibility (e.g. Internet penetration) and social and economical difference.

Defining different aspects of digital divide and proper addressing of these aspects plays vital role in utilizing Information and communication technology in the society. This stage requires higher level of electronic capabilities and readiness. The Economist (2006) provides six categories for narrowing down digital divide. Connectivity & technology infrastructure, business environment, consumer and business adoption, Legal and policy environment, social and cultural environment and supporting e-services. Must need to be revised and maintained properly. Market Maker business model may contribute to this stage by brings together different stake holders. Market makers citizen participation

#### Communication stage:

In this stage government initiates its communication with citizens (G2C), businesses (G2B) and itself (G2G). Adding more features to informational websites is main technical challenge here. Communicating by electronic mail must be utilized in this stage. In this stage government puts downloadable forms online which can be filled by citizens before contacting government offices. These forms can be sending back to corresponding government offices by post or by person. In both cases it saves considerable amount of time and effort for citizens, businesses and government agencies. User feed back can improve quality of services in this stage. More visited web page can be tracked so more effort will be putted in specific arias. It is possible for different government agencies to track user visit to each web page and the time that they spend on each particular subject. This information is useful for improving quality of rang of services which government offers but at the same time it can be used for commercial purposes (selling information to third party). Main issue which arises here is privacy (Layne 2001). Reddick (2004) argues that this stage takes more time than it is planed. Explicit measures must be used to insure privacy protection in this stage. Experiences from Distributor models which help them to survive in online environment and facilitating reintermediation can be used in this stage for utilizing communication efficiently. For example increasing quantity and quality of services can encourage citizens to communicate with government online instead of contacting government agencies by person. In this way government, businesses and citizens realize the benefits of online communication.

#### Transaction stage:

In this stage each government agency provides full service to citizens and businesses. These services are limited to functionality of the specific government agency which has been contacted by citizens or businesses. For example, if citizen need to contact to more than one agency to obtain business license, they can't do it online. Renewing driving license, filling tax form online and paying tax online are examples of online transactions between government and other e-government stakeholders. Providing database management system to support online transaction and Installation of proper security mechanism are main technical challenges. Authorization and authentication issues also must be addressed in this stage. There is additional challenge in developing countries for conducting online transaction and providing direct link to government services. Changing and improving legal framework to be compatible with online transaction is necessary for this stage. This stage can benefit disintermediation as benefited by Producer electronic model. Users contact and transact directly by each agency directly and without any intermediation. Online transaction brings grate saving to users in term of time and cost.

#### Integration stage:

In this stage all government agencies will be integrated together and one main electronic government portal will be accessible for users. Users can obtain all government services online and through this portal. Layne (2001) categorize integration into two sub stages. First phase is vertical integration in which local systems will be connected to state government and federal government system in consequences and functionality of connected agencies are similar to each other. For example local judicial system will be connected to state judicial system and state judicial system is connected to federal judicial system. In this way record of any crime which has been committed in any state is accessible by other states judicial system. Another example is renewing driving license in different state than the state which has issued first license by

connecting police system all over the country. Second phase is connecting systems of different government agencies with different functionalities. Managing complex databases across different agencies and confidentiality of user information's are main challenges of this stage. Another challenge is managing consistency in format and user-interface from one agency to the next. The function of this stage is quite similar to Aggregator business model. As aggregator provides one stop shopping, Main function of this stage is deploying one stop government. . By completing this stage ultimate goal of electronic government in the country can be fulfilled and all stakeholders of electronic government can benefit from one stop government services. However aggregator model does not address the main challenge of this stage which is confidentiality. The correspondence between the stages of the proposed development model and the potential contribution of e-business model functionality is summarised in table 5 below.

e-government stage	challenges	Applicability of e-business model functionality
Cataloguing	Data management Designing information access Organizational issues	Infomediary analyses data
interaction	Citizen participation Trust Digital.divide(access,economy, skill)	Market Maker : Brings together different stake holders
communication	Technical challenge privacy	Distributor: reintermediation
transaction	Authentication and authorization Secure transaction	Producer: disintermediation
integration	Complex Technical challenge For one stop shopping confidentiality	Aggregator :one stop shopping

**Figure 5.** Correspondence of e-business models to e-government developing stages

#### 4. Conclusion

There are a number of similarities and differences between government business and other conventional businesses. The main difference between these two is that, the nature of relationship between government and its citizens is different as compared to the relationship between other businesses to their customers. As the review of e-business models and electronic government development stages shows, the functional similarities between each stage of e-government and different e-business models are apparent. Considering the fact that electronic businesses are more agile as compared to government services and departments and move evolve more quickly, some of the challenges of developing electronic government in developing countries can be addressed by the approaches that have been taken by different electronic business models.

Electronic business models may not be able to directly contribute in addressing all challenges in each stage of the e-government development model reviewed here, but they can contribute in addressing some of the difficulties and challenges in each stage. This work is ongoing and the potential link of e-business models to e-government developments is being further explored with specific applications in Iran.

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