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AN ADAPTATION OF THE BALANCED SCORECARD FOR E-GOVERNMENT SERVICE DELIVERY: A CONTENT ANALYSIS

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Abstract

E-government service delivery performance has been discussed in literature as a way governments use information technologies (IT) to deliver valuable services to their citizens at a lower cost. This paper examines the effectiveness of website-supported Balanced Scorecard's four dimensions (innovation and learning, internal process, veteran value proposition, and financial) in improving e-government service delivery performance. The study used content analysis to analyze the data obtained from a sample of 19 county veteran service officers (CVSOs) to test the hypotheses. CVSOs use websites to serve veterans on a Government-to-Citizen (G2C) basis. The results show that the different aspects of the relations between CVSOs and veterans fit with the four interrelated balanced scorecard factors. The results also show that three of the four website-supported Balanced Scorecard dimensions (learning and innovation, internal process, and veteran value proposition) have a positive impact on e-government service delivery performance. However, the impact of the fourth website-supported Balanced Scorecard perspective (financial) on e-government service delivery performance is different because of the digital divide among the various generations of veterans.

Keywords: Veterans, Balanced Scorecard, Websites, E-government

Introduction

Financial accounting measurements are extensively used to evaluate government performance (Wright et al., 1999; Hsu, 2005), but they do not reveal adequately the benefits of investing in IT. Financial accounting measurements do inform managers of historical outcomes, but they do not indicate why those results were achieved or what managerial actions have to be performed to improve future results (Wright et al., 1999). Because the excessive reliance on financial accounting performance measurements is inadequate and can be misleading, Wright et al. (1999) suggested a Balanced Scorecard theory as a consistent performance measurement tool for the use of IT.

In government, IT and information are public property, not a proprietary resource to be protected and exploited for competitive advantage (Dufner et al., 2002); therefore, performance measurement is important to assess e-government efforts. A government needs to track what is working and what is not and assure citizens that the government's time and funds are being well spent (Stowers, 2004). Some traditional performance measures may be appropriate for e-government, but e-government service is different in its delivery modes and expectations. E-

government service delivery applications are relatively new and government service providers and researchers can only learn so much from traditional cost-benefit analyses. Therefore, new performance measures need to be developed to provide accountability for jurisdictions' e-government efforts. In addition, the significance of aligning the usability of websites with government service delivery strategies is widely recognized (Griffith et. al., 2003), but the lack of appropriate methodologies prevents government units and their constituents from integrating website projects with e-government service delivery performance.

This paper addresses the issue of delivering electronic services using the concept of an accepted management tool--the Balanced Scorecard. In other words, the website-supported Balanced Scorecard dimensions may be used to improve e-government service delivery performance. Like many other innovative technologies, government websites can generate sustainable electronic service delivery performance if the technology is used for improving the operational efficiency of government services.

This research deals with G2C e-government, focusing on government websites that county veterans service officers (CVSOs) use to deliver electronic services to veterans. Veterans are the nation's population who have been discharged or retired after serving active duty with the United States Armed Forces. CVSOs are county employees. Veterans interact with CVSOs when requesting government benefits or having questions about them.

This paper is organized as follows. Section II contains the description of the Balanced Scorecard theory. In Section III, government service delivery performance is examined. In Section IV, the research model and hypotheses are presented. In Section V, the methodology is outlined. In Section VI, the results and findings are examined. In Section VII, the conclusion and discussion of this paper are presented.

Balanced Scorecard Theory

The early experiences of companies using Balanced Scorecard have demonstrated that it meets several managerial needs (Kaplan and Norton, 1992). When a company includes both financial and non-financial indicators together in a sheet, it is called a Balanced Scorecard (Pandey, 2005). By using the Balanced Scorecard, companies must create a system that simultaneously aligns and integrates four interrelated perspectives: 1) customer focus, 2) internal process focus, 3) learning and innovation focus, and 4) financial focus (Kaplan and Norton, 1992; Hsu, 2005). Balanced Scorecard is not only a tool for performance assessment, but also a key driver to a business organization's success (Hsu, 2005).

Prior to this study, many authors such as Wright et al. (1999) and Huang and Hu (2004) have examined the integration of IT or web services with Balanced Scorecard. Building and expanding on previous efforts (Huang and Hu, 2004), we address the issue of e-government services delivery performance using the Balanced Scorecard approach.

E-Government Service Delivery Performance

Governments use IT to deliver valuable services to their citizens at a lower cost. E-government services refer to the emerging area of IS and IT services that are delivered electronically (Ramesh and Tiwana, 2001). The way that government agencies design and deliver services and configure and deploy underlying information and communications technologies is central to the performance of e-government service delivery.

The Research Model and Hypotheses

In the research model shown in Figure 1, the dependent variable will be drawn from e-government service delivery performance. The independent variables will be drawn from the website-supported four interrelated Balanced Scorecard business perspectives. Because these four interrelated business perspectives are supported by websites used by CVSOs on a G2C basis in order to serve veterans, they have been adapted as follows: website-supported innovation and learning perspective (this perspective is based upon performance indicators of how the CVSOs innovate and learn through government websites); website-supported internal process perspective (this perspective demonstrates how CVSOs use websites to identify performance indicators via their internal capabilities); website-supported veteran value proposition perspective (this perspective shows how CVSOs use websites to identify

outcome measures of their works in order to create value for current and future veterans); and website-supported financial perspective (this perspective indicates how CVSOs use websites to take into account outcome measures of their past performance.)

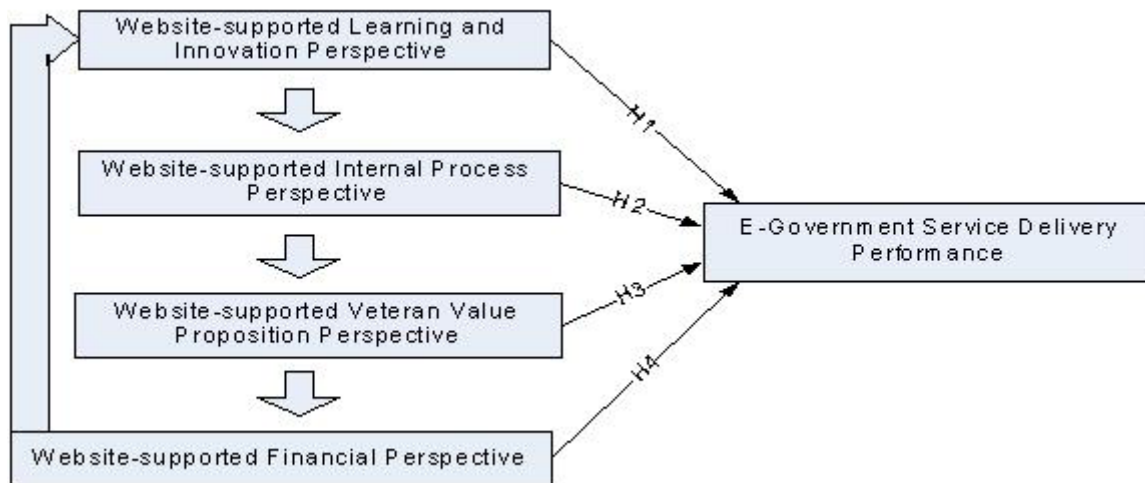


Figure 1. Research Model (Adapted from the Balanced Scorecard Framework of Huang and Hu, 2004)

This research model enables us to test the following hypotheses:

H1: The website-supported learning and innovation perspective will have a positive effect on e-government service delivery performance.

H2: The website-supported internal process perspective will have a positive effect on e-government service delivery performance.

H3: The website-supported veteran value proposition perspective will have a positive effect on e-government service delivery performance.

H4: The website-supported financial perspective will have a positive effect on e-government service delivery performance.

Methodology: Multiple Case Studies

This research focuses on government websites that deliver electronic services to veterans. The website of the North Dakota Government Rural Outreach (GRO) Initiative has been selected as the sample U.S. government website for this research. That website has been chosen because it has a component dedicated to veterans and CVSOs.

The procedure used to process data was based on the guidelines suggested by Churchill (1979). In order to follow these guidelines, multiple case studies have been conducted. In total, 19 CVSOs of 17 counties in North Dakota were asked to participate in the multiple case studies. The interviews were held individually with each CVSO for one hour. The interviews were tape-recorded, and the texts of the interviews were transcribed and entered into Windows Word software. To help conduct the interviews, an interview guide was used.

The study used content analysis to analyze the data obtained from a sample of CVSOs to test the hypotheses. The common response is obtained by using the generalized answer from all CVSOs. The procedure for data analysis was based on totaling the overall counts of messages coded in each category and the analysis of the messages. Each research variable has played the role of category. Occurrences of the messages in each category have been analyzed to determine relative importance. Higher relative counts reflect the significance of the particular message within the specific category.

Results and Findings

Procedures for testing the hypotheses

In this research, Chi-square, a non-parametric test of statistical significance for bivariate tabular analysis, was used to test the hypotheses and analyze data. The test of the hypotheses determined whether or not two different samples (of people or texts) are significantly different in some aspect of their behaviors. Then it can be generalized from the samples that the populations are also different in the behaviors (Connor-Linton, 2003).

Chi-square was selected in this research because it is a rough estimate of confidence; it accepts weaker, less accurate data as input than do parametric tests (like t-test, f-fisher, and analysis of variance) (Connor-Linton, 2003). Also, it does not require the sample data to be more or less normally distributed in the population from which the sample is drawn (Connor-Linton, 2003). But Chi-square requires that data are in the form of raw frequency counts of phenomena in two or more mutually exclusive and exhaustive categories (Connor-Linton, 2003).

Hypothesis Testing (H1)

Table 1 summarizes the number, percent, and chi-square of messages related to the impact of the website-supported learning and innovation perspective on e-government service delivery performance.

Table 1 presents the results of chi-square tests carried out to determine whether positive messages about the website-supported learning and innovation perspective predominate over negative messages about the website-supported learning and innovation perspective. The results show that positive messages were significantly greater than negative messages (82.23 at $p < 0.001$). Thus, Hypothesis 1, which states that website-supported learning and innovation perspective will have a positive effect on e-government service delivery performance, is supported.

Table 1. Number, Percent, and Chi-square of Learning and Innovation

Coded Messages	Number	Percentage (%)	Number of CVSOs	Chi-Square
IVSS	41	77	14	15.86***
IVNS	12	23	5	
Total	53	100	19	
YVCB	37	71	11	9.30***
YVNC	15	29	7	
Total	52	100	18	
TVSI	29	81	14	13.44***
TVNI	7	19	3	
Total	36	100	17	
HTST	41	87	16	43.08***
HTNT	6	13	3	
Total	47	100	19	
TFEE	20	44	7	0.55
TFNE	25	56	12	
Total	45	100	19	
The total chi-square value for Table 1 is				82.23***

*** $p < 0.001$

Hypothesis Testing (H2)

Table 2 summarizes the number, percent, and chi-square of messages related to the impact of the website-supported internal process perspective on e-government service delivery performance.

Table 2 presents the results of chi-square tests carried out to determine whether positive messages about the website-supported internal process perspective predominate over negative messages about the website-supported internal process perspective. The results show that positive messages were significantly greater than negative messages (30.76 at $p < 0.001$). Thus, Hypothesis 2, which states that website-supported internal process perspective will have a positive effect on e-government service delivery performance, is supported.

Table 2. Number, Percent, and Chi-square of internal process

Coded Messages	Number	Percentage (%)	Number of CVSOs	Chi-Square
IFOB	25	45	10	0.64
IFNF	31	55	9	
Total	56	100	19	
<hr/>				
IAFV	32	84	17	17.78***
IANV	6	16	2	
Total	38	100	19	
<hr/>				
VCWR	29	78	15	11.91***
VCNR	8	22	4	
Total	37	100	19	
<hr/>				
VCUI	31	54	11	0.43
VCNI	26	46	8	
Total	57	100	19	
The total chi-square value for Table 2 is				30.76***

*** $p < 0.001$

Hypothesis Testing (H3)

Table 3 summarizes the number, percent, and chi-square of messages related to the impact of the website-supported veteran value proposition perspective on e-government service delivery performance.

Table 3 presents the results of chi-square tests carried out to determine whether positive messages about the website-supported veteran value proposition perspective predominate over negative messages about the website-supported veteran value proposition perspective. The results show that positive messages were significantly greater than negative messages (37.83 at $p < 0.001$). Thus, Hypothesis 3, which states website-supported veteran value proposition perspective will have a positive effect on e-government service delivery performance, is supported.

Table 3. Number, Percent, and Chi-square of veteran value proposition

Coded Messages	Number	Percentage (%)	Number of CVSOs	Chi-Square
DWVO	29	59	10	1.65
DWNO	20	41	9	
Total	49	100	19	
IPVV	42	71	11	10.59***
IPNV	17	29	8	
Total	59	100	19	
IFUV	33	77	14	12.30***
IFNV	10	23	4	
Total	43	100	18	
IICV	36	77	12	13.29***
IINV	11	23	5	
Total	47	100	17	
The total chi square value for Table 3 is				37.83***

***p<0.001

Hypothesis Testing (H4)

Table 4 summarizes the number, percent and chi-square of messages related to the impact of the website-supported financial perspective on e-government service delivery performance.

Table 4 presents the results of chi-square tests carried out to determine whether there are any significant differences between

- the proportion of increase of initial cost and decrease of initial cost messages, and
- the proportion of increase of cost over time and decrease of cost over time messages.

Table 4. Number, Percent, and Chi-square of financial perspective

Coded Messages	Number	Percentage (%)	Number of CVSOs	Chi-Square
				5.91**
DCAB	21	34	8	
DCNB	40	66	9	
Total	61	100	17	
				5.58**
ATCD	38	65.50	10	
ATND	20	34.50	9	
Total	58	100	19	

**p<0.025

The results show that decrease of cost over time messages were significantly greater than increase of cost over time messages. Thus, Hypothesis 4, which states that the website supported financial perspective will have a positive effect on e-government service delivery performance, is supported (5.58 at p<0.025). This finding suggests that, as time goes by, a different group or generation of veterans might be comfortable with using the Internet. However, increase of initial cost messages were significantly greater than decrease of initial cost messages (5.91 at p<0.025). The result also shows that the website-supported financial perspective has negative impact on e-government service

delivery performance at the earliest stage of the website's use to deliver service to veterans because of the digital divide among various generations of veterans.

Discussion and Conclusion

The results show that the different aspects of the relations between CVSOs and veterans fit with the four interrelated Balanced Scorecard factors. The results also show that three of the four website-supported Balanced Scorecard dimensions (learning and innovation, internal process and veteran value proposition) have a positive impact on e-government service delivery performance. However, the impact of the fourth website-supported Balanced Scorecard perspective (financial) on e-government service delivery performance is different because of the digital divide among the various generations of veterans.

As time goes by, that finding could change because the high cost associated with the earliest stage of the website's use by CVSOs to serve veterans will decrease. This decrease will result from a different group of veterans who might be comfortable using the Internet. Therefore, the digital divide gap between veterans will be small in terms of using the Internet and make them more self-sufficient as far as using technology. Finally, the results also show that to increase e-government service delivery performance, veteran self-service needs to be promoted on websites. Then, e-government service delivery will free up CVSOs and allow them to focus less on routine tasks that could be easily handled by websites.

Digital divide is frequently referred to as the gap between technology "haves" and "have nots" (Sipior et al., 2004). Community members like CVSOs can run programs with assistance from volunteers to reduce the digital divide gap. The programs will allow veterans to learn computer skills and their discomfort will decline (Sipior et al., 2003).

The findings of this study also demonstrate the importance of usability of a website. The International Organization for Standardization defines usability as the extent to which a service can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use (Cetiner and Ryan, 2004). Therefore, veterans can benefit from the usability functionalities of websites to receive e-government service to achieve goals with satisfaction.

Future research is necessary because this research model must be tested further. E-government technology has attracted significant attention among researchers and development communities. Many exciting research issues are being addressed and some are yet to be addressed, and we hope that this paper inspires others to do future research by expanding or enhancing this research model.

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