

FROM PRINT TO ONLINE WORLD:  
EXAMINING THE PREDICTORS THAT INFLUENCE THE LEVEL OF  
INTERACTIVITY OF NEWSPAPER'S WORLD WIDE WEB PAGES

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## **ABSTRACT**

The purpose of this study is to examine the predictors that influenced the interactivity of U.S. daily newspapers Web sites, namely the market size of newspapers, newspapers ownership, the number of online newspaper technical staff, length of newspaper Web site existence. Whether a national newspaper has different interactive Web site from a local newspaper is also studied.

A content analysis of 106 U.S. daily newspapers Web sites found that market size and length of time newspapers having Internet presence sites are correlated to the interactive level of newspapers Web sites. National newspapers are also found having more interactive Web sites than local newspapers.

# CHAPTER 1

## INTRODUCTION

Having an Internet Presence Site (IPS) is the trend for print newspapers. According to Editor and Publisher 2001, there are over 1400 daily Newspapers in the United States. American Journalism Review (<http://newslink.org/daynews.html>, 2002) lists 1161 Newspapers are online. The reasons for many publishers taking their papers online are out of three related fears – fears of being left behind, fears of losing existing readers and being bypassed altogether by new ones, fears of losing money, especially retail and classified ads, to new competitors (Singer, et al. 1999). No matter what are the reasons, with claims like the death of print is going to happen soon haunting around (Bogart, 2000; Platt, 1995), most newspapers have long realized the strategic role of Internet and the Internet presence site was regarded as a necessity.

The Internet, with its unique capacity for interactivity and personalization, is inherently different from the traditional print newspapers. Compared to traditional journalism, Interactivity is the characteristic of online journalism (Millison, 1999). Newspapers still have a lot to learn about more than dumping their print versions onto Web sites (Mostafa, 2000; Neuwirth, 2001). In the mid-90s, many Web sites came into existence by just moving print content into cyberspace. Nowadays, interactivity is the name of the game.

Abernathy (1995) reported that setting up a highly interactive site might cost \$30,000 or more. So if the traffic is not heavy and the start-up cost is high, why bother to be a member of interactive online communication?

The answer is that you can't afford not to. The future media survival would depend on taking advantage of opportunities offered by the Internet (Quinlan, 1994). The unique opportunities offered to the print world are interactivity (Deborah, 1993). The Web combines the impact of the printing press, the interactivity of the Web, and the reach of television – all in a point-and-click interface. Newspapers need it as an enhancement to their print product, not simply because it reduces reliance on paper and ink, but primarily because it makes newspapers “more interesting, more compelling, more useful, more diverse and vibrant” (Higgins, 1994). Newspapers can publish simultaneously in different languages, quick news updates and adjustment of news to different educational and comprehension levels (Ingle, 1995). Although newspapers will remain vital for decades, electronic interactive services will add value to them by providing faster access and personalized services. Kampinsky et al. (2001) recommended the Amazon.com pattern to newspapers – extensive use of personality, interactivity and data.

Furthermore, online newspapers face increasing competition from not only the traditional media field, but also other industries that use Internet to create direct marketing opportunities for their products. The Internet makes the concept of convergence valid - the coming together of once separate media, print and electronic, into a digital, networked environment. Coming with such information systems integration is the even harsher competition among media firms. For newspapers, they are not only extend their competition with TV stations to the Web (Holliday, 2001), but also compete with many other Internet companies that come into play in the online world (Beardi, 2001). Aggregators such as Yahoo! that bring many segments together will also create

increasingly difficult competition for online newspapers (Fitzgerald, 1997). Interactive Web site is the answer for newspaper to the harsh competition in the converging world.

Finally, modern telecommunication infrastructure has the potential to revolutionize democratic involvement by citizens. What is needed is a truly interactive form of electronic communication (Hacker, 1996). Newspapers, as the representatives of the fourth estate, should be among the first to involve in interactive communication.

Newspapers have realized the importance of interactivity and become increasingly interactive in the past few years (Higgins, 1994), but obviously, their level of interactivity are not the same. What are the factors that influencing their Interactivity is a question that has yet to be convincingly answered.

Research to date has tended to focus on describing the current situation of online newspapers' level of interactivity from generally disparate conceptions of interactivity. Few of them explored what are factors that influenced the interactive level of newspaper Web sites. Are newspapers market size or their experiences with Web sites possible predictors of interactivity level of newspapers Web sites? Or some other factors, such as technical staff or newspaper ownership, are influencing newspaper Web sites interactivity? This study will explore the factors that influence the interactivity of newspaper Web site. For this goal, 106 U.S. daily newspapers will be content analyzed.

## CHAPTER 2

### LITERATURE REVIEW

#### **Traditional Newspapers Lack of Interactivity**

The role of the news media is to serve not only as conduits of political information, informing the public of key events of the day, but also to enhance public discourse and initiate informed participation among citizens (Gurevitch and Blumler, 1990; McLeod, et. al. 1994). Although not often emphasized, the tradition of thinking about the free press clause primarily emphasize, not the rights of the press, but the citizen's right to adequate information and vigorous public debate (Rosen, 1992). The idea of communication among citizens being the “soul of democracy” has been treated as a truism (Scheufele, 2002). Citizens’ involvement in communication and discussion is regarded as a necessary condition for a healthy and functioning democratic society (Scheufele, 2000).

Yet the traditional one-way newspapers produce messages independent of users participation. Scholars have long been dissatisfied with the one-way communication pattern of traditional mass media whereby “public opinion is formed by the press and modeled by the public opinion industry, polling and interest groups” (Carey, 1993).

Schultz (1999) noted that it’s inevitable that producers and receivers of widely disseminated messages are separated in large societies. Therefore the recent public journalism theory advocates interactive media (Rosen, 1991), emphasizing the press to adopt an active role (Coleman, 1997).

However, newspapers’ poor capability of interacting with readers has long been a concern in journalism. In the 1960s, newspapers relied mainly on letters to the editors,

surveys, and focus groups to have communication with audience. However, such feedbacks could be best described as one-way communication that is occasionally turned out to be two-way interactive communication. Ordinary people have limited opportunities to discuss news content with the journalistic and political elites (Schultz, 1998). Furthermore, traditional mass media is not able to change the fixed linear ordering of the information, nor can it allow audiences to navigate through the information to learn precisely what they want to know (Hoffert and Gretsche, 1991).

### **Newspapers Online**

The advent of the Internet brings interactivity to journalism. Mass media scholars concluded that for its interactive nature, the Internet is offering “radically new models of mass communications” (Balcytiene, 2001). Although the information passed to the readers may be similar to some degree, online journalism disseminating through the interactive medium is fundamentally different from traditional mass media (Neuman, et al, 1994).

Internet, the fastest growing medium in history (Pulliam, 1999), allows people around the world to communicate with each other instantly. Interactivity is the central component of Web sites (Lasica, 1998 a). Internet is user controlled, highly interactive and essentially egalitarian (Riley et al, 1998). When readers contact journalists on the site, the model is a combination of both mass communications and interpersonal communications (Balcytiene, 2001). When people look up news on the Internet, at first look, the model maybe similar to traditional flow of news; but in this new medium, the users follow their own threads of thoughts and drive the news -- simply want what he or

she wants and nothing more. Interactivity of Internet gives audience power and allows for two-way information flow.

Clearly as Internet a two-way medium, the best of the current generation of newspapers Web sites are those that excel at interactivity – those facilitate communication between Web users, and between Web users and Web site contents. The real power of the Web lies in interactivity (Dysart, 1999), and interactivity is the word on the Web for successful marketing (Carey, 1998). Dysart (1999) argued that if the site just sits there - if visitors can neither communicate with people nor interact with the site contents - it is going to be left in the dust. How well sites make use of the interactive nature of the World Wide Web is also one of the most important measures in Barron's annual ranking of top ten websites (Yakal, 2000). Interactive systems are becoming the key tools for attracting and keeping website visitors (Dysart, 1999) and many web designers have realized the importance of interactivity to create highly trafficked sites that become virtual magnets for repeat visits (Dysart, 1998).

### **Concept of Interactivity**

Interactivity is a critical concept in computer-mediated communications, because it is seen as the key advantage of the medium (Morris & Ogan, 1996; Pavlik, 1996; Rafaeli & Sudweeks, 1997). Rafaeli (1988) made an early effort to define interactivity as a formal communication concept as an attempt to bridge mass communication and interpersonal communication. He initially defined interactivity as “an expression of the extent that in a given series of communication exchanges, any third (or later) transmission is related to the degree to which previous exchanges referred to even earlier

transmissions” (Rafaeli, 1988). Later the concept is restated similarly (Rafaeli and Sudweeks, 1997).

However, interactivity is a hybrid construct (Rafaeli and Sudweeks, 1997) and views on interactivity are often found contradictory in research and scholarly works. Rafaeli’s conceptualization of interactivity is seen as from an interpersonal communication perspective (Ha and James, 1998). Similarly from interpersonal perspective, Blattberg and Deighton (1991) defined interactivity as the facility of direct communication for individuals and organizations. From this perspective, Interactivity is a “process-related” communication (Rafaeli and Sudweeks, 1997) and is not a characteristic of the medium (Rafaeli and Sudweeks, 1997; Shultz, 1999). Another conceptualization of interactivity comes from a mechanical perspective that considers interactivity a property of the medium (Ha and James 1998). For example, Steuer’s (1992) computer-mediated communication model defines interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in real time”. In a business setting, interactivity tends to be seen as the "combination of rich content, active intelligence, collaborative communications to create a compelling consumer experience" (Robb et al., 1997).

Recently, the debate is on what aspect of interactivity is more useful and important to online publics. Different purposes and tasks require different levels of interactivity. Some popular and scholarly literature bases their conception of interactivity on the definition by Heeter (Massey and Levy, 1999; McMillan, 1998); others follow the interpretation of interactivity by Rafaeli and Sudweeks (Morris & Ogan, 1996; Schultz, 1999; Coyle and Thorson, 2001). Rafaeli and Sudweeks (1997) emphasized

interactivity's process-related characteristic, while Heeter (1989) positioned interactivity both in the structure of the medium and processes of communication. Following the conceptualization of interactivity by both Heeter and Rafaeli and Sudweeks, two dimensions of interactivity of online journalism take shape (Massey and Levy, 1999). One is interpersonal interactivity; the other is content interactivity.

Interactivity has been assumed to be a natural attribute of interpersonal communication (Rafaeli, 1988) and now applied to all new media (e.g. two-way cable and the Internet) (Morris and Ogan, 1996). According to Rafaeli, the most useful basis of inquiry for interactivity would be one that grounded in responsiveness. Rafaeli and Sudweeks's definition of interactivity recognizes three pertinent levels: declarative (one-way) communication (e.g. radio and television), reactive (two-way) communication, and fully interactive communication (Rafaeli and Sudweeks, 1997).

This study will accept interactivity as reactive and fully interactive communication based on Rafaeli and Sudweeks's conceptualization. One-way communication will not be considered in this study, because one-way communication is not what we expect of online journalism. In traditional "one-way" communication, communicators disseminate messages to a large audience with no or few expectation of feedback from the audience. For online journalism, because of the unique interactive capability of the Internet, a web site can be perceived as an invitation for visitors to do something (Sterne, 1995), either to interact with the content or interact with the communicators.

Despite its importance, conceptualization of interactivity from interpersonal perspective has been filled with an assumption that two-way communication is a common

desire of both the communicators and the audience. Rafaeli & Sudweeks (1997) describe interactivity as "a condition of communication in which simultaneous and continuous exchange occur, and these exchanges carry a social, binding force." Rogers (1995) defines interactivity as "the degree to which participants in a communication process can exchange roles and have control over their mutual discourse." These definitions, emphasizing "exchange" and "mutual discourse," assume that audience is interested in interactive communication with communicators. In the setting of online journalism, this implies that all readers want to communicate with the journalists or the company advertising and sales persons, etc.

However, this assumption is invalid (Ha and James, 1998). Studies of audience behaviors in computer-mediated communication have shown that not all consumers are active participants (Ha, 1995). People have different reasons to visit a Web site. Some are goal-oriented and want to complete a task there; others may simply be surfers of the Web to kill time (Hoffman and Novak, 1996). That is where the second dimension of interactivity – content interactivity comes into play.

Content interactivity is defined as the degree to which journalists technologically empower consumers over content (Massey and Levy, 1999). Complexity of choice, one dimension of interactivity defined by Heeter, falls into this category.

Traditionally, information has moved along media channel in one direction, such as television, from the message producer to the receiver. The one-way nature of newspaper excludes the possibility of a return information loop between message producers and receivers (Newhagen, Cordes, and Levy, 1995). Traditional journalism, with its linearity, has bound communication into a predetermined order and a tyranny of

writer over reader (Rafaeli, 1996). Online journalism, however, potentially empowers its audience (Massey and Levy, 1999). Online journalists can pre-determine, to a certain extent, the reader's progress through the material, but hyperlinks encourage the readers to continue to explore various narrative threads. This is what the concept of "non-linear storytelling" is referring to. Readers can interact with the information itself through choosing and navigating, and personalization. For example, users can interact with the database of a site and find information specific to them.

### **Interpersonal Interactivity**

A Web site is a passive media (Pete, 1999), that is, it simply exists waiting for visitors. So Outing (1998, b) considers sites that excel at interactivity are those that "facilitate communication between human beings," those that excel at interpersonal interactivity. In the online newspaper world, some of the tools are most often recommended by experts that contribute to interpersonal interactivity characteristics of a Web news site include e-mail and discussion forums or online chat (Outing, 1998, b). Powers (2001) also put emphasis on email and discussion forum as new ways that people communicate through CMC (Computer Mediated Communication).

#### E-mail: Journalists-Reader Communication

According to National Association of America (NAA) 1999 Internet Usage Study, Email remains the foremost reason for going online (88%) (<http://www.wanpress.org/rp/research/news.html>). The truly interactive site should solicit user comments at the end of each story (Outing, 1998, b). Emails at the end of a story offer readers this opportunity. Accepting letters to the editor via e-mail is an example of newspapers taking

steps to provide another access point to readers, say newspaper publishers and editors (Noack, 1994). Reporters can use these comments as part of the news organizations' reporting, which contribute to the interactivity of a web site (Outing, 1998, b).

Email serves as a fast, asynchronous means of interpersonal communication between users and communicators (Schultz, 1999). Its speed, clarity, and overall convenience are unparalleled (Focazio, 1997). The email link gives the newspaper new ways to solicit reader feedback, to expand information gathering by reporters and create a new category of news (Calamai, 1995).

E-mail is much less formal and official for readers. Letters to the editor, in particular, are almost always written out of anger, either at the author or at the article. E-mail, by contrast, communicates a much fuller range of responses (Solomon, 1997). Boston Globe deputy managing editor Lincoln Millstein said e-mail means immediacy, and people who usually don't write to the paper will write e-mail letters. The advantage of accepting letters to the editor via e-mail is that it lets newspapers reach out to readers (Noack, 1994). Such direct contact actually results in more story ideas, faster correction of mistakes (Deuze, 1999) and enables reporters to hear from people who may know something about the story and who can share authoritative perspective (Giles, 2000).

Calame (2001) details how The Wall Street Journal managed to publish an edition on Sep 12, 2001, the day after the terrorist attacks on America. Despite being forced out of its damaged main office, the journal successfully published the edition on the 12th, using email and other tools.

Currently, eight out of ten newspapers provide readers with one or more options for obtaining the email addresses of reporter (Featherly, 2001). Journalists often have the

concern that posting their email addresses is the same as being overwhelmed by hundreds of emails each day (Deuze, 1999). In fact, these cyberspace newspaper mailboxes receive everything – from letters to the editor, correspondence, news tips and, increasingly, junk mails. This raises the question. Internet offers the great potential of communication between users and reporters. But do the reporters fully utilize this potential and really read and reply to these emails?

#### Online Forums: Reader-Reader Communication

Online forum, also referred to as message board, virtual community or bulletin board, is a powerful interactive tool that brings people together. Online forums provide a place where users can share their opinion with others and also ask questions and discuss some topics. The user groups, according to Berthon et al (1996), may build a kind of community atmosphere in the site, which in turn may make this site a satisfying option. Lasica (1996) points out that such facility strengthens readers' bond to a media source, allows readers to interact with each other, not just the journalists. They especially widen the interaction between readers to readers (Schultz, 1999). Furthermore, it gives readers an opportunity to contribute rather than just consume (Lasica, 1996). In the wake of September's terrorist assaults, it is not surprising that so many turned to the online forum to share their anger and grief (Futrelle, 2001). An open forum where users can share thoughts, ideas can provide much value to the site (Pete, 1999).

Tanner (2001) argues that online forum is a public space and identifies four characteristics: access, freedom of communication, structure of deliberation, and the public use of reason. However, Outing (1998, b) noted that there are surprising number of news Web sites do not support online forum.

## **Content Interactivity**

The technology of the Internet not only allows for fast interpersonal interaction between journalists and users and among users, but also users interaction with their individual preferences. The diversity of readers is increased by the World Wide Web, but has always been an issue in journalism. Interactive journalism offers the opportunity to address the diverse needs and preferences of those readers. This does not mean adapting the paper to the perceived needs of a faceless reader, but means putting a journalistic product together to cater for the individuals (Deuze, 1999). One dimension of interactivity is seen as consisting of “the availability of choice available and of unrestrained navigation in the cyberspace” (Ha and James, 1998, p457). In the online newspapers world, the number of section links offers the readers the availability of choice, and the hypertexts and search engines offer readers unconstrained navigation choice of content.

### Section Links

In online journalism setting, as is the same in printing newspapers, if the newspaper has more sections, the users have more choices. One of the measures McMillan (1998) used to test the complexity of choice dimension of interactivity is the number of links from the home page of newspaper web site. A greater number of section links is “an indication of higher complexity of choice” is presumed.

### Hypertexts

Hypertext is another frequently mentioned technological innovation of the Internet, which allows the readers to understand the meaning of a day’s events in a

“personalized” context, by inserting hypertexts into news stories that can lead readers to deeper context, illustrations, background information, related stories, etc.

The World Wide Web is hypertextual, and hypertexts “represent the primary mechanism” for an interactive Web news site (Millison, 1999). In literature, interactivity is commonly associated with hypertext (Arata, 1999) and the hypertext idea is becoming the dominant data structure that Rafaeli declared as deserving “a focus of communication research” (Rafaeli, 1996).

Hypertexts are a method of telling stories interactively. George Landow (1997) traces the origins of this term to Nelson who used it to refer to non-sequential writing on computer in 1969s. Hypertexts are like special structure of threads that link the various elements of a complex work, introduce multiple points of view, and thus add depth and details. By appropriate mapping of hypertext, users can interact with web site content as if they are physically in a natural environment (Steuer, 1992). Traditional journalism guides the reader through a linear narrative thread, while online journalists let readers become participants. These hyper-linked pages offers dynamic content because the links are always changing and evolving as online staff updates the information. Furthermore, links allow users to choose what they want by following their own thought paths and interests within a well-defined structure provided by the publisher (Fillmore, 1993). Readers may select whether they wish to read certain links, for example, whether to access to a link of background information or other related reports of the story. This takes the power from the hands of journalists to a certain extent as readers click their way through a hyper linked set of pages, thus allowing users to follow a non-linear reading path and making the document interactive and customizable for the user.

The study of Nadarajan and Ang (1999) noted that one of online newspapers' errors is that news organizations do not use the hyperlinking technologies of the Web effectively to influence the flow of accurate information to the public. Most online newspapers are still relying on their associated print newspapers for content and format. Paul (1995) noted that many news sites are simply scooping up the old flat text used on print newspaper and “throwing it on the screen.” However, online product cannot be a print replica. Or why should we bother to go online. Internet, as a medium, has great potential of interactivity between users and communicators. We are still not clear right now how well newspapers are using it.

### Search Engines

Interactivity is a kind of personalization (Lieb, 1998). Personalization of content assigns a bigger role to user interests in shaping the model of news and the related information flow (Balcytiene, 2001). Instead of reading what other people think is news, the reader can select his or her own news – judging the news worthiness and setting up their own news collections. Strength of the Web is its ability to present individual readers with a selection of tailored contents (Bogart, 2000).

Regan (2000) reported that the period of one-to-many production is ending. We are entering the era of “one-to-one” relationship-based economy. However, it’s not possible for newspapers with finite budget and staff to cater to infinite number of users needs. Instead, newspapers sites are offering a wide range of features for a diverse audience. Thus the filtering of worthwhile information is an important function to be fulfilled by the newspaper.

Fattah (2001) argued that all newspaper sites “must add useful search engines and personalization features.” Ghose and Dou (1998) considered it crucial that a Web site is equipped with search engine function. They argued that search engines provide users with personalized information while at the same time, the web site still “contain a full spectrum of information to meet the potentially diversified information needs” of users (Ghose and Dou, 1998). There is so much information on the Web that digging it out can be irksome (Dystart, 1998). The newspaper site may have all the traditional newspaper sections – news, sports, features, lifestyle, etc. – as well as online interactive features such as hotel finders and driving direction map. No one wants to explore all those areas on every visit to the web site. A user may be only interested in certain topic, for example, all the sports news about Michael Jordan’s return to the basketball field. Here, the search engines, the interactive technology unique to online journalism, help to solve this problem by fetching only the specific and targeted articles.

Kirsner (1999) reported that personalization of information will be “enormously important” for newspapers sites, while newspapers are slow to develop “robust database content management systems” that really put the control into the hands of users.

Few studies on the interactivity of newspapers sites have looked at this aspect of interactivity.

### **Factors Influencing Interactivity**

If newspapers hope to flourish online, they must engage in a two-way interactive communication with their audiences (Lasica, 1996). However, newspapers met several challenges creating interactive Web sites.

Resource is one. The Web technology is developing so fast, keeping up with it needs resources and experiences. It seems that small, independent newspapers, typically with less resources and going online at a later time, are at a disadvantage position for more interactive Web sites when compared with big ones.

Technology is another challenge. HTML, the foundation on which the Web is built, cannot enable people to create highly interactive Web sites without the help of some other tools, such as Active X or Perl. However, these tools for interactive Web sites may sound daunting to journalistic people. Newspapers need technical staff to help set up and maintain an interactive Web site.

Newspapers vary in their ability to meet these challenges for interactive Web sites. This study is to explore the predictors for the degree of interactivity of online newspapers sites, mainly examining whether newspaper market size, newspaper ownership, number of online technical staff, and the length of time having Internet presence sites will affect the interactivity of newspapers Web sites.

### Market Size

Tremayne (1997) found that newspaper sites show more interactivity than television sites. Since his sample of five online newspapers is almost all sites with larger circulation newspapers, it might suggest that market size has an effect on the interactivity of newspaper Web site.

Newspapers are in double market places (Udell, 1978) that sell access to audiences and to advertisers. The bigger circulation newspapers have, the better advantage newspapers are at in bargaining with advertisers. If circulation drops, advertisers find the newspapers of less use in reaching a desired audience (Compaine,

1980). That is why smaller size dailies tend to weather economic storms better than their big city brethren (Fine, 2001). NAA's analysis of daily newspaper circulation slides last year reports that smallest newspapers have the biggest decline of circulation, while large dailies were essentially flat (Fine, 2001). Small circulation papers have smaller revenue base from subscription and smaller market to attract advertisers, which make them more susceptible from the pressure of advertisers to influence their content. According to the study of Soley and Craig (1992), as circulation rose, fewer editors reported that advertisers influenced their paper content.

Newspaper has high "first-copy" costs, that is, the costs of gathering and packaging the information product and preparing it for printing (Picard, 1998). The costs for producing the first copy are high fixed costs. Increasing the number of copies produced will not change the high fixed costs of first copy (Picard, 1998). After the first copy, the costs decline as economies of scale develop when number of copies produced increases (Rosse and Dertouzous, 1979). Since the high fixed costs and relatively low variable costs after that, larger newspapers enjoy sharply falling average costs that result in economies of scale.

The efforts of newspapers to improve circulation have effects on the news product, such as improving editorial presentation (Compaine, 1980). The reality is that the dominant news Web sites are run by the old media – the traditional news organizations, Giles argued, "is the influence of marketplace" (Giles, 2000). The strategic importance of "size" holds true in regard to audience market share (Chan-Olmsted and Park, 2000).

When setting up dot-com, it is harsher for those with insufficient capital or marginal journalistic reputations (Giles, 2000). Setting up a highly interactive site may cost \$30,000 or more (Abernathy, 1995). And online start-up budgets under \$5,000 have not been uncommon at smaller papers (Outing, 1996). Among the survivors are the mainstream news organizations that have the resources to build powerful Web sites. Small media organizations are at a disadvantageous position for the required resources to set up an interactive site utilizing the latest technology. Gubman and Greer found that newspaper site are often consistently “sophisticated” or “unsophisticated” according to the size of the organization (Schultz, 1999). Garneau (1996) also reported that the cost of developing new media product made it highly unlikely to compete as small, independent newspapers. Schultz (1999) found newspaper size is a clearer predictor of interactive options of newspapers Web sites.

On the other hand, some small papers have made big success on the Internet. Lasica (1998, b) reported that Sunline (www.sunlin.com) has won a slew of state and national awards for small online publications. Chan-Olmsted and Park (2000) examined 300 broadcast TV stations’ websites and found that market size is the least relevant to the content and structure of website. Lin and Jeffres (2001) also noted that market size is not a significant factor in determining the content on websites.

### Media Ownership

The possible effects of ownership on newspaper content have been the focus of many scholarly studies (Bagdikian, 1992; Demers, 1993; Beam, 1993; Lacy, S. et al., 1996; Fradgley et al., 1995). No research in mass communication can ignore the question of media ownership and the economic implication of that control (Gomery, 1998). When

newspapers going from the print to the online world, ownership may also be one factor influencing the interactivity of newspapers Web sites.

Industrial economists have long believed that elements of “market structure” make up the economic environment of firms and induce these firms to behave in a certain way (Caves, 1982). One of the significant elements to surface in the discussion of market structure is “ownership concentration.” It is assumed that economic benefits such as scale economies, better bargaining power and shared group know-how are more likely to be available to firms under chained ownership. The newspaper industry continues to be one of the most profitable industries (Picard, 1998). Increasing commercialization of the press after World War II led to larger newspaper groups and media conglomerates (Picard, 1998). Critics deplore the growth of large media conglomerates and their control over information (Bagdikian, 1992) and proponents claim the larger companies are better able to utilize economies of scope and scale, eventually resulting lower overall costs to consumers (Litman, 1988; Picard, 1998).

Chain newspapers have the potential advantages of scale of economy. Besides, sharing news coverage and feature sections among groups can enhance the news product. Furthermore by offering a bigger circulation package, chain newspapers become a big player in the quest for advertising revenue than any single daily could hope to be (Morton, 1997).

However, studies on the relationship between group ownership and content have yielded inconsistent results (Fradgley et al., 1995). Basically we expect homogeneity among these newspapers and some studies do prove this expectation (Glasser et al. 1989; Wackman et al, 1975). Chain owners may throw their unified influence in editorial policy

(Campaign, 1980), and newspapers monopoly may compromise the paper's quality of coverage as lack of competition could soften adherence to journalistic standards (Henry, 1998).

On the other hand, some studies found the opposite (Wagenberg et al, 1975). Thrift (1977) found that editorial content of independently owned dailies changed significantly after being purchased by groups. In Campaign's book (1980), conflicting examples are also present. Some has dramatically improved the editorial quality after been purchased by chain organization, while some are frequently criticized.

In the online setting, Chan-Olmsted and Park (2000) found ownership is related to content of station Web site. The larger the station, the more likely the web site will include such information as communication mechanism and membership systems. Schultz (1999) argued that chain newspapers possibly benefit from their media group's experience with Internet sites. However, Schultz (1999) found ownership structure was not a good predictor of interactive options of newspapers Web sites.

#### National vs. Local

Conventional wisdom suggests that big national news site, with more money, broad coverage, and higher reputation, would be in the best position to attract repeated visitors and set up a highly interactive news Web site than local newspapers.

According to "The Media Audit," a syndicated survey of both online and traditional media in more than 80 U.S. markets, the Washington Post web site leads the way in attracting an Internet audience. Peng, Tham and Xiaoming (1999)'s findings also indicated the difference of national and local media on content. They found one third of their sampled newspapers offered interactivity in the forms of forum or live-chat. More

national papers than local papers have such interactive facilities. The relative strength of the large newspapers – both in capital and technology staff – makes their application of interactive devices easier than smaller, local newspapers. According to the study by Chyi and Lasorsa (1999), most people tend to read local newspapers in the ink-and-paper format while national newspaper sites are gaining more ground.

However, some studies have concluded that both local as well as national media fail to serve adequately audiences needs (Lemert, 1984; McLeod, Daily, Guo et al, 1995). While some other studies found local newspapers actively attempt to provide a forum for local self-definition and try to create and maintain participation in their communities (Hindman, 1998). Fattah (2001) noted that local sites have become more adept at gathering and using Web metrics. Local news sites have twice the percentage of loyal customers as their counterparts on the national level (Fattah, 2001). Dibeau and Garrison (2001) found that local newspapers used more Web technologies than national newspapers. They argued that unless national online newspapers catch up in the use of technology, their readership would be taken away.

#### Length of Web Existence

The Internet is a new medium. Since newspaper going online in the mid-90s, web sites have gone through great changes, both in content and structure and presence. Many scholars agreed that it's still hard to say where this new medium will lead. Length of web existence may be another factor influencing the interactivity of newspapers Web sites.

At the beginning of Internet hype, a lot of traditional mass media jumped to the online world and produced Web sites of doubtful value (Schultz, 2000). Holtz (1998, p3) contended that in the beginning “the internet is so new that businesses, unsure of what to

do with it, are applying old use to it". According to Lasica (1999), the early efforts of online news industry "were embarrassing, to put it kindly, with few publications that had even an inkling of understanding" about the Net.

And as time going on, newspapers became more comfortable with the new medium and got more experience operating Web sites, and newspapers Web sites have become increasingly interactive (Higgins, 1994). Now newspapers such as *New York Times* and *Chicago Tribune* do a lot of original reporting on the Web (Lasica, 1999), and fight for supremacy in traffic, drawing millions of repeated visitors. According to Osborn (1999), *The Washington Post* and *The New York Times* were among the first to move to the Web. Newspapers online are still premature, but practice makes perfect. They may benefit from their experiences online to develop more interactive sites.

#### Online Technical Staff

Technology has greatly changed the nature of the newsroom, classified and advertising operations in the 1980s (Compaine, 1980). Wigand (1997) noted that modern communication and information technologies can enable changes in business processes. Scholars from the very beginning have viewed the Internet as a technology with positive consequences (Bogart, 1994). According to report of Newspaper Publishers Association (June, 2000), technology has lowered barriers to entry, resulting increasing consumer choices.

The growth in the nature of online journalism mirrors the history of the development of Web technology (Sundar, 2000). In the early days, the potential for interactivity was quite narrow, in part a reflection of the available technology (Conhaim,

1992). Despite its blessings, the widespread acceptance of the web and HTML in particular has limited our ability to make web site more interactive (Klein, 2000).

Nowadays, more interactive web site is made possible by such new software as Director, Flash and programming language such as Java, JavaScript, VRML and Perl. These tools make interactive devices such as online chat and search engine available. However, extra programming efforts are required (Wacksman and Cohen, 1997), and the technical staff is critical in creating and maintaining such complex sites. Take the search engines as an example. Kirsner (1999) noted that meta-searching, which searches several databases at once, is technically challenging, even for newspapers that offer all four-tier searchable databases. DHTML (Dynamic HTML) together with VB let programmers create more interactive sites (Kiely, 1998), but DHTML compatibility across browsers also have to be considered (Stanek, 1999). For the use of Java Applet, it has caused some user problems for newspapers, including computer crashes (Dibean and Garrison , 2001). Interactive sites are desirable, but obviously, more online technical staff is needed to create and maintain such Web sites and related database system, and for trouble-shooting and other technical supports.

Newspapers sites typically vary in their technical capability to utilize various technical features of the Internet. Dibean and Garrison (2001) argued that it's not probable that any online newspapers will take up use of plug-in based technologies to make more dynamic web sites, such as Flash and Shockwave, unless they are made easier to use. Newspapers could only discontinue use it (which results in less interactive sites) or have more technical staff for support and troubleshooting.

## Summary

Researchers are starting to look at the impact of Internet's interactivity on the newspapers Web sites; however, most of them did only descriptive studies of the current situation of the interactive level of newspapers, such as answer how many newspapers offer email, and forums. Few had touched the question that why newspapers had different levels of interactive web sites, what were the factors that influenced the interactivity of newspapers Web sites.

Massey and Levy (1999) conduct a content analysis of Asian newspaper Web sites, but they only describe the interactivity of Asian English newspapers sites, and did not explore why it was so, what factors might affect the interactivity of newspaper web sites. Schultz (1999) mainly studied the interactive options offered by online newspapers. He also tried to relate two factors that might affect newspaper web sites interactivity, and found ownership structure was not a good predictor of interactive options while newspaper size proved to be a clearer predictor. However, his study on interactive options in online journalism provides only token interactive options of newspaper Web sites. He ignored Heeter's definition of interactivity and failed to recognize content interactivity. His interactivity index considers only static email links, not the real response to readers' emails.

This study incorporated the interpretation of interactivity of Heeter from the perspective of content interactivity and Rafaeli and Sudweeks' contribution to interpersonal interactivity. The researcher explored whether the interactivity of newspaper web site was dependent on certain factors, namely newspaper market size, ownership, number of online technical staff, length of time having internet presence site.

Whether national newspapers have more interactive web site than local newspapers was also explored.

## CHAPTER 3

### RESEARCH QUESTIONS AND HYPOTHESIS

Based on the above discussions, this study explored the variables that influenced the level of newspapers websites' interactivity. The relationship between five independent variables and the interactivity level of newspaper Web site are explored. Four research questions and one hypothesis were posed.

RQ1: Are there any relationships between market size and the level of interactivity of newspaper Web site?

This study is interested in finding out when newspapers going online whether market size has impact on the interactivity of newspapers Web sites.

RQ2: Does newspaper ownership affect the level of interactivity of newspaper web sites?

Whether ownership affects the interactive level of newspapers Web sites remains unclear in previous studies. This question will evaluate the overall performance of online newspapers and study whether the ownership variable is helpful in predicting the interactivity of newspapers Web sites.

RQ3: Does national newspapers have different level of interactive Web site from local newspapers?

National and local newspapers have a lot of difference in their content and structures of newspapers. This question tests whether this is also true when newspapers go online in terms of the difference in their websites' interactivity.

RQ4: Does newspaper with more online technical staff have more interactive Web site?

Compared with traditional one-way communication, online communication has the advantage of interactivity, which is made available by the technological advancements in the past decade. To use these technical tools for interactive Web sites, newspapers need technical staff to create and maintain the sites and provide technical support to the sites. This question tests whether the number of online technical staff of newspapers has impact on the level of interactivity of their websites.

H1: Length of Web existence has positive effects on the interactivity of their Web sites.

This hypothesis tests whether the interactivity of newspapers Web sites is influenced by the length of time since newspapers establishing their Internet presence sites. Although still early in its development, newspapers Web site has gone through great changes in content and structure, and especially in presence since its creation in mid 1990s. Newspapers Web sites are becoming increasingly interactive in the past several years. It is expected that the interactivity level of newspapers be different if their length of Internet Presence differs from each other.

## CHAPTER 4

### METHOD

The general methodology this study used involved a content analysis of 106 U.S. daily newspaper web sites. McMillan (2000) analyzed 19 studies that apply content analysis techniques to the World Wide Web and found that this research technique can be applied to a dynamic environment, such as the World Wide Web. Despite the some unique challenges presented by the rapid growth and change of Web-based content, researchers are now using content analysis to examine themes such as diversity, commercialization utilization of technology on the World Wide Web (McMillan, 2000). Thus this study mainly used content analysis technique on 106 U.S. daily newspapers Web sites in order to address the above questions.

In addition to content analysis method, this study also applied an email survey to collect information concerning the variables of the number of online technical staff and length of Web existence of newspapers.

#### **Operational Definition of Key Variables**

The term of “national” is conventional and vague and changing over time (Seymour-Ure, 1991). However, Seymour-Ure listed three general criteria: national reputation, geographical scope, and content breadth. According to American Journalism Review (<http://newslink.org/daynews.html>, 2002), Christian Science Monitor, Los Angeles Times, New York Times, USA Today, Washington Post, and Washington Times

will be regarded as national newspapers. The rest of newspapers are then considered as local newspapers.

Chain newspapers: Compaine (1982) has defined chain as “ the ownership of two or more daily newspapers in different cities by a single firm or individual.” Using the *Editor & Publisher Yearbook 2001* as a guide, each newspaper sampled was marked whether it was owned by media groups or chains, or entrepreneurs.

Market size: This variable was measured by weekday circulation of its print version according to *Editor and Publisher International Yearbook 2001*.

Number of technical staff: This variable was measured by the number of online technical staff in the newspaper organization. Most newspapers have a section link “contact us” or “about us” which listed the department and email address of its employees. For those newspapers that do not have this section, a standard email including this question will be sent to the newspapers. The response of this email will also be used as one of the items composing of the index of interactivity to test newspapers’ responsiveness to readers.

Years online: Most newspapers have a section of “about us”, which inform readers of their mission, history, etc. If the desired information is not available from the newspaper’s Web site, the standard email including this question will be sent to the newspaper.

Email: Email or Electronic mail usually has the form of user@company.domain. Nowadays, however, because of the hyperlink technology, some newspapers only list the names of employees. If readers want to send email to the employee, it is just a click away.

Online forum: Also known as bulletin boards, a typical forum has the main topics listed along with the date of the last message posted in that topic. Choosing one of the topics will either open a list of subtopics or go directly to the discussions (Notess, 1999).

Section links: The number of section links was counted in the home page of the site. It is presumed that a greater number of links is an indication of higher complexity of choice (McMillan, 1998). Section links are usually a button on the top of home page from left to right or a menu on the left side of home page forming a column, or on the right of the home page.

Hypertext: Hypertext is defined as the underlined texts or highlighted items of a web page, when clicked with a mouse, open another web page (Ha and James, 1998). By clicking a link in the story, a reader can navigate from the story to some in-depth description or background information or related stories. Hypertext allows readers to follow his or her own thought threads to form his or her own stories.

Search engine: The presence of a search engine was considered to represent greater complexity of choice. A surfer interested in certain topic can just type a key word or phrase in the “search” section of the site. Then all relevant information contained the key word or phrase in the site will be shown on the screen (Ghose and Dou, 1998).

### **Sampling**

106 U.S. online newspapers were examined by content analysis in summer 2002. Online newspapers listed on the web site of American Journalism Review (<http://newslink.org/daynews.html>, 2002) served as this study’s sampling frame, because it is one of the best and most reliable and up-to-data lists of newspapers online (Schultz,

1999; Pack, 2001). Systematic stratified sampling method was applied. For the fifty states in the United States, this study randomly selected two newspapers from each state. To make national newspapers relatively representative, six national newspapers are selected (Christian Science Monitor, Los Angeles Times, New York Times, USA Today, Washington Post, and Washington Times). This study will follow Schultz's (1999) categorization of circulation, which was measured by weekday circulation of its print version according to *Editor and Publisher International Yearbook 2001*. The categories of circulation used are: less than 25,000, 25001 to 50,000, 50001 to 100,000 and more than 100,000. According to Schultz, this category is better than other categories, such as those by Newspaper Association of America. To test intercoder reliability, twelve newspapers will be randomly selected.

### **Measurement Validity**

In addition to be reliable, a measurement must be valid if it is to be of use in studying variables. A valid measuring device measures what it is supposed to measure. There are four major types of validity – face validity, predictive validity, concurrent validity, and construct validity (Wimmer and Dominick, 1987). The most common method used in content analysis to assess validity is face validity, while only a few studies have attempted to document concurrent validity and predictive validity (Wimmer and Dominick, 1987).

Face validity is achieved by examining the measurement device to see whether, on the face of it, it measures what it purports to measure if the categories are rigidly and satisfactorily defined. Most descriptive content analyses usually rely on face validity.

The measurement of this study comes from several former studies – Gubman and Greer’s analysis of online sites produced by U.S. newspapers (1997), McMillan’s analysis of 395 sites on the World Wide Web for models of funding for content in computer-mediated communication (CMC) (1998), Massey and Levy’s content analysis of English-language online newspapers in Asia (1999), Schultz’s content analysis of user interactive options in 100 U.S. online newspapers (1999). Their measurement of Web sites’ interactivity is widely accepted. Thus the measurement validity of this study has been assured.

### **Coding**

The unit of analysis of newspapers website was the whole one-day’s content, starting from the home page. According to Schultz (1999), the interactive features of newspaper websites are fairly constant, unless a newspaper launches a whole new concept for its sites. So in the final analysis, most newspapers Web sites were coded once. It was not required to read through the editorial content, but focus on the interpersonal and content interactivity items discussed above. The researcher and another independent coder did the coding. Coders clicked through and coded the interactive items on the homepage and then on all subsequent pages: first, whether the interpersonal and content interactivity items were available, such as general email to the newsroom, personal email to reporters, hypertext in stories, search engines; Second, what levels of these interactive items were used, including the number of section links, newspapers’ responsiveness to the coder’s email, number of online discussion forums, and diversity of the topics.

Coders also look especially for sections named “About us,” “Contact us”, etc. but not concentrate on these sections only, for information of number of online technical staff and the year the newspaper first set up their online version. If the information not available, a standard email containing the corresponding questions will be sent to the newspapers and coders will code accordingly the number of online technical staff and the year the newspaper first set up their online version based on the responses from the newspapers.

The data collection for other variables that influencing the interactive level of newspapers Web sites is offline. Market size and ownership were coded according to the *Editor & Publisher Yearbook 2001*. Whether the newspaper is a national or local one was coded according to American Journalism Review (<http://newslink.org/daynews.html>, 2002).

An index was then created that combined the different tools that contribute to content and interpersonal interactivity of newspaper Web sites. It assigned values according to their sophistication and significance for interactive communication (See Appendix IV). While certain assumptions may be contested, the construction of the index was not arbitrary, but largely based on Schultz’s (1999) scheme and theoretically correct according to Rafaeli and Sudweeks that interactive communication is in higher level than reactive communication (Rafaeli and Sudweeks, 1997). For example, to weigh the journalists’ response of email more heavily than just a static email link on the page is appropriate in examining two-way interactive communication. Applying this method, the index resulted in a scale ranging from a maximum of 18 points to a minimum of 0 points (if a newspaper offered none or the lowest level of the interactive tools). The higher an

online newspaper scored, the more likely it was to offer more different and sophisticated content and interpersonal interactive tools, which may encourage interactive communication.

### **Measurement Reliability**

Reliability is crucial to content analysis (Wimmer and Dominick, 1987). Three general components of measurement reliability can be identified: intercoder reliability, stability and equivalence.

Intercoder reliability designates the degree to which a result can be achieved by other observers (Wimmer and Dominick, 1987). To obtain intercoder reliability, a pilot study of 12 online newspaper sites from the sample has been conducted. The coding sheet, coding guidelines and operational definitions of each variable were prepared before the coding procedure (See Appendix I and II). The coding guidelines were explained in detail to the coders. The intercoder reliability coefficient was calculated using the formula from Holtsi (1969). The value of  $r$  varied from 83.33% to 100% among variables. The intercoder reliability was 0.95 (See Appendix III), higher than the 90% standard for content analysis.

### **Statistical Tools**

F-tests, one-way ANOVA, Simple linear regression, and Bonferroni t Tests methods were applied when examining the relationship between predictive variables and interactivity level of newspapers Web sites. The widely used statistical software SAS is

used to analyze the data patterns. The researcher wrote the SAS code appropriate for the different test methods.

F-tests and one-way ANOVA were used to analyze whether the explanatory variables were statistically significant in their effects on the interactive level of newspapers Web sites. If F test is statistically significant, Bonferroni t Tests were used to compare the differences of means among different groups, such as circulation groups, to gain further insight of the data pattern.

Simple linear regression was used to analyze the relationship of the raw data of circulation (actual circulation number) and the interactive level of newspapers Web sties.

## CHAPTER 5

### FINDINGS

About half of the sampled newspapers scored the average or higher of the total 18 points of Interactivity Index. The mean score was 8.2. The highest score was 17 points, which was achieved by Los Angeles Times and the lowest score was 1 point, which was gained by Miles City: Star.

#### RQ1: Market Size Effects on the Interactivity of Newspapers Web Sites

Large newspapers scored higher in the Interactivity Index Score averagely (See Table 1). A closer look at Table one revealed that newspapers generally had small standard errors for all the four categories of circulation. Newspapers with circulation 100,000 or more had the biggest standard error but still small than one. These small standard errors showed that newspapers within each category made similar efforts on interactive web sites.

**TABLE 1: Mean Interactivity Index Score by circulation**

Circulation	Mean	Standard Error
100,000 or more	10.50	0.81
50,001 ~ 100,000	10.29	0.75
25,001 ~ 50,000	8.00	0.78
25,000 or less	7.40	0.34

As to RQ1, One-way ANOVA revealed statistically significant mean differences between circulation categories (See Table 2). The F-statistic for circulation had value 8.41 and p-value is 0.0002, which demonstrated that circulation did have some effects on newspaper web sites interactivity.

**TABLE 2: One-way ANOVA on Interactivity Index Score by circulation**

	df	F	P-value
Between Groups	3	7.64	0.0002
Within Groups	102		
Total	105		

**TABLE 3: Bonferroni t Tests for the Effect of Circulation**

Comparison	Difference Between Means	
4 - 3	0.2143	
4 - 2	2.5000	
4 - 1	3.0670	***
3 - 4	-0.2143	
3 - 2	2.2857	
3 - 1	2.8827	***

Comparisons significant at the 0.05 level are indicated by \*\*\*.

1: Newspapers with circulation of 25,000 or less  
2: Newspapers with circulation of 25,001~50,000  
3: Newspapers with circulation of 50,001~100,000  
4: Newspapers with circulation of 100,000 or more

The F-test only broadly summarized that the mean of interactivity index for different market size newspapers were not all equal, or in other words, market size had effects on the interactive level of newspapers Web sites. We obtained further insight by contrasting the mean interactive index scores of each category of newspapers (See Table 3). Using Bonferroni's conservative contrast of means, which controls the overall type I error rate of 5%, we found that the interactivity index score for newspapers with circulation 25,000 or less was significantly different from that for newspapers with circulation 50,000 ~ 100,000 and newspapers with circulation 100,000 or more (See Table 3).

To further gain information of how the market size affected the interactive level of newspapers web sites, simple linear regression method was used with the raw data of circulation numbers. With the raw data, the SAS output showed that the assumptions of Simple Linear Regression model were violated – the random error was not normally distributed, and the residuals plot was not random but had a slightly curve pattern. To meet the assumptions, statistical transformation of data using Log circulation as explanatory variable was tried. This time, the SAS output showed that all assumptions met and yielded the coefficient for log circulation of 0.96, which was statistically significant with F-value 4.67, and p-value <0.001.

RQ2: Ownership Effects on Interactivity of Newspapers Web Sites

Table 4 demonstrated that chain newspaper web sites and independent newspapers web sites got almost same average Interactivity Index scores (See Table 4). Table 4 also told us that newspapers generally had small standard errors within each ownership groups. Both of the two standard errors were less than 1, while independent newspapers had a slightly bigger standard error than chain newspapers, which meant the independent newspapers have slightly bigger variation in their efforts on interactive web sites.

**TABLE 4: Mean Interactivity Index Score by Ownership**

Ownership	Mean Interactivity Index Score	Standard Error
Chain	8.15	0.32
Independent	8.22	0.68

From Table 4, we had the general impression that the interactivity scores of chain and independent newspapers were not different, which meant the ownership may have

little or no effects on the interactivity of newspaper web sites. The SAS output showed this. Although chain newspapers have a slightly higher mean score, the relationship between ownership and interactive web sites failed to be statistically significant. Table 5 revealed that the F-test had value of 0.01 with p-value 0.98, which meant that different ownership does not affect the Mean score of interactivity index. So ownership structure (chain vs. independent) was not correlated with the level of interactivity of newspapers Web sites. It was not a good predictor of interactive newspaper web sites.

**TABLE 5: One-way ANOVA on Interactivity Index Score by Ownership**

	df	F	P-value
Between Groups	1	0.01	0.98
Within Groups	104		
Total	105		

**RQ3: Web Sites Interactivity of National vs. Local Newspapers**

Looking at Table 6, we saw that national newspapers were in quite a lead of local newspapers, with the difference of more than four points in interactivity index scores (See Table 6).

**TABLE 6: Mean Interactivity Index Score of National & Local Newspapers Web Sites**

	Mean Interactivity Index Score	Standard Error
National	12.00	1.19
Local	7.98	0.29

As to RQ3, One-way ANOVA revealed statistically significant mean differences of interactivity index scores for national and local newspapers (See Table 7). The F-

statistic had value 10.79 and p-value of 0.0014, which demonstrated that national newspapers had different interactive level of web sites from local newspapers.

**TABLE 7: One-way ANOVA on Interactivity Index Score of National & Local Newspapers Web Sites**

	df	F	P-value
Between Groups	1	10.79	0.0014
Within Groups	104		
Total	105		

One fact we should note was that for the six sampled national newspapers, five of them fell into the biggest market size category, with circulation of more than 100, 000; and the sixth newspaper fell into circulation of 50,000 ~ 100, 000. We suspected that this variable was interrelated with market size variable. The colinearity analysis indicated this, which meant one variable was in (near) linear relationship with the other and we could delete one of them from the explanatory variables from statistical perspective. However, since this variable may still be meaningful in real life, we kept this variable here.

RQ4: Number of Online Technical Staff's Effects on Interactive Newspapers Web Sites

For limited resources and time, not all newspapers technical staff data had been collected. For the available data of thirty-eight cases, one-way ANOVA showed that F-value of 8.30 and p-value of 0.0066. It seemed that this variable is significant. However, the data pattern analysis showed an obvious outlier, with technical staff of 100. This very big outlier seriously damaged the data pattern and need to be removed for further analysis. After removing this outlier, simple Linear Regression method was applied and the SAS output gave a coefficient for technology as 0.2. However, this variable was

found non significant in its effect on the interactive level of newspaper Web sites. One-way ANOVA showed that F-value of 2.01 and p-value of 0.16 (See Table 8).

So as for research question, “Will newspapers with more online technical staff have more interactive Web site?” we found some evidence that the number of technical staff may not affect the interactivity of newspapers Web sites.

**TABLE 8: One-way ANOVA on Interactivity Index Score by Number of Online Technical Staff**

	df	F	P-value
Between Groups	1	2.01	0.16
Within Groups	36		
Total	37		

H1: Length of Web existence has positive effects on the interactivity of their Web sites.

The same data shortage problem existed with this category of data. For the available data of thirty-eight newspapers, simple linear regression revealed statistically significant length of Web existence effects on interactive Web sites, with p-value of 0.0019 (See Table 9).

So as for this hypothesis, we found strong evidence that the length of having Internet Web site presence had effects on the interactivity of web site. Since the parameter estimate for length of time was positive with value of 0.55, we concluded that the longer time since newspaper having its online version, the more interactive site it would have.

**TABLE 9: Simple Linear Regression by Length of Web existence**

Parameter	Estimate	Standard Error	t Value	P-value
Intercept	7.51	1.30	5.77	<0.0001
Length of time	0.55	0.25	2.21	0.034

## CHAPTER 6

### DISCUSSION

Most of the U.S. daily newspapers have their online versions now, but different newspapers vary in their ability to adapt to the fourth media (Bonington, 1995) in terms of Interactivity. This study found that some factors do affect the level of Internet newspapers sites' interactivity, while others do not.

RQ1: Are there any relationships between market size and the level of interactivity of newspaper Web site?

Results from RQ1 indicate that market size influenced the interactive level of newspapers Web sites. Newspapers with bigger market size have more interactive Web sites than newspapers with smaller market size. Since its creation, newspapers web sites have seen many changes, yet it seems market size is a factor influencing the interactive level of different newspapers web sites from the early stage of newspapers Web sites, as the result of this study is consistent with Gubman and Greer's findings in 1997 and Schultz's conclusion in 1999.

When newspapers set up websites, the high fixed first copy costs were still there. And the costs of the first interactive copy online are even higher. According to Abernathy (1995), a highly interactive site will cost \$30,000. Since newspapers have increasingly been viewed by advertisers as a medium to reach mass audience rather than segmented audience (Picard, 1998), obviously, larger dailies are in an advantageous position to satisfy advertisers' needs of reaching the mass audiences. A disproportionate amount of

advertising went to the leading papers (Picard, 1988). The greater financial resources and advertising revenues for larger papers enable them not only to invest more in staff and in-depth coverage (Lacy & Bernstein, 1988), but also to set up and investigate more interactive online websites.

The high fixed costs and running costs made it highly unlikely for small, independent owners to compete effectively in the future (Garneau, 1996). This raises the concern that if only interactive newspapers Web sites could survive tomorrow's generation as the Internet experts saying, it seems that only bigger newspapers will survive. This somewhat reflects Rheingold's concern about "big power and big money" (Riley and Keough, 1998). Rheingold believed that the Net was still out of the control of the elite but it might not stay that way for long since big power always found ways to control new communications media. This suggests that contrary to what people expect of the egalitarian nature of Internet (Riley et al, 1998), the online environment may not be a fairer playing field for small newspapers than the offline world.

RQ2: Does newspaper ownership affect the level of interactivity of newspaper web sites?

Gomery (1998) suggested perspective of economics to study the effect of ownership on contents of mass media. Starting from "who owns the media" (economic structure) to finally evaluate media performance (Gomery, 1998). If there is a link between the economics of ownership and corporate behavior to the communication qualities, scholars can begin to make recommendations for policy change (McQuail, 1992).

In the online setting, this study's finding confirms past research presented by Schultz's study in 1999 that ownership structure was not a good predictor of interactive newspapers Web sites.

Some previous studies of ownership effects, however, found its impacts on media Web sites. For example, Chan-Olmsted and Park (2000) found ownership correlated positively to content of broadcast station Web site. Akhavan-Majid and Boudrear (1995) noted small chain and independent newspaper found similarities with each other, while the medium-size and large newspapers chains on the other. Since these researches mixed ownership with other variables, this seems to suggest that ownership alone may not be a good predictor of interactive Web sites, but have to work together with other variables to be effective, such as media type.

Limited by time and resources, this research only studied one media type – newspapers, and ownership was found not correlated to level of newspapers interactive Web sites. Part of the reason may be that although owners of newspapers are strategically placed in the flow of information, yet in fact they rarely exercise their power on a day-to-day basis (Seiden, 1974). Rather, they set the overall policy and exercise their power principally through the selection of editors who in turn select reporters and writers (Seiden, 1974). Editors have the final say of what content will appear on the newspaper, such as whether to provide some background information or related stories links to a story.

RQ3: Does national newspapers have different level of interactive Web site from local newspapers?

The finding of RQ3 suggested that there was difference of national and local media on the interactivity of newspapers Web sites. While Dibeau and Garrison (2001) found that local newspapers used more Web technologies than national newspapers, finding of this study is consistent with Peng, Tham and Xiaoming's in 1999 that national newspapers had more interactive web sites than local newspapers.

However, at the nation wide level, things become a bit stickier. There are not many national dailies. In this study, six national newspapers were sampled. When contrasting the six national newspapers with one hundred non-national ones, we need to be a little more careful about the conclusion. According to the reports of Lasica, J. D. (1998, b) and Fattah (2001), there are some exceptions of successful interactive local newspapers Web sites. Since the six sampled national newspapers were all big papers with circulation more than 50,000, we may conclude that big national newspapers tend to have more interactive newspaper Web sites than small local newspapers Web sites.

RQ4: Does newspaper with more online technical staff have more interactive Web site?

The finding on RQ4 provides that the number of technical staff is not statistically significant in its effects on interactive newspapers Web sites.

Technology developments in the past decades had changed the structure and functions of newspapers organization, primarily with respect to production and distribution. Papers could be produced faster and more efficiently, allowing for later deadlines (Picard, 1998). The content became "fresher" and increased the paper's ability to compete with broadcast media (Picard, 1998). At the same time, the newspapers developed increasing reliance on technology and equipments. A result of this is more

technicians needed to operate and service the new technology and equipments (Picard, 1998). At the beginning, these technicians were critical for the smooth production and distribution of the paper.

The technical convergence and the move toward a digital environment are reshaping the online media. The digitization of content products, whether in the form of text, image or video and audio, will continue to expand (Negroponte, 1995). When newspapers start developing the Internet as a tool to generate new readers and possibly new revenue streams (Levins, 1997), we expect that the number online technicians are influencing newspapers Web sites. However, the result of this study indicated that the number of online technical staff is not related to interactive newspapers Web sites.

One of the reasons may be that production of an online newspaper web site is a little different from print papers. According to the replies to email inquiry, some newspapers outsourced their Web sites to Web companies, and they themselves had no Web technicians at all, while some others in a chain media group do not outsource their web sites but have the parent group take care of their Web site. They themselves may have only one or sometimes no online technical staff at all.

One of the key challenges for newspapers industry is the Internet technology. Since the average length of time newspapers having their Internet Presence sites is about five years, some papers are still not up to the challenge yet. But Internet is so important that publishers can't afford to be left behind. One of the choices is let some Web experts take care of newspapers' Web sites. For the chain papers, having one online technical group to create and maintain all the chain paper Web sites and troubleshooting is no

doubt a great idea to meet the technology challenge and at the same time save a lot of money.

H1: Length of Web existence has positive effects on the interactivity of their Web sites.

The finding on H1 indicates that length of Web existence is associated with the interactive level of newspapers web sites.

At the beginning when newspapers went online, most of them did not even provide the email addresses of their reporters and editors (Katz, 1994). The early efforts of online news industry “were embarrassing” Lasica (1999).

Later, scholars criticized newspapers offered only illusions of interactivity on the Web (Lasica, 1996). Newhagen, Cordes, and Levy (1995)’s study noted that some editors did not even look at emails from readers, although they had encouraged readers explicitly to send comments. Online newspapers generally offered few and token interactive options (Schultz, 1999). Journalistic Web sites are not necessarily interactive at all.

As time goes on, newspapers get more experience and more comfortable with this new medium. Although online newspaper is still by no means a perfect new media vehicle -- most of the search engines are clunky and their rich archive is largely hidden from view -- its efforts to be more interactive are obvious. Email has been widely accepted by online newspapers as an interactive tool for readers to contact the newsroom and even many individual editor or reporter (Schultz, 1999). Editor & Publisher (Feb 20, 1999) reported some newspapers incorporated highly interactive features with database and provide a lively and well-used forum for online discussion.

Most newspapers that replied to the email inquiry have their first digital version available in 1997 to 1998, some two or three years earlier or later and few have their Internet presence site in the early 1990s. The average is 4.84 years. Deborah (1993) argued that the critical mass for interactive services should be reached in a number of larger cities in five years. It seems that after about five years developing Web sites, most newspapers are mature in some interactive features of the Web, such as general email and hypertexts in headlines.

### **Several Points on the Index of Interactivity**

#### E-mail

While most former studies look at email links, they failed to examine the actual responsiveness of email by the newspapers (Schultz, 1999; Gubman and Greer, 1997). This study took the response from the newspapers into consideration since response from the newspapers is what Rafaeli and Sudweeks' (1997) considered interactive communication.

Although almost all newspapers sampled have general email links or feedback forms for readers to contact newsrooms, many failed this test to be fully interactive by totally ignoring the coder's email, as some studies suggest the newspapers offer e-mail links to their newsroom more for appearance than for interpersonal communication (Massey and Levy, 1999).

Some may argue that because of email overload, journalists would be overwhelmed by hundreds of emails each day (Deuze, 1999) and no response from journalists is natural. The researcher believes that the static email link on the screen is not what we expect of interactive communication. Only after newspapers really respond the

email of readers, a two-way communication cycle is complete. And so response from the newsroom should be considered as one item in the index of interactive level of newspapers Web sites.

### Section Links

In this study, more section links meant more interactive choices available for readers to select from. However, without a good layout, more sections may be more confusing for readers, especially old and not technology savvy people. When facing a complex set of choices, readers may feel at lost and don't know what to select and then give up and go elsewhere or select something randomly. Thus the more choices may mean no choice or nothing for readers. This suggests future study take the layout of the newspapers site and readers' experience with different level of interactive newspapers Web sites into consideration.

### Search Engines

Outing (1998) reported that the U.S. newspaper industry made a major strategic mistake to fail to develop a Web search engine in the mid 1990s. And because of that blunder, the industry faces increasingly powerful search engine and directory service competitors, such as Yahoo. Now seems to correct that mistake, most of the sampled newspapers have search engines. However, some simply copy the search engine of Google, or that search the entire web site instead of the specific newspapers site and specific news topics.

This study coded only whether the newspaper Web site has a search engine and did not include information such as how well the search engine works and how the search results are presented. No doubt that such information also means a lot for readers to

interact with a Web site. Many newspaper executives are beginning to realize this (Outing, 1998, a). Some small newspapers redirected their strategies as a local portal and there are some successful stories (Lasica, 1998, b). Future study can also explore more in this aspect.

## CHAPTER 7

### CONCLUSION

This exploratory study examined five possible factors that may influence the interactivity of newspapers Web sites. The findings suggested that market size had positive effects on the interactive level of newspapers Web sites and national newspapers had more interactive sites than local newspapers. What deserves further exploration is that there may be something behind the scene of “market size” or “national” papers. For example, interactive features need support of high-speed Internet access superhighway, which is more likely available in big markets. Although technology is developing at great speed, many aspects of life and society have remained fairly constant. For most households, interactivity is still provided by standard telephone lines through which users have access to the Internet. Audiences of big market may have easier and faster access to the Internet. Thus big newspapers can provide more interactive features on their Web sites without slowing the reader’s downloading process.

In addition, newspapers with big market size, such as Los Angeles Times or Chicago Tribune, have national reputation of quality content, which is more likely to attract commercial support of the sites. McMillian (1998) has discovered the relationship between public funds and highly interactive health-related Web sites. It will be informative to find out the relationship of commercial support and the level of interactive newspapers Web sites.

Results also indicated that ownership structure of the newspapers was not relevant to the interactivity of newspapers Web sites. One interesting question pops up during the

process of the research that deserves future exploration. According to the email replies, some newspapers contracted out the Web sites to some Web companies, while others not. Some chain papers had their in-house group to help and maintain the child newspaper's Web sites. This results in an interesting research question – whether newspapers ownership structure or market size has effects on newspapers' strategy of outsourcing their web sites or not. Are independent papers more likely to contract out their Web sites than chain papers? It would be informative to find out the patterns of how newspapers handled their Web sites.

### **Limitations and Suggestions for Future Study**

Limited by time and resources, this study has two limitations. Based on these limitations, suggestions for future study are given.

This study found the number of online technical staff was not relevant while length of Web existence statistically significant to the interactive level of newspapers Web site. However, this study had the small sample limitation concerning the variables. Only 38 cases newspapers' data were used in this study. Future study can try more methods to collect the data or increase sample size.

According to the replies to the email inquiry, the researcher realized that an online newspaper need not only online technical staffs, but also other support online staff to be fully interactive. Massey and Levy (1999) suggests a likely relationship between an online newspaper's level of interactivity and its staffing. This is an area that calls for further attention.

Another limitation is that only five predictors were examined in this study. In the real world, many more other factors may also affect the interactivity of newspapers Web

sites. For example, not only technology itself is changing at breakneck speed, users must also change their concepts of what can be done with it (Salpeter, 1997). Web sites will be getting more sophisticated in terms of interactivity, but can older, less technology savvy readers keep pace? Future research should explore the readers' responses on the interactivity of newspapers Web sites. Is the different target readers group a factor influencing the interactive level of newspapers Web sites? Generally Web sites will become more interactive and multimedia, but exactly how much interactivity YOUR readers want?

Second, the corporate strategy of the newspapers may also affect interactive Web sites. Under the tension to make profit, newspapers are trying new strategies online, such as registration to access (Robins, 2002), subscription based online newspapers (New Media Age, June 28, 2001, p2), entertainment instead of hard news for the long-term success (Fitzgerald, 1997), powerful search engine and directory service to attract Web traffic (Outing, 1998, a). Different strategies will surely lead newspapers to different direction of interactive devices. To better understand, further study could interview site executives. They may be able to explain whether the current practice was due to a lack of know-how or a deliberate corporate strategy intended to certain directions.

Generally then, this study presents a necessary early step in understanding relationships between the level of interactivity of newspapers Web sites and some of its predictors. The present findings suggest that the market size and length of Web existence are correlated with the level of Interactivity. However, because of the ongoing evolution of Internet technologies, tomorrow's websites will bear little resemblance to most of today's offerings (Gillespie, 1999). The changing nature of the Web argues for

employing a comparative and longitudinal perspective to study the factors that influencing the evolution of newspapers Web sites interactivity.

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**APPENDIX I**  
**CODING SHEET**

V 00: Date \_\_\_\_\_

V 01: Case-No \_\_\_\_\_

V 02: Newspaper \_\_\_\_\_

1-National                      2-local                      9- Unclear

V 03: Circulation number \_\_\_\_\_

V 04: Ownership

1- Independent              2- Chain                      9- Unclear

V 05: Number of technical staff \_\_\_\_\_

V 06: When online version available \_\_\_\_\_

**E-mail**

V10: General e-mail address(es)/posting forms to contact newsroom?

1- Yes              2- No              9- Unclear

V11: List of staff personal e-mails?

1- Yes              2- No              9- Unclear

V12: Contact information of the author of a story?

1- Yes              2- No              9- Unclear

V13: Contact information of newsroom in a story?

1- Yes              2- No              9- Unclear

V14: Reply coder's email?

1- Yes              2- No              9- Unclear

**Online forum**

V 20: Number of discussion forums offered \_\_\_\_\_ (if zero, skip V 21)

V20a: 9-Unclear (skip V21)

V 21: Forum topics

1- Diversity of topics (more than four)              2- Dominated by \_\_\_\_\_              9- Unclear

**Section links**

V 30: Number of section links \_\_\_\_\_

**Hypertext**

V 40: Hypertext in story

1- Yes      2- No      9- Unclear

V 41: Hypertext in headline

1- Yes      2- No      9- Unclear

V 42: Links to other news web sites

1- Yes      2- No      9- Unclear

**Search Engine**

V 50: search engine offered

1- Yes      2- No

## APPENDIX II

### CODING GUIDELINES

The content analysis looks for factors that contribute to content and interpersonal interactivity of online newspapers. It explores the predictors that influence the interactivity of online newspapers. The coding of this exploratory study will finish two tasks. The first is to get the index for the interactivity of online newspapers, which will reflect the level of interactivity of online newspaper web sites. The second is factors that may influence the interactivity of newspapers Web sites, namely the number of circulation, national/local newspapers, newspapers ownership, number of online technical staff, and years of having Internet Presence site.

All editorial elements of online newspapers will be included in the coding if they allow interpersonal communication between readers or with journalists or if they allow readers to act interactively with the online newspaper contents. Generally, all Web sites of a selected online newspaper will be examined, excluding advertisements/classifieds. It is not required to read through every editorial text. The study is interested in structural elements. The focus is on the index of interactivity level, which is composed of e-mail, discussion forums, hypertext, search engines, and section links, and the predictors that may influence such level.

#### Examination Process

Browse the Web sites of each online newspaper carefully, but do not waste time reading through articles. Instead, click on as many links and articles as possible, and examine at the same time all the features of interactivity index. Start the analysis at the newspapers' original homepage. Usually, some coding variables are already being taken care of when looking at a few sections of the newspaper web sites. Look especially for sections named "About us," "Contact us", "Forums," "Letters to Editors" etc. However, do not concentrate on these sections only.

Watch the URL to make sure that you do not enter sites of a different content provider when you follow a link, for example, homepages of Associated Press, or of Gannett media group.

If necessary, register with e-mail and password to get access to certain areas of an online newspaper. This will frequently be required when entering discussion forums. If the newspaper would charge for access, stop the examination and circle the correct choice in the coding sheet.

#### Variables of the Coding Sheet

Circle appropriate response categories on the coding sheet. Specify problems whenever you mark "unclear."

V 00: Specify the date coding the online newspapers, for example, 5/10

V 01: Specify the case number of newspapers coded, starting from 1

V02: National newspapers are all the six newspapers listed in American Journalism Review (<http://newslink.org/daynews.html>, 2002), namely Christian Science Monitor, Los Angeles Times, New York Times, USA Today, Washington Post, and Washington Times. The rest are local newspapers.

V 03: Wrote down the specific circulation number of weekday circulation of the newspapers' print version according to *Editor and Publisher International Yearbook 2001*.

V 04: Ownership: also consult *Editor and Publisher International Yearbook 2001*. If the newspapers belong to some media group, such as Gannett Co. Inc., MediaNews Inc., New York Times Co., circle 2- Chain, else, circle 1- Independent. If some unclear situation happened, circle 9- Unclear and specify the problem.

V 05: Most newspapers do not have this information online, so send the standard email to the newspapers with the question to ask the number of their online technical staff. If the answer has part-time staff, count each part-time staff as 0.5. If the newspaper outsourced to some Web companies, specify the company name and find out the contact information, or Web site. Go to their web site or email the company for technical staff information.

V 06: Most newspapers do not have this information online either, so send the standard email to the newspapers with the question to ask when their online version available, wrote down the specific year.

#### E-Mail

V 10: Mark "1-Yes" if there is at least one general (impersonal) e-mail address provided that readers can use to contact the newsroom. Also mark "1-Yes" if online forms are provided so that readers can filled in to send comments, questions, or letters to the editor.

Mark "2-No" if there is no general e-mail address or response form provided. Also mark "2-No" if only e-mail of Webmaster or only e-mail of departments not belonging to the newsroom, e.g. advertising department, distribution service.

V 11: Mark "1-Yes" if the editorial staff is listed in a directory with individual e-mail addresses. Also mark "1-Yes" if only most editors/reporters in the list apparently have e-mail address listed.

Mark "3-No" if:

- There is no staff directory.
- Only staff of non-editorial departments is listed with e-mail.
- List does only contain emails of manager or director or administrative committee.

V 12: Browse articles and see if there is contact information so that readers can contact the author of the article. You will find the contact information possibly as an email link, or "contact author". Quite possibly such links are attached on the top or the bottom of the story, in the text or as by-line.

Mark "1-Yes" if you find such contact information.

Mark "2-No" if you cannot find articles that have such links to the author or only general contact form or email links to the newsroom.

Mark "9-Unclear" if, for example, e-mail addresses are provided but not as a link, or only members can log in to read the stories.

V13: Browse articles and see if there is contact information so that readers can contact newsroom. You will find the contact information possibly as an email link, or "Your opinion", etc. Quite possibly such links are attached on the top or the bottom of the story, sometimes in form format.

Mark "1-Yes" if you find such contact information.

Mark "2-No" if you cannot find articles that have such links to the newsroom.

Mark “9-Unclear” if, for example, e-mail addresses are provided but not as a link, or only members can log in to read the stories and there is a fee involved.

V14: If the newspaper answered the standard email and the response is not an automatic one, mark “1-Yes”. Mark “2-No” if the newspaper did not answer the email. Mark “9-Unclear” if, for example, e-mail addresses are provided but not as a link, or the email address is not valid and being returned when sent the standard email.

#### Online Forums

V 20: A discussion forum is a bulletin board to which readers can post comments by e-mail. Others can read the postings that are publicly displayed on the Web site, and may add their own statements. Be careful some sites listed “Forum” or “Public forum”, but in fact they are essays or stories from the columnists, not messages from the readers.

Specify the number of forums offered by the newspaper site. If there is no forum offered, mark “0”.

If there need a password and log in, try to register as a new member, but if there is a charge involved, mark V21 a “9-Unclear”.

Rules for counting: Often times, forums are ordered by newspapers according to topic categories. Sometimes they are combined to bigger entities (“folders”) and then called, for example, “Community,” “Forums”, “Public Forums”, etc. To simplify the coding, we count it as one forum but have many categories on different issues. Then V21 the forum topics are quite possibly diversified.

You do not have to read postings but just look how the newspaper structures the forums by headlines. This helps to decide whether something is actually a forum.

The number of messages that are posted to forums will not be considered.

Do not count archived forums (inactive).

V 21: Classify topics the forums have: When you find more than one forums, look at the topic range and decide whether there is “1-diversity of topics” or a clear domination by one or two of the topics. Or if in the situation of one “folder” forum, we may have diversified forum topics, but not guarantee. Browse through the forum headlines to determine the number of topics.

Domination means that one or two categories account for about half or more of all forums. If this is the case, specify “3- Dominated by: \_\_\_\_\_”

#### Section Links

V 30: List the number of section links in the front page of the newspaper website. Examples of section links are News, Sports, Features, and Weather, etc. Pay attention when some newspapers have a big folder “News” and list many sub sections under it, for example, weather, sports, business, and etc. In such occasions, count the number of subsections instead of one big “news” section. Usually, the section links are listed vertically on the left side of site, or horizontally on the top of the site, or both on the top and on the left side of the site. Sometimes, they are also listed vertically on the right of the site. In either case, be careful and just do not ignore any one of them.

#### Hypertext

V 40: Mark “1-Yes” if there is at least one hypertext in story, either links to other related stories, pictures, or enlarged pictures. Often there are hypertexts in the story or around the story hyperlinks of “Related Stories”.

Mark “9- Unclear” if something else happens, for example, have to log in to read the story and there is a charge involved.

Else mark “2-No”.

V41: Mark “1- Yes” if the headline is hypertext or there are links like “Full story”, “For more Information”, “Read more”, “More of this story”, etc. and click on these links will lead to full story.

Mark “2- No” when such links do not exist.

Mark “9- Unclear” if something else happens, for example, have to log in to read the story and there is a charge involved.

V 42: Mark “1-Yes”, if there are links to other news web sites from the front page, from the stories or from other sections. Pay attention that the links are to other “NEWS” or “Media” web sites. From economic purpose, newspapers often have links from their front page to their advertisers or sponsors or partners’ web sites. For news web site links, usually, they are links to sisters in the same media group, or parent group, or partners. Sometimes they are links to big brothers in the media field, such as CNN or NBC.

Mark “2-No” if there is no links to other news web sites.

Mark “3-Unclear” if something unusual happens.

### Search Engine

V 50: Usually, search engines appear in the front page and the form format. Sometimes it appears as a section link “Search” or “Search our web site”. Sometimes, we can’t find it in the front page, but in the “Archives” section, where the site use search engine to allow users to interact with archives. Some sites have the technical ability or resources to have their own search engines, while others borrow the ones from Google or Yahoo. No matter what is the case, mark “1-Yes” is search engine found in the newspaper web site, else mark “2-No”.

### APPENDIX III

#### INTERCODER RELIABILITY

The researcher and a graduate student performed the coding procedure. An intercoder reliability test for the quantitative variables was conducted with about ten percent of the sample, which was 12 newspaper Web sites. The sites were randomly selected.

Holsti's r to test the intercoder reliability is used:

$$\text{Holsti's formula: } r = \frac{2M}{N1 + N2}$$

V 02: National vs. Local Newspapers	$2*12/(12+12)=100.00\%$
V 03: Circulation number	$2*12/(12+12)=100.00\%$
V 04: Ownership	$2*12/(12+12)=100.00\%$
V 05: Number of technical staff	$2*12/(12+12)=100.00\%$
V 06: When online version available	$2*12/(12+12)=100.00\%$
V 10: General e-mail address/ forms to contact newsroom:	$2*10/(12+12)=83.33\%$
V 11: List of staff personal e-mails:	$2*11/(12+12)=91.67\%$
V 12: Contact information at the end of articles:	$2*11/(12+12)=91.67\%$
V 20: Number of discussion forums offered:	$2*11/(12+12)=91.67\%$
V 21) Forum topics:	$2*11/(12+12)=91.67\%$
V 30: Number of section links:	$2*12/(12+12)=100.00\%$
V 40: Hypertext in story:	$2*11/(12+12)=91.67\%$
V 41: Links to other news web sites:	$2*11/(12+12)=91.67\%$
V 50: search engine offered:	$2*12/(12+12)=100.00\%$

$$\text{Average } r = \frac{100.00\% * 7 + 91.67\% * 6 + 83.33\%}{14} = 95\%$$

## APPENDIX IV

### INDEX OF INTERACTIVITY LEVEL

The index reflects the level of newspaper sites interactivity. The maximum score is 18 points and minimum is 0 point. The higher the score, the higher level of newspaper web sites interactivity.

<b>Index</b>	<b>Points</b>
General e-mail addresses to contact newsroom	1 pt
At least some personal email addresses to editors/reporters	1 pt
Email links to at least some authors attached to articles	1 pt
Email links to newsroom attached to articles	1 pt
Email response	2 pts
Discussion forum	2 pts
Diversified topics	1 pt
Section links (10 to 20)	1 pt
Section links (more than 20)	2 pts
Hypertext in story	2 pts
Hypertext in headline	1 pt
Links to other news web sites	1 pt
Search engine	2 pts
MAXIMUM	18 pts
MINIMUM	0 pt

**APPENDIX V**

**102 U.S. ONLINE NEWSPAPERS**

<b>Case #</b>	<b>City: Name</b>	<b>State</b>
1	<u>Birmingham: News, Post-Herald</u>	Alabama
2	<u>Anniston: Star</u>	Alabama
3	<u>Fairbanks: News-Miner</u>	Alaska
4	<u>Anchorage: News</u>	Alaska
5	<u>Bullhead City: Mohave Valley News</u>	Arizona
6	<u>Yuma: Sun</u>	Arizona
7	<u>Paragould: Press</u>	Arkansas
8	<u>Helena: World</u>	Arkansas
9	<u>San Francisco: Examiner</u>	California
10	<u>Auburn: Journal</u>	California
11	<u>Salida: The Mountaquin Mail</u>	Colorado
12	<u>Loveland: Reporter-Herald</u>	Colorado
13	<u>Willimantic: Chronicle</u>	Connecticut
14	<u>Manchester: Journal Inquirer</u>	Connecticut
15	<u>Dover: Delaware State News</u>	Delaware
16	<u>New Castle-Wilmington: News Journal</u>	Delaware
17	<u>Naples: News</u>	Florida
18	<u>Ft. Pierce: Tribune</u>	Florida
19	<u>Savannah: News</u>	Georgia
20	<u>Albany: Herald</u>	Georgia
21	<u>Honolulu: Star-Bulletin</u>	Hawaii
22	<u>Lihue: Garden Island</u>	Hawaii
23	<u>Sandpoint: Bonner County Bee</u>	Idaho
24	<u>Twin Falls: Times-News</u>	Idaho
25	<u>Bloomington-Normal: Pantagraph</u>	Illinois
26	<u>Geneva: Kane County Chronicle</u>	Illinois
27	<u>Anderson: Herald Bulletin</u>	Indiana
28	<u>Bluffton: News-Banner</u>	Indiana
29	<u>Iowa City: Press-Citizen</u>	Iowa
30	<u>Council Bluffs: Nonpareil</u>	Iowa
31	<u>Chanute: Tribune</u>	Kansas
32	<u>Hays: News</u>	Kansas
33	<u>Richmond: Register</u>	Kentucky

34	<u>Glasgow: Times</u>	Kentucky
35	<u>Baton Rouge: Advocate</u>	Louisiana
36	<u>Opelousas: World</u>	Louisiana
37	<u>Waterville: Sentinel</u>	Maine
38	<u>Biddeford: Journal Tribune</u>	Maine
39	<u>Baltimore: Sun</u>	Maryland
40	<u>Rockville: Montgomery Journal</u>	Maryland
41	<u>Lynn: Item</u>	Massachusetts
42	<u>Fitchburg: Sentinel &amp; Enterprise</u>	Massachusetts
43	<u>Petoskey: News Review</u>	Michigan
44	<u>Marquette: Mining Journal</u>	Michigan
45	<u>Red Wing: Republican Eagle</u>	Minnesota
46	<u>Austin: Herald</u>	Minnesota
47	<u>Starkville: News</u>	Mississippi
48	<u>Greenville: Delta Democrat Times</u>	Mississippi
49	<u>Boonville: News</u>	Missouri
50	<u>Mexico: Ledger</u>	Missouri
51	<u>Miles City: Star</u>	Montana
52	<u>Bozeman: Chronicle</u>	Montana
53	<u>Los Angeles Times</u>	National
54	<u>USA Today</u>	National
55	<u>Christian Science Monitor</u>	National
56	<u>Washington Times</u>	National
57	<u>Washington Post</u>	National
58	<u>New York Times</u>	National
59	<u>Scottsbluff: Star-Herald</u>	Nebraska
60	<u>Hastings: Tribune</u>	Nebraska
61	<u>Elko: Free Press</u>	Nevada
62	<u>Reno: Gazette-Journal</u>	Nevada
63	<u>Concord: Monitor</u>	New Hampshire
64	<u>Nashua: Telegraph</u>	New Hampshire
65	<u>Newton: New Jersey Herald</u>	New Jersey
66	<u>Camden: South Jersey Courier-Post</u>	New Jersey
67	<u>Alamogordo: News</u>	New Mexico
68	<u>Silver City: Press</u>	New Mexico
69	<u>Binghamton: Press &amp; Sun-Bulletin</u>	New York
70	<u>Long Island: Newsday</u>	New York
71	<u>Jameston: sun</u>	North Carolina
72	<u>Clinton: Sampson Independent</u>	North Carolina

73	<u>Salisbury: Post</u>	North Dakota
74	<u>Fargo: Forum</u>	North Dakota
75	<u>Findlay: Courier</u>	Ohio
76	<u>Canton: Repository</u>	Ohio
77	<u>Oklahoma City: Oklahoman</u>	Oklahoma
78	<u>Edmond: Sun</u>	Oklahoma
79	<u>Albany: Democrat-Herald</u>	Oregon
80	<u>Ontario: Argus Observer</u>	Oregon
81	<u>Chambersburg: Public Opinion</u>	Pennsylvania
82	<u>McKeesport: News</u>	Pennsylvania
83	<u>Providence: Journal-Bulletin</u>	Rhode Island
84	<u>Woonsocket: Call</u>	Rhode Island
85	<u>Sumter: Item</u>	South Carolina
86	<u>Charleston: Post &amp; Courier</u>	South Carolina
87	<u>Madison: Leader</u>	South Dakota
88	<u>Yankton: Press &amp; Dakotan</u>	South Dakota
89	<u>Oak Ridge: Oak Ridger</u>	Tennessee
90	<u>Johnson City: Press</u>	Tennessee
91	<u>Pecos: Enterprise</u>	Texas
92	<u>Brownsville: Herald</u>	Texas
93	<u>Ogden: Standard-Examiner</u>	Utah
94	<u>Salt Lake City: Salt Lake Tribune</u>	Utah
95	<u>St. Johnsbury: Caledonian-Record</u>	Vermont
96	<u>Burlington: Free Press</u>	Vermont
97	<u>Woodbridge: Potomac News</u>	Virginia
98	<u>Harrisonburg: News Record</u>	Virginia
99	<u>Wenatchee: World</u>	Washington
100	<u>Everett: Herald</u>	Washington
101	<u>Parkersburg: News &amp; Sentinel</u>	West Virginia
102	<u>Huntington: Herald-Dispatch</u>	West Virginia
103	<u>Baraboo: News Republic</u>	Wisconsin
104	<u>La Crosse: Tribune</u>	Wisconsin
105	<u>Cheyenne: Wyoming Tribune-Eagle</u>	Wyoming
106	<u>Casper: Star-Tribune</u>	Wyoming

## VITA

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In 1993, she began her study of Journalism in Department of International Journalism at University of International Relations, Beijing, China. She graduated with bachelor of art degree in 1997.

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