



Customer Relationship Management (CRM) technology and organizational change: Evidence for the bureaucratic and e-Government paradigms

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ABSTRACT

This paper examines the impact of Customer Relationship Management (CRM) technology on organizational change in local governments in the United States. The bureaucratic and e-Government paradigms are examined with regards to this technology impacting organizational change. Survey evidence on the adoption of CRM is examined from the perceptions of Chief Administrative Officers (CAOs) in cities and counties that have adopted this technology. Survey results indicate that both the e-Government and bureaucratic paradigms impacted organizational change from CRM adoption. Factor analysis shows that management change, efficiency change, and leadership and organizational change are the three most common factors in the models. Regression results indicate that local governments that score high on these factors are more likely to take an enterprise approach in the adoption of CRM for their local government. The results of this study imply that organizational change is not just influenced by the more recent e-Government paradigm, but traditional attributes of the bureaucratic model are present as well.

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1. Introduction

Most of the recent literature on IT and public administration has argued for the importance of the e-Government model to institute organizational change in government, while the bureaucratic model has received very little attention in the literature (Norris & Moon, 2005). [U1]

This paper examines both the bureaucratic and e-Government paradigms and their influence on the adoption of Customer Relationship Management (CRM) technology in local governments in the United States. CRM can be defined as a software application that is used to track interactions with residents in a local government on an ongoing basis and allows governments to manage this data. CRM for local governments incorporates, as part of the call center function, the ability to manage citizen non-emergency calls into one centralized system. CRM creates opportunities for citizens to participate in government (Schellong, 2008). Engaging citizens in government is one of the key visions of e-Government advancement (Thomas & Streib, 2003; Welch, Hinnant and Moon, 2004; Jones, Hackney and Irani, 2007; Caillier, 2009).

The bureaucratic paradigm is found in the traditional literature on the impact of Information Technology (IT) adoption in public administration (Fountain, 2001; Ho, 2002). In this literature, there is an emphasis on the improvement in the internal workings of government as a result of IT

adoption. The e-Government paradigm, is more recent, and research in this area has proliferated with the rise of the internet in the mid-1990s. e-Government focuses on IT creating results in government, with its external and more transformative impact on public service delivery (Grant & Chau, 2005). Most of the recent literature on IT and public administration has argued for the importance of the e-Government model to institute organizational change in government, while the bureaucratic model has received very little attention in the literature (Norris & Moon, 2005). However, in this paper, there is an argument that one must understand both of these paradigms in order to realize the true potential of IT on organizational change (Heintze & Bretschneider, 2000; Kraemer & King, 2006).

This paper shows through survey evidence of Chief Administration Officers (CAO) the impact of CRM systems on local governments. The CAO is the top administrator for a local government and should have knowledge of the broad impact of CRM on organizational change. The research question of this paper is: *What is the importance of the bureaucratic and e-Government paradigms for explaining organizational change through CRM?* This article argues that in order to understand e-Government in the present context, one must understand the importance of IT on bureaucratic change as well.

Most of the existing research has examined CRM in private sector organizations (Fjermestad & Romano, 2003), with very little empirical research that examines this technology in the public sector organizations (King, 2007; Schellong, 2008). There needs to be more research on CRM in public sector organizations because of key differences from the private sector such as the absence of market incentives, the need for high levels of accountability, and multiple and

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Table 1
Bureaucratic and e-Government paradigms of CRM on organizational change.

Bureaucratic paradigm			e-Government paradigm		
	Principles	Rationale		Principles	Rationale
Internal change	Efficiency	Creating more efficient service delivery in economic terms through CRM	External change	Accountable	Accountable to stakeholders such as citizens to create more open and transparent government through CRM
	Standardization	Making sure that service delivery is the same for all customers through centralized CRM		Information Sharing	Sharing information with different levels of government and citizens through CRM
	Cost savings	Reductions of costs through automation and removing duplication of efforts through CRM		Teamwork	Collaboration on CRM in service delivery
	Workflow management	Managing the workforce through CRM		Centralization of customer functions	Centralization of customer service through CRM
	Productivity	Increase output given a fixed amount of input using CRM		Effective management	Using CRM to promote change in management to focus on result
	Workforce reduction	Reducing workers handling calls in individual departments, creating a leaner workforce through CRM		Leadership	Having a champion of IT to development its full potential

ambiguous goals of public organizations (Bozeman & Bretschneider, 1986; Pan, Tan, Eric and Lim, 2006). In addition, citizens prefer to use different contact channels depending upon the problem they want to address. They prefer to use the internet more for research-oriented activities, but prefer the phone to solve problems (Pew Internet and American Life, 2007). Therefore, citizens prefer different channel choices when initiating contact with government, which makes understanding CRM adoption especially important (Ebbbers, Pieterse and Noordman, 2008).

This study is different from existing research in that it examines through survey evidence the impact of CRM on organizational change. There is very little survey research completed on this important and emerging area of e-Government research. This study also examines the perceptions of CAOs and their influence on shaping organizational change in the public sector. CAOs are critical stakeholders in shaping IT and organizational change in their governments.

This paper is divided into several sections. The next section examines how CRM technology creates an enterprise approach in public sector organizations. This is followed by a discussion of the bureaucratic and e-Government paradigms and what both theories say about organizational change through CRM. Survey evidence is then presented examining the views of local CAOs on the adoption of this technology for their government. Statistical evidence on the impact of CRM for local governments is discussed in the final sections of the paper. The conclusion to this paper stresses the importance of knowing both the bureaucratic and e-Government paradigms in order to understand organizational change from IT.

2. Enterprise approach and CRM

One way that IT can improve the performance of government is by focusing on an enterprise approach (Bannister, 2001; Landsbergen & Wolken, 2001). IT is said to be able to integrate public sector organization to better focus on its mission (Ebrahim & Irani, 2005; Hjort-Madsen, 2007). CRM technology, for instance, has the ability to integrate the customer service function into a centralized information system. This technology will reduce or eliminate the need to have separate customer service functions in individual departments. An enterprise approach has the ability to focus on the needs of citizens because customer service representatives become specialists in identifying their needs. However, individual departments may lose control of their customer service function, which may create a tension between the departments and the call center.

One of the most important impacts of creating an enterprise approach is that it breaks down the silos of information in government (Bannister, 2001). The focus here is on changing the way the organization functions. Before CRM departments would provide services individually, this would lead to confusion by citizens

because they may be uncertain of where to go for information or services (ICMA, 2008; Schellong, 2008). A centralized customer service system has the potential to break down these silos since information is shared from the departments with the call center to better meet the needs of citizens. As a result, CRM is part of developing an enterprise approach to government, focusing on the needs of citizens, rather than asking citizens to navigate through government bureaucracy (King, 2007). Essentially, it provides a one-stop-shop to government information and services, breaking down the silos of government bureaucracy demonstrating the importance of government working together to attain results (Ho, 2002).

3. Bureaucratic paradigm and e-Government paradigms

Table 1 shows two common paradigm or models of IT adoption and their impact on organizational change (Ho, 2002), and applies them to CRM technology. The first paradigm is the bureaucratic and has the longest history in the literature on IT and public administration. The second paradigm is the e-Government, which has a relatively short history, but has a lot of say about organizational change in the public sector. The e-Government paradigm advocates for the transformation of the organization as a result of adopting this technology (West, 2004; Grant & Chau, 2005; Bekkers & Homburg, 2007). Through a literature search, each of these paradigms has several principles that are noted as being important.

There are six principles identified in the bureaucratic model and the same number for the e-Government model (see Table 1). The bureaucratic model focuses on *internal change* within government, while the e-Government model shifts the focus onto *external change*. These two paradigms are not mutually exclusive, in that some of the principles found in the bureaucratic paradigm can also be found in the e-Government paradigm. For example, effective management and leadership could fit into both paradigms since they deal with change internally. However, both of these principles are advocated strongly for in the e-Government research and are perceived to be a benefit of adoption. In addition, e-Government has some of the principles associated with the bureaucratic paradigm such as efficiency, standardization, cost savings, and productivity. Therefore, through the analysis presented here, some of the principles can be incorporated into the other paradigm. As the literature review discusses, the principles identified in each of the models are often cited as reasons for IT adoption and its impact on organizational change. In addition, there is the issue of omitting certain principles from each of the models, given that there are multiple principles that could be incorporated into each model. However, given the limited number of cases in the survey discussed later, it seemed reasonable to focus on the most important principles identified in the literature.

3.1. Bureaucratic paradigm

The bureaucratic paradigm examines the impact of IT on the internal structures and functions of government (Bannister, 2001; Ho, 2002; Moon, 2002; Fountain, 2009). This theory predates the e-Government literature and is concerned with the adoption of IT on public sector organizations. There are six attributes identified in the IT and public administration literature that are relevant to the bureaucratic model. As mentioned, these six attributes are not all of the possible elements in the bureaucratic model, but provide the most relevant to the study of CRM on government.

One of the most important functions of IT and the bureaucracy is to increase efficiency in government operations (Fountain, 2001; Danziger & Anderson, 2002; Kraemer & King, 2006). IT is said to be able to streamline the processing of information and services in the most efficient manner. Weber (1919) argues that the bureaucracy, although not perfect, is able to deliver services efficiently because of the specialization of functions (Homburg, 2008). CRM is a technology that can provide for greater efficiency in public service delivery, by being able to handle citizen contacts for information and services.

A second attribute of the bureaucratic model is standardization of service delivery. Standardization means that the delivery of services follows a prescribed manner and creates the most efficient path. Scholars have argued that standardization creates “red tape” and may impede change in public sector organizations (Pandey & Bretschneider, 1997; Moon & Bretschneider, 2002). Services that do not follow a standardized path tend to have bottlenecks in their delivery. The bureaucratic model, therefore, argues that standardization is well suited to most functions of service delivery. IT enables public sector organizations to standardize services because it can be pre-programmed into the information system. In application, CRM standardizes services, creating a common interface that the public can deal with when initiating contact with their government for information or services.

A third attribute of the bureaucratic model is that it is said to provide cost savings for public sector organizations (Brudney & Selden, 1995; Ho & Ni, 2004). IT is often touted as being able to reduce costs of delivering services through automation. Many proponents of IT adoption base their claims on the premise that if an organization spends money, it will ultimately save resources in the long run from this expenditure. In the context of CRM, cost savings can occur through a centralized call center, taking this function away from individual departments.

A fourth attribute of the bureaucratic model is the improvement in workflow management (Swain et al., 1995; Ho & Smith, 2001). Technology, such as CRM, has the ability to make work flow better in the organization. Technology has the ability to schedule functions to proceed in the correct order to finish the task. With regard to CRM technology, workflow is streamlined through a centralized customer service system.

A fifth attribute in the bureaucratic model of IT and public administration is productivity (Kraemer & Dedrick, 1997). IT has the ability of creating a more productive workforce. Essentially, technology can increase output with less input, thus improving productivity for government. CRM technology, for instance, can increase productivity since there would be a centralization of calls for information and services. Productivity is increased because of the elimination of the need to have separate departments administer this function.

A sixth and final attribute of the bureaucratic model is workforce reduction. IT is said to perform the work of others and ultimately it should reduce employment in public sector organizations. There is not much evidence for this occurring in the public sector. However for the private sector, especially in the manufacturing sector, this is one rationale for its adoption. In application, there should be a reduction in duplication efforts of individual departments in their customer service function as a result of CRM. The e-Government paradigm is the second theory reviewed.

3.2. e-Government paradigm

In this article, the e-Government paradigm has six identifiable attributes that are important to CRM adoption in public sector organizations. The e-Government paradigm is different from the bureaucratic paradigm since it focuses on the external environmental change.

The first attribute covered is that of increased accountability of government because of e-Government (Wong & Welch, 2004; Grant & Chau, 2005). IT has the ability of opening up government to the public by, for instance, displaying information online where citizens can have access to this information 24 h a day, seven days a week. This increased transparency produces more accountability for government and its operations. Citizens using CRM can contact government through the telephone or other contact channels such as the web and be able to get information or services, which promotes more open and transparent government.

The second attribute of the e-Government model is that of increased information sharing among departments (Landsbergen & Wolken, 2001; Andersen & Henriksen, 2006). In this model, there is an emphasis on breaking down the silos of information in the bureaucratic model, in order for different departments to share information to further the mission of the organization. CRM should be able to facilitate information sharing through a centralized customer service function. As a result, citizens will have easier access to information and services provided by their local government.

The third attribute of the e-Government model is its ability to promote teamwork in organizations (Rainey & Steinbauer, 1999). With a centralized customer service system there is the ability to work as a team to fulfill service requests from citizens. In order to focus on results, members of the organization need to work as a team as the e-Government paradigm advocates (Homburg, 2008). The spirit of collaboration is central for CRM adoption, with the removal of the customer service function from individual departments.

The fourth attribute of the e-Government paradigm is the elimination of the departmental focus (Bannister, 2001; Ho, 2002). Overall, it makes sense to centralize the customer relations function because members of a customer service department can be more specialized in their functions. However, the issue is if the department gives up control of their customer service function, then they may not get the correct information transmitted to citizens (ICMA, 2008).

The fifth attribute is that of CRM creating more managerial effectiveness. As a result of this attribute, technology public sector managers may be able to do their job more effectively (West & Berman, 2001; Danziger & Anderson, 2002; Moon & Norris, 2005). There is literature that argues that IT adoption will increase managerial effectiveness in public sector organizations (Heintze & Bretschneider, 2000). This study also examines the impact of CRM for improving managerial effectiveness, a common factor that influences e-Government adoption.

The sixth and final attribute of the e-Government paradigm is that of leadership, which is said to improve organizational performance (Bajjal, 1998; Biehl, 2007). The literature on IT adoption has long argued for the importance of having a champion of IT development, someone that is vested in the success of a project. This study also examines the impact of leadership on the adoption of CRM technology in local governments, a principle that is noted as important in the e-Government research. The survey sample frame is discussed in the following section.

4. Survey sample characteristics

In the survey, 311/CRM was defined on the survey instrument as a software application that tracks interactions with residents in a local government on an ongoing basis and allows governments to manage this data. Generally, 311 incorporates CRM as part of the call center

function to answer citizen non-emergency calls in one system. Some programs consolidate an existing customer service phone number into a single “311”, or specific 7 digit hotline number. In the United States, because of the immense number of non-emergency calls to 911, the Federal Communications Commission (FCC) set aside 311 for non-emergency local government services (Schwester, Carrizales and Holzer, 2009).

This survey of 311/CRM was sent to city and county government Chief Administrative Officers (CAO) between the months of April and May 2009. The CAO is the top executive of a local government and this administrator should know the impact of 311/CRM on organizational change. This individual supervises the daily operations of the local government and works with the mayor and elected officials to determine the strategic direction of the government.

Through an exhaustive search, there were a total of 113 cities and counties in the United States that have a confirmed 311/CRM system in operation. These cities and counties were identified through published reports and extensive web searches (ICMA, 2008). There is no current directory of 311/CRM in local governments, therefore, some cities and counties that have this technology may be missing from the survey sample.

Table 2 provides information on those cities and counties that have adopted 311/CRM and have responded and did not respond to the survey. It also compares responses from the first wave of the survey with the second wave, by population. This information is important in order to identify those governments that actually participated in the survey. These 113 cities and counties were mailed a copy of the survey instrument, along with a cover letter explaining the project. After two rounds of surveys, 60 CAOs chose to participate in the survey. This represents a response rate of 53%, which is higher than other local government surveys of e-Government adoption (Coursey & Norris, 2008).

Comparing the cities and counties that responded and did not respond to the survey indicate some interesting differences (Table 2). The mean population for responding local governments was 702,624 and 305,440 for non-responding governments. Therefore, local governments that responded were generally larger than the population of 311/CRM overall. The largest city or county that responded had a population of over eight million, while the smallest city or county that responded had a population of less than 19,000. The results from this study are consistent with larger-sized cities and counties that have 311/CRM. This might represent early adopters of this technology, given that larger-sized governments tend to have more resources to devote towards CRM systems. In addition, these larger local governments may be more willing to tout the use and effectiveness of these systems. This is confirmed with a difference of means tests indicating that population size is significantly different from those that chose to participate in the survey compared to non-respondents. As a result, caution should be used when interpreting the survey results presented in the following sections; the results are more representative of larger-sized local governments than the population as a whole. However, when testing the responses from the first wave of the survey with the second wave, independent sample t-tests indicated that there was no response bias.

Table 2

Comparison of the population of respondents and non-respondents to the survey and responses from the first wave and the second wave.

	N	Mean	Minimum	Maximum	Independent sample t-tests statistic
Responded to survey	60	702,624	18,694	8,363,710	2.27 ^a
Did not respond to survey	53	305,440	6000	1,766,476	
Total surveys sent	113	516,335	6000	8,363,710	
Responses first wave survey	30	753,910	18,694	8,363,710	0.32
Responses second wave survey	30	651,338	55,170	3,833,995	

^a Note: Significant difference in respondents and non respondents to the survey by population size at the 0.05 level.

Table 3

311/CRM in my local government takes an enterprise approach, looking at the whole of government rather than at separate departments.

	Frequency	Percent
Strongly agree	18	30.0
Agree	28	46.7
Neither agree/disagree	10	16.7
Disagree	4	6.7
Strongly disagree	0	0.0

5. Survey results of 311/CRM and the enterprise approach

Table 3 provides information on the impact of the 311/CRM system creating an enterprise approach to public service delivery, the key question of organizational change in this paper. The five-point Likert scale question presented CAOs with the following statement: *311/CRM in my local government takes an enterprise approach, looking at the whole of government rather than separate departments*. This statement resulted in a range of responses from strongly agree to strongly disagree. This statement is used as the dependent variable in the regression analysis conducted towards the end of the article. The purpose of this statement was to determine the impact of 311/CRM on organizational change by creating a more holistic approach to governance, moving away from departmental public service delivery to a more centralized model. There was not much disagreement that this occurred in local government (6.7%). In fact, when summing up the strongly agree and agree responses, most CAOs agreed with this statement (76.6%). Therefore, the vast majority of CAOs believed that 311/CRM has changed their local government by emphasizing an enterprise approach. However, there were differences in the level of agreement, with 46.7% of CAOs agreeing to this statement and 30% strongly agreeing with the enterprise approach.

6. Survey results of bureaucratic and e-Government paradigms

Table 4 shows the survey results examining the two paradigms of IT and public administration: the bureaucratic and e-Government approaches. As mentioned in the literature review, there were six factors identified in the literature that are bureaucratic reasons for IT and organizational change. Survey questions were asked for each of the six bureaucratic factors: efficiency, standardization, cost savings, workflow management, productivity, and workforce reduction. There were also six e-Government factors, as shown in Table 4: accountability, information sharing across departments, teamwork, eliminating departmental focus on customer service, managerial effectiveness, and having a champion or leader. The survey results showed that all of the 12 questions had an impact on the implementation of 311/CRM systems in local governments.

For the survey results in the bureaucratic paradigm, there was agreement that five of the six questions had an impact on organizational change. The exception was that 311/CRM eliminated jobs in local government. There was 56.7% of CAOs that responded

Table 4
Bureaucratic and e-Government paradigms of 311/CRM and organizational change.

In my local government 311/CRM...	Strongly agree (%)	Agree (%)	Neither (%)	Disagree (%)	Strongly disagree (%)
<i>Bureaucratic paradigm</i>					
Has created a more efficient government	43.3 (26)	46.7 (28)	8.3 (5)	1.7 (1)	0
Has standardized municipal government services	20.0 (12)	41.7 (25)	36.7 (22)	1.7 (1)	0
Has resulted in cost savings	16.7 (10)	38.3 (23)	36.7 (22)	8.3 (5)	0
Enabled departments to better schedule workers based on service requests	28.3 (17)	38.3 (23)	28.3 (17)	5.0 (3)	0
Has increased productivity in employees	21.7 (13)	41.7 (25)	31.7 (19)	5.0 (3)	0
Has eliminated jobs in local government	0	6.7 (4)	36.7 (22)	46.7 (28)	10.0 (6)
<i>e-Government paradigm</i>					
Has created a more accountable government	36.7 (22)	55.0 (33)	6.7 (4)	1.7 (1)	0
Facilitated information sharing among departments	31.7 (19)	45.0 (27)	20.0 (12)	3.3 (2)	0
Has promoted teamwork in employees	20.0 (12)	45.0 (27)	28.3 (17)	6.7 (4)	0
Eliminated the departmental basis for local government customer service	18.3 (11)	23.3 (14)	20.0 (12)	35.0 (21)	3.3 (2)
Allowed for more effective management of my local government	23.3 (14)	56.7 (34)	16.7 (10)	3.3 (2)	0
Has a champion of 311/CRM in our local government	50.0 (30)	31.7 (19)	16.7 (10)	0	1.7 (1)

Note: Number of observations are in parentheses.

who disagreed that this technology had eliminated jobs for their local government. Therefore, the cost savings through a reduction in duplication in customer service does not appear to be evident in the survey results. There was strong agreement, when summing up “agree” and “strongly agree” responses to the statement that 311/CRM created more efficient government (90%). The second highest level of agreement was in response to the statement that 311/CRM enabled departments to better schedule workers based on service requests (66.6%). This was followed by agreement that this technology has created more productivity in employees (63.4%). In addition, this technology has standardized municipal government services (61.7%). The least amount of agreement was in response to the statement that 311/CRM has resulted in cost savings. Overall, the results examining the bureaucratic paradigm of IT on organizational change showed a strong and consistent impact.

Table 4 also shows survey results for the impact of 311/CRM examining six factors in the e-Government paradigm. As with the factors in the bureaucratic paradigm, the e-Government factors were viewed as having a significant impact on organizational change. The greatest level of agreement, was when summing up “agree” and “strongly agree” responses to the statement that 311/CRM has created a more accountable local government (91.7%). Leadership is important for IT development in the organization and having a champion of 311/CRM was viewed as being especially important for CAOs (81.7%). There was a substantial amount of agreement that 311/CRM allowed for more effective management of the local government (80%). There was also much agreement that 311/CRM facilitates information sharing among departments (76.7%). Finally, there was agreement that this technology promoted teamwork in employees (65%). There was, however, disagreement that this technology eliminated the department basis for local government customer service (38.3%). The evidence for the e-Government paradigm shows that this technology still maintains the departmental basis for local government customer service delivery.

When comparing the bureaucratic and e-Government responses to the impact of 311/CRM on organizational change three important findings surface. First, there is general agreement that the 12 factors identified in Table 4 had an influence on the use of this technology to influence organizational change. Second, there was no major evidence that this technology has eliminated jobs for the local government and the departmental basis for customer service delivery has been maintained. Third, in the survey evidence there seemed to be slightly higher levels of agreement that the e-Government paradigm impacted organizational change, more so than the bureaucratic paradigm. With these factors identified, the following section examines them more closely as they relate to organizational change through statistical analysis.

7. Factor analysis of bureaucratic and e-Government paradigms

Table 5 provides factor analysis of the 12 survey questions from Table 4. Factor analysis can be used to explore the impact of groups of variables together and extract from them the most common factors that explain variance. Factor analysis is ideal for reducing a large number of variables into a smaller number of factors for modeling purposes. It is a way to select a subset of variables from a larger set, based on which original variables have the highest correlations with the principal component factor. Finally, factor analysis creates a set of factors to be treated as uncorrelated variables, one approach to handling the multicollinearity of these factors; then, these factors can be easily modeled through multiple regressions.

Factor analysis is especially relevant to examining survey data since it reduces attributes from a larger number of variables into a smaller number of factors. This is an ideal technique for survey data using a five-point Likert scale ranging from strongly agree to strongly disagree, since it is able to combine variables to derive the most likely factors that explain variance.

Factor analysis is especially important theoretically to explain both the bureaucratic and e-Government models, since it is able to examine both of these models together. This research is trying to discern if the bureaucratic and e-Government models overlap, and examining the factors together with factor analysis makes this possible.

There should be caution when examining the survey results since the sample size is small, with only 60 observations. However, since this is an exploratory study, coming up with some broad factors that explain organizational change seems warranted given the limited amount of research in this area of CRM and organizational change.

This paper conducted factor analysis with the extraction of the factors through principal component analysis with varimax rotation to determine the most likely causes of the bureaucratic and e-Government paradigms. A common cut-off point found in the literature for factors is 0.50 and, therefore, only those are displayed in Table 5 (Carter & Belanger, 2005). Of the 12 variables, three factors explained 63% of the variance of the model. The first factor identified was entitled management change, this was composed of six variables of 311/CRM creating more effective management, better scheduling of service requests, and greater productivity; facilitating information sharing; eliminating jobs; and promoting teamwork. This factor explained the most, at 42.4% of the variance of the model.

The second and third factors did not explain as much of the model. The second factor was labeled efficiency, and it explained only 11.8% of the model. In this factor there was 311/CRM creating a more efficient government, providing cost savings, standardizing service delivery, and creating a more accountable government. The third and final factor can be grouped into leadership and organizational change.

Table 5
Factor analysis of bureaucratic and e-Government paradigms and organizational change from 311/CRM.

	1 (Management change)	2 (Efficiency change)	3 (Leadership and organizational change)
Has promoted teamwork in employees	0.724		
Enabled departments to better schedule workers based on service requests	0.673		
Has eliminated jobs in my local government	–0.592		
Allowed for more effective management of my local government	0.576		
Facilitated information sharing among departments	0.573		
Has increased productivity in employees	0.558		
Has created a more efficient government		0.830	
Has resulted in costs savings		0.725	
Has created a more accountable government		0.722	
Has standardized municipal government services		0.559	
Eliminated the departmental basis for local government customer service			0.725
Has a champion of 311/CRM in our local government			0.721
Percent of explained variance	42.4%	11.8%	8.6%

Note: Extraction method principal component analysis with varimax rotation.

In this factor there were two questions of eliminating the departmental basis for local government customer service and having a champion of 311/CRM in local government. The third factor, was the weakest of the three, and explained only 8.6% of the variance and had only two principal components.

Therefore, two-thirds of the variance of the bureaucratic and e-Government variables can be explained by the three factors of management change, efficiency change, and leadership and organizational change. However, the most important factor that explained the greatest variance of the model was management change. The following section examines these three factors further and models their impact on creating an enterprise organization.

8. Regression results

Table 6 examines through Ordinary Least Squares (OLS) regression the impact of the enterprise approach variable, as noted in Table 3. This variable is regressed on the three factors identified in Table 5, along with two additional independent variables. The dependent variable is taken from the survey question: 311/CRM in my local government takes an enterprise approach, looking at the whole of government rather than separate departments.

There were two additional independent variables added to the regression model from questions on the survey. One predictor variable is the Full-Time Equivalent (FTE) employees of the local government, which is predicted to impact IT adoption (Brudney & Selden, 1995; Norris & Moon, 2005). The greater the size of the local government is one indication of its ability to support a CRM system. There were 36.7% of the survey respondents who came from a local government that had 5000 FTE employees or greater. The average FTE was between 1000 and 2499 for responding local governments to the

survey. Another independent variable added to the regression is a measure of the overall sophistication of the CRM systems used, another important factor identified in the e-Government research (Moon & Norris, 2005). Local governments that have more sophisticated CRM systems may be more likely to use these systems to create an enterprise computing environment because of their success. There were 11 possible choices as features of CRM, namely: internet kiosks, interactive voice response, searchable knowledge databases, Geographic Information Systems (GIS), assigning tracking numbers, wireless technologies, push technologies, work order management, status service requests, 311 web service, integration of service channels such as phone, web, and over the counter. This variable was composed into an index, with a local government having more features scoring higher on the index. The average number of CRM features used was five, and the maximum reported was seven by local governments.

The regression results in Table 6 indicated that only three of the independent variables predicted the enterprise approach. The variables of FTE employment and sophistication of the CRM system did not register a statically significant impact on the enterprise approach. Therefore, when CAOs were in strong agreement that 311/CRM created greater management change, efficiency change, and leadership and organizational change they were more likely to believe that this technology created an enterprise approach to their government. Examining the adjusted-R², these three factors explain 38% of the variance of this model. Examining the collinearity statistics, the Variance Inflation Factors (VIF) was around 1 (which is significantly less than 4 the threshold that indicates multicollinearity) indicating no issue with multicollinearity. In addition, the tolerance for the coefficients was greater than 0.20, which provides no indication that multicollinearity is a problem with the regression.

Table 6
Final regression results: dependent variable enterprise approach created from 311/CRM.

	Beta coefficient	T-statistic	Prob. sign.	Collinearity statistics	
				Tolerance	VIF
Constant	–	2.31	0.03	–	–
Management change	0.42	3.81	0.00	0.88	1.13
Efficiency change	0.46	4.28	0.00	0.93	1.07
Leadership and organizational change	0.31	2.91	0.01	0.94	1.07
Full-Time Equivalent (FTE) employees	–0.06	–0.58	0.57	0.86	1.17
Sophistication of CRM technology	0.08	0.66	0.51	0.82	1.22

Model diagnostics

N = 60

F-statistic = 8.14

Adjusted-R² = 0.38

Overall, this model presented in Table 6 implies that 311/CRM created a more holistic enterprise approach to governance and is consistent with the common bureaucratic and e-Government impacts noted in the IT and public administration literature. The results presented here support the impact of organizational change through the use of CRM systems.

9. Conclusion

This paper has examined the impact of CRM technology on organizational change in local governments. The survey results indicated the impact of both the bureaucratic and e-Government paradigms on organizational change in local government. The survey results showed that both models had an influence on the use of CRM technology in local government. The influence of the e-Government paradigm had a slightly greater influence on organizational change than the bureaucratic paradigm for local governments' in the survey. The factors analysis indicates that all of the bureaucratic and e-Government principles impacted organizational change through the use of CRM.

When examining the regression model, local governments that exhibited higher perceived organizational change from CRM, believed that CRM created an enterprise approach to governance. These results imply that organizational change in governments, as described by the current e-Government literature, is not driven only by e-Government, bureaucratic principles are important as well. The e-Government literature has often advocated for the importance of change focusing outwards from the organization, but internal change is also important.

Current e-Government research could benefit by focusing more on some of the important past studies on IT adoption for public sector organizations as a way of understanding current organizational change in e-Government (Danziger & Anderson, 2002; Kraemer & King, 2006; Bekkers & Homburg, 2007; Coursey & Norris, 2008). Many current studies in e-Government research pay little, or no, attention to the important past research on IT and organizational change in public administration. For e-Government research to develop, it should more thoroughly appreciate the many past studies on IT adoption in the public sector. Without understanding the development of IT and public administration, it is difficult to grasp the current changes that are taking place.

There are some limitations of this study that should be noted. First, this paper is limited by a dataset with only 60 cases, and many of the respondents to the survey are from larger population centers. With the adoption of CRM one is limited by the fact that a small portion of local governments in the United States actually use this technology. In addition, there is no central database of governments that currently use CRM, making it difficult to get a truly representative sample. A second limitation of this study is that the principles identified here in the bureaucratic and e-Government paradigms may omit some principles that are important. As a result, future research should examine the impact of CRM on organization change through case studies of several local governments that have adopted this technology. Case studies would provide another way of understanding the more subtle issues of CRM and its impact on organizational change.

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