

Metropolitan Websites as Urban Communication

Leo W. Jeffres

School of Communication
Cleveland State University

Carolyn A. Lin

Department of Communication
University of Connecticut

The Internet offers cities new opportunities to communicate with their constituents at a time when metropolitan areas struggle with their community identity and cohesion. This study examined how official websites of the core cities in the 50 largest (by population) United States metropolitan areas represented their cities to the public as a whole, as well as how the cities communicated with their residents and visitors via these websites. A research paradigm was proposed to serve as the conceptual framework for empirical exploration, based on Musso, Weare, and Hale's (2000) dualistic model, by expanding it to include a "mass communication" model. Study findings revealed that the vast majorities of all sample sites contained high frequencies of information links to reflect all major communication functions.

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Introduction

In the information age, the Internet offers cities new opportunities to communicate with their constituents at a time when metropolitan areas struggle with their community identity and cohesion due to continued urban decay for some and a declining job base for others. A recent study by Pew Research (Horrigan, 2004) estimated that the Internet was used by 29% of Americans to contact their government, second only to the use of telephone (42%). Yet local government websites generated the lowest satisfaction level (16%) and the highest dissatisfaction level (41%) from their citizen patrons when compared to their state and federal counterparts.

From a policy perspective, the decision to mount an official website for a local government may be based on attempts to stay technologically "trendy" and/or to fulfill bureaucratic directives without a good understanding of communication principles and practices. Government mandates notwithstanding, the larger issue remains that the Internet technology which offers new opportunities for communication within cities could also threaten to weaken ties that link neighbors and

residents with each other and with city leadership. Numerous observers have argued that the Internet pulls people out of their immediate environments, allowing them to participate in far-flung, virtual communities.¹

According to this line of thought, neighborhoods are merely conveniences that at the most must be benign in their impact on residents and can be ignored as a source of friends or identity. Webber (1968) argued that widespread air transportation and global communication permit the educated and affluent to live anywhere, leading to the potential decline in progressive urbanization growth. He put forth the largely economic argument that cities exist because spatial agglomeration reduces the costs of interaction between human and material resources; these spatial settlement clusters are not dissolving but have been dispersing over an increasingly widening terrain.

Writing more recently, Castells (1992) sees information technologies as fundamentally transforming the world today, with industry and services organized worldwide around the operation of their information-generation units. The information elites have become increasingly cosmopolitan and the importance of local and national governments may wither with the increased dominance of information by powerful multinational conglomerates. Castells sees a new technological paradigm with the information revolution as its backbone in a functionally interrelated world economic system.

Looking at European cities, Castells (1992) prophesizes the development of an “informational city,” where productivity and competitiveness of cities and regions is determined by their ability to combine informational capacity, quality of life, and connectivity to the network of major metropolitan centers at the national and international levels. Telecommunication facilities and services and transportation systems will be more important than spatial considerations. In this scenario, a dualism emerges between the cosmopolitanism of the elite—who are functionally, socially, and culturally connected to the world within and beyond national borders—and those tied more to local communities (Castells, 1992). Many observers, like Castells, apparently do not see the new information technologies and the potential communication networks that they enable being employed by neighborhoods or communities to their advantage.² Some suggest that the lure of new communication technologies withdraws residents from in-person contact and lures them from communities as social ties disperse (see Hampton & Wellman, 2002).³ While few today would argue that computer-mediated relationships will supplant face-to-face relationships with friends and loved ones, it is still an empirical question as to how the Internet affects weak ties, acquaintances, and friendships built on proximity and other ties (Granovetter, 1973) in the urban environment.

Graham and Marvin (1996) believe that the new information-based economies will have destabilizing effects, creating sharp divisions between the information-rich and the information-poor trapped in “information ghettos” and contributing to further urban sprawl. They suggest that cities be restructured from internally integrated wholes to collections of units that operate as nodes in international and global

economic networks. They see the growth of global media systems and rise of groups being linked by a complex interaction between cultural exchanges mediated by electronic spaces and place-based ones in urban places. It is important to understand how telecommunications and telematics can contribute to the development of more sustainable cities. Although not citing the communication literature, Graham and Marvin are calling for more attention to the communication patterns within and between cities.

These contradictory predictions about whether information technologies could indeed help dilute or enhance the identity of a geographically defined local community—via linking people from across different geographic zones to form a boundary-free virtual community—represent the technological uncertainties that concern city planners, community activists, and civic-minded citizens alike. The ultimate question to address thus involves whether information technologies can indeed be an effective tool for advancing community-building interest in the various aspects of civic life, ranging from providing public services to driving economic growth. As a first step toward exploring this phenomenon, it is important to understand how local community organizations or municipal governments utilize information technologies as a conduit to help build an image, foster an identity, drive social and economic development, and fortify the cohesion of a local community/city.

To explore the phenomenon of whether information technologies might help advance or deter civic development at a local level, this study intends to investigate how local municipalities utilize information technologies to communicate with their internal and external stakeholders. This study examined official websites of the major cities in the 50 metropolitan areas of the United States. It analyzed how these municipal websites represented their cities to the public as a whole and how these cities communicated with their residents and visitors through these websites, via a conceptual framework focusing on the macro functions of the Internet medium on society.

Literature Review

The social scientific literature on how local municipalities utilize information technologies to serve constituents and communicate with the public is scarce. The following section reviews the existing literature examining municipal websites and how they view their mission. It also provides a discussion of what societal functions municipal websites can perform to define municipalities as part of the social system in an information age.

Municipal Websites and Community Communication

Musso, Weare, and Hale (2000) examined the extent to which innovative applications of Web technology might advance local governance reform in a content analysis of 270 municipal web sites in California. They concluded that most municipal Web sites lack a clear mission and provide few of the features that might improve local governance. They identify two reform models, entrepreneurial and

participatory. Under the entrepreneurial model, the city is seen as delivering services to local businesses for fostering economic development and to residents for improving the quality of life. The participatory model focuses on an elitist approach to improve interest groups' access to the decision-making process as well as a communitarian approach to strengthen social networks by improving political discourse. Although their focus is on government reform rather than the broad range of roles and functions of websites, Musso et al. (2000) provide a valuable first step in examining how cities communicate with their constituencies.

Against this backdrop, it is easy to see that the Internet offers an opportunity for cities to both send and receive messages, to promote communication among residents, and act in more than one communication role. Metro websites may be positioned as "mass communicator," performing many of the same functions as media websites, providing: news about the city, information about municipal functions, arts and cultures, recreation and entertainment, business opportunities, civic achievements, upcoming events, health and safety, local weather, etc. In this role, the cities use the new information technology to disseminate the same message to large, diverse urban audiences.

At the same time, metro websites may provide opportunities for residents and stakeholders to more easily communicate with city officials and administrators through email and bulletin boards. In this "leadership" role, the websites stimulate point-to-point communication that comes close to interpersonal communication channels minus the face-to-face modality within an institutional setting. In addition, metro websites can be utilized to stimulate communication among residents; this includes efforts to increase discourse, interaction, and involvement among residents of neighborhoods. Each of these roles will be examined briefly before the project is outlined.

Metro Websites as Mass Communication

Media are generally seen as being capable of performing four macro functions (Lasswell, 1948; Wright, 1986). These functions include: surveillance of the environment (sometimes operationalized as the watchdog role of the press), coordination of activities (so one aspect of society knows what the other is doing), socialization (passing on the culture from one generation to the next), and entertainment (providing leisure-time activities). These functions can be applied to the metro websites as mass communication and the extent cities' websites fulfill the following functions for each of the roles identified above.

1. Surveillance of the environment: informing residents of city activities, providing news about current programs, alerting residents to potential problems under the city's purview.
2. Coordination of activities: providing what Lemert (1984) calls "mobilizing information," facts and details that allow residents to have an impact on city policies and programs, e.g., detailed information about committee meetings.

3. Socialization: providing residents, potential residents, and visitors with historical information about the city and its culture and traditions.
4. Entertainment: providing residents with entertainment via such venues as fun photos of community highlights, or providing information about community entertainment/activities that would fulfill this function externally.

Metro Websites as Institutional Communication

Metropolitan websites also may be viewed as an extension of the city and how its leadership sees itself. Accordingly, the website can be represented as the “local government,” including major officials elected to represent constituents. Here the website may present the government structure online by listing major elected officials and bureaucratic branches. In this case, websites would stress government organization, formal lines of authority and offices, and links between officials, bureaucrats, and constituents. The Musso et al. (2000) study found that 63% of the municipal sites provided information about elected officials and 52% did so for city managers. Information about the policy making process was provided by 58% and election information by 14%.

Websites also can focus on the city as a “provider of civic services,” ranging from police and transportation to garbage collection, schools, and health in addition to soliciting feedback about the delivery of such services. Musso, et al. (2000) found that parks and recreation information was present on 70% of the California municipal websites, transportation on 75%, and public safety on 66%. Clearly there is overlap between the roles of the city officials as representatives and as providers of city services, depending on how the website meshes these two roles together.

The website could also position the city as a “developer,” performing economic roles by soliciting businesses and acting as an entrepreneur forming partnerships among and with private entities. In this “economic role,” city websites will also attempt to attract tourists and potential residents, the former essential to many local economies and the latter necessary for areas to maintain and grow their population. The Musso et al. (2000) study found that two thirds of municipal websites provided information about programs supporting business and 71% provided business and tourism information. Garvin (1996) emphasizes the primacy of private market forces in city planning. He identifies six ingredients for any successful city planning: market, location, design, financing, entrepreneurship, and time. City websites could reflect this view by appealing to potential entrepreneurs and trying to attract private developers through a variety of services.

In their developer role, cities must pay attention to the quality of life available to residents.⁴ Porter identifies four guiding principles for renewed activity among community-based organizations in business development: 1) identify and build on strengths; 2) work to change workforce and community attitudes; 3) create work-readiness and job-referral systems that link residents to local businesses; 4) facilitate commercial site improvement and development. To what extent are such activities

and goals identifiable in city websites, in so far as showcasing community development plans may entice both residents and investors into their neighborhoods?

The metro website can also act as a “civic mobilizer,” exhorting residents to get involved, to have an impact on city government and on city development. The website can provide information that allows residents to organize and to affect city policies on development and change.⁵ The Musso et al. (2000) study of municipal websites found that 24% provided information about neighborhood organizations, 20% about fraternal and social organizations, and 8.5% about local interest groups. A 1995 survey of community organizations in seven Ohio metropolitan areas found that three neighborhood organizations had full Internet access and half of them had computers (Stoecker & Stuber, 1997, 1999). Savage and Warde (1993) note that contemporary cities are becoming increasingly differentiated by their role in the international economy, and that this makes it difficult to generalize about a single evolutionary path for all.

How much attention is paid to neighborhoods in city websites? As Musso et al. (2000) showed, neighborhood groups receive relatively less attention than governmental bodies, businesses, and visitors. Older cities with established neighborhood identities are more likely to pay attention to these constituent units of the city, while newer metropolitan areas may focus more attention on city residents as voters, taxpayers, or customers for city services.

Research also can identify what neighborhood communication patterns (see Jeffres, 2002), in particular use of the Internet and neighborhood websites, function to support neighborhood competition within the city to secure desired city services and economic development support. Tonn, Zambrano, and Moore (2001) surveyed 40 community networks, finding that communities are now served by several types of sites, including nonprofit community networks, those administered by local governments, and commercial sites. They looked at eight types of information resources: community events, government services, police and emergency, weather, education, environment, religion, and business. An eighth of the sample contained information about all eight types of resources, and most of the sites administered by government organizations did not provide links back to community networks or other local websites. They concluded that neither individually nor in combination did the sites work to strengthen the social capital of the communities they serve by fostering dialogue and helping people meet their responsibilities as citizens.

These findings provided an interesting contrast for how the television medium was able to successfully help facilitate civic engagement in a different study. According to Kang and Kwak (2003), residents in lower socio-economic status and less socially mobile communities were found to engage in community activities more frequently due to their use of public affairs news and information seen on television. It is possible that the mode of presentation (audio, visual, and textual) as it relates to information priming and framing (Entman, 1993; Scheufele, 2000) might help explain the failure of communication effectiveness in Tonn, Zambrano, and Moore’s (2001) community network website study, and the success in Kang and Kwak’s (2003) television news

study. By implication, if these community and/or municipal websites can be constructed in such a way that their informational usefulness and functional usability are clearly valued, then positive communication effectiveness may follow.

In sum, the literature review above provided a theoretical framework to study community-oriented or municipal websites. This theoretical framework allows for the exploration of these websites' content dimensions under the rubrics of different social utilities and functions of a mass medium. Moreover, the limited empirical findings reflect the following two observations. First, municipal websites lack a clear institutional mission and the types of content features that could be useful for improving the communication between the citizens they serve and the institution that provides the civic services. Second, the effects of using community-oriented websites to provide information for the purposes of improving community development via increasing communication between institutions and the public were less than desirable.

Research Questions and Hypotheses

Based on the above literature review, several research questions are posed to test our proposed conceptual framework. This conceptual framework builds on Musso et al.'s (2000) entrepreneurial versus participatory model for applying web technology by expanding it to include mass communication functions. The "entrepreneurial model" closely parallels the institutional communication functions and the "participatory model" community communication functions in the present study. The "mass communication model" introduced here captures the media functions that are inherent to the Internet medium. While assuming municipal websites are capable of serving the four traditional functions of media (i.e., surveillance, coordination, socialization, and entertainment), the following question is offered.

RQ1: To what extent are mass communication functions served by municipal websites through provision of surveillance, coordination, socialization, and entertainment information?

In addition, as these websites can link audiences to other media's websites, the following query is raised.

RQ2: To what extent do municipal websites facilitate citizen access to other local media outlets?

A major function of content analyses is to see how message patterns reflect on the encoders, i.e., how websites reflect on city leadership responsible for the websites via institutional communication functions. The following question is posed:

RQ3: To what extent do municipal websites exercise their institutional communication functions by presenting their cities as local government, as provider of public services, and as economic developer?

Focusing on how municipal websites attend to community ties and neighborhoods, the following question is posed:

RQ4: To what extent do municipal websites speak to residents as members of neighborhoods and communities and to what depth must one navigate for this function?

Furthermore, in so far as cities identify their constituents in different community roles, such identification can help strengthen community relations between these different constituencies. Therefore, the following question is raised:

RQ5: To what extent do municipal websites assume the role of community mobilizer to help strengthen community ties to better the community's economic and social development?

A review of the literature suggests that constituent and consumer roles will receive greater prominence than neighborhood residents, with the others falling in between. Both of the former should garner more importance because officials want to be re-elected and to avoid criticism related to the delivery of city services. Based on these presumptions, the following hypotheses are offered:

H1: Constituent roles will be more frequently represented than neighborhood resident roles.

H2: Consumer roles will be more frequently represented than neighborhood resident roles.

Research Methods

The study adopted the content analysis method to examine how municipalities presented themselves and how they communicated with residents and visitors via their official web sites. A number of past studies of media and other websites provide useful background for developing the coding scheme of this study, e.g., Chan-Olmsted and Park (2000), Kiernan and Levy (1999), Lin and Jeffres (2001), and McMillan (2000); whether sponsored by media or other institutions, the goal of these websites is to attract and serve audiences with diverse content, search engines, and interactive features. Lin and Jeffres (2001) found that newspapers, radio stations, and TV stations had relatively distinctive content emphasis, each attempting to utilize its website to maximize institutional goals. Chan-Olmsted and Park (2000) found that news-related content on TV stations' websites played an important role while interactivity and personalization were not readily observed. Kiernan and Levy (1999) found no relationship between characteristics of TV stations' websites and competition.⁶ The coding scheme was constructed to match functions with content and interactive features offered by the web. The metropolitan statistical areas of the United States were utilized as the sampling frame for the study.⁷ Although metropolitan areas also include numerous suburbs, the central city generally provides the broadest array of services, opportunities, and attractions and is important for regional development and identity; its website deserves particular attention. A purposive sample of official websites of the major cities in the top fifty metropolitan statistical areas of the United States was selected. The sample comprised 50 municipal web sites representing the 50 largest cities in the United States.

Coding Procedures

The content analysis was conducted in January-February, 2003. The coding procedures involved a consecutive tiered approach. If a coding item was located on the home page, a “1” was recorded. But if it was located off a second page, then a “2” was coded, and so forth. If a coding item was found in a clickable dropdown menu the dropdown menu was treated as part of the same webpage. The other variables were coded to determine whether the content (or the communication function) was available on the city website and whether it appeared on the first page or several levels deep. Coding was done by a graduate assistant under the supervision of the senior author. Intra-coder reliability scores show an accuracy of higher than 95%, the result of extensive training. For audience roles, the depth within the website was ascertained, while mere presence on the website was coded for most other variables.⁸

Definitions

Websites were examined to see whether particular audiences are referenced for each of the following functions: mass communication, institutional communication, and community communication. Each of these functions is operationally defined as below.

Mass Communication Functions

The extent to which the four mass communication functions—surveillance, coordination, socialization, and entertainment—were achieved by city websites was measured through indices composed of the items shown in Table 1. All items were dummy coded to indicate the “presence” (or “1”) or “absence” (or “0”) of a particular function. This procedure, employed by Musseo et al. (2000) and Lin and Jeffres (2001), is used throughout this study.

- “Surveillance Function” measures the extent to which the municipal website informs residents of city activities, provides news about current programs, and alerts residents to potential problems under the city’s purview.
- “Coordination Function” measures the extent to which the website provides audiences with information or opportunities to contact city departments or officials or to participate in official business by attending public meetings.
- “Socialization Function” gauges whether the municipal websites provided residents, potential residents, and visitors with historical information about the city and its culture.
- “Entertainment Function” reflects whether the municipal websites provided residents with entertainment via such venues as fun photos of community highlights or provided information about community entertainment/activities that would fulfill this function externally.

In addition, since these metro websites can also facilitate additional interactions with other media websites, a set of measures were added to gauge the sites’ links to other local mass media websites.

Table 1 Municipal websites classified by mass communication functions

Function	%	Index Mean
Surveillance (11 items in index)		9.32
Up to date news stories about city	68	
Current news releases	86	
Calendar of city events	80	
Information about city social service programs, services	80	
Information about schools/education programs, services	82	
Information about city housing programs, services	88	
Information about public safety programs, services	92	
Information about city transportation programs, services	90	
Information about city garbage collection, environment, programs, services	94	
Information about city recreation, sports programs, services	90	
Information about city health programs, services	82	
Coordination (10 items in index)		8.28
Provide information for contacting city departments	88	
Provide feedback link for contacting city departments online	86	
Solicits citizen initiatives to report problems online	80	
Provides information for contacting mayor	76	
Provides feedback link for contacting mayor online	78	
Provides map and/or list of wards, council reps	68	
Provides information for contacting city council reps	90	
Provides feedback link to contact city council reps online	84	
Provides information on where, when how to attend, speak at council meetings	82	
Provides information on where, how to attend subcommittee meetings of city council	76	
Socialization (4 items in index)		2.26
Provides statistics about city	72	
Provides information about lodging in city for visitors	46	
Provides information about activities for visitors	88	
Provides visual tour of city for visitors	20	
Entertainment Function (2 items in index) ¹		2.62
Provides gallery/set of city photos	90	
Average no. of city photos on homepage ¹	1.7	
Mass Communication (5 items in index)		1.04
Provides links to local metro newspapers	38	
Provides links to local television stations	28	
Provides links to local radio stations	20	
Provides links to local cable television systems	14	
Provides links to community/non-metro newspapers	4	

Note: The percentages represent those municipal websites with the functions available somewhere on the site. They are based on a sample of 50 municipal websites.

Institutional Communication Functions

Metro websites were conceptualized as communicating to their residents as (1) local government, (2) public service provider, (3) economic developer, and (4) community or neighborhood mobilizer/facilitator. See the coding items in Table 2. Items were coded as dichotomous variables, where “1” means “presence” and “0” means “absence” of a particular function.

- “Local Government” describes the extent to which municipal websites provided information about elected officials, representation and election processes, government organization, formal lines of authority and offices, and links between officials and constituents.
- “Public Service Provider” indicates the extent to which municipal websites provided information about the traditional city services—from police and transportation to garbage collection, schools, and health—and solicited feedback about the delivery of such services to the public.
- “Economic Developer” profiles whether municipal websites performed their economic roles by soliciting businesses and acting as an entrepreneur forming partnerships among and with private entities in addition to appealing to tourists and potential residents.

Community Communication Functions

Metro websites were seen as performing the functions of a community mobilizer to help foster community discourse and strengthen community economic and social development. Coded items were measured by either the “presence” (or “1”) or the “absence” (or “0”) of a particular function (see Table 3 for all coded items).

- “Community Identifier” pinpoints the extent to which municipal websites provided their residents information that would facilitate cultivation of community identity.
- “Community Mobilizer” depicts whether municipal websites exhorted residents to get involved and to assert an impact on city government and development, in addition to whether they provided information about neighborhood organizations and how to activate citizen participation.

In addition to these measures, coders also ascertained whether the municipal website provided people with the ability to search the metro website.

Results

Analysis was conducted by computing two types of information. First, the percentages of municipal websites with specific types of information or features was reported. Second, indices were constructed by summing up the number of items reported for each function and then dividing that figure by the number of potential items. This is necessary because the number of items measuring each function differs.

Table 2 Municipal websites classified by institutional communication functions

Function	%	Index Mean
Local Government (11 items)		8.82
Provides information for contacting city mayor	76	
Provides feedback link for contacting mayor online	78	
Provides map and/or list of wards and city council reps	68	
Provides information for contacting city council reps	90	
Provides feedback link for contacting city council reps online	84	
Provides information on where, when, how to attend, speak at city council meetings	82	
Provides information on where, when, how to attend subcommittee meetings of city council	76	
Provides codes/recent ordinances	84	
Provides city council agenda	88	
Provides city council minutes	64	
Provides information about city budget	92	
Public Service Provider (3 subindices: 16 items total)		14.10
City Services s (8 items)		6.98
Provides information about city social service programs	80	
Provides information about school, education programs	82	
Provides information about city housing programs, services	88	
Provides information about city public safety programs, services	92	
Provides information about city transportation programs, services	90	
Provides information about city garbage collection/environment, programs, services	94	
Provides information about city recreation/sports programs	90	
Provides information about city health programs, services	82	
City Rules/Regulations (5 items)		4.38
Provides information about paying utilities	59	
Provides information about building inspections	80	
Provides information about zoning	90	
Provides information about public records	44	
Provides information about taxes	88	
City Service Contacts (3 items)		2.74
Provides information for contacting city departments	88	
Provides feedback link for contacting city departments online	86	
Solicits citizen initiatives to report problems (e.g., streets, sewer)	80	
Economic Developer (2 subindices; 9 items total)		5.48
City Development (5 items)		3.16
Provides information about doing business with city	90	
Provides online services/forms for business permits, licenses	60	
Provides information/services for potential businesses, developers	88	
Solicits investments in city, promotes city for development	6	
Provides statistics about city	72	
Tourism Development (4 items)		2.32
Provides information about lodging in city for visitors	46	
Provides information about activities for tourists	88	
Provides visual tour of city for visitors	20	
Provides calendar of city events	80	

Following are the number of items measuring each function: local government, 11 items; public service provider, 16 items; city services, 8 items; city rules/regulations, 5 items; city service contracts, 3 items; economic developer, 9 items; city development, 5 items; tourism development, 4 items. These represent the denominator of the indices, while the sum computed for each municipal website represents the numerator in the index. This is similar to computing standardized scores.

The first two research questions focus on the mass communication roles recognized by metro websites. Table 1 presents results showing how well the mass communication functions—surveillance, coordination, socialization, and entertainment—are served by the municipal websites. These four functions of media were reflected on the municipal websites in a variety of ways. The most important function appears to be “surveillance,” followed by “coordination.” This was determined based on standardizing the index average by the potential number of items, since the number of items measuring each function differs. For example, a mean of 9.32 for the surveillance function was obtained by an index produced by 84% of the 11 items. Entertainment was measured by observing the use of photographs and galleries; results showed that 90% of the websites had a gallery or set of city photos. Facilitation of mass communication was much less frequent, particularly for neighborhood newspapers and cable systems.

An examination of the most popular information presented in each function is instructive. The vast majority of websites had a wide range of different types of information about city services and programs. Information about public safety (i.e., the police), for example, and basic city garbage collection and environmental programs were the most frequently appearing items. Up to date news stories about the city were found on about two-thirds of the city websites, perhaps a reflection of the staffing difficulty in maintaining websites to keep them current. The coordination function was served in a similar manner, with information for contacting city council representatives appearing most frequently, followed by information for contacting city departments. Ward maps or lists of wards were the least frequently available information categories, followed by information about how to participate in subcommittee meetings of city councils (found on 76% of websites). The socialization function was ascertained by providing information about activities for visitors (found on 88% of websites) and statistics about the city (72%); a fifth of the sites provided a visual tour of the city and less than half provided lodging information. More than three-fourths of websites provided each of the four feedback links that connect residents with city council representatives, the mayor, or city departments. Connections to local metro dailies’ websites were found on 38% of websites and to local TV stations’ sites on 28%.

A major function of content analyses is to see how message patterns reflect on the encoders, i.e., how websites reflect on city leadership responsible for the substance of the websites. RQ3 asked to what extent the metro websites stress city roles as local government, as provider of public services, and as economic developer (see Table 2). Since the number of items used to measure each role varies, standardization was

Table 3 Municipal websites classified by community communication functions

Community Identifier by Constituency*						
Consumer of City services	Constituents, Political Role	Neighborhood Residents	Potential City Residents	Visitors, Tourists	Economic Developers	
Acknowledged on Website	94%	82%	78%	92%	94%	
Not acknowledged on Website	6%	8%	22%	8%	6%	
Located on Home Page	85%	91%	72%	78%	79%	
Located 1 page deep	15%	7%	23%	20%	21%	
Located 2 pages deep	0	2%	5%	2%	0	
Community Identifier by Special Population						
Youth	Seniors	Minorities				
Acknowledged on Website	46%	38%	48%			
Not acknowledged on website	54%	62%	52%			
Community Mobilizer (2 subindices; 12 items total)						
		Percentage			Index Mean	
Citizen Involvement and Neighborhood Promotion Items (based on all 12 items below)					5.20	
City Governance (based on following 2 items)					1.58	
Provides information on where, when, how to attend, speak at city council meetings		82%				
Provides information on where, when, how to attend city council subcommittee meetings		76%				
Neighborhood Involvement (based on following 10 items)					3.62	
Index including first 9 items, excluding no. of neighborhood Websites linked						
Provides statistics about neighborhoods as units		22%				
Provides information about community planning programs		76%				

(continued)

Table 3 *Continued*

Community Mobilizer (2 subindices; 12 items total)	Percentage	Index Mean
Provides list of individual neighborhood organizations	28%	
Provides links to individual neighborhood organizations	30%	
Provides information about volunteering	72%	
Provides map of city neighborhoods	44%	
Provides list of city neighborhoods	36%	
Provides profiles of city neighborhoods	24%	
Provides links to neighborhood websites	30%	
Number of neighborhood websites linked Mean = 14.37, 0 = 70%; 14 with 12-115		
City as Employer/Organization (based on following 2 items)		
Provides information about getting a job with city/career center	90%	1.74
Provides information directed to city employees/employee relations	84%	

Note: The percentages are based on a sample of 50 municipal websites. The first row represents the percentages of municipal websites that acknowledged audience roles somewhere on the site. If a role was mentioned in a list in a drop box that could be clicked, it was treated as “part” of that webpage. If it was located on a page one click from the home page, it was coded as one deep. If it was located on a page once removed, it was coded as 2 pages deep. If it could not be located anywhere on the website, it was coded as absent.

necessary for comparisons. Results show that the two roles featured most prominently on municipal websites are the “city as provider of public services” and the “city as local government.” The index representing the ways city websites provide information about public services has an average of 14.10; this is 88% of the 16.0 possible. The three sub-indices do equally well; the mean index for providing information about public services registers 87% of the potential, while the index for providing client information registers 88%, and the index promoting interaction with service departments registers 91% of its potential. These high percentages mean that almost all items are found on the city websites. The only item to fall below the half way mark is providing information about public records, which is found on 44% of the city websites.

While the “city as local government” function is prominent on municipal websites—with the 8.82 mean representing 80% of the 11.0 potential—the most frequently-found information concerns the city budget (found on 92% of the websites), followed by information for contacting city council representatives (found on 90% of websites). The least frequently found item is city council minutes, which is present on 64% of the municipal websites (see Table 2).

Under the “city as economic developer” function, the mean for the index that measures work with developers is 3.16, representing 63% of the 5.0 possible. The most prominent items here include providing information about doing business with the city and actual information or services for potential businesses and developers. Online forms and services for development are frequently found (60% of the websites), but less so by comparison. While the index measuring promotion of tourism is 2.32, 58% of the 4.0 possible, the most frequently found items remain information about activities for tourists, followed by a calendar of city events.

Table 3 shows the city’s roles as a “community identifier” on municipal websites. Two roles are found on 94% of the metro websites—citizens as consumers of city services and as economic developers. Not far behind is visitors/tourists (found on 92% of websites). The constituent, or political role, is found on 82% of websites and neighborhood residents on 78%. Comparatively, “potential city residents” is acknowledged on a little over a third of the websites; this is interesting since many core cities have been trying to maintain and increase their population base. These findings address RQ4.

When present, the political constituent role is most likely to be found on the home page (91%), followed by the role of citizens as consumers of city services (85% found on the home page when present). The role of economic developer is found on more websites (92%) but it is located deeper inside the website, since it is found 79% of the time on the home page and the rest of the time one or two pages deep, perhaps as a recognition of the limited size of the site’s audience despite its importance. Potential city residents have to dig the deepest to find relevant information, followed by neighborhood residents. These results support our two separate hypotheses that postulated constituent and consumer roles would receive greater prominence than neighborhood residents, though the latter did receive greater attention than potential residents. Also

note that youth and minorities receive greater attention on websites than do seniors, perhaps a reflection on the expectation that seniors are less likely to utilize the Internet.

City as community or neighborhood “mobilizer/facilitator” is broken down into two sub-indices, “Promoting citizen involvement in governance” and “Promoting neighborhoods and neighborhood involvement.” The former appears frequently on municipal websites (the mean of 1.58 represents 79% of the 2.0 possible); providing information on how to attend and participate in city council and subcommittee meetings are found on more than three-fourths of municipal websites. These findings answer RQ5.

However, as expected, information about city neighborhoods takes a back seat to other roles. The index for the nine items measuring neighborhood promotion is 3.62, 40% of the 9.0 potential. Most frequent items were information about community planning programs (found on 76% of websites) and volunteering (on 72% of websites). A host of others are found on a third or fewer of the websites, with statistics about neighborhoods as units on 22% of sites, profiles of city neighborhoods on 24% of sites, and links to neighborhood websites on 30% of municipal websites. When links were present, they ranged from 13 to 115 neighborhood websites, with 71% providing no links.

Discussion

This exploratory study built on Musso et al.’s (2000) dualistic model for applying web technology for reforming municipalities—the entrepreneurial versus participatory model—by expanding it to include a “mass communication” model. Specifically, the “entrepreneurial model” closely paralleled the “institutional communication functions” and the “participatory model” was similar to the “community communication functions” tested in the present study. The “mass communication model” was introduced here to capture the media functions that are inherent in the Internet medium.

Based on the study findings, it would appear that the site features did attempt to capitalize on the asset of the Internet as a mass medium—a source for virtual surveillance and interaction. This is not surprising, as the most popular uses of the Internet have persistently fallen in the categories of utility-driven information seeking and virtual communication (e.g., emailing) in the literature (e.g., Raine & Packel, 2001). In the present study context, municipal websites provided the largest number of links to “information surveillance” services, followed by “interaction coordination” services. While the former helps people obtain the essential information to become fully situated in a community, the latter allows people to impact the system via interacting and engaging with city personnel. These two sets of service features could be instrumental in shaping a better-informed citizenry and more democratic process of governing (e.g., Wellman, 1997).

Though there were only four features identified for the “socialization functions,” at least 72% of the sites provided city statistics and 88% of the sites listed activity information for visitors. Similarly, while two items were coded for the

“entertainment functions,” 90% of the sites featured such items as the city’s “photo gallery,” which aims to entertain visitors with a fun portrayal of life in the city. Both sets of features could be useful in making the residents feel that they belong to the community in a cultural and perhaps historical sense—through learning about the heritage and the profile of the community—via facts, statistics, events, and activities as well as visual and historical archives.

While conceptualizing city websites via the “mass communication” functions may help cultivate the municipal image in a more conventional information-dissemination and feedback-gathering media modality, framing these websites with the “institutional communication” functions can help groom the city’s persona into one of an economically dynamic, modern, and progressive metropolis. For instance, over 90% of the sampled websites featured links to such items as “city budget,” “public safety programs and services,” “transportation programs and services,” “zoning rules and regulation,” and “local business opportunities.” These types of information links utilize the Internet as a vehicle for institutional communication that functions to position the city as a desirable place for economic growth, targeting both internal and external stakeholders.

This kind of “cheer-leader,” “public relations,” and “marketing” role is not different from what is commonly found displayed on the corporate (e.g., Esrock, Stuart, & Leichty, 1999) or media institution websites (e.g., Lin & Jeffres, 2001). The communication principles behind these corporate or media websites tend to cast the corporations as a valuable product for the shareholders, a strong competitor within the industry, a likable social icon with the general public, a responsive company to the consumers, and a socially responsible institution to the regulators. The sample municipal websites presented relatively parallel communication principles by showcasing their cities as a valuable locale for the commercial sector, a strong competitor among similar municipalities, a likable city for the general public, a responsive government to their residents, and a socially responsible community (e.g., on public safety) to the regulators.

In addition to communicating with the residents and stakeholders about the merits of the city, cities may need to nurture grassroots support in order to successfully implement any developmental agenda. The “community communication” functions conceptualized in this study reflect this particular aspect of the municipal communication model online (e.g., Ball-Rokeach, Kim, & Matei, 2001). In particular, municipal websites were found to present the type of information that could help their visitors develop a strong sense of identity with the community in addition to mobilizing civic involvement in the city within neighborhoods and community organizations alike (e.g., Chayko, 2002). One interesting finding shows that 90% of sites post information that could help identify visitors of a site as “consumers of city services,” “economic developers,” or “visitors/tourists.” These “community identifiers,” along with those less frequently posted “identifier” categories such as political constituents (82% of all sites) and neighborhood residents (78% of all sites), were located on 72% to 91% of the home pages on all sampled

sites. The least identified resident categories found on these websites—youth (46%), seniors (38%), and minorities (48%)—seem to counter the trend in rendering social services, in so far as addressing the primary recipients of these services is concerned.

In sum, by focusing on exploring the “communication functions” of metro websites, this study constructed a conceptual framework based on theoretical principles from the communication and urban studies disciplines. The particular paradigm of communication functions proposed here proved to be useful in explaining both macro as well as micro level concepts associated with the multiple roles that municipalities assume in the venue of online communication. As the study findings revealed how the vast majorities of all sample metro sites contained mostly high frequencies of information links to reflect all major communication functions, these statistics then compared favorably to those gathered from the smaller municipalities sampled in the Musso et al. study (2000).

Public Policy Implications

According to a recent Pew research study (Horrigan & Rainie, 2002), at least 65% of the American public expected to find the information or service they need from their government agencies online; that percentage rose to 82% among Internet users. This social trend has grown in tandem with the rise in replacing many in-person government service transactions (e.g., paying sewer bills or finding the municipal recycling regulation) by the 24-hour virtual office. Government bureaucracies today, especially at the federal and state level, heavily rely on the Internet technology to deliver most of their communications with the public. Meanwhile the public has also increasingly come to expect their government agencies to provide the information they need online.

In the competitive urban environment today, cities with declining resources must learn to serve their constituents in a variety of roles while communicating with a variety of other stakeholders and persuading them to visit, invest in, or consider the city as a potential home. This social phenomenon implies that municipalities need to adopt an effective online communication strategy that will help them maintain and sustain their local identity while serving residents by shifting municipal functions to a relatively cost-efficient “virtual” environment. To achieve this type of virtual communication effectiveness, it is essential for local municipal governments to implement the following. First, ensure the usefulness and usability of their websites. Second, widely promote the use of their websites to all potential visitors, including their internal and external stakeholders, to better serve their constituents. Third, regularly measure the number of their constituents reached and served. And fourth, periodically assess the communication effectiveness of their websites by surveying residents on their use and satisfaction with the services and information provided online and by surveying city departments and personnel for the feedback they receive concerning the website. Ultimately the effectiveness of the website will be determined not only by public use of the website but also from economic efficiencies and social benefits stemming from that use.

Conclusion

The present study provided a preliminary conceptual framework for understanding the different dimensions of virtual public communication functions of municipal governments. Municipal governments that intend to improve their websites should be able to benefit from this conceptual framework by testing and providing those content features that can maximize their public communication functions.

Future research should further verify the validity and reliability of the present conceptual framework. In particular, the logical “next step” in this area of research will involve exploring how well these municipalities position these communication functions via any of the three functional models—mass communication, institutional communication, and community communication—to target their constituencies. Moreover, to help determine whether a municipal website is indeed a successful public communication outlet three additional verification research approaches are proposed below.

First, usability studies that evaluate the effectiveness of the interface design via navigational and application successes and failures could help improve the information architecture of these websites within the context of public communication. Second, online-use tracking studies that document the usage level of different pages, images, and hyperlinks—applying the measurement metrics of unique users, frequency, and duration among others—should help inform the depth and breadth of audience reach for these websites. Third, a combination of survey and experimental research methodologies could help assess the perceived cognitive and behavioral impacts of these websites on their citizen patrons. In this vein, the limitations of the present study are what these proposed future studies could help overcome, in addition to the limitation of having sampled only the websites from the largest fifty cities in the country.⁹

In conclusion, the futuristic scenarios like the one depicted in the “informational city” environment (Castells, 1992)—often hyped by public policy makers, expert commentators, and the media—remain largely far-fetched. By the same token, the pessimistic view of the ever-widening digital divides between the rich and the poor communities may also be overstated (e.g., Graham & Marvin, 1996). All told, the Internet remains the best venue for democratizing the platforms for sharing public opinions and bridging the information gaps in the increasingly diversified municipal communities to date.

Notes

- 1 See Wellman (1997) for a discussion of the Internet as a mechanism of creating community. Also see Ball-Rokeach et al. (2001) for a major project studying a communication infrastructure model and Chayko (2002) for a discussion on social bonds in the Internet age.

- 2 A less pessimistic view is provided by Katz and Rice (2002), who note that the Internet is like any form of communication, as helpful or harmful as those who use it.
- 3 In their study of a wired community, Hampton and Wellman (2002) found that residents with Internet access knew names of 25 neighbors compared to eight for the non-wired. They also talked to neighbors twice as often and visited each other's homes 50% more often. Also, social ties, particularly weaker social ties, were spread more widely throughout the neighborhood.
- 4 Wheeler (1998) reviews thinking about sustainable urban development and ties it to a concern with urban livability which recognized the complex interconnections among different issues, fields, disciplines, and actors, including transportation, land use, housing, community development, economic development, and environmental protection. To this list we add communication patterns and institutional structure.
- 5 Harvey (1977, 1982, 1985) analyzes uneven urban development, calling attention to social and political struggles to prevent "removal of capital." At the neighborhood level, similar struggles by communities, political representatives, and neighborhood groups are found across the urban landscape, often cited as forms of civic boosterism (Savage & Warde, 1993). Harvey's theory focuses on investment in land, which is an important "commodity" that neighborhoods have to offer. The restructuring approach (see Massey, 1984) avoids this limitation because it is less concerned with capital accumulation and more with the strategies adopted by enterprises to survive and prosper in a world economy. A parallel might be drawn at the neighborhood level, where social factors and quality of life dimensions are significant strategies not directly or easily translatable into economic terms alone.
- 6 For content analyses of corporate, institutional, and other websites, see Aikat (2000), Li (1998), McMillan (2002), Esrock and Leichty (1999), Flanagan (2000), and Papacharissi (2002).
- 7 The metropolitan statistical areas are defined for federal statistical use by the Office of Management and Budget with assistance from the Bureau of the Census in the U.S. Department of Commerce. The 2000 census was the basis for the rank ordering used in this study.
- 8 A set of websites was coded by the first author, the coder, and a third individual to identify problems and inconsistencies. A set of decision rules was developed for the formal coding operation. To determine intra-coder reliability, a set of randomly-chosen sites was coded twice and the comparisons used to yield the reliability measure.
- 9 Cities were broken into three groups by population size (smallest group $N = 16$, middle group $N = 17$, largest group $N = 17$) to see if there were any significant differences in use of the Internet based on size as an indicator of resources. All scales and individual measures were broken down by size, with only one analysis of variance producing a statistically-significant difference. Larger cities were more likely to provide maps of city neighborhoods ($F = 3.35, p < .05$). No other differences were found.

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About the Authors

Leo W. Jeffres is Professor in the School of Communication at Cleveland State University. His research interests are urban communication systems, technology and communication, media effects, and audience analysis.

Address: School of Communication, Cleveland State University, Cleveland, OH 44115 USA

Carolyn Lin is Professor of Communication Sciences at the University of Connecticut. Her research interests are the content, uses, and effects of new media technologies, health communication, advertising, and international communication.

Address: Department of Communication Sciences, University of Connecticut, Storrs, CT 06269-1085 USA