ELSEVIER

A framework for pricing government e-services

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Abstract

Governments are in the early stages of providing constituents with information and services online over the Internet. E-government service decisions should be rooted in solid finance principles, such as efficiency, equity and revenue adequacy. Pricing decisions should be tailored to meet the demands of particular constituent groups and the revenue needs of government. By so doing, governments can more quickly and broadly expand online service delivery and increase the net benefits to stakeholders. By segmenting e-services into government-to-citizen (G2C) and government-to-business (G2B) transactions and applying different pricing schedules for e-services with different demand elasticity's, governments can increase overall consumer surplus, while generating additional revenue.
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1. A framework for pricing government e-services

Most state and local governments in the United States of America have completed the first stage of e-government by enabling constituents to search for, view and download information over the Internet. Now governments are developing the next stage of e-government by establishing the electronic service (e-service) infrastructure and organizational capacity for constituents to transact official business online. E-government research has now expanded to include the financial management dimensions of paying for and delivering online services [6,10]. One area of controversy left unexplored is the additional price often charged to constituents – usually referred to as a "convenience fee" – for engaging in a service transaction over the Internet. Governments are struggling to come up with pricing models that: (1) generate enough revenue to finance the capital and operating costs of providing information and services online; (2) constituents perceive as fair; and (3) provide incentives for constituents to use e-services reg-

ularly and adopt as a preferred method of receiving information and services.

This paper seeks to further our understanding of government e-services by using a finance framework to analyze the pricing of government online services. This decision-making framework expands e-commerce models to include the field of public finance, which involves the economics of financing government expenditures. Government officials can use this comprehensive finance framework to develop and price a bundle of e-services that increases overall consumer surplus, as well as enhances revenue. We begin by providing some background on the e-services currently being provided by governments over the Internet. We then develop some of the important theoretical aspects of a framework for understanding the pricing of government e-service, and analyze specific e-commerce pricing strategies that are being applied to government e-service. Finally, we conclude by discussing some implications for the future of e-government service.

2. E-government online services

All levels of government now provide a variety of online services to citizens (G2C) and businesses (G2B). Both G2B

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and G2C services involve opening up new distribution channels for traditional services, and the creation of new, information-related, services. In recent studies of government online services [2,16,17] the most frequently reported G2C online service by state governments involves motor vehicle agency services – vehicle registration renewal, acquiring specialty plates, and driver's license renewal. Many states also provide licenses online for hunting and fishing, real estate, and other professional occupations. Other frequently provided on-line services include state park reservations and personal income tax filing. Local governments have initially focused on enabling the online payment of parking tickets, traffic violations, and utility bills.

Governments also provide many G2B added value services. States have traditionally sold motor vehicle records to businesses such as insurance companies, but the new information technologies make the process much more efficient. Now states are providing e-services involving searching records and generating reports for driver's records, vehicle titles, liens, and registrations, and business organization information such as certificates of existence. Other business services include Uniform Commercial Code (UCC) filings and searches, tax payments, business registration, and license verification. While the array of e-services currently offered is growing, governments are only in the beginning stages of using the Internet for the benefit of their constituents. Indeed most web sites, 56%, currently provide no services at all [15].

3. G2B versus G2C services: different price elasticities of demand

While upfront capital costs are the same and operating cost structures are similar, the government services offered to businesses (G2B) and those offered to citizens (G2C) form distinct market segments, which likely have different demand functions and different price elasticities of demand.[1] Though price elasticity of demand inevitably varies across the broad spectrum of G2B e-services, in general it is reasonable to assume that G2B services are less price elastic than G2C services.

For certain lines of business G2B services are essential inputs into the process of making money. G2B services may be essential to a business operation because certain types of information may be available only in official government records, like property or drivers' records, and there may be few, if any, substitutes for such official information. Such information is an essential input and the cost savings from purchasing the information online in an electronic, user-friendly format increases the demand for the service. Moreover, the monetary value of e-services to businesses is tangible and quantifiable, since the savings from

transacting business online rather than onsite or over the telephone has direct monetary value in a business environment, and businesses often purchase government information to resell at a profit. Also, business organizations have a better technological infrastructure, and business users have a more sophisticated knowledge of computer technologies than the average citizen. Businesses have a greater ability and willingness to pay for services that are comparable to G2C services in terms of production costs.

Substantial direct benefits from G2C services may simply not be as tangible and identifiable for individual consumers. In these early stages of e-government, web portal navigation may be cumbersome and online service fragmented, uncustomized and generally difficult to use. In addition, the demand for G2C services will likely remain elastic as long as governments maintain other channels for citizens to conduct service transactions, keeping open at least a few motor vehicle offices, for example. There is anecdotal evidence that G2C online motor vehicle registration renewals are price elastic. In Arizona, for example, adoption rates skyrocketed for online vehicle registration renewals once the $6.95 charge was eliminated in 1998 [8]. Therefore, it is reasonable to assume that for a given change in price, in general, demand changes more for G2C service than for G2B service.[2] As a result, of the different demand structures, differential pricing structures are appropriate for G2B and G2C commerce.

3.1. Graphical intuition of G2C and G2B services and consumer surplus

Consumer surplus is commonly used to evaluate public investment projects and provides a useful framework for guiding G2C and G2B pricing decisions. Consumer surplus is the difference between what a consumer is willing to pay versus what they actually pay. A useful pricing strategy for maximizing consumer surplus for taxes and user prices is the inverse elasticity, or Ramsey rule. The Ramsey rule, developed by Frank P. Ramsey [9], states that in order to reduce total excess burden in taxation, the percent reduction in the quantity demanded of each good from taxation must be equal. This results in the inverse elasticity rule where total excess burden is minimized where tax rates on goods are set inversely proportional to their price elasticities of demand.[3]

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[1] After an extensive search, I can find no published empirical study that has analyzed the price elasticity of demand of a government e-service.

[2] While this paper compares the general demand for G2C services versus G2B services, demand for G2C services may vary across different sub-populations. For example, citizens in rural communities may have farther to travel for some essential government services, and therefore, may have a greater demand for such services offered over the Internet than citizens in urban areas. Therefore, demand functions for specific G2C service sub-populations should be estimated and used to inform e-government decisions when appropriate. Ultimately, the precise price elasticity of demand estimates for different e-services and stakeholder groups is a matter for future empirical research.

[3] For an updated treatment of the Ramsey rule, see Sandmo [11].