

An Ideal Model for Virtual Communication on Municipal Government Websites

By

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Applied Research Project

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Abstract

Purpose. The purpose of this applied research project is to develop an ideal model of virtual communication on municipal government websites and determine to what extent mid-sized cities in Texas have addressed the components of this ideal model.

Methods. A content analysis of the existing websites of 32 cities with populations between 44,000 and 140,000 was conducted to evaluate how well mid-to-large-sized cities were meeting the demands of communicating digitally with their citizens. *Results.*

The results indicate that many cities were using sound communication tools on their websites. Many basic and common tools expected to be used were found, but cities had chosen not to implement many other tools, possibly missing opportunities to reach their citizens in ways most familiar to them. *Conclusion.* For this study, a benchmark was created of what cities are currently doing to communicate with their citizens through their websites. As increasing numbers of their populations access the Internet and new ways to communicate are created, cities will need to adapt and use these methods to their advantage in communicating with the public.

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Table of Contents

Abstract	ii
About the Author	iii
List of Tables	vi
Chapter 1: Introduction	1
Purpose	1
Summary of Chapters	2
Chapter 2: Literature Review	3
Purpose	3
General Website Structure	5
E-Government	5
Web 2.0.....	10
Access, Usage, and Transparency for the Audience	12
Government Communication on the Web	15
Social Media	15
E-Participation	17
E-Democracy	19
Conceptual Framework.....	20
Chapter Summary	23
Chapter 3: Methodology	24
Descriptive Categories and Content Analysis	24
Categories, Website Criteria to be Assessed, and Measurement	25
Population	32
Statistics	32
Chapter Summary	32
Chapter 4: Results	34
General Website Structure	34
Access, Usage, and Transparency	41
Social Media	46
E-Participation & E-Democracy	49
Chapter Summary	55
Chapter 5: Conclusion.....	56
Summary.....	56
General Website Structure	56
Items Cities Are Doing Well on	56
Items Cities Can Work on	57
Access, Usage, and Transparency	57
Items Cities Are Doing Well on	57
Items Cities Can Work on	58

Social Media	59
Items Cities Are Doing Well on	59
Items Cities Can Work on	60
E-Participation and E-Democracy	60
Items Cities Are Doing Well on	60
Items Cities Can Work on	61
Recommendations for Further Studies	62
Bibliography	63
Appendix.....	67

List of Tables

Table 2.1	Conceptual framework	21
Table 3.1	Operationalization table	26
Table 4.1	Results concerning local municipal websites should have easy-to-use search engines	35
Table 4.2	Results concerning local municipal websites should include a news section.....	36
Table 4.3	Results concerning local municipal websites should post contact information for all departments	36
Table 4.4	Results concerning local municipal websites should make payments for bills, permits, fines, and fees available online	37
Table 4.5	Results concerning local municipal websites should have mobile phone browser display options	38
Table 4.6	Results concerning local municipal websites should include blogging	39
Table 4.7	Results concerning local municipal websites should incorporate YouTube videos	39
Table 4.8	Results concerning local municipal websites should offer RSS (Really Simple Syndication)	40
Table 4.9	Results concerning local municipal websites should offer e-mail subscription options for different news and information	41
Table 4.10	Results concerning local municipal websites should be easy to navigate	42
Table 4.11	Results concerning local municipal websites should make it easy to find commonly requested information quickly	42
Table 4.12	Results concerning local municipal websites should post commonly requested documents and information online	43
Table 4.13	Results concerning local municipalities should encourage and promote computer access and usage	44
Table 4.14	Results concerning local municipalities should provide free Wi-Fi in public buildings	45
Table 4.15	Results concerning local municipalities should offer comprehensive online request systems for citizens to report issues and make requests	45
Table 4.16	Results concerning local municipalities should have Facebook pages	47

Table 4.17	Results concerning local municipalities should have Twitter pages	48
Table 4.18	Results concerning local municipalities should offer text-messaging subscription services for news and information.....	48
Table 4.19	Results concerning local municipalities should use smartphone applications	49
Table 4.20	Results concerning local municipalities should offer a chat option to speak with employees live	50
Table 4.21	Results concerning local municipalities should include message boards for discussions and questions	51
Table 4.22	Results concerning local municipalities should provide options for citizens to provide feedback online	52
Table 4.23	Results concerning local municipalities should allow comments online on any news postings.....	52
Table 4.24	Results concerning local municipalities should use different online tools to gauge public opinion.....	53
Table 4.25	Results concerning local municipalities should solicit information online regarding current relevant topics or items	54
Table 4.26	Results concerning local municipalities should post policy documents online to gather feedback	54

Chapter 1: Introduction

The World Wide Web is one of the most cost-effective tools a government agency can use to reach its public audience. When dedicated websites are in place, citizens are able to access government services and information any time they choose to do so through an Internet connection. This accessibility has created a new standard and level of expectation as far as which services should be offered and what information should be posted on the Internet. Cities now must be proactive in their public outreach to their citizens, and they must implement the tools and methods that citizens are most likely to use if they are going to be successful in communicating through the Internet.

Purpose

The purpose of this applied research project is to focus on a local, more personal level of government to determine how well cities are using communication methods online through their home pages to reach their citizens. Although studies have been conducted related to overall website structure, e-government, and security, no study has been specifically focused on communication through local government websites. This project assesses thirty-two local Texas municipalities and measures them according to criteria based on the four descriptive categories found in the literature. The populations of the different cities chosen for this study range between 44,000 and 140,000 and provide an overall view of mid-sized cities in Texas and how well they are communicating online. A summary of all findings and a recommendation for further

studies is included. The cities are not ranked against one another, but instead are combined to render an overall picture of whether cities are meeting the ideal model of virtual communication on their websites according to criteria derived from the literature.

Summary of Chapters

Chapter two contains a review of the literature that led to the discovery of key communication methods and tools in a conceptual framework. The four descriptive categories found were as follows:

- General website structure
- Access, usage, and transparency
- Social media
- E-participation and e-government

Chapter three includes discussion of the methodology used for this study and how the content analysis was conducted on each of the thirty-two local Texas municipality websites. Chapter four includes the results and presents a summary of each descriptive category, followed by a breakdown of each criterion assessed through the content analysis. Chapter five concludes the overall findings of this research project, including discussion of any important information found, where cities are missing the mark, and recommendations for further studies.

Chapter 2: Literature Review

The Internet has become a widely used method of communicating and providing information to a variety of users, and government agencies have been developing websites to take advantage of new opportunities to reach particular audiences. Municipalities, especially, have discovered many opportunities to reach out to citizens through the World Wide Web by having websites, as well as by trying different methods of online communication. According to a survey conducted by the Pew Research Center, a staggering 82% of Internet users in America completed a transaction or accessed a government website to locate information in 2009 (Smith 2010). This is clearly a new method of preferred communication by citizens, and local government agencies have had to adapt to this emerging means of communication. Different criteria and methods are used to evaluate websites, but focusing strictly on the methods and techniques specifically used to communicate with the citizens online requires a different strategy. To begin, the techniques available to local municipalities for communicating with the public online were investigated.

Purpose

The purpose of this chapter is to provide a review of the literature that led to development of a conceptual framework, which was used to create a practical ideal model of the best tools and methods local municipalities should include as part of their online communication presence to reach their public successfully in the most efficient

and effective ways available. The literature review revealed for four different descriptive categories of government websites and communication methods that should be used when creating a local municipality homepage. The first part of this chapter will discuss government websites in general, how information is provided to citizens, and how government agencies use the web to communicate. The first category is general website structure, which is related to the methods and approaches used on the web by government agencies to provide information and is focused on using newer technology on the web to provide information and services digitally to citizens who have access to the Internet. The second category is access, usage, and transparency. This category includes how the public accesses information online, how the information is used, and whether government websites are transparent in providing information online.

The last part of this chapter includes discussion of how communication is handled by government agencies via the web. The categories are related to the different methods government agencies can use on the Internet to communicate directly with citizens. The first category is social computing, which includes such social media and social networks as Facebook and Twitter. That discussion addresses different ways government agencies can reach citizens through social networks commonly being used by the public online. By providing information through communication media the public is most comfortable using, government agencies can make information more easily accessible to citizens. The second category is e-participation and e-democracy:

how government agencies can encourage communication and participation in government activities through the Internet and use an advanced form of communication to facilitate decision making through input gathered from citizens using digital means. This chapter will conclude with a conceptual framework of descriptive categories based on the literature and a discussion of the overall state of communication methods that should be used online by government agencies.

General Website Structure

E-Government

E-government is a method implemented recently by government agencies to provide information, conduct regular business, and communicate with their constituents via the web. By using the Internet and different technologies, citizens can readily access public information and services (White 2007). No longer will citizens have to take time out of their work days to visit city hall in person to pay a ticket or utility bill or even to speak with a city employee. Making these tasks more convenient and easy to access will cause citizens to be more likely to complete transactions online instead of delaying payment or becoming delinquent because they are unable to or choose not to drive to city hall to pay a bill or fine in person. Citizens can now go online to access this information or find contact information, thus saving citizens time and saving government agencies time because they do not have to serve as many walk-in citizens wanting to pay a bill or ask questions. Some citizens will always prefer to

handle business face-to-face, but by providing electronic means to conduct business online, government agencies can be more efficient.

Layne and Lee (2001) included the following quote from David McClure, Associate Director of the U.S. General Accounting Office, in an e-government article that succinctly explained e-government while testifying before the U.S. Congress:

Electronic government refers to government's use of technology, particularly web-based Internet applications to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities. It has the potential to help build better relationships between government and the public by making interaction with citizens smoother, easier, and more efficient. Indeed, government agencies report using electronic commerce to improve core business operations and deliver information and services faster, cheaper, and to wider groups of customers. (Layne and Lee 2001, 122)

Although many citizens may continue to find face-to-face interactions with their local government officials to be more personal and comfortable, it is important to provide access to information online, if for no other reason than to try to make access more convenient for the public. Giving the public options for accessing information or communicating electronically helps create a more accessible government agency as opposed to standard public meetings or visiting city hall to ask questions or request help in person. Furthermore, with the introduction of the World Wide Web and e-government, it is apparent there has been a change in the relationship between citizens and technology as it relates to how citizens communicate with government agencies. E-mail is one of the most used communication tools available and is widely accepted

(Andersen et al. 2011). It is up to government agencies to take advantage of what the Internet has to offer and the popular tools available for corresponding with the public.

Because of the abundant use of smartphones, tablets, and other mobile devices with access to the web, people have grown accustomed to almost instantaneous access to information. This desire for up-to-the-minute news extends to government agencies and personnel, including elected officials such as city council members, forcing government agencies to adapt to these demands for greater access through e-government. With this adaptation, government agencies should consider their target audience during website design, which should be easy to use and navigate, and provide an introduction to the site so that citizens know what is available to them (Smith 2001). If agencies design a website that makes it easier to access the most commonly requested information and provide a good search function with simple navigable pages, they should be able to easily manage the needs of the public online.

Not only is it important for citizens to be able to communicate quickly and efficiently with government agencies, but also they must be able to access more services through the web, including accessing government data and paying for government services online, such as an electric utility bill. Communication between government and citizens also relies heavily on documents and archived information. By providing more requested information online, government websites have enabled the public to search for information and ask for an increased level of access to government information

(Solis 2000). This situation has placed added pressure on government agencies to determine what citizens want online and make the information easy to locate. Although it may be common knowledge, the public is entitled to access public information. In the current culture, it is expected more than ever that government agencies should be transparent by providing information online without being asked for it.

There is an underlying understanding that government agencies can function at a higher level through their websites because citizens can access everything they might need, creating a “one stop shop” (Gant and Gant 2002). By delivering services online to citizens, government agencies can also benefit by lowering the costs involved in interactions with the public and saving staff time by encouraging citizens to conduct transactions online. For example, many cities provide an option to pay utility bills online. By doing so, cities may find they are operating more efficiently and embracing e-government has allowed them to combine or eliminate positions (Garson 2006). Citizens are now not only saving time by not going to the electric utility office to pay their bills, but they are also saving city tax dollars by lowering government costs for personnel. It is important to remember even if cities are able to eliminate positions there must still be employees involved to manage the new systems and ensure they are running properly.

Although government agencies have begun making online services and information more easily accessible to the public, this technology brought with it higher citizen expectations of greater service from government agencies (Layne and Lee 2001).

Once citizens experience how easy it can be to apply for a permit or renew a driver's license online without waiting for a long time in line, many will have an expectation that they should be able to conduct all business online without having to go to a government office. This realization, in turn, will cause government agencies to look more closely at their own e-government transformation, which includes optimized delivery of government services through technology and effective communication methods (Ropponen 2010). When government agencies decide to move forward with e-government, the next step is determining how to evaluate their level of success in implementing e-government in their day-to-day operations.

Because e-government includes a wide variety of tools or methods to provide services to citizens, categorizing the different ways a city could evaluate the types of methods being used is necessary, in addition to determining how well services are being provided online. One method found in the literature identified four stages of e-government: "information available on-line, one-way interaction, two-way interaction, and full online transaction" (Sakowicz 2007, 1). Providing citizens with information online is the first basic e-government tool agencies have at their disposal. By simply spending the time to create an effective website and uploading documents to the server for citizens to download and view, agencies are accomplishing the first stage of e-government. One way to measure whether government agencies are trying to support online interaction is to see how easily one can locate contact information for

government employees or how quickly one receives a response to a standard question, as well as determining whether a website has useful information in an organized way that is easy to navigate (Panopoulou, Tambouris, and Tarabanis 2008).

Furthermore, cities must embrace technology and use it to manage one-way interactions online. One-way interaction is essentially management and support by staff responding to citizen searches for information online and providing quick responses to requests and documents. Two-way interaction expands on this by soliciting information from citizens and providing a response to them. It could include feedback polls, electronic surveys, or a number of other methods that increase citizen participation through e-government. The last stage of e-government is the creation of full-access online transactions to conduct government business, such as paying for recreation programs online. By defining and creating benchmarks for each of these stages, cities could determine how well they are communicating online with their citizens. Another way to focus on communication with citizens is by embracing Web 2.0 technologies.

Web 2.0

Web 2.0 is broadly defined as allowing government agencies to interact in better, more efficient ways, providing citizens with better sources of information through such methods as blogs, wikis, and forums to encourage collaboration and interaction. Citizens are using Web 2.0 services and programs to better locate and benefit from all the combined intelligence available on the web (O'Reilly 2005). Governments are likely

to find that more citizens are becoming involved with government issues because the information is more easily accessible through the Internet. By conducting a quick Google search, citizens can find thousands of pages on almost any topic they could imagine. In the past, citizens may not have heard of or researched what was going on in their own towns, but with the Internet now at their finger tips, increasingly more citizens are staying abreast of how government is conducting business.

By embracing Web 2.0 technologies, government agencies are adapting new communication tools and methods that might provide the best way to connect with their citizens. It is also important that agencies have a presence on the web to draw in citizens and encourage their participation as opposed to relying on citizens' initiatives to access the government homepages looking for information (Chang and Kannan 2008). Thus, agencies may need to create Facebook or Twitter pages to advertise and connect with citizens, or they may need to create a YouTube channel if citizens prefer to receive their information online in video format. For example, many cities have regular video presentations of their mayors or city managers giving citizens an update on city business and information on topics of interest, such as current news or upcoming events. This type of technology has changed the way government agencies communicate with citizens to reach them at a personal level.

One of the primary focuses of Web 2.0 is on connecting with other persons, focusing less on the technology itself (Ostergaard and Hvass 2008). Doing so is

accomplished by sharing ideas, networking, and linking information for easy access online. Web 2.0 facilitates a better communication method than in the past. Citizens can collaborate and share common interests with other people who may be following the same topic (Department of Communities and Local Government 2008). Finally, they can also follow their city on Facebook or Twitter to stay aware of current events.

Access, Usage, and Transparency for the Audience

Unfortunately, not every citizen has access to a computer or the Internet to communicate or access government information. Certainly, this is an issue that local governments must address even more than state or federal agencies because they provide services at a more personal, local level and it is their responsibility to see that all citizens can access government resources online (Goldberg 2009). This technology gap can be addressed simply by providing free access to computers at public libraries, but local municipalities must also make sure that citizens know the technology is available. Some cities even go so far as to provide free computer training for their citizens. Doing so facilitates greater use of e-government by those who would not have used it otherwise. It cannot be overlooked that, for efficiency and cost-saving purposes, local governments are providing more information online, but they must consider all citizens, including those uncomfortable with computers or the Internet. This digital-divide barrier is still in place and indicates a lack of knowledge and access to computers still exists for many citizens in the United States and across the world (Dunne 2010). As

technology and the Internet become more widespread and cost effective, government agencies will see this barrier begin to close. Until then, local government agencies must find ways to communicate with and reach the segment of the population without Internet and computer access.

Public outreach is also an important factor when providing information to a particular audience, with e-government providing many opportunities to try different communication methods to reach as many citizens as possible. Citizens must be able to contact and communicate with government agencies quickly and efficiently for an online presence to be considered successful at any government level. In 2007, 86% of government websites provided visitors an option to e-mail a person other than the webmaster directly from a government website (West 2007). Although this is a high percentage, there should be no excuse for a government agency with a presence on the web today not being able to provide contact information for various departments and employees. E-mail has become one of the most popular ways for citizens to communicate with government personnel. Subsequent studies have found steady increases in access to online information through government websites in such areas as pages for leaving comments and subscribing to e-mail updates and access through mobile devices (West 2008). These new methods of communication have helped to increase the online presence of government agencies and allow more options for

citizens to communicate. These technologies have also increased the degree of transparency in the information provided by government agencies.

Transparency in all types of government agencies is an area that must be considered when planning how to provide information online. In her applied research project (2010, 13), Ruth Thornton states that *transparency* “refers to elements of government websites that are necessary but not sufficient to provide the citizen with confidence in the legitimacy of the website and agency, thereby supporting online citizen engagement” (13). If any government agency purposely chooses not to post certain documents and information online for citizens to view without requesting the information through open-records requests, then it is doing everyone a disservice because it is showing it may have something to hide. Ultimately, it is a benefit for government agencies to be proactive in posting online relevant documents that might be of interest to citizens, especially at the local level.

E-transparency is a new term that refers specifically to publishing documents online, reporting government information, showing accountability, displaying a level of openness to citizens, and allowing transactions to be conducted online because one of the main uses of government websites is to provide access to information online as opposed to allowing transactions to be conducted on the website (Heeks 2006). Without a certain level of government transparency, citizens have a hard time trusting actions and services provided to them. Citizens like the opportunity to conduct their own

research and make up their own minds concerning decisions being made, rather than only being given what someone thinks they need to see. The Internet and government agency websites have certainly made gathering information easier to create a more transparent environment for citizens.

Government Communication on the Web

Social Media

Social media are fairly recent phenomena that have had government agencies scrambling to figure out the best ways to take advantage of this new ability to communicate with citizens at a different level in their online communities and networks. By using tools such as blogs, social networks (e.g., Facebook and Twitter) and mobile devices (e.g., smartphones and tablets), citizens are now more heavily involved with government agencies in discussing current issues or being able to find more easily other people interested in the same policies and changes they are (Smith 2010). Social media have allowed citizens who once may have been indifferent to the way their government was operating to have a stronger interest because the ability to be involved is provided in a way that fits their lifestyle. According to a survey conducted by the Pew Research Center, 31% of respondents engaged in at least one of six online government activities, including watching a video on a government website, receiving e-mail alerts they had signed up for, reading a blog posted by a government official, following or becoming a fan of a government agency online, signing up to receive text

messages, or following a government official on Twitter (Smith 2010). Over time, this number will continue to grow as more citizens use new social technologies and government agencies become open to this method of online communication.

Social media provide government agencies the opportunity to access areas they had once not been able to reach. Cities must determine what value they are able to gain from public input by implementing and regularly using the different platforms currently being used by their citizens. This method of communication online has led to a more empowered citizenry that expects a higher level of transparency, openness, and efficiency related to government information and services (Huijboom et al. 2009). Social computing has also shown a large shift of control to the users, with citizens posting more information, so it is important that governments consider the design and delivery of content to meet the new communication methods (Chang and Kannan 2008). Now that information is easily distributed through multiple online platforms, government agencies must take special care to consider what information is being provided to avoid errors that are difficult to take back in the digital environment.

By taking charge and increasing their reach through social networking, government agencies can build relationships with their citizens and provide accurate information in an easily accessible way. One of the concepts of social media is that government is no longer forcing information on citizens by making them receive information they might not be interested in reading. Instead, agencies push the

information out through various networks, allowing those who choose to access it to share it with their contacts, who continue the cycle with their friends (Kingsley et al. 2009). This mechanism allows social media to be a greater benefit to government agencies by allowing them to use a cost-effective way to reach a larger audience. There is also more value in the information being shared because citizens are able to opt in and choose to receive or share certain information. By sending out one tweet to 400 followers of a city Twitter page and a few citizens retweeting the message to their friends, a city could end up having a much larger reach than with a press release printed in a local newspaper that has a limited number of subscribers and cannot be easily shared electronically.

E-Participation

E-participation has been defined as a method of facilitating deeper citizen involvement, allowing them to follow political processes online, and encouraging broader participation in government issues (Kearns, Bend, and Stern 2002). By providing new electronic options for citizens' involvement in government processes, it helps to limit the number of disengaged citizens on important political issues that will affect their lives. According to national studies conducted over a four-year period, cities began to increase methods of participation, with up to 60% allowing comments or feedback online, but still showing 68-79% of cities not providing more two-way communication options, such as message boards or online forums. This study is an

example of why cities should continue to work on improving their resources online to maximize their communication with citizens (Holzer and Kim 2003, 2005, 2007).

Government agencies must be aware of evolving technology so they can adapt and incorporate the best available methods into their websites to reach the most citizens possible. For example, most cities now have their own Facebook pages, primarily because, in 2008, there were 100 million visitors on Facebook (Huijboom et al. 2009). Cities should not pass up the opportunity to be a part of a social network with a broad reach at no cost. Such technology is especially important for smaller communities that may not have the monetary resources to build a website or communication plan. As long as they are taking advantage of sites like Facebook, Twitter, and YouTube, they are still able to encourage participation through social media.

Many opportunities exist for government agencies to encourage greater participation through the Internet by gathering feedback and opinions on different policy issues through opinion polls, bulletin boards, and satisfaction surveys that allow citizens to submit information electronically (Henriksson et al. 2006; Panopoulou, Tambouris, and Tarabanis 2008). Because many of these methods of communication are available for free or at a low cost, agencies should take advantage of the opportunity to use them for gathering information. Research has also shown that “citizen participation through e-government . . . [may] lead to increased accountability of governments and increase citizen trust and confidence in public officials” (Reddick 2009, 2). If e-

government can increase accountability of and trust for public officials at a low cost, it is certainly worth government agencies considering using these communication tools in their day-to-day operations.

E-Democracy

E-government has enabled citizens to access government services and information online at their own convenience. It has also improved the democratic process by allowing government agencies to provide a variety of information and encourage citizens to deliberate policy issues and by diminishing the issues presented by physical geography and citizens not being able to participate (West 2005). In addition, e-democracy has taken e-government to a higher level by offering citizens a direct opportunity to engage in public policy by expressing their opinions online (White 2007). Without an online communication presence, the only input that government officials receive comes through face-to-face communication, phone calls, and letters. Unfortunately, many people will not participate in such processes unless there is a specific topic that interests them on a personal level. When the democratic process is easily available online in formats citizens use in their personal lives, there is a better chance they will take a few minutes to speak up or provide input on issues related to their community. When this shift starts to take place, government officials may have a better understanding of how more people feel about an issue rather than the same people who usually attend and speak at public meetings. There is still no guarantee the

same citizens coming in person, writing letters, and calling will not be the same citizens using these new tools to communicate even more. Cities can only encourage all citizens to participate and provide their feedback online to help gain new ideas and input.

By using the most popular technology currently available, government agencies can provide a citizen-centered democratic process that includes voting on current issues, contributing to the decision-making process, helping to form policies, and providing input on resource allocation and delivery of services to citizens (Kearns, Bend, and Stern 2002). By staying current on the most popular social media networks and technologies, government officials have a better chance of facilitating involvement in the democratic process. Thus, the Internet has provided governments with options to reshape the public sector's view and create a new relationship between citizens and government, whereas, in the past, a limited number of citizens could have such involvement (West 2000). Many online technologies gauge public opinion, build online communities, and support public debate in a valuable way. Thus, a shift has occurred in the way government provides information and solicits input through such interactive tools as online comment forms, service request systems, and online discussions that are beneficial to users and the government agencies involved (Stowers 1999).

Conceptual Framework

The previous sections have presented a holistic view of the literature and the different communication methods available to municipalities. Combining this

information led to development of a framework that describes the ideal attributes of local municipal websites that support virtual communication with citizens. The themes found in the literature to help form the conceptual framework are shown in table 2.1.

Table 2.1: Conceptual framework

Descriptive Categories	Supporting Literature
General Website Structure	Smith 2010
<ul style="list-style-type: none"> Local municipal websites should have easy-to-use search engines. 	White 2007
<ul style="list-style-type: none"> Local municipal websites should include a news section. 	Layne and Lee 2001
<ul style="list-style-type: none"> Local municipal websites should post contact information for all departments. 	Andersen et al. 2011
<ul style="list-style-type: none"> Local municipal websites should make payments for bills, permits, fines, and fees available online. 	Smith 2001
<ul style="list-style-type: none"> Local municipal websites should have mobile phone browser display options. 	Solis 2000
<ul style="list-style-type: none"> Local municipal websites should include blogging. 	Gant and Gant 2002
<ul style="list-style-type: none"> Local municipal websites should incorporate YouTube videos. 	Garson 2006
<ul style="list-style-type: none"> Local municipal websites should offer RSS. 	Layne and Lee 2001
<ul style="list-style-type: none"> Local municipal websites should offer e-mail subscriptions options for different news and information. 	Ropponen 2010
Access, Usage, and Transparency	Sakowicz 2007
<ul style="list-style-type: none"> Local municipal websites should be easy to navigate. 	Panopoulou, Tambouris, and Tarabanis 2008
<ul style="list-style-type: none"> Local municipal websites should make it easy to find commonly requested information quickly. 	O'Reilly 2005
	Chang and Kannan 2008
	Ostergaard and Hvass, 2008
	Dept. of Communities and Local Government 2008
	Goldberg 2009
<ul style="list-style-type: none"> Local municipal websites should be easy to navigate. 	West 2007
<ul style="list-style-type: none"> Local municipal websites should make it easy to find commonly requested information quickly. 	West 2008
	Thornton 2010
	Heeks 2006

Table 2.1: Conceptual framework *continued*

Descriptive Categories	Supporting Literature
<p>Access, Usage, and Transparency cont.</p> <ul style="list-style-type: none"> Local municipal websites should post commonly requested documents and information online. Local municipalities should encourage and promote computer access and usage. Local municipalities should provide free Wi-Fi in public buildings. Local municipalities should offer comprehensive online request systems for citizens to report issues and make requests. 	
<p>Social Media</p> <ul style="list-style-type: none"> Local municipalities should have Facebook pages. Local municipalities should have Twitter pages. Results for local municipalities should offer text-messaging subscription service for news and information. Local municipalities should use smartphone applications. 	<p>Smith 2010</p> <p>Huijboom et al. 2009</p> <p>Kingsley et al. 2009</p> <p>Chang and Kannan 2008</p>
<p>E-participation & e-democracy</p> <ul style="list-style-type: none"> Local municipalities should offer a chat option to speak with employees live. Local municipalities should include message boards for discussions and questions. Local municipalities should provide options for citizens to provide feedback online. Local municipalities should allow comments online on any news postings. 	<p>Kearns, Bend, and Stern 2002</p> <p>Huijboom et al. 2009</p> <p>Henriksson et al. 2006</p> <p>Panopoulou, Tambouris, and Tarabanis 2008</p> <p>Reddick 2009</p> <p>Holzer and Kim 2003</p> <p>Holzer and Kim 2005,</p> <p>Holzer and Kim 2007</p> <p>West 2005</p> <p>White 2007</p> <p>Kearns, Bend, and Stern 2002</p> <p>Stowers 1999</p> <p>West 2000</p>

Table 2.1: Conceptual framework *continued*

Descriptive Categories	Supporting Literature
E-participation & e-democracy cont.	
<ul style="list-style-type: none">• Local municipalities should use different online tools to gauge public opinion.• Local municipalities should solicit information online regarding current relevant topics or items.• Local municipalities should post policy documents online to gather feedback.	

Chapter Summary

A review of the literature revealed four important categories concerning ideal communication tools that should be used by local governments in establishing their virtual communication presence: general website structure; access, usage, and transparency; social media; and e-participation and e-democracy. Each of these categories has specific methods and tools that can be used by government agencies to increase the level and efficiency of communication with the public. Creating a methodology to gauge how well local governments are communicating online allows cities to measure how effective each has been and recommend improvements to be made in the future (Shields and Tajalli 2006). The next chapter will describe the methodology used to describe the attributes in more detail and determine how well local government municipalities' websites meet the ideal model of virtual communication.

Chapter 3: Methodology

This chapter presents the research methodology used to determine how well the websites of mid-sized Texas municipalities met the ideal components of virtual communication at the time of this study. Based on common descriptive categories in the literature, these categories were used in creating an operationalization table, which can be tested through a content analysis of each website. The results of the content analysis are reported with descriptive statistics.

Descriptive Categories and Content Analysis

An ideal model of virtual communication on a municipality's website was derived from the literature. Municipal websites can reach citizens on a more personal level either on the Internet or in person, but by using the Internet, cities can reach more people with the tools described in the literature. Categories identified in the literature were used to create a conceptual framework, which was operationalized according to specific criteria to be tested in each of the four categories. Using a standard content analysis to evaluate the website of each city rendered an overall evaluation of how well each city's website was performing in each of the categories. By measuring against an ideal model cities can determine a benchmark as a way to understand or improve each city's website (Shields 1998). Content analysis with descriptive statistics helped to evaluate city websites' attainment of the criteria. Content analysis is a good option for conducting research because it may cost less than other studies and does not require

time spent waiting on other people. There is no reliance on test subjects or interviewees because it relies on review of documents and information. As long as a website is accessible, it can be tested. Content analysis also allows researchers to revisit and test the same website again if errors appear to be present in the analysis. It can also be beneficial for future researchers to use the same criteria to determine whether changes have been made to the websites.

Categories, Website Criteria to be Assessed, and Measurement

The operationalization table (table 3.1) was created based on the four descriptive categories found in the literature. These four broad categories were further defined by components that constitute them. These components form standards for judging municipal websites. The websites of thirty-two Texas municipalities were reviewed and evaluated based on the criteria of the ideal model. Each component was measured using either a nominal or an ordinal scale, and the results were reviewed and analyzed with descriptive statistics. This technique enabled determination of how well the cities' websites were meeting the various criteria.

Table 3.1: Operationalization table

Descriptive categories	Criteria to be evaluated	Measurement
1. General website structure		
Local municipal websites should have easy to use search engines.	1. Does the website have a built in search engine?	Yes, No, Could not determine, Not applicable
	2. Is the annual budget found as first hit on a search entry for '2012 Annual Budget'?	Yes, No, Could not determine, Not applicable
Local municipal websites should include a news section.	3. Does the website have a dedicated news section?	Yes, No, Could not determine, Not applicable
	4. Has there been a news post in the last 30 days?	Yes, No, Could not determine, Not applicable
Local municipal websites should post contact information for all departments.	5. Does the website have a contact information link visible on the main page?	Yes, No, Could not determine, Not applicable
	6. How many clicks are required to get to the contact page for the city manager?	Number of clicks required
Local municipal websites should make available online payments for bills, permits, fines, and fees.	7. Does the website offer online payment transactions?	Yes, No, Could not determine, Not applicable
	8. If so, which type? (e.g., utility bills, permits, fines, fees, other)	Transaction name, Not applicable
Local municipal websites should have a mobile phone browser display option.	9. Does the website offer a mobile phone browser display option?	Yes, No, Could not determine, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
1. General website structure (continued)		
Local municipal websites should include blogging.	10. Does the website have a blog page?	Yes, No, Could not determine, Not applicable
	11. If so, which users make posts? I.e. communications department, administration officials, elected officials, other.	Poster's name, Not applicable
Local municipal websites should incorporate YouTube videos.	12. Does the city have an official YouTube channel?	Yes, No, Could not determine, Not applicable
	13. If so, how many videos have been uploaded?	Number of videos listed, Not applicable
	14. If so, how many subscribers are there?	Number of subscribers, Not applicable
Local municipal websites should offer RSS.	15. Does the website offer an RSS subscription for news releases?	Yes, No, Could not determine, Not applicable
Local municipal websites should offer e-mail subscription options for different news and information.	16. Does the website offer an email subscription option?	Yes, No, Could not determine, Not applicable
	17. If so, which different options may be selected for specific areas of interest?	Option names, Not applicable
2. Access, usage, and transparency		
Local municipal websites should be easy to navigate.	18. Does the website use drop-down menus?	Yes, No, Could not determine, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
2. Access, usage, and transparency (continued)		
Local municipal websites should make it easy to find commonly requested information quickly.	19. How many clicks are required to find the municipal code of ordinances?	Number of clicks required.
Local municipal websites should post commonly requested documents online.	20. Is elected official information located in one section?	Yes, No, Could not determine, Not applicable
	21. Is there an archive of annual budgets available for viewing?	Yes, No, Could not determine, Not applicable
	22. Does the website post the municipality's check register for viewing?	Yes, No, Could not determine, Not applicable
	23. Does the website post agenda from elected officials' meetings? (e.g., city council meetings)	Yes, No, Could not determine, Not applicable
	24. Does the website post minutes from elected officials' meetings? (e.g., city council meetings)	Yes, No, Could not determine, Not applicable
	25. Does the website make streaming video available online for elected officials' meetings? (e.g., city council meetings)	Yes, No, Could not determine, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
2. Access, usage, and transparency (continued)		
Local municipalities should encourage and promote computer access and usage.	26. Does the municipality offer free computer access at the public library?	Yes, No, Could not determine, Not applicable
	27. Does the municipality offer free computer training courses?	Yes, No, Could not determine, Not applicable
Local municipalities should provide free Wi-Fi in public buildings.	28. Does the city advertise and provide free public Wi-Fi in public places?	Yes, No, Could not determine, Not applicable
	29. If so, where is Wi-Fi advertised as being provided?	Names or places listed with available Wi-Fi, Not applicable
Local municipalities should offer comprehensive online request systems for citizens to report issues and make requests.	30. Does the municipality offer a type of comprehensive online citizen request system?	Yes, No, Could not determine, Not applicable
3. Social media		
Local municipalities should have Facebook pages.	31. Does the municipality have its own Facebook page?	Yes, No, Could not determine, Not applicable
	32. If so, how many “likes” or “friends” does the page have?	Number of “likes” or “friends,” Not applicable
	33. Does the municipality use the events option for posting upcoming events?	Yes, No, Could not determine, Not applicable
	34. How many posts have been made?	Number of posts made, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
3. Social media (continued)		
Local municipalities should have Twitter pages.	35. Does the municipality have its own Twitter page?	Yes, No, Could not determine, Not applicable
	36. How many followers does the page have?	Number of followers, Not applicable
	37. How many tweets has the municipality made?	Number of tweets made, Not applicable
Local municipalities should offer text messaging subscription services for news and information.	38. Does the website offer a text messaging subscription service?	Yes, No, Could not determine, Not applicable
	39. If so, what options may users select to receive text-message alerts?	Names of the different options available for selection, Not applicable
Local municipalities should use smartphone applications.	40. Does the website offer any applications available to be used on iPhones?	Yes, No, Could not determine, Not applicable
	41. If so, what are the types of applications?	Names of the different options available for selection, Not applicable
4. E-participation & e-democracy		
Local municipalities should offer a chat option to speak with employees live.	42. Does the website offer an option for users to chat with someone live for assistance?	Yes, No, Could not determine, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
4. E-participation & e-democracy (continued)		
Local municipalities should include a message board for discussions and questions.	43. Does the website have a message board available for users to post discussion topics?	Yes, No, Could not determine, Not applicable
	44. If so, how many discussion topics posted?	Number of discussion topics posted, Not applicable
	45. How many members are registered on the message board?	Number of registered members, Not applicable
Local municipalities should provide options for citizens to provide feedback online.	46. Does the website have links on each page for users to be able to provide feedback on the website?	Yes, No, Could Not Determine, Not applicable
Local municipalities should allow comments online on any news postings.	47. Does the website allow users to comment on news postings?	Yes, No, Could Not Determine, Not applicable
Local municipalities should use different online tools to gauge public opinion.	48. Does the website contain an active public polling tool on the main page?	Yes, No, Could Not Determine, Not applicable
	49. If so, what is the polling question currently being asked?	Polling question currently being asked, Not applicable
Local municipalities should solicit information online regarding current relevant topics or items.	50. Are there any posts on the main page requesting users to submit their comments on a particular item?	Yes, No, Could not determine, Not applicable
	51. If so, what is being asked?	Question currently being asked, Not applicable

Table 3.1: Operationalization table *continued*

Descriptive categories	Criteria to be evaluated	Measurement
4. E-participation & e-democracy (continued)		
Local municipalities should post policy documents online to gather feedback.	52. Does the website have a post on the main page requesting users to comment on specific policy documents being discussed by elected officials?	Yes, No, Could not determine, Not applicable
	53. If so, what is the document?	Title of the document, Not applicable

Population

Thirty-two Texas cities were selected. Their populations ranged between 44,000 and 140,000 (US Census Bureau 2010). A list of the cities used in this study and their populations, locations, and website addresses are included in the appendix.

Statistics

Descriptive statistics are used to determine percentage distribution of cities meeting or not meeting the evaluated criteria indicated in table 3.1. Additional information was collected to determine how well cities were using the communication tools in place on each website and the specific uses of certain types of tools.

Chapter Summary

This chapter included discussion of the methodology chosen for this study of thirty-two Texas cities' websites and the content analysis of those websites according to

criteria based on categories found in the literature. The criteria will be used to determine how the selected cities' website communications compare to the ideal model. The next chapter includes the results and findings from this research and recommendations for future researchers and cities making changes to their websites.

Chapter 4: Results

The purpose of this chapter is to outline the results from the content analysis of thirty-two Texas municipalities' websites. Interpreting the results indicating how well cities are meeting the idea model for virtual communication will assist cities in determining what they need to improve in future website updates to communicate online more effectively. This chapter is structured according to the descriptive categories previously identified, included detailed results for subareas and accompanying criteria evaluated for the cities' websites.

General Website Structure

The general website structure category is comprised of seventeen items to measure how well local municipalities' websites meet the ideal model of virtual communication. Before beginning this study, these items were expected to be included because many have been available since cities began creating websites and others are so common and inexpensive that they would be expected to be included on a website. Under each category, a brief synopsis of the findings is provided.

Table 4.1 indicates that almost every city included a built-in search engine for citizens to use in easily locating documents of interest to them. The two exceptions in this case were the websites of Victoria and Port Arthur. Both of these cities appeared to create their websites in house, with Victoria having the more current version. Port

Arthur appeared to be extremely outdated in terms of having the most basic website structure.

Table 4.1: Results concerning local municipal websites should have easy-to-use search engines

Item	Yes	No	Not applicable
1. Does the website have a built in search engine?	94%	6%	0%
2. Is the annual budget found as a first hit on a search for "2012 Annual Budget"?	38%	56%	6%

The other aspect examined when reviewing a city website for an easy-to-use search engine was whether users could locate what they were searching for in the first try. All cities are required to produce an annual budget, and almost every site analyzed had old and current budgets posted. The findings revealed only 38% of the search engines had the appropriate document appear as the number one hit in response to a search for "2012 Annual Budget," and many of the search engines returned nothing at all. The local search function is one of the most basic tools anyone would use and needs to be functioning properly for successful online communication.

A dedicated news section is a staple in the setup and structure of government websites, and the analysis shown in Table 4.2 indicates city websites conformed to this rubric. All but one city had a dedicated news page, with Port Arthur being the sole city lacking a dedicated section for news. This lack may again be, in part, because of outdated technology and the website being created in house. The research also indicated

that those cities having dedicated news sections were using them regularly. All cities with dedicated news pages had posted news in the 30 days prior to their evaluation for this study.

Table 4.2: Results concerning local municipal websites should include a news section

Item	Yes	No	Not applicable
3. Does the website have a dedicated news section?	97%	3%	0%
4. Has there been a news post in the last 30 days?	97%	0%	3%

Without easily located contact information, citizens would not be able to communicate effectively with city officials. The results in Table 4.3 indicate that most cities recognize this fact and post their contact information in easily located areas. Only two cities did not: Baytown and Port Arthur. A second question addressed another way to determine the ease of finding contact information by asking how many clicks were required to find contact information for the city manager's department in each city. On average, it took only 1.06 clicks for the thirty-two cities, a very low figure.

Table 4.3: Results concerning local municipal websites should post contact information for all departments

Item	Yes	No	Not applicable
5. Does the website have a contact information link visible on the main page?	94%	6%	0%
6. How many clicks are required to get to the contact page for the City Manager's Department?	34 total		1.06 average

The web opened the doors for completing financial transactions online, and the research revealed 100% of the cities analyzed have taken advantage of this capability. This function provides a great service and opportunity for citizens to pay for services easily. Overall, the results in Table 4.4 indicate most cities offered, at a minimum, utility bill payment, court citation payment, and alarm permits as some of the most common services offered.

Table 4.4: Results concerning local municipal websites should make payments for bills, permits, fines, and fees available online

Item	Yes	No	Not applicable
7. Does the website offer online payment transactions?	100%	0%	0%
8. If so, which type? (e.g., utility bills, permits, fines, fees, other)	Utility bill, citations, EMS services, property taxes, parks & rec programs, alarm permits, weed abatement, hangar rental, retiree insurance, loan payments, lease payments, permits, pet registration, facility rental, convention tickets, garage sale permits, red light fines, code enforcement		

It is becoming increasingly common for individuals to have smartphones with access to the Internet and browsers specifically for viewing websites on a cellular phone. This method of communication is important, and the results in Table 4.5 concerning this item indicate only 53% of the cities had a mobile display option in place.

Many of the websites were set up so they could be read on such devices, but users had to use the zoom feature a great deal to click or read an item. A mobile version makes it much easier for users to find what they are looking for online. These results show that not many cities had taken advantage of this opportunity to help citizens use their websites.

Table 4.5: Results concerning local municipal websites should have a mobile phone browser display option

Item	Yes	No	Not applicable
9. Does the website offer a mobile phone browser display option?	53%	47%	0%

Blogging is a relatively new communication method online and one not expected to be used by cities at this time. However, as Table 4.6 indicates, seven of the thirty-two cities were taking advantage of this new communication method. The city that appeared to be taking the greatest advantage of this area was the City of Round Rock, which started its blog in 2007. Round Rock's blog includes many different staff members contributing, compared to other cities that had only one area, such as the library, making blog posts.

In 2011, over 2 billion views of YouTube videos were reported each day (Scott 2011). This number cannot be ignored. People love watching videos, and many cities could communicate with their citizens on a personal level in this way. The results in Table 4.7 indicate 72% of the cities were trying to take advantage of this communication

method by having their own designated YouTube pages and, on average, there were 191 videos posted. While subscriptions are not a good indicator as to how many people have watched each video, it does show how many chose to be notified when new videos are posted by the cities and it shows the interest level. The average number of subscribers was 74.

Table 4.6: Results concerning local municipal websites should include blogging

Item	Yes	No	Not applicable
10. Does the website have a blog page?	22%	78%	0%
11. If so, which users make posts? (e.g., communications department, administration officials, elected officials, other)	Library staff, city staff; comment option available for citizens		

Table 4.7: Results concerning local municipal websites should incorporate YouTube videos

Item	Yes	No	Not applicable
12. Does the city have an official YouTube channel?	72%	28%	0%
13. If so, how many videos have been uploaded?	4,404 total		191 average
14. If so, how many subscribers are there?	1,696 total		74 average

RSS has been around since the creation of the Netscape browser, and should be something that all cities offer. However, the results in Table 4.8 indicate only 56% of the cities had this option at the time of this study. Even if they did not think it was worth

providing, it is a common tool that many still use for news feeds and is another tool that cities should use to provide news and updates in a streamlined manner.

Table 4.8: Results concerning local municipal website should offer RSS (Really Simple Syndication)

Item	Yes	No	Not applicable
15. Does the website offer an RSS subscription for news releases?	56%	44%	0%

E-mail subscriptions for news and information are another basic service area that should be provided by every city. This service allows information to be e-mailed directly to citizens so they do not have to check the website to access the most current news or updates. It is a low-cost way for cities to reach the public. As shown in Table 4.9, 78% of the cities in this study were using some form of e-mail subscription option. Many had specific areas users could select so they did not have to receive mass e-mails on every topic, including emergency notifications, calendar alerts, and newsletters.

Table 4.9: Results concerning local municipal websites should offer e-mail subscription options for different news and information

Item	Yes	No	Not applicable
16. Does the website offer an e-mail subscription option?	78%	22%	0%
17. If so, which options may be selected for specific areas of interest?	Newsletter, emergency notifications, calendar alerts, severe weather alerts, updates to websites, departmental specific news, legal notices, public notices, agendas and minutes, job postings, volunteer opportunities		

Access, Usage, and Transparency

The access, usage, and transparency category is comprised of thirteen items for measuring how well local municipalities were meeting the ideal model for virtual communication on their websites. This area has received more attention recently in terms of ensuring that citizens are able to access websites. Transparency has also become a focus of cities because citizens have greater expectations of knowing what is going on because information can be easily provided on the Internet. Under each category, a brief synopsis of the findings is provided.

Drop-down menus are a basic tool that makes viewing a website much easier for citizens of all skill types. The results shown in Table 4.10 indicate that 88% of the cities chose to use drop-down menus. The 12% of websites not using drop-down menus

required more clicks to locate other information for this study, replicating an action similar to what citizens would do if they were trying to navigate through a city website without drop-down menus. It is also important to note drop-down menus can be a detriment if used poorly, such as a long list of pages making it difficult to scroll through and find what is needed. Cities should work carefully to organize these drop-down lists in a succinct format. For example, departments could be sorted in sub-menus alphabetically instead of one long list of every department page in the city.

Table 4.10: Results concerning local municipal websites should be easy to navigate

Item	Yes	No	Not applicable
18. Does the website use drop-down menus?	88%	12%	0%

Another way to test how well cities' websites are set up for communicating with citizens is to calculate how many clicks it takes to get to common documents. In the case of local municipalities, they all have a code of ordinances regulating the city, and citizens should be able to find this information without major problems. Investigation of the thirty-two city websites indicated it took 1.5 clicks on average to locate the information (table 4.11).

Table 4.11: Results concerning local municipal websites should make it easy to find commonly requested information quickly

Item	Total	Average
19. How many clicks are required to find the municipal code of ordinances?	48	1.5

All items in table 4.12 are commonly requested information cities should be trying to make more easily accessible to citizens. From the analysis of the cities' websites, it is clear this is a priority for most of them. Streaming video was provided at only 78%, but not all cities can afford to televise or record their public meetings, so they would not have videos to post online. The only other low mark was check registers being posted on only 47% of the websites. However, posting such financials online is a fairly new concept for cities, though it is promoted by the Texas Comptroller's office. In the future, the number of cities posting this information online may begin to rise as more cities move to this type of transparency.

Table 4.12: Results concerning local municipal websites should post commonly requested documents and information online

Item	Yes	No	Not applicable
20. Is elected official information located in one section?	100%	0%	0%
21. Is there an archive of annual budgets available for viewing?	91%	9%	0%
22. Does the website post the municipality's check register for viewing?	47%	53%	0%
23. Does the website post agendas from elected officials' meetings? (e.g., city council meetings)	100%	0%	0%
24. Does the website post minutes from elected officials' meetings? (e.g., city council meetings)	91%	9%	0%
25. Does the website make streaming video available online for elected officials' meetings? (e.g., city council meetings)	78%	22%	0%

While computers are becoming more affordable, there are still going to be segments of the population in each city that either cannot afford one or choose not to purchase one. Thus, it is important for cities to offer opportunities to citizens to use computers if the cities want to communicate in more ways with them. The results shown in Table 4.13 indicate 75% of the cities provided free computer access in their public libraries. For 22% of the cities, this item was not applicable because the cities did not operate their own libraries. Otherwise, this number would probably be much closer to 100%. While providing computer access is good, it is also important to provide training for those not familiar with the technology. Fewer cities offered such training than offered free computer access. In addition, the cities that did not operate their own libraries were included in the “not applicable” results.

Table 4.13: Results concerning local municipalities should encourage and promote computer access and usage

Item	Yes	No	Not applicable
26. Does the municipality offer free computer access at the public library?	75%	3%	22%
27. Does the municipality offer free computer training courses?	50%	28%	22%

Wi-Fi Internet access is becoming much more common and being provided by many private-sector businesses that citizens might visit. Cities should also consider providing this service for their citizens. The results shown in Table 4.14 indicate that 56% of the cities advertised free Wi-Fi, with most indicating it was available in the

libraries. San Marcos, for example, had public Wi-Fi in many more buildings besides the library, but it was not advertised on the website. This may be the case with some of the other cities.

Table 4.14: Results concerning local municipalities should provide free Wi-Fi in public buildings

Item	Yes	No	Not applicable
28. Does the city advertise and provide free public Wi-Fi in public places?	56%	44%	0%
29. If so, where is Wi-Fi advertised as being provided?	Libraries, community activity center, recreation center, airport terminal, parks, police department, city hall, downtown, boys/girls club, civic center, training center, golf course		

Another way for cities to make it easier for citizens to communicate about issues and concerns is by implementing an online citizen-request system for residents to log in on and make reports. Such a system provides a consolidated area so that citizens know where to go to receive feedback through the system and learn whether problems they have reported have been addressed. The results shown in table 4.15 indicate that only 56% of the cities had implemented one of these systems for their citizens.

Table 4.15: Results concerning local municipalities should offer comprehensive online request systems for citizens to report issues and make requests

Item	Yes	No	Not applicable
30. Does the municipality offer a type of comprehensive online citizen request system?	56%	44%	0%

Social Media

The social media category is comprised of eleven items to measure how well local municipalities were meeting the ideal model of virtual communication on their websites. Use of social media is one of the newest areas that cities have become involved in over the last few years, largely because social media outlets have become such a large part of the way people communicate day to day. Cities have to learn and adapt to the ways their citizens communicate and seek information to offer the best options possible for communication on their websites. Under each category, a brief synopsis of the findings is provided.

Use of Facebook, Twitter and YouTube, is still thriving and increasing among Internet users, and because these online communication tools are free, cities have no excuse for not trying to use them to communicate information to their citizens. Of the thirty-two city websites analyzed, all but three had Facebook pages. The average number of “likes” per city Facebook page was 4,036, indicating a large number of users interested in city news and information. With a little bit of effort and publication, cities could reach many people at no cost. The results in Table 4.16 also indicate that cities

were fairly active with the number of posts made, averaging 30 in September 2012. One thing the cities were not taking advantage of was the built-in calendar/events page on Facebook, with only 50% using it to publicize their events.

Table 4.16: Results concerning local municipalities should have Facebook pages

Item	Yes	No	Not applicable
31. Does the municipality have its own Facebook page?	91%	9%	0%
32. If so, how many “likes” or “friends” does the page have?	117,041 total		4,036 average
	Yes	No	Not applicable
33. Does the municipality use the events option for posting upcoming events?	50%	41%	9%
34. How many Facebook posts were made in September 2012?	963 total		30 average

The results in Table 4.17 indicate that almost as many cities had Twitter pages as had Facebook pages, at 88% and 91%, respectively. In addition, fewer Twitter users than Facebook users were following these municipalities. Cities can use these data to help determine whether they need to focus more on a particular social media type if their citizens appear to be more interested in one type than another. However, overall, it is clear that cities are progressing by using some of the most popular social media tools to reach their citizens.

The results in Table 4.18 indicate a 50/50 split in the number of cities that distributed information via text-messaging. Most of those that did so included it as an option within the e-mail subscription choices. Texting is a common way for people to communicate, and cities should try to take advantage of it. Stand-alone programs available online allow users to sign up to receive information, so cities can send out news blasts or relevant information to users who have signed up to receive them. Although costs are involved with this communication method, it is still a relatively low-cost way to reach citizens with important information.

Table 4.17: Results concerning local municipalities should have Twitter pages

Item	Yes	No	Not applicable
35. Does the municipality have its own Twitter page?	88%	12%	0%
36. How many 'followers' does the page have?	42,885 total		1,532 average
37. How many tweets has the municipality made?	27,101 total		968 average

Table 4.18: Results concerning local municipalities should offer text-messaging subscription services for news and information

Item	Yes	No	Not applicable
38. Does the website offer a text messaging subscription service?	50%	50%	0%
39. If so, what options may users select to receive text-message alerts on?	Emergency notifications, calendars, jobs, news, library, police notices, dept news		

Smartphone applications are also becoming increasingly popular. The iPhone led this innovation with simple and easy-to-use applications available at low or no cost. The results in Table 4.19 indicate that 44% of the cities were using some sort of smartphone application for their citizens, usually for crime tip reporting, library catalogs, or citizen requests. These types of applications encourage citizens to communicate because they are on a device they are familiar with and always have on them. Users are able to take pictures and submit information in a short period of time. If cities can promote this use, employees will be able to receive a great deal of information they may have been missing before when it was not as easy to report a problem.

Table 4.19: Results concerning local municipalities should use smartphone applications

Item	Yes	No	Not applicable
40. Does the website offer any applications available to be used on iPhones?	44%	56%	0%
41. If so, what are the types of applications?	Law enforcement apps, tip reporting apps, citizen request tracker, resources, facilities, library app, citizen send request app, seedclickfix reporting app, library apps		

E-Participation & E-Democracy

The e-participation and e-democracy category is comprised of twelve items for measuring how well local municipalities were meeting the ideal model for virtual

communication on their websites. This is a final area cities have started getting involved in over the last few years, but it is being adopted more slowly than the services in the other categories. Encouraging participation and feedback in the democratic process through the web has not been entirely embraced according to this study's findings. If cities truly want to involve their citizens and gather feedback on important topics and areas of interest, then they need to begin posting and requesting information on the web. Doing so gives citizens the opportunity to review the information. In addition, providing this medium of communication for responses from citizens will increase participation because not all residents have the time to attend or speak in person at public meetings. Cities will have to learn to adapt to receive the input they need for decision making. Under each category, a brief synopsis of the findings is provided.

Live chat rooms are not a new concept and have been used by private-sector websites for years. They provide another option for citizens to communicate, and some may prefer this method. Not everyone likes talking on the phone or visiting a city office in person. Live chat allows a real-time discussion that is more beneficial than a one-way e-mail. The results shown in Table 4.20 indicate that only one city's library was offering a live-chat option.

Table 4.20: Results concerning local municipalities should offer a chat option to speak with employees live

Item	Yes	No	Not applicable
42. Does the website offer an option for users to chat with someone live for assistance?	3%	97%	0%

Offering message boards is a good way to encourage dialogue and provide another platform for citizen input on different issues. The results shown in Table 4.21 indicate that only 19% of the cities' websites had any sort of message-board option. Unfortunately, when message boards were available, there were low numbers of discussion topics, even when many members were signed up to access the boards. This type of discussion board needs moderation and use could be increased by posing some probing questions to encourage people to begin communicating. Message boards are a much less formal way to communicate and could help generate ideas. They are also a low-cost option. The City of San Marcos, for example, had created a free message board to gather online input regarding a proposed smoke-free initiative. Quite a few citizens used it to post their thoughts and ideas concerning what the city should consider.

Table 4.21: Results concerning local municipalities should include message boards for discussions and questions

Item	Yes	No	Not applicable
43. Does the website have a message board available for users to post discussion topics?	19%	81%	0%
44. If so, how many discussion topics posted?	2 total		
45. How many members are registered on the message board?	10,475 total	1,746 average	

Feedback is important, whether it is in response to specific questions or is offered as an option on the website in general. In addition, putting a link on a page for users to follow to give feedback is not difficult. However, according to the results in Table 4.22, only 72% of the reviewed city websites had easily available ways to give feedback. All cities should offer this option.

Table 4.22: Results concerning local municipalities should provide options for citizens to provide feedback online

Item	Yes	No	Not applicable
46. Does the website have links on each page for users to be able to provide feedback on the website?	72%	28%	0%

As indicated by the results in Table 4.23, none of the thirty-two cities in this study allowed users to post comments on news stories or postings. This is a relatively easy option to offer, and it gives citizens a place to communicate directly on a specific topic. From a technology standpoint, cities should not have an issue with implementing this type of system, so they may have other reasons for not allowing users to give comments.

Table 4.23: Results concerning local municipalities should allow comments online on any news postings

Item	Yes	No	Not applicable
47. Does the website allow users to comment on news postings?	0%	100%	0%

Cities should make an effort to take advantage of the web, including gauging public opinion. The results shown in Table 4.24 indicate that only 22% of the websites reviewed had any type of polling tool or questions being asked for feedback purposes. Cities are constantly reviewing new programs and processes, so they should always have something they want input on from the citizens. It is just a matter of making the issues and polling technology available on the web so people can give their input.

Table 4.24: Results concerning local municipalities should use different online tools to gauge public opinion

Item	Yes	No	Not applicable
48. Does the website contain an active public polling tool on the main page?	22%	78%	0%
49. If so, what is the polling question currently being asked?	Customer survey; pay as you throw option survey, main street redevelopment survey; Engage Denton mindmixer website with multiple questions seeking input; capital improvements survey		

Similar to the item on gauging public opinion, question 50 in Table 4.25 was more specific and focused on determining whether cities were posting specific information online and requesting citizens to respond to the information. Only one of the thirty-two cities had placed any such question on its homepage. A website is a major communication tool, but cities cannot expect good feedback if they are not posing questions online or giving citizens opportunities to comment.

Question 52 specifically addressed websites having any sort of policy document, such as an ordinance, posted on the main page requesting citizen input. Elected city officials are constantly drafting ordinances and making changes to city regulations that could affect citizens. If the cities were to post the questions in advance of city council meetings, they may receive better feedback. As shown in Table 4.26, none of the cities' websites reviewed provided any sort of policy document for comment.

Table 4.25: Results concerning whether local municipalities should solicit information online regarding current relevant topics or items

Item	Yes	No	Not applicable
50. Are there any posts on the main page requesting users to submit their comments on a particular item?	3%	97%	0%
51. If so, what is being asked?	Feedback requested on a possible landfill expansion		

Table 4.26: Results concerning whether local municipalities should post policy documents online to gather feedback

Item	Yes	No	Not applicable
52. Does the website have a post on the main page requesting users to comment specifically on a policy document being discussed by elected officials?	0%	100%	0%
53. If so, what is the document?	Not applicable		

Chapter Summary

This chapter included discussion of the results and findings from the content analysis of thirty-two Texas cities' websites according to criteria based on categories found in the literature. The next chapter includes a discussion of the results and findings from this study, item cities are doing well on and items cities can work on, as well as recommendations for future researchers.

Chapter 5: Conclusion

Chapter 5 concludes the discussion of this research project based on the conceptual framework, key information revealed in the results of the content analysis, where cities are missing the mark, and recommendations for further studies.

Summary

The purpose of this research project was to determine to what extent mid-sized Texas municipalities' websites meet the criteria of an ideal model of virtual communication. This chapter includes discussion of each of the four categories and provides an assessment of how cities are doing in communicating with their citizens online.

General Website Structure

Items Cities Are Doing Well on

Most of the cities whose websites were reviewed for this study were committed to creating websites that meet the basic needs of communication online. All but one site had an easy-to-use search engine clearly identified on each page. The cities also committed to providing news and information on their websites, and most of them were posting news updates regularly for their readers. Finding contact information for reaching an employee for questions and answers was also not an issue for most of the cities. In addition, cities were doing a great job of providing ways for citizens to complete financial transactions online, giving residents more options for paying their

bills in addition to mailing payments or paying in person. Other areas in which cities were successful were spreading information through official YouTube pages and offering e-mail subscription options for their citizens.

Items Cities Can Work on

While most of the cities did well on general website structure, there are still improvements to be made. Tagging items so searches pull the correct information is relatively easy to do. Webmasters could address this issue in the backend to ensure documents are tagged properly for indexing. Blogging is a simple and straight forward way for cities to provide information to citizens and encourage discussions, but many cities have not moved forward with implementation (only 22%). Another simple communication method many cities are failing to take advantage of is a mobile phone browser display option, with only 53% having one in place. Considering the popularity of smartphones, there is no excuse for cities not to provide this option with their overall website setup. Finally, cities should not move away from older technology as an option for citizens, such as RSS feed choices. Only 56% of the reviewed websites still offered RSS as an option, even though it still used today.

Access, Usage, and Transparency

Items Cities Are Doing Well on

Many of the cities reviewed did very well in the category of access, usage, and transparency. Of the city websites reviewed, 88% had some sort of drop-down menu,

making it easier for citizens to search for information more quickly. Finding important documents such as the code of ordinances required only 1.5 clicks on average.

Concerning posting important documents for citizens to review, annual budgets, elected officials' meeting agendas, and elected officials' meeting minutes were all available and located in the drop-down menus. Finally, concerning promoting computer access and use, cities were doing a great job of providing free computer access at their public libraries. Doing so is extremely important to help reach those who many not have computers at home.

Items Cities Can Work on

One of the items investigated in this study was the online availability of cities' check registers, which has become a new standard in providing transparency to citizens. Unfortunately, this is an area cities in this study needed to work on. Only 47% of the cities were providing the information at the time of this study. The other area that can be improved upon is computer training and free computer use at libraries. Even the most basic of training can benefit those unfamiliar with using a computer and surfing the Internet. With training, users are more likely to make the most of their time on the computers, and cities will benefit from these users' communication.

Furthermore, cities should promote more options for free Wi-Fi service than just in the libraries. Giving more options for citizens to surf the Internet in public places will encourage them to be more active and seek more information online, including on the

city websites. Cities may also need to improve promotion of current places that offer Wi-Fi. Finally, another area cities could invest in is citizen request programs that allow a type of one-stop shop for reporting concerns and contacting departments. These systems provide residents with a case number so staff can follow up and ask questions or let residents know the issues are resolved. Many private-sector businesses handle complaints online in this manner. The study results indicate that only 56% of the cities had a citizen request system in place on their websites.

Social Media

Items Cities Are Doing Well on

Many of the cities reviewed had made the commitment to join social-media sites such as Facebook and Twitter. Of the cities included in this study, 91% had Facebook pages in, and 88% had Twitter pages. These two social-media sites are currently among the most popular on the Internet. Another interesting result of this study was determining how many people were subscribed to the different pages. On average, 4,035 people were following each city on Facebook, and 1,532 were following on Twitter. Although these numbers may seem low considering the city population ranges of 44,000–140,000, the way social-media functions is that subscribers can share and repost information they are subscribed to. Thus, while cities may be sending information to only 4,035 people, that information may be making its way to news

outlets, friends of citizens, different businesses, and so on. The results also indicate cities to be somewhat active on Facebook, averaging 30 posts in September 2012 alone.

Items Cities Can Work on

Text messaging is an area cities should be focusing on improving to provide additional means of communication with citizens. The results indicate only 50% of the cities provided an option for users to sign up to receive text-messaging alerts.

Considering this is a common form of communication, that not many cities are taking advantage of this tool is surprising. Another area cities can focus on to provide more options for government services is smartphone applications. The results of this study indicate that only 44% of the cities were taking advantage of iPhone applications for their citizens. Available applications among these cities included police tip reporting, citizen requests, and library catalogs. Although creating smartphone applications costs money compared to such free alternatives as Facebook and Twitter, such applications are useful tools that will create additional ways for citizens to interact with their local municipalities.

E-Participation and E-Democracy

Items Cities Are Doing Well on

The category of e-participation and e-democracy is the only one that this study's findings did not indicate cities were doing well in meeting the criteria. Most cities in this study have been slow to add more interaction and participation online. Many cities

were not requesting feedback on pressing issues or important policy documents online through polls or other mechanisms.

Items Cities Can Work on

Message boards can encourage community discussion and provide city employees with more feedback on different topics of interest. This study found only 19% of the cities provided this option, but even those with the tools in place were not encouraging feedback by providing starter topics. Most of the message boards had no topics, even though many community members were signed up. Another area in which cities could add more services is a live-chat option for citizens to communicate with city staff in real time. Only one city in this study had implemented this program through its library for asking library-related questions. The primary challenge in offering this service would be finding the resources to staff live chat. In addition, each department is unique, so it may be difficult to answer many of the questions online through a chat program without a designated chat employee from each department.

Another important feature cities should be offering is posting polls and policy documents online to request feedback to help city staff and elected officials make decisions. Doing so may be one of the most effective ways to gather feedback on new ideas or documents. This study found only 22% of the reviewed websites had a poll in place, one city was requesting feedback on a topic, and no city with policy documents

on the main page for discussion. Posting important documents with their regular website updates would add no additional cost.

Overall, cities have come a long way in finding methods for communicating effectively online. This study determined there are areas in which cities are performing well, but there are deficiencies in some of the websites that would not take much effort to address. It is a matter of choice and a commitment to improved virtual communication standards in order for cities to make the necessary changes for their citizens.

Recommendations for Further Studies

In this study, a benchmark was created for evaluating what cities should be using to communicate with citizens on the Internet. It would be beneficial if future researchers were to follow up with additional research to determine whether the use of tools and communication methods has changed. Additional research could investigate new ways to communicate and different models of communication, such as Wiki's, that cities might be using or moving toward in the future.

Bibliography

- Andersen, Kim Normann, Rony Medaglia, Ravi Vatrappu, Helle Zinner Henriksen, and Robin Gauld. 2011. The forgotten promise of e-government maturity: Assessing responsiveness in the digital public sector. *Government Information Quarterly* 28, 439–445.
- Chang, Ai-Mei, and P. K. Kannan. 2008. *Leveraging Web 2.0 in government*. Washington, DC: IBM Center for the Business of Government.
- Department for Communities and Local Government. 2008. Online social networks: Research report. London: Communities and Local Government. <http://www.communities.gov.uk/documents/communities/pdf/1000435.pdf>.
- Dunne, Kerill. 2010. Can online forums address political disengagement for local government? *Journal of Information Technology & Politics* 7 (4): 300–317.
- Gant, Jon P., and Diana Burley Gant. 2002. Web portal functionality and state government eservice. Proceedings of the 35th Annual Hawaii International Conference on System Sciences. <http://www.computer.org/comp/proceedings/hicss/2002/1435/05/14350123.pdf>.
- Garson, G. David. 2006. *Public information technology and e-governance: managing the virtual state*. Raleigh, NC: Jones and Bartlett Publishers.
- Goldberg, Jeffrey S. 2009. State of Texas municipal websites: A description of website attributes and features of municipalities with populations between 50,000–125,000. Research project. Texas State University–San Marcos. <https://digital.library.txstate.edu/handle/10877/3482>
- Heeks, R. 2006. *Benchmarking e-government: Improving the national and international measurement, evaluation and comparison of e-government*. Manchester, UK: Development Informatics Groups.
- Henriksson, Anders, Yiori Yi, Belinda Frost, and Michael Middleton. 2006. Evaluation instrument for e-government websites. In *Proceedings Internet Research 7.0: Internet Convergences*, Brisbane, Queensland, Australia.
- Holzer, Marc, and Seang-Tae Kim. 2003. *Digital governance in municipalities worldwide: An assessment of municipal websites throughout the world*. Newark, NJ: E-Government Institute/National Center for Public Productivity, Rutgers, the State

- University of New Jersey, Campus at Newark.
<http://unpan1.un.org/intradoc/groups/public/documents/aspa/unpan012905.pdf>.
- Holzer, Marc and Seang-Tae Kim. 2005. *Digital governance in municipalities worldwide: A longitudinal Assessment of municipal websites throughout the world*. Newark, NJ: E-Government Institute/National Center for Public Productivity, Rutgers, the State University of New Jersey, Campus at Newark.
<http://unpan1.un.org/intradoc/groups/public/documents/aspa/unpan022839.pdf>.
- Holzer, Marc and Seang-Tae Kim. 2007. Digital governance in municipalities worldwide: A Longitudinal Assessment of municipal websites throughout the world. Newark, NJ: E-Government Institute/National Center for Public Productivity, Rutgers, the State University of New Jersey, Campus at Newark.
<http://unpan1.un.org/intradoc/groups/public/documents/aspa/unpan031374.pdf>.
- Huijboom, N. T., V. Broek, V. Frissen, L. Kool, B. Kotterink, M. Nielsen, and J. Millard. 2009. *Public services 2.0: The impact of social computing on public services*. Luxembourg: European Commission, Joint Research Centre, Institute for Prospective Technological Studies. <http://ftp.jrc.es/EURdoc/JRC54203.pdf>.
- Kearns, I., J. Bend, and B. Stern. 2002. *E-participation in local government*. London: Institute of Public Policy Research.
- Kingsley, Chris, Allison Brummel, Catherine Lamb, Jack Higgins, Andrew Biros, and Callan Smith. 2009. *Making the most of social media: 7 lessons from successful cities*. Philadelphia: Fels Institute of Government, University of Pennsylvania.
<http://www.fels.upenn.edu>
- Layne, Karen, and Jungwoo Lee. 2001. Developing fully functional e-government: A four stage model. *Government Information Quarterly* 18, 122–136.
- O'Reilly, Tim. 2005. What is Web 2.0? O'Reilly radar. <http://radar.oreilly.com/2005/09/what-is-web-20.html>.
- Ostergaard, S. D., and M. Hvass. 2008. eGovernment 2.0—How can government benefit from web 2.0? *Journal of Systemics, Cybernetics & Informatics* 6 (6): 13–18.
<http://www-05.ibm.com/dk/files/EGovernment08.pdf>
- Panopoulou, Eleni, Efthimios Tambouris, and Konstantinos Tarabanis. 2008. A framework for evaluating websites of public authorities. *Aslib Proceedings* 60 (5): 517–546.

- Reddick, Christopher G. 2009. Factors that explain the perceived effectiveness of e-government: A survey of United States city government information technology directors. *International Journal of Electronic Government Research* 5 (2): 1–15.
- Ropponen, Teemu Ilmari. 2010. Designing e-government services for collaboration between citizens and the public sector. Master's thesis. Alto University School of Science and Technology. Helsinki, Finland. <http://lib.tkk.fi/Dipl/2010/urn100384.pdf>.
- Sakowicz, M. 2007. How to evaluate e-government: Different methodologies and methods. Paper presented at the 11th Annual NISPA Conference, Bucharest, Romania.
- Scott, Jeremy. 2011. 25 jawdropping YouTube video facts, figures, & statistics. <http://www.reelseo.com/youtube-statistics/>
- Shields, Patricia M. 1998. "Pragmatism as philosophy of science: A tool for public administration". *Research in Public Administration* 4:195-225. <https://digital.library.txstate.edu/handle/10877/3954>
- Shields, Patricia M. and Tajalli, Hassan 2006. "Intermediate theory: The missing link in successful student scholarship". *Journal of Public Affairs Education* 12 (3): 313-334. <https://digital.library.txstate.edu/handle/10877/3967>
- Smith, A. G. 2001. Applying evaluation criteria to New Zealand government websites. *International Journal of Information Management* 21:137-149.
- Smith, A. 2010. Government online: The Internet gives citizens new paths to government services and information. Pew report. <http://www.pewinternet.org/Reports/2010/Government-Online.aspx>
- Solis, Eddie. 2000. Assessing Texas state agency websites for minimal website accessibility standards. Applied research project. Texas State University–San Marcos. <http://ecommons.txstate.edu/arp/187>.
- Stowers, Genie N. L. 1999. Becoming cyberactive: State and local governments on the World Wide Web. *Government Information Quarterly* 16, (2): 111.
- Thornton, Ruth Anne. 2010. Texas state agency websites: A descriptive assessment of attributes that support online citizen engagement. Applied research project, Texas State University–San Marcos. <http://ecommons.txstate.edu/arp/347>.

US Census Bureau, Census 2010 Summary File 1.
<http://2010.census.gov/2010census/data/>.

West, Darrell. 2000. Assessing e-government: The Internet, democracy, and service delivery by state and federal governments. *Center for Public Policy, Brown University, Rhode Island*.

———. 2005. E-government and the transformation of service delivery and citizen attitudes. *Public Administration Review* 64 (1): 15–27.

———. 2007. Global e-government, 2007. <http://www.insidepolitics.org/egovt07int.pdf>.

———. 2008. *State and federal electronic government in the United States*. Washington, DC: Brookings Institution.

White, Jay D. 2007. *Managing information in the public sector*. Armonk, NY: M. E. Sharpe.

Appendix

Table: Texas Cities with Populations of 44,000–140,000 (US Census Bureau 2010)

City name	Population	Official city website address
Mesquite	139,824	http://www.cityofmesquite.com/
McKinney	131,117	http://www.mckinneytexas.org
McAllen	129,877	http://www.mcallen.net
Killeen	127,921	http://www.killeentexas.gov
Waco	124,805	http://www.waco-texas.com/
Carrollton	119,097	http://www.cityofcarrollton.com/
Beaumont	118,296	http://www.cityofbeaumont.com/
Abilene	117,063	http://www.abilenetx.com/
Denton	113,383	http://www.cityofdenton.com
Midland	111,147	http://www.midlandtexas.gov
Wichita Falls	104,553	http://www.wichitafallstx.gov/
Odessa	99,940	http://www.odessa-tx.gov
Round Rock	99,887	http://www.roundrocktexas.gov/
Richardson	99,223	http://www.cor.net/
Tyler	96,900	http://www.cityoftyler.org/
Lewisville	95,290	http://www.cityoflewisville.com
College Station	93,857	http://www.cstx.gov
Woodlands		http://www.thewoodlandstownship-tx.gov/
Township	93,847	
San Angelo	93,200	http://www.sanangelotexas.org/
Longview	80,455	http://www.longviewtexas.gov/
Sugar Land	78,817	http://www.sugarlandtx.gov/
Bryan	76,201	http://www.bryantx.gov/
Baytown	71,802	http://www.baytown.org
Missouri City	67,358	http://www.missouricitytx.gov/
Temple	66,102	http://www.ci.temple.tx.us/
Harlingen	64,849	http://www.myharlingen.us/
Flower Mound	64,669	http://www.flower-mound.com/
North Richland Hills	63,343	http://www.nrhtx.com/
Victoria	62,592	http://www.victoriatx.org/
Port Arthur	53,818	http://www.portarthur.net/
Galveston	47,743	http://www.cityofgalveston.org/
San Marcos	44,894	http://www.sanmarcostx.gov

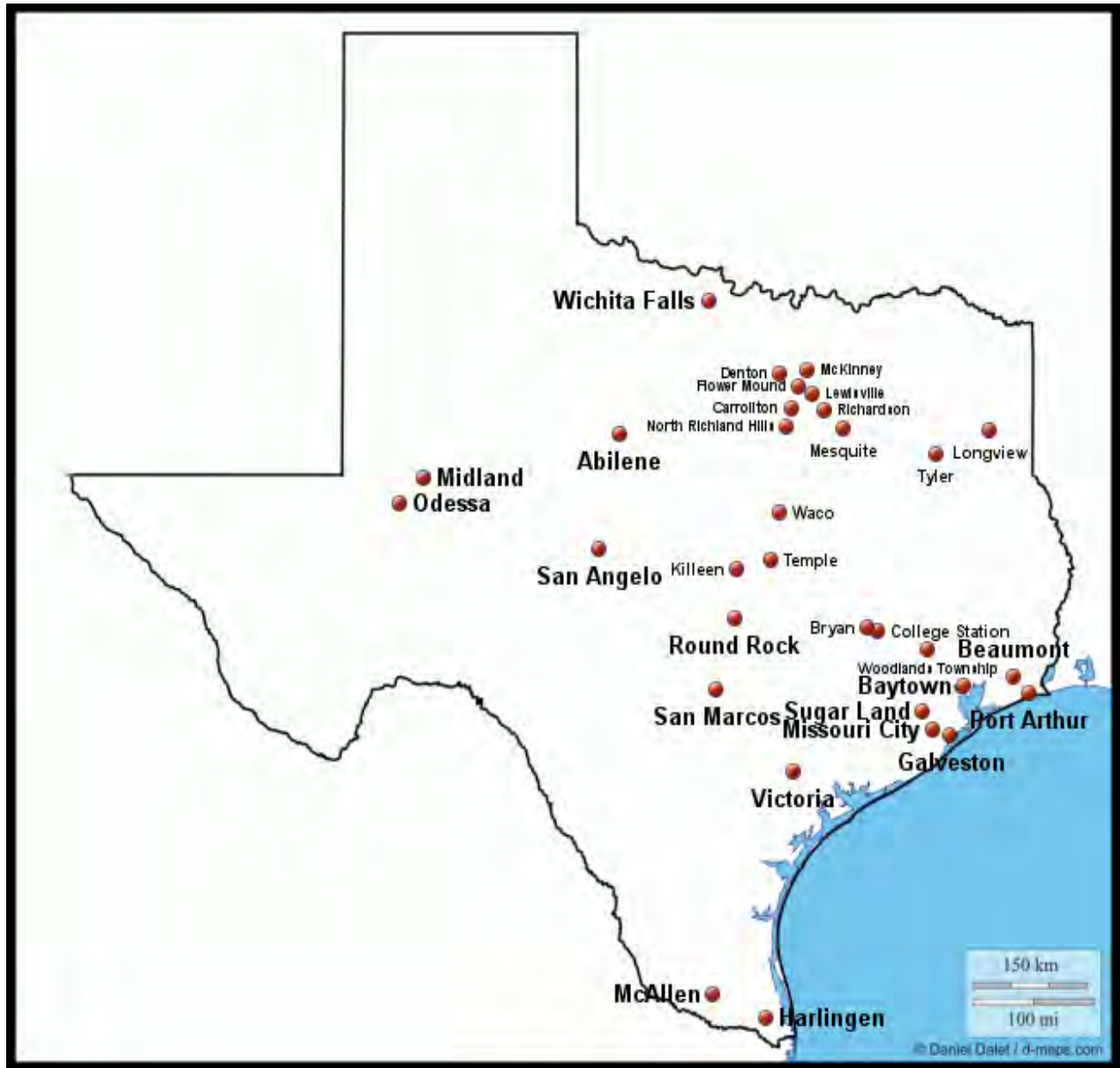


Figure: Map of Texas showing thirty-two cities included in this research