

E-GOVERNEMENT-TO-BUSINESS SERVICE QUALITY AND USER SATISFACTION: AN ASSESSMENT OF THE U.S. STATE G2B WEB PORTALS

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ABSTRACT

This study assessed the e-government-to-business (G2B) service quality and user satisfaction of the 50 U.S. states and Washington, D.C. The findings indicate that only the following five e-services were offered by most G2B portals with effective information, navigation, interactive, transactional, and intelligent capacities: (a) Business Licenses, Permits, and Regulations, (b) Business Taxes and Reporting, (c) Doing Business with the State, (d) Employment and Workforce Information, and (e) How to Start a New Business. The majority of the online users were satisfied with the state G2B services. The findings also identified areas that need improvement.

Keywords: e-Government-to-business (G2B) services, characteristics, quality, and user satisfaction

INTRODUCTION

With the advancement of Internet and Web technologies, e-government sites have been evolving from the pure information-sharing phase to interactive, transactional, intelligent or integration phases for better serving the constituencies. As the recent research indicated, from 2000 through 2005, there was a dramatic increase in offering sophisticated e-government functionalities at county and municipal levels in the U.S. (2). In 2006, all of the U.S. state e-government sites already evolved into interactive, transactional, or intelligent phases, with 76% in the transactional phase and 8% at the intelligent or integration stage (13).

Among all the e-government services, e-government-to-business (G2B) service was offered by most (94%) state governments in the U.S. (13). The state G2B portal was viewed as a key strategy for enabling businesses to easily find the information or service they need and to complete business transactions electronically, thereby strengthening the state economic competitiveness (e.g., 8). However, no assessment of the G2B service scope and quality of

all the U.S. state governments has been identified in the literature. This gap suggests a need for the research.

To assess the state G2B service scope, quality, and use satisfaction, we raised the following research questions:

1. What are the main characteristics of state G2B portals' main pages?
2. How is the quality of state G2B services?
3. How do the affluent states differ from the less-affluent ones in offering G2B services?
4. How is the user satisfaction of state G2B services?

METHODOLOGY

The population of this study was the official G2B portals of the 50 U.S. states and Washington, D.C. These 51 portals were all used in the study according to the sample-size requirement (4). Content analysis is commonly used in assessing organizations' Web contents, deliveries, and strategies (e.g., 2, 3, 10, 12, 13). We used this method for systematically and objectively recording the service characteristics, availabilities, and capacities of the state G2B service portals. The G2B service quality was assessed on the basis of its availability and capacity. The capacity measures indicates the degree of effectiveness in (a) content information, (b) Web navigation, (c) interactive service, (d) transactional service, and (e) intelligent or integration service (e.g., 2, 5, 6, 7, 13).

Based on the findings of the content analysis, we developed an instrument for online users to evaluate the effectiveness of the G2B services and to report user satisfaction. A four-point, Likert-type scale was used to measure the service effectiveness, with 1 = *not effective*, 2 = *less effective*, 3 = *effective*, and 4 = *very effective*. Three hundred and six business students at a Midwestern state university participated in this study in October 2006 as an experiential-assessment exercise when learning business communication and Internet technology. The participating students were randomly assigned to the

51 G2B portals for the exercise. The students understood that their participation in the study would be anonymous and not have an impact on their course grade, which was required by the university Institutional Review Board protocol.

Each of the 306 completed questionnaires was edited and coded. Frequency counts, percentage distributions, means, standard deviations, and weighted means were prepared. In analyzing the data, the midpoints of each scale range (the real outer limits) were used in determining effectiveness levels for each e-service feature; that is, weighted mean responses of 1.0~1.4 = *not effective*, 1.5~2.4 = *less effective*, 2.5~3.4 = *effective*, and 3.5~4.0 = *very effective*. The independent t-test was employed to identify if any significant difference existed between affluent states and less-affluent ones in offering G2B services, because a previous research reported that economically affluent counties offered better e-government sites than did the less-affluent ones (10).

RESULTS

Research Question 1 asked, "What are the main characteristics of state G2B portals' homepages?" As Table 1 shows, 90% of the 51 G2B homepages had a loading speed of around one second and 88% of the homepages were about one-screen long. Regarding the G2B service links, a majority of the G2B homepages offered these five: Business Licenses, Permits, and Regulations (92%), Business Taxes and Reporting (92%), Doing Business with the State (90%), Employment and Workforce Information (84%), and How to Start a New Business (80%). However, only a minority of the G2B homepages provided the following 13 e-service links: State Government Offices or Agencies for Business (43%), Agriculture and Farming business (41%), How to Finance a Business (41%), State Environmental Requirements (39%), Small Business Information and Assistance (37%), State Tax Incentives and Application Forms (35%), Business Facts and Figures of the State (33%), Helping Businesses Succeed (18%), Minority and Women-Owned Businesses (18%), Business Opportunities (18%), Not-for-Profit Organizations (16%), Business Owner's Guide to State Government (16%), and How to File Complaints (8%).

[Insert Table 1 about here]

Research Question 2 asked, "How is the quality of state G2B services?" Table 2 illustrates the G2B service availability frequency and quality measures in five categories of Web capacities: content

information, Web navigation, interactive service, transaction service, and intelligent service. A majority of the G2B sites offered the following five e-services in full capacities: (a) Business Licenses, Permits, and Regulations; (b) Business Taxes and Reporting; (c) Doing Business with the State; (d) Employment and Workforce Information; and (e) How to Start a New Business. The weighted means of capacity measures indicated that these five G2B services were rated as *effective* or *very effective* in all five categories of capacity measures (ranging from 3.1 to 3.7 on a 4-point scale).

[Insert Table 2 about here]

In contrast, only a minority of the G2B portals offered other 13 types of e-services, with just a few having transactional and intelligent capacities (see Table 2). The capacity measures indicated that these 13 less-available e-services were rated as being from the borderline of *effective* (2.5) to the borderline of *very effective* (3.5) in most categories. Only the e-services of How to Finance a Business and Business Owner's Guide to State Government were rated as *less effective* in the transactional and intelligent capacities.

Research Question 3 asked, "How do the affluent states differ from the less-affluent ones in offering G2B services?" As Table 3 shows, significant differences existed between the affluent states and less-affluent ones in only eight types of e-services. Group 1 (less-affluent states) offered significantly better e-services than Group 2 (affluent states) in the following four types: State Government Offices/Agencies for Business, Agriculture and Farming Business, Business Facts and Figures of State, and Small Business Information and Assistance. By contrast, Group 2 provided significantly better e-services than Group 1 in these four types: State Environmental Requirements, How to File Complaints, Doing business with State, and Minority and Women-Owned Businesses.

[Insert Table 3 about here]

Research Question 4 asked, "How is the user satisfaction of state G2B services?" Among the 306 online users, 68% reported having overall satisfactory experience in evaluating the G2B services. Most participants had convenience when navigating the G2B services (86%) and also reported to continue using the G2B services (83%). Moreover, 87% indicated that they would recommend their friends and relatives to use the state G2B services.

CONCLUSIONS AND RECOMMENDATIONS

Around 90% of the state G2B homepages were designed with approximately one screen for page length and one second for page-loading time. This design approach is in line with the homepage design principle of providing a complete picture of what the site is all about on the first screen, or at least by the second, because Web visitors form their first impression of a Web site within just the first few seconds of clicking on (e.g., 1, 11). Most of the state G2B portals offered the following five e-services with effective information, navigation, interactive, transactional, and intelligent capacities: (a) Business Licenses, Permits, and Regulations, (b) Business Taxes and Reporting, (c) Doing Business with the State, (d) Employment and Workforce Information, and (e) How to Start a New Business.

However, the findings have identified some weaknesses that need improvement. For instance, only a minority of the state G2B portals provided other types of e-services, such as State Environmental Requirements, Small Business Information and Assistance, Minority and Women-Owned Businesses, and How to File Complaints. Among these less available e-services, just a few had advanced transactional and intelligent capacities. Obviously, a continuous improvement of these e-services is needed among the states currently offering such e-services without transactional and intelligent capacities since such e-services also play important roles in enhancing the state economic competitiveness (8, 9). Furthermore, for those G2B portals that failed to offer such e-services, the portal administrators should consider a needs assessment to determine which additional G2B services are needed by their business users. Otherwise, these states might lose their competitiveness in this Internet/Web-based global economy.

Significant differences existed between economically affluent and less-affluent states in offering some types of e-services. While affluent states did better than the less-affluent states did in some e-services, the less-affluent ones did better than their counterparts in other e-services. Therefore, this finding does not support the finding of a previous study at the county level that the per capita personal income correlated significantly with the e-government involvement (10). The differences, however, provide the state G2B portal administrators and developers with opportunities to learn from one another for continuously improving their G2B services.

Overall, the majority of the online users was satisfied with the state G2B services and would continue using the G2B services as well as recommending them to their friends and relatives. This finding implies that more and more business users will use G2B services and the state G2B portal administrators and developers need to take proactive actions and be ready to welcome a growing big wave of G2B users.

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Table 1
Characteristics of State E-Government-to-Business Web Homepages (N=51)

Main Characteristics	Frequency	Percentage
G2B Homepage Loading Time \approx 1 Second	46	90%
G2B Homepage Length \approx 1 Screen	45	88%
G2B Service Links		
1. Business Licenses, Permits, & Regulations	47	92%
2. Business Taxes and Reporting	47	92%
3. Doing business with the State (Contracts)	46	90%
4. Employment and Workforce Information	43	84%
5. How to Start a New Business	41	80%
6. State Government Offices or Agencies for Business	22	43%
7. Agriculture and Farming Business	21	41%
8. How to Finance a Business	21	41%
9. State Environmental Requirements	20	39%
10. Small Business Information and Assistance	19	37%
11. State Tax Incentives and Application Forms	18	35%
12. Business Facts and Figures of the State	17	33%
13. Helping Businesses Succeed	9	18%
14. Minority and Women-Owned Businesses	9	18%
15. Business Opportunities	9	18%
16. Not-For-Profit Organizations	8	16%
17. Business Owner's Guide to State Government	8	16%
18. How to File Complaints	4	8%

Table 2
Availability and Capacity of State E-Government-to-Business Services

Types of G2B Services	Availability Frequency and Capacity Measures									
	Content Information		Web Navigation		Interactive Service		Transaction Service		Intelligent Service	
	<i>f</i>	<i>M</i> ^a	<i>f</i>	<i>M</i>	<i>f</i>	<i>M</i>	<i>f</i>	<i>M</i>	<i>f</i>	<i>M</i>
Business Licenses, Permits, Regulations	47	3.5	47	3.5	47	3.4	32	3.3	32	3.4
Doing business with the State (Contracts)	47	3.5	47	3.3	44	3.4	32	3.1	26	3.2
Business Taxes and Reporting	46	3.7	46	3.5	46	3.6	41	3.5	28	3.3
Employment/Workforce Information	43	3.6	43	3.4	43	3.3	28	3.2	26	3.2
How to Start a New Business	41	3.5	41	3.6	41	3.4	32	3.3	27	3.3
State Gov. Offices or Agencies for Business	22	3.3	22	3.5	22	3.2	7	2.8	5	2.5
Agriculture and Farming Business	21	3.6	21	3.4	19	3.4	15	2.7	15	2.5
How to Finance a Business	21	3.3	21	3.1	21	3.2	13	2.3	11	2.4
State Environmental Requirements	20	3.6	20	3.4	20	3.3	11	3.4	7	2.9
Small Business Info and Assistance	19	3.3	19	3.1	19	3.2	12	3.1	10	3.1
State Tax Incentives and Application Forms	18	3.3	18	3.1	18	3.3	15	2.9	11	2.8
Business Facts and Figures of the State	17	3.6	17	3.4	14	3.3	9	3.2	8	3.3
Helping Businesses Succeed	9	3.1	9	3.2	9	3.1	4	2.9	4	3.0
Minority and Women-Owned Businesses	9	2.9	9	3.3	9	3.4	7	2.7	5	2.7
Business Opportunities	9	2.9	9	3.1	7	3.2	4	3.5	4	2.5
Not-for-Profit Organizations	8	3.3	8	3.1	8	3.4	6	3.5	4	3.3
Business Owner's Guide to State Government	8	3.4	8	3.0	6	3.1	6	2.4	4	2.4
How to File Complaints	4	3.6	4	3.6	4	3.6	4	3.5	2	3.5

^a The weighted mean used a 4-point scale, where 4 = *very effective*, 3 = *effective*, 2 = *less effective*, and 1 = *not effective*.

Table 3
Comparison of G2B Services Between Affluent and Less-Affluent States

Types of G2B Services	Group ^a	N	Mean	Std. Deviation	Mean Difference	t	Df	Sig. (2-tailed)																																																																																						
State Government Offices/Agencies for Business	1	25	0.54	0.500	0.226	4.091	49	0.000**																																																																																						
	2	26	0.31	0.466					Agriculture and Farming Business	1	25	0.49	0.501	0.153	2.753	49	0.006*	2	26	0.33	0.473	Business Facts and Figures of State	1	25	0.39	0.490	0.131	2.449	49	0.015*	2	26	0.26	0.442	Small Business Info and Assistance	1	25	0.44	0.498	0.132	2.408	49	0.017*	2	26	0.31	0.463	State Environmental Requirements	1	25	0.30	0.460	-0.168	-3.053	49	0.002**	2	26	0.47	0.501	How to File Complaints	1	25	0.05	0.212	-0.082	-2.532	49	0.012*	2	26	0.13	0.335	Doing business with State (Contracts)	1	25	0.88	0.326	-0.075	-2.413	49	0.016*	2	26	0.96	0.208	Minority/Women-Owned Businesses	1	25	0.13	0.341	-0.097	-2.214	49
Agriculture and Farming Business	1	25	0.49	0.501	0.153	2.753	49	0.006*																																																																																						
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^a Group 1 consists of states with the state per capita personal income below the national median and Group 2 includes states with the state per capita personal income above or equal to the national median.

*Difference significant; $p < .05$. ** Difference significant; $p < .005$.