RADIO BUSINESS ON THE WORLD WIDE WEB: A CONTENT ANALYSIS OF TERRESTRIAL AND INTERNET-ONLY RADIO STATIONS IN THE UNITED STATES

By

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A THESIS PRESENTED TO THE GRADUATE SCHOOL
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The evolution of the Internet has altered the traditional radio industry. Nowadays, integrating the Internet into radio business is an optional necessity. This study utilizes content analysis to explore the website contents of Internet-only radio stations and terrestrial radio stations streaming online. A total of 176 stations were analyzed in October 2002 to examine two broad interactive dimensions—audience-oriented and source-oriented—and six strategic patterns—virtual information space, virtual promotion space, virtual distribution space, virtual communication space, virtual sponsorship space, and virtual transaction space. This comparative study is conducted to answer the question of what similarities and distinctions of strategic and interactive approaches terrestrial and Internet-only radio stations have in their website contents.

The findings indicate that the online presence of information, promotion, and communication was highly visible in both terrestrial and Internet-only radio stations. However, terrestrial and Internet-only radio stations presented different emphases in

means of practicing these online mechanisms. The findings also show that audience-oriented interactivity was dominant in terrestrial and Internet-only radio websites. With respect to the business strategies, terrestrial radio stations tend to demonstrate themselves as information providers and Internet-only radio stations seem to portray themselves more firmly toward the roles of information collectors. Nonetheless, a clear business model has yet to be established, as both terrestrial and Internet-only radio stations have had limited e-commerce-related content on their websites. This study provides an integrated framework in examining online media business, and it contributes some empirical analysis of the Internet radio industry in its early stage.

CHAPTER 1
INTRODUCTION

Radio is the first mass medium that enables the dissemination of information instantly from one to many. The Internet, with all its capabilities, gives individual users opportunities to reach other people and organizations all over the world for exchanging or obtaining information. Radio and the Internet, as educational and entertaining communication tools, are important components of the information age. This chapter provides a brief introduction of radio, the Internet, and Internet radio in an attempt to explore and define what the new medium is and might become. Applicable technological, regulatory, and business backgrounds are also addressed.

From Radio to the Online World

With the rapid advancement of technological and regulatory changes, the radio and Internet industries have undergone transformations in the way that they conduct business. How has Internet radio, as a combination of the two media, impacted the radio and Internet markets? The responses of the radio and Internet firms will largely define the future of Internet radio.

Radio

Radio affected society by entertaining people and giving listeners the opportunity to learn, discuss, and interact. When radio broadcasting began in the early 1920s, it was the major entertainment and news center for families. In the 1940s, TV broadcasting began in the United States. Cable joined the battle in the 1970s; however, radio has remained close to its original form and has still kept its role in the communication world.

Radio presents the evolution of a technology shaped by people, government, and environment. As a basic communication tool, radio's relatively low price and wealth of diverse information make it a necessity in every household. In the 1990s, 99 percent of American households had at least one radio, with the average owning five (Broadcasting, 2001). This fixture has been installed in almost as many automobiles since the introduction of the transistor radio in 1954. Radio, with the widest reach and greatest penetration, remains the world's most ubiquitous medium (Pease & Dennis, 1993).

The format and the business approach may alter, but radio itself, as a medium, has not changed much as new communication inventions have been introduced. In fact, terrestrial radio stations are limited by the power of the station's transmitter and the available broadcast spectrum. The geographic restrictions bring radio broadcasters to a unique commercial enterprise. For decades, radio business has been considered as a local medium targeting local markets. Albarran and Pitts (2001) pointed out that "each radio station serves a specific city of license. The station's programming is intended to serve that city and perhaps adjacent communities" (p. 4). In the search for a local identity, terrestrial radio stations try to build strong links with their communities. However, technological developments may have changed the way people think about radio. Radio and the Internet have converged in one way. The Internet's worldwide connection has brought revolutionary changes to the radio world.

The Internet and Streaming Media

The Internet has enjoyed more explosive growth than any other medium. To reach an audience of 50 million, it took radio broadcasters 38 years, television 13 years, and cable 10 years; however, the Internet crossed the line in four years (Wendland, 2000). The unique character of the Internet allows businesses to advertise, provide product

information, and deliver real-time customer service capability to their clients (Nelson, 2000). Therefore, more broadcast media have adopted Internet technologies. As soon as the Internet began incorporating audio/video functions and streaming, its impact on the broadcasting industry became more powerful.

Unlike downloadable media files, streaming is a technique for transferring data over the Internet in a continuous flow. It allows a large media file to be viewed before the entire file has been downloaded to a user's computer. The idea of streaming media is to transmit audio/video data in real time. In 1995, streaming technology entered the Internet with its first delivery system StreamWorks by Xing Technology, which was acquired by RealNetworks in August 1999. The debut of RealAudio, along with the increasing live and on-demand audio content on the Internet, gave rise to the streaming media market in the mid-1990s.

RealNetworks announced RealVideo in 1997, and more than 10 million RealAudio users upgraded to the new version in the same year. It is the first feature-complete and cross-platform video broadcast solution for the Internet. In the late 1990s, new technologies grew dramatically from streaming systems. The development of the first complete digital music system provided users with everything needed to acquire, play, and manage their personal music collections. The improvement in server capacity brought the expansion of streaming media even further. The adoption rate of streaming technologies has accelerated exponentially in the last couple years (Luo, 2000; ViewCast, 2000).

Modern technologies have created diversity for consumers. With software enhancing the online delivery of audio/video content and various programs streaming

online, users can choose, edit, and even produce their own radio and TV programs at their fingertips. The interactive function online has truly brought the information world to the users.

Internet Radio

Streaming media has brought the radio industry another online revolution. It can be user-controlled as in on-demand, pay-per-view movies, or server-controlled as in webcasting. Webcasting is the ability to deliver live or delayed versions of audio/video broadcasts via the Internet. In short, it broadcasts information online. Early Internet radio webcasting was adopted in 1999 by some organizations that saw its potential. Schools, churches, newspapers, radio/TV stations, and manufacturers of computer software and hardware were pioneers despite the technical limitations of the Internet. Limitations included such problems as limited bandwidth in most of the delivery systems and lack of clear business models by most online businesses (Lee, 1999).

The growth of the Internet and streaming technologies has changed the way radio professionals think. Internet radio stations, which include terrestrial radio stations streaming online and Internet-only radio stations, utilize streaming media webcasting to the world. In this study, terrestrial radio stations streaming online refers to traditional radio stations broadcasting by a land-based transmitter and webcasting via the Internet at the same time. Their programming content has been distributed via a traditional broadcast spectrum and has also been delivered online. On the other hand, Internet-only radio stations are Web stations using streaming technologies to webcast programs that users can listen to only through the Internet. Their programming content is created solely for distribution over the Internet.

Terrestrial radio stations have constructed their websites at an accelerated speed, and many of them have webcasted their programs to reach more listeners. Meanwhile, some early adopters have built their own Internet-only radio stations to transmit personal radio programs around the world. A study by BRS Media[1] in April 2000 showed that 9,321 radio stations had a Web presence. Of those, 5,945 were American/Canadian radio stations (Ha, 2002). The BRS Web-radio-directory as of March 2000 indicated that there were 3,130 stations worldwide streaming audio online, and most of them were commercial Internet radio stations. In the United States, 1,540 stations were distributing their signals only in this manner. In early 2002, BRS Media listed more than 10,000 stations online with over 5,000 providing webcasting. That is a more than 60 percent growth rate compared to two years ago (BRS, 2002). The data show that the Internet radio industry is growing.

Significance of Internet Radio

Some Net data and findings show the media industry has been following the Web adoption trends. In 1999, nearly two-thirds of American adults owned a personal computer. In 2001, a total of 474 million people all over the world and about 167 million (62%) Americans had home-based Internet access, as reported by Nielsen//NetRatings (NetRatings, 2001b). The expanding usage of the Internet has brought many new opportunities to the information world.

Internet radio continues to provide new opportunities. It gives consumers more choices in personal music and offers independent artists a channel to express their non-

[1] BRS Media Inc., an Internet radio-tracking and consulting firm in San Francisco, assists radio and multimedia websites to build and brand on the power of the Web. Its BRS Web-radio-directory has detailed lists of radio stations on the Internet.

mainstream music. In fact, newspapers and trade magazines have highlighted the development and significance of Internet radio from various perspectives. However, scholarly research regarding Internet radio is somewhat limited. Most publications to date are industry reports.

With the vision that Internet radio will be one of the dominant medium forms in the future, it is important to gain more knowledge about its development. Technology, regulation, and business are the three most important perspectives determining the future of Internet radio. Technological development and deployment are the cores triggering the possibilities of Internet radio. In the meantime, regulation has the power to shape its pervasiveness in quantity and diversity. Nonetheless, without considering the business implications of its operations, a commercial Internet radio station may find it almost impossible to survive, much less succeed. Accordingly, Internet radio must be studied from its technological, regulatory, and business perspectives to thoroughly understand its current state of development and to assess its possible advancement in the future.

Current Developments of Internet Radio

Streaming media have attracted millions of users with their unique characteristics of choices and individualization. In January 2001, streaming media users represented 44 percent of all Internet users and 27 percent of Americans overall (Arbitron, 2001a). After six months, the users had crossed the 50 percent threshold of all Internet users (Arbitron, 2001b). For Internet radio users, the growing trend had increased in three consecutive years from 11 percent in January 2000 to 25 percent in January 2002. One in four Americans have listened to radio online (Arbitron, 2002b). In addition, a similar result from another survey by the Cable and Telecommunications Association for Marketing found that approximately 56 percent of all Internet users have accessed streaming media.

Of all Internet users, 26 percent of them have watched news clips, 21 percent have downloaded music, and 22 percent have listened to music on Internet radio stations (Beard, 2002).

Meanwhile, MeasureCast measured the total time audiences listen to Internet radio stations, which had increased 702 percent from January 2001 to July 2002, a 141 percent increase since January 2002 (MeasureCast, 2002). Arbitron found time spent listening to all sources of Internet audio had grown from nearly five hours in January 2001 to nearly six hours in January 2002 (Arbitron, 2002b). The following overview of technological, regulatory, and business backgrounds offers more evidence of the existing growth rate and possible trend for the time to come.

Technological Background

Technologies have elevated the ability to store, sort, filter, and distribute information. The deployment of media-related Internet technologies has certainly accelerated the development of Internet radio in every possible way. Shapiro and Varian (1999) noted that content and infrastructure are interdependent. In the information age, content as the information product is essential, but it does not have much value without distribution channels delivering to those in need. This interdependent relationship particularly shows in hardware technologies as distribution channels (infrastructure) including dial-up, broadband, and wireless, as well as software technologies (content) concerning streaming ability.

Hardware technologies of distribution

Distribution infrastructure is the essential hardware technology with respect to the development of Internet radio. Therefore, distribution channels such as dial-up, broadband, and wireless connections are discussed.

Dial-up. Dial-up access is like using a phone to connect computer devices rather than people. With a modem and a telephone connection, a computer device can be connected to a network. Currently, dial-up is the basic and cheapest service connecting to the Internet, and it is still the chief access used by most home users. It provides speeds not more than 56 kilobits per second (kbps). That speed is slow and data transfer rates are limited by using normal telephone lines. Large data files, such as audio/video contents, are held temporarily because users' devices cannot accept the input at equal speed. Therefore, if users try to listen to Internet radio with dial-up access, it is difficult to prevent constant buffering from decreasing quality music enjoyment.

In 2001, 90 percent of American Web surfers connected to the Internet by dial-up service. In 2004, an estimated 55 percent of American home users will dial into the Internet, as predicted by GartnerGroup (Spring, 2000). Cahners In-Stat analyst Daryl Schoolar also believed that dial-up service will still appeal to a large audience for the next few years due to the relatively cheaper cost of the service and the geographical convenience of the existing home phone line infrastructure (Spring, 2001). It is generally accepted that dial-up modems will remain a fixture in most Internet-connected homes. However, as more website content contains large audio/video data files, the importance of a higher connection speed has risen. Broadband service is thus considered as the next potential substitute for the distribution systems.

Broadband. Broadband is a mature and growing delivery system in the telecommunications industry. Broadband, including Digital Subscriber Line (DSL) and cable modem services, is a high bandwidth Internet connection which allows users to access the Internet at a much higher speed. Bandwidth is the amount of information that

can be carried through a phone line, cable line, satellite feed, and so on within a given time interval. The Federal Communications Commission (FCC, 2002a) defined broadband capability as services and facilities with at least an upstream (customer-to-provider) or downstream (provider-to-customer) transmission speed exceeding 200 kbps. Since streaming media content is increasingly popular online, high-speed Internet access, which offers the ability to deliver audio and video seamlessly, gains more market demand.

The growth of broadband is a support for broadcasting companies to engage in the Web business. Webcasting needs higher transmission speeds (bandwidth) to deliver the streaming content. Broadband enables users to originate and receive high-quality voice, data, graphics, and video with a continuous connection. Thus, streamed music from Internet radio can be played smoothly. According to Nielsen//NetRatings (2001a), broadband access soared nearly 150 percent from December 1999 to December 2000. The dramatic growth was in 20 of the largest cities in the United States. Meanwhile, the FCC (2001) reported similar survey data with a 158 percent growth rate for the year 2000, a total of 7.1 million high-speed Internet users. In 2001, a 36 percent increase during the first half year resulted in approximately 9.6 million high-speed subscribers as of June 30 (FCC, 2002a). Furthermore, a report from Nielsen//NetRatings (2001c) released in November 2001 showed an astounding number of 21 million broadband users, a 90 percent growth from November 2000.

Government statistics and private analysis firms showed there were more broadband users than subscription numbers, possibly because broadband access is more pervasive at the office than at home. Fortunately for the broadband industry, the data

revealed the demand for broadband access continuing to expand and the availability of subscribership to high-speed services increasing significantly. Additionally, the FCC (2002a) noted that although investment trends in general have slowed at present, investment in infrastructure for broadband remains strong.

Broadband service and streaming media are mutually beneficial. According to T. S. Kelly, director of Internet Media Strategies, streaming media is one of the chief incentives prompting users to switch to high-speed Web access (NetRatings, 2001a). Meanwhile, research shows that streaming media gains with the extension of broadband adoption. Nielsen//NetRatings (2001c) reported 31 percent of Web surfers who consumed streaming media in 2001 were broadband users. These broadband users numbered 12.7 million, a 94 percent leap from the previous year. The numbers prove the interdependent relationship between broadband and streaming media.

Wireless. The wireless Web refers to use of the World Wide Web through a wireless device. Internet data now are easily and instantly accessible to users of wireless Personal Digital Assistants (PDAs), pocket personal computers, and cellular phones. The explosive growth of wireless technologies offers enterprises powerful new distribution channels and market opportunities. Without plugging into a wall outlet, the wireless system allows users to surf online whenever they want and wherever they are near an access point.

With the increased diversity of service offerings, the average price of a wireless phone call continues to drop, and more consumers subscribe to wireless services. According to the 2001 U.S. Wireless Industry Services Study by J. D. Power and Associates (2001), 52 percent of the households in the 25 largest U.S. markets used

wireless phone service. Twenty-three percent of the subscribers reported accessing the Internet via a wireless phone, nearly twice as many compared to 12 percent in 2000. The FCC (2002b) noted that the mobile data industry continued to grow and to evolve. Estimates of the number of mobile Internet users at the end of 2001 ranged from 8 to 10 million.

The data show the growth of wireless Internet users and the need for larger bandwidth. According to the FCC (2002b), several mobile telephone carriers have begun upgrading their networks with advanced wireless network technologies, which allow them to offer mobile Internet access at speeds ranging from 25-60 kbps, with maximum bursting rates up to 144 kbps. However, using wireless Internet to receive streaming media content is still inefficient at present. Besides the need to improve the bandwidth availability, it is also crucial to provide better receiving quality, decoding ability, and battery life for wireless streaming media content. Moreover, the puzzle of a diverging array of formats, platforms, devices, and connections is unsettled. Since the streaming media market is growing more fragmented, solutions to compatibility of diverse formats are in demand for wireless devices (Yoshida, 2001).

In spite of the difficulties, new wireless Internet radio devices have already been placed in the market. Sony CEO Akio Morita believed music was such an important part of any culture that it needed to be made more portable or mobile (Bajarin, 2001). Nowadays, wireless Internet radio is possible; however, the price is remarkable for consumers to use it. Live365.com's MP3 player for the PocketPC allows users to stream and to listen from its 18,000 international Internet radio stations (Batista, 2000). Ericsson's H100 Internet radio, designed to make Internet-based audio services as easy to

use as conventional radio, provides accessibility to any online radio station around the world. Since users need to dial through a mobile phone, listening to the radio may accumulate per-minute airtime fees (Noble, 2001). Another choice is to use the wireless Ricochet modem;[2] nonetheless, the service area is currently limited in major cities and monthly payments are high (Batista, 2000).

Streaming software technologies

While hardware technologies improve and delivery systems become faster and more convenient, software technologies provide the tools facilitating the delivery. A streaming media server, which delivers audio/video stream, is the central software of an Internet radio station. Here, the software technologies focus on audio/video software providing streaming ability.

Streaming media is a continuous broadcast that works through the encoder, the server, and the player. These three software components are illustrated in Figure 1-1, where the encoder converts audio/video content into a streaming format, the server makes the content available over the Internet, and the player on the user's computer retrieves the content. Each of the main streaming software providers builds their own set of components. While the players from different makers[3] are compatible with playing one another's formats, only the encoder and the server of the same provider can be operated simultaneously (Morris, 2000).

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[2] Ricochet wireless service was developed by Metricom, Inc. The company went bankrupt and sold many assets to Aerie Networks in November 2001. Aerie Networks decided to relaunch Ricochet and to charge less in order to compete with cable modem and DSL.

[3] The main providers are RealNetworks (RealPlayer), Microsoft (Windows Media Player), Apple (QuickTime), and ShoutCast (Winamp).

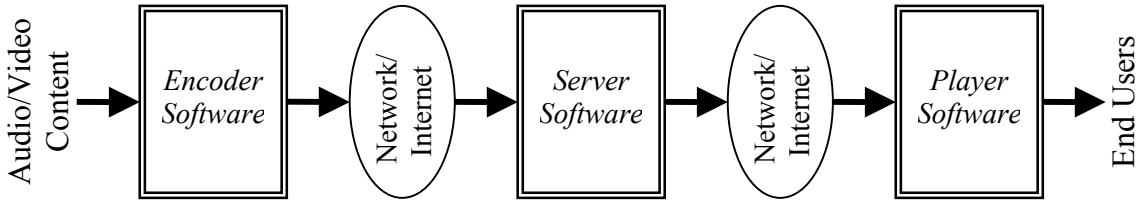

Figure 1-1. Components of webcasting. Note: The outline is summarized and modified based on Morris (2000).

A streaming media player is normally a standard feature. The player either comes with the computer or can be downloaded from the Internet. Pre-recorded content is prepared for streaming utilizing the encoder, and is stored on the server like a downloadable file. A live webcasting, however, requires the encoder at the webcast location and the server at a different location to work together in real time. A large amount of computing resources are on demand, and thus a dedicated server is needed (Morris, 2000). The streaming software upgrades frequently as the computer's capability grows larger. It provides more personalized functions with a higher music quality and becomes more user-friendly. The pervasiveness of streaming software, along with more media streaming online, provides investors more expectations to capitalize on the growth trend of this industry. When considering the transmission speed, the software industry also tries to shrink data to fit smaller lines as an alternative to ameliorate distribution channels. Therefore, the need for bigger data delivery systems can be mitigated by upgrading current audio/video compression and streaming systems (Gove, 2000; Reuters, 2001).

Although it is difficult to obtain a reliable amount of streaming media online, a 2002 Arbitron study indicated that 80 million Americans (35%) have accessed streaming audio/video online and half of them do so on a monthly basis (Arbitron, 2002b). In

addition, Real Networks calculates an additional 350,000 hours of streams encoding every week in Real formats, but not all of them are made available online. According to eWeek magazine, streaming content accounted for 10 percent of all Internet traffic with many portals and destination sites hosting hundreds of streams, and media players had exceeded 30 million users in 2000 (Musich, 2000). Streaming media is burgeoning, even though no thorough survey has been completed to determine the available streaming audio/video number on the Internet.

Regulatory Background

There is little government regulation related exclusively to Internet radio at present. Several telecommunications standards and content provisions applying to Internet information exchange were promulgated in the Telecommunications Act of 1996, but Internet radio is not mentioned.

The current regulation concerning Internet radio is the Digital Millennium Copyright Act, which stipulates the need of royalty fees for streaming copyrighted music via digital media. While record companies consider on-air music distribution as promotion, they are not willing to license their music for online streaming circulation. Therefore, the pricing battle between Internet radio stations and the recording industry has begun. Many Internet radio stations have thus stopped webcasting because of the uncertain government regulation and possible unaffordable royalty rate. The details of the regulatory issue will be further discussed in Chapter 2.

Business Background

After the Telecommunications Act of 1996, one of the biggest impacts on radio markets is the massive consolidation among terrestrial radio stations. Unlike the limited bandwidth of traditional radio, Internet radio has the advantage of open infrastructure of

the Web. Internet radio is more capable to extend content, requires less equipment to webcast, and currently has fewer regulatory restrictions. Thus, the decreasing diversity caused by the consolidation of terrestrial radio stations is offset by the explosion of Internet radio.

Many researchers are concerned with the limited music diversity in the traditional radio market because of consolidation, which may not serve the public interest (Steiner, 1952; Krattenmaker & Powe, 1995; Drushel, 1998; and Huntemann, 1999). When terrestrial radio stations broadcast online, their webcasting programs are like their original on-air programs. On the other hand, Internet-only radio stations have more possibilities to webcast multiform music formats without the business concerns of generating local revenues by appealing to certain local audiences. With the growth of Internet radio, especially Internet-only radio stations, media consumers are offered more alternative choices to find the music types that are not the mainstream formats.

The Internet also offers new opportunities for the radio industry. The Internet is growing to become a site of stable, market-based commerce as technology advances, as consumers become more sophisticated, and as business models mature. However, it is still a fledgling medium, not to mention Internet radio as a novel broadcasting instrument. Still, the unique character of the radio industry could be an advantage in the online world. "Unable to know their audience members as people, [radio] broadcasters have developed techniques for knowing their audience as types and distributions" (Rothenbuhler, 1996, p. 128). While radio targets groups and the Internet can target individuals, the combination of radio and the Internet industry tries to find a balance targeting fragmented consumers. The general manager of Autodesk's Discreet division, Paul Lypaczewski, believed that

"the advantages of streaming are particularly compelling in today's economic environment, as companies can improve productivity and customer communication with engaging, informational webcasts" (Boulton, 2001a). The stronger connection enables advertising companies to access a more targeted audience for their products, which brings Internet radio stations better advertising revenue.

Unlike Internet-only radio stations fumbling for a better business solution, terrestrial radio stations have established a business model of selling airtime to traditional local markets. Most terrestrial radio stations actually offer their clients advertisements on the Web as value-added to on-air advertisements (Gwynne, 1998). Therefore, even though the online conduit brings their business to a world market, the Internet strategy toward streaming online could still be an insignificant one. On the other hand, Internet-only radio stations with a global reach have to come out with innovative ways to generate revenues. In a report by AccuStream iMedia Research, more than 60 percent of streaming websites preferred advertising as a revenue source instead of subscription. Although Internet radio stations mainly rely on sponsors and advertising at present, some have also adopted a transaction-based business model for streaming content (Palumbo, 2002).

Research Overview

The purpose of this study is to compare the Internet strategic patterns of terrestrial radio stations streaming online and Internet-only radio stations by analyzing their website content. Technological advancement accelerates the progress of Internet radio stations in general. The regulatory decision also has its impacts. While mature business models have not been created, the Internet radio industry in its beginning stage clearly needs more research attention and practical experience.

Academic journals concerning broadcasting media Internet strategies are more focused on the TV industry (Kiernan & Levy, 1999; Chan-Olmsted, 2000; Chan-Olmsted & Park, 2000). Those studies explore the strategies that broadcast and cable TV networks have adopted. A few studies have researched radio stations' websites (Gwynne, 1998; Murphy, 1998; Lind & Medoff, 1999; Evans, 2000); however, these preliminary studies were more concentrated on how broadcasters adopt the Internet or why people visit the Internet radio stations instead of the Internet strategies. That is, the research focus has been at the industry or consumer level, rather than at the firm level. Since Internet radio has become one of the alternative media, the establishment of its business strategies can facilitate the growth of the industry. Meanwhile, no research has compared terrestrial radio stations streaming online and Internet-only radio stations as two distinct Internet business entities.

The chapters of this thesis are outlined as follows. In Chapter 2, the literature review consists of two parts. The first part maps out environmental factors, such as technology, consumers, and regulation that are likely to affect the Internet radio industry in general. The second part reviews the literature on Internet strategic approaches in the multimedia context. Various Internet business approaches are addressed, and broadcast media Internet strategies in particular are examined. Chapter 3 proposes the analytical framework, clarifies the operational definition of variables, and formulates the research questions according to the preceding reviewed literature. The research method content analysis is laid out, and the research design is established.

Chapter 4 reports the results on findings of research questions, comparing similarities and distinctions regarding Internet strategic approaches and interactivities of

terrestrial radio stations streaming online and Internet-only radio stations. Chapter 5 draws conclusions. The author also discusses the findings, as well as the limitations of the study, and makes suggestions for further research.

CHAPTER 2
LITERATURE REVIEW

This chapter aims to provide a better understanding of the Internet radio industry and reviews Internet strategic approaches to establish a strategic framework for analyzing the website content of Internet radio stations. This chapter is composed of two parts: environmental influences on the Internet radio industry and Internet business strategic approaches in multimedia context.

Environmental Influences on the Internet Radio Industry

Business strategies are largely affected by the environmental changes (Porter, 1998). The Internet industry is still moving toward a mature business model; therefore, these external factors would shape the future direction of Internet radio. Thus, this section examines environmental influences, including technological, consumer, and regulatory factors with reference to the Internet radio industry.

Technological Leverage

The Internet gives companies a chance to build their images, provide information, and communicate with clients, as well as distribute and sell their products globally and electronically. It offers consumers the same chance to access all those functions in real time. Robison and Crenshaw (2002) noted that with telecommunications technology, the Internet has extended and reshaped the post-industrial society in which information-sharing has become the major form of communication. The world is verging on another revolution with the rapid accumulation of global interdependencies and a Web of communication networks devoted to innovation, information-sharing, coordination, and

control. As a matter of fact, the advancement of the Internet-related industry relies largely on technological development.

Internet radio demonstrates a significant technological revolution in the radio industry. As discussed in Chapter 1, hardware and software infrastructures determine the smoothness of webcasting and are crucial factors helping Internet radio listeners to grow. An explosion of audio online was sprung by the widespread acceptance of MP3 (software) and a faster Internet connection (hardware). Interactive transmission gives further benefit to the progress of the Internet radio industry. Usability, mobility, accessibility, and radiobility, which Tacchi (2000) referred to as the technical ability to be radio-like, bring Internet radio an innovated attraction. Certainly users now approach the multiplicity of entertainment with a different attitude from what they had toward traditional media.

According to a report released by Jupiter Media Metrix in 2001, consumers would visit a website more often if it is customizable (36%) and loads quickly (40%). Technological development is enabling such characteristics. While broadband offers a faster transmission speed, multiple software provides choices for users to personalize their preference. In addition, push technology, which sends data to a user without the user requesting it, is able to webcast the customized content periodically and directly to the user's desktop (Rosencrantz, 1997), which can increase visibility, improve interrelationships, and reduce costs (Phelan, Griffiths & Fisher, 2000).

The possible technology created for personalized Internet radio reproduces the relationship between radio and listeners. Tacchi (2000) compared two Internet radio websites, Launch.com and Gaia Live, for their different models. Technological feasibility

enables Launch.com to offer music to match the preferences of different users, to raise a listening community, and to group people with similar music taste to interact with each other. Gaia Live, on the contrary, utilizes the basic techniques simply to offer diverse programming by webcasting non-mainstream music (Tacchi, 2000).

With continuous innovations of the Internet media software and products, the Internet performs an interactive mixture of all media types. The perception of this technology-driven industry and the expectation of consumers toward this medium could strongly create its value. When Internet technology has been able to provide basic functions and fulfill more advanced choices of business applications, the next question for the industry is how to interpret the needs of consumers.

The Needs of Consumers

How the content is used and how the site is accessed online may offer valuable information for the Internet-related industry. Trying to understand people's use of the Internet at home, three HomeNet studies at Carnegie Mellon University have been investigated since 1995. Participants reported using the Internet more for pleasure than for instrumental purposes. The most popular reasons to use the Internet were to communicate with people, track sports and popular culture, listen to music, play games, and pursue specialized interests (Kraut et al., 1997). Cockburn and McKenzie (2001) updated and extended the empirical foundation for understanding Web use. Compared to earlier studies, users are visiting more pages daily, and the revisiting rate has increased to 81 percent. Research from Arbitron (2002b) also showed the Internet was rated slightly more highly as the mean of communication than as the sources of entertainment and information. Web use has been proved to be rapidly interactive, with users visiting many pages within seconds.

With regard to the Internet radio industry, as Americans clicking on banner ads had dropped from 30 percent in July 2000 to 14 percent in July 2002, subscription might be an alternative choice. Listeners who were willing to pay a small fee for online audio content has increased from 14 percent in January 2002 to 22 percent in July 2002, especially if the channel offers exclusive content (47%) or has no audio commercials (42%). The findings indicate the importance of the compelling content to improve consumer perception of the Internet's entertainment value (Arbitron, 2002c).

To understand how Internet radio is evaluated, Internet radio measurement is presented first, and followed by users' preference of broadcasting websites as well as the diversity of radio programming.

Internet radio ratings

Analyzed data concerning Internet radio ratings are mainly from private media firms, such as Arbitron and MeasureCast. However, both of these firms provide only data on the most listened to of their own primarily North American subscribers.

Arbitron. Arbitron measures terrestrial radio audiences in local markets and Internet radio tuning across all webcasting sources. The ratings and data provide information for the advertising, commerce-supported webcasting, and online media market, but the streaming is measured only for Arbitron subscribers. For this matter, an Internet radio station unranked in one month may receive a high ranking the following month when the station becomes a subscriber to the Arbitron service (Compaine & Smith, 2001). For instance, Clear Channel Worldwide was the number two webcast network in February 2002, but it was not measured a month before because it was not a subscriber (Arbitron, 2002a).

MeasureCast. MeasureCast measures fewer Internet radio stations but generates more in-depth information, such as streaming audience size, demographic information, and statistical analysis. However, besides being subscribers, stations also need to use RealNetworks in order to be measured. Although MeasureCast combines a plug-in application to webcasters' streaming server and survey analysis of demographic information about panelists intending to provide value-added demographics, its data are still too limited from such dual restrictions (Compaine & Smith, 2001).

The advancements of streaming media content enhance the experience and distribution of online interactivity. Arbitron and MeasureCast's efforts on measuring the audiences of webcasting content show that the Internet has become one of the primary conduits for media consumption. Since infrastructure and information are valuable only when they work together, the Internet radio requires meeting consumers' interactive needs with both technological developments and customizable content.

Users' preference of broadcast media websites

While the Web emerges as a mass medium of its own, traditional media companies are among the major players in serving these audiences. Media companies try to design websites to meet the needs of the online surfers. King (1998) surveyed consumers' uses and gratifications, Web design preferences, and Web content usage of 28 local TV stations' websites in the United States. The most dominant reason why respondents utilized the medium was using the Web to access specific sites and information. Interactivity was most highly preferred for Web design preferences. As for Web content elements, the dimensions of visiting television-related sites and news were the most prevailing choices.

Of direct relevance to the users' preference of Internet radio, Murphy (1998) conducted an online survey on a sample of American Rock and Classic Rock radio station websites and garnered 1,752 respondents. The study found seven basic reasons why people visit radio station websites: familiarity with the radio station; aesthetic; downloading; entertainment; information; interaction; and relaxation appeal. It also showed a linear relationship between the times spent visiting radio station websites and visiting more radio station websites, listening to the radio, as well as contacting radio stations to request songs and enter contests.

In the meantime, a 2000 report released by Arbitron found that radio station website visitors sought a station's website to be an extension of its on-air broadcast. Website visitors wanted to know more information about songs and concerts, enter the station's contests, and listen to the station over the Internet (Arbitron, 2000). However, for some music lovers, the diversity that Internet radio stations provide is the reason they keep visiting online radio (Foege, 2001).

Diversity of radio programming

The diversity of radio programming is an advantage of Internet radio. Rogers and Woodbury (1996) found a positive relationship across markets between the level of radio programming variety and the share of population listening to radio; therefore, it is reasonable to conclude that audiences value diversity. Currently, Internet radio provides a wider range of music choices than terrestrial radio stations offer. The category called "world music," for instance, which accounted for 8.2 percent of the 2,500 global sites covered by RealGuide, is not recognized by the industry overall in the United States (Compaine & Smith, 2001; Broadcast & Cable Yearbook, 2001).

Terrestrial radio stations have had a fast decline in local music, news, and diverse programming after the Telecommunications Act of 1996. The act attempts to move telecommunications markets toward competition, which led to a dramatic growing number and an unprecedented merger activity of terrestrial radio stations. As the number of outlets increases, the common belief is that there is a greater likelihood that minority and niche audiences are served (Rogers & Woodbury, 1996). However, increased concentration of the radio market did not lead to increased listener choice (Drushel, 1998; Huntemann, 1999). In fact, consolidation among large radio conglomerates led to a lack of variety and to program duplication, as prior studies implied, which may endanger public interest (Steiner, 1952; Krattenmaker & Powe, 1995).

For Internet radio stations, increasing diversity in content and customer choice is one of the biggest advantages. However, observers worried that the new regulation toward Internet radio may diminish its current offering of abundant formats. Therefore, regulatory issues are addressed next.

Regulatory Battle

Traditionally, limited regulatory control of Internet radio is one of the reasons for the burgeoning development of Internet radio stations. With the rise of the Internet radio industry, one of the most significant regulatory issues concerning Internet radio is the copyright provisions. In regard to advertising, terrestrial radio commercials that feature American Federation of Television and Radio Artists talent and are streamed online have to pay triple rates for performer fees (Johnston, 2002). Moreover, since the FCC decided to treat the Internet as an alternative distribution system of radio programming, the music copyright issue has increasingly been a topic of debate.

The Digital Millennium Copyright Act (DMCA) is among the most controversial and widely watched copyright laws since it was passed in 1998. As long as webcasters paid a royalty fee to be agreed on later, an automatic license would be issued to stream copyrighted music via digital media, such as Internet radio (U.S. Copyright Office, 1998). As terrestrial radio broadcasters do, webcasters also pay about 4 percent of their revenue to compensate composers and music publishers. Terrestrial broadcasters have never paid a royalty to record labels because they have successfully argued that sound recordings are already compensated by the promotional benefits of having their music played over the air (Harmon, 2002). Although webcasting is similar to traditional radio, which does not carry the same risk of being quality recorded and copied as MP3, record labels have been reluctant to license their music for online distribution.

Since the negotiation of royalty rates between record companies and webcasters failed to reach an agreement,[1] the U.S. Copyright Office established a Copyright Arbitration Royalty Panel (CARP) in 2001 to resolve the issue. The panel has proposed a retroactive fee dating back to October 1998 and a rate of per-listener per-song fee.[2] The proposition has been criticized by rejecting the "percentage of revenues" royalty concept that record companies and webcasters had previously been willing to accept (Albiniak, 2001; Hanson, 2002).

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[1] Record companies asked for 15 percent of revenues or a comparable per-performance fee whereas webcasters wanted to pay approximately 3 percent of revenues.

[2] The CARP issued its ruling on February 20, 2002, recommending a royalty rate of .14¢ per song per listener for Internet-only webcasters, .07¢ per song for commercial radio station simulcasts, and .02¢ per song for noncommercial radio simulcasts, with royalties, as per the DMCA, due retroactively to October 1998. Thus, an Internet-only webcaster, which streams one hour of programming (15 songs) to 1,000 listeners, would owe royalties for that hour of broadcasting of $21.00.

It was criticized that besides the vague concept on fair use (Wittenstein & Ford, 1999), the DMCA may be used to block competition and the introduction of new technologies (Sheets, 2000). First, the statute does not properly define what circumvention tools are covered. Meanwhile, the proposed fees may effectively bankrupt independent webcasters and create on the Internet the pattern of consolidation that has engendered terrestrial radio under a handful of conglomerates and that has led to limited programming choices. Although people listening to Internet radio grew from 6 percent in 1998 to 23 percent in 2001, it still cannot compete with terrestrial radio that 95 percent of Americans listen to in a given week (Arbitron, 2001b). Because currently so few webcasters are profiting from advertising alone, CARP's proposed royalty rate in some cases is far more than a station's total revenue.

The new law was enacted just as the individualized Internet radio business was beginning to boom; it would certainly be more expensive and hence more difficult to maintain those websites (Pollack, 2000). Thus, hundreds of Internet radio stations had plastered their sites with requests urging listeners to write their concerns to Congress (Harmon, 2002). With the record labels demanding the agency to increase the rate and the webcasters pleading for a lower alternative, the copyright appeals board set a rate of 0.07 cent per song, per listener, in June with payments due October 20, 2002, retroactive to 1998. More than 200 Internet-based radio stations have shut down due to the regulation (Graham, 2002).

BRS Media Inc. records the number of radio stations broadcasting on the Internet. From 1996 to the beginning of 2001, the steady growth of Internet radio webcasting had approached a climax close to 6,000. However, a decrease in webcaster numbers has

begun with the uncertain regulation since then, and the decline continues. In September 2002, the total number dropped to 3,940, according to the latest statistical chart of BRS Media (BRS, 2002). Since one of the most attractive characteristics of Internet radio is its free access to a startlingly wide range of music, proponents worry that the royalty charge would leave no room for most independent webcasters, and the consolidation to those few large corporations would also take place in the online radio world. Under the final dictation of the DMCA, Internet radio stations need to find a business model that would allow them to generate more revenue to survive. Therefore, the business aspects of Internet radio, namely, the Internet strategic approaches, are discussed in the next section.

Internet Strategic Approaches in Multimedia Context

Companies in the same industry are normally under similar impacts of external environments. This, however, does not apply in the world of Internet radio. In fact, the market of Internet radio is still in flux, while the different groups of stations (Internet-only vs. terrestrial streaming radio stations) competing within different external environments (i.e., online only vs. dual offline/online). This section focuses on Internet business strategies in the context of broadcast media in particular. The value-added Internet strategic approaches are further addressed in order to develop a strategic framework for analyzing the website content of Internet radio stations.

Significance of Internet Business Strategies

Many businesses have flocked to the Internet, trying to seize opportunities in this huge market full of potentials. However, explosive commercial activities do not guarantee success. Comprehending the strategic value of the Internet, as well as the characteristics of commercial websites and content management, may determine the likelihood of success in Internet businesses.

The strategic value of the Internet

Unlike the traditional business environment, the Internet presents its distinctive concepts for marketing communications. Nowadays, an increasing number of companies create meaningful alliances, expand into new markets, differentiate their specialties, and generate profits by participating in an Internet venture. Weston (2000) suggested that the branding value of the Internet could be extended globally through alliances, licensing, and other leveraging techniques as the business world becomes progressively a brand-driven global force. Public relations and direct marketing can be further improved by an integrated marketing communication approach in Internet branding (Motion, 2001).

Zinkhan and Watson (1998) pointed out communication and organizational effectiveness as important implications for the Internet. The efficiency of the online communications world not only accelerates the business environments but also reduces the costs. Another advantage for businesses is the Internet's ability to reduce risks (Watson & Zinkhan, 1997). Organizations confront three critical strategic challenges: demand risk, innovation risk, and inefficiency risk. "Demand risk" faces fluctuations in demand or even the collapse of markets, as "innovation risk" and "inefficiency risk" are the failure to match competitors' innovations and unit costs (Child, 1987). Chan-Olmsted (2000) further applied the risk-reducing value of the Internet to the television industry. The interactive and personalized opportunities of existing and new products online may bring down "demand risk." In addition, using the Internet as channels to collect innovative ideas from users and to reduce cost of distribution may lessen "innovation risk" and "inefficiency risk."

The Internet offers opportunities to raise brand awareness, reduce risks, and create corporate advantages. Through the perspective of the radio industry, the Internet can also

strengthen communication effectiveness and economize expenses at the stage when some expansion of functions or markets is needed. Since "reach" is an important indicator of the radio business, the Internet's global orientation certainly extends the vision of the business market to a higher level. Moreover, traditional intermediaries can be eliminated through direct online marketing and sales. Markets can be segmented to focus on specific groups of customers for their preference. Customers can be further locked in by loyalty schemes (Smithson & Evans, 2000), such as customized radio stations or personal photo albums. In brief, the Internet's value should be seen in its informational function providing brand awareness to consumers, communication effectiveness for customer services and organizational efficiency, marketing distribution for new commerce opportunities, and transactional advantages.

Characteristics of commercial websites and content management

A commercial website often shows the strategic attempts of a company. Hoffman and Novak (1997) focused on marketing activities on the Internet. They proposed a structural model of consumer navigation behavior and pointed out three characteristics for the commercial Web medium. First, users interact in a many-to-many communications environment. With multiple transmissions online, information is gathered and formed by participants, and participants at the same time can experience it freely. Second, flow in computer-mediated environments involves Web-based marketing efforts. Flow is a playful and exploratory experience and repetition is encouraged from the users' self-motivated perception (Nel et al., 1999; Miller, 1973). A successful commercial website should facilitate this flow experience between senders and receivers. Third, consumers' experiential activities (intrinsic) toward goal-directed behaviors (extrinsic) lead to flow experiences, which can help the designation of commercial

websites in attracting users. A successful commercial website design is for users to feel enjoyment interacting with the website; therefore, flow characteristics should always be kept in mind (Nel et al., 1999).

In addition, Sullivan (1999) noted that corporate websites are designed to manage one or all of four activities: electronic commerce; disclosure of information in accordance with regulatory requirements; control of information flow; and the reduction of communication expenses. Quelch and Klein (1996) suggested that established companies would start their websites by offering information to address the needs of customers, collecting information from the markets, providing customer and internal services, and eventually providing online transactions. Another type of website allows Internet start-ups to begin with transactions and then continue to establish a brand image, provide product support, and win repeat purchases (Quelch & Klein, 1996). The website characters of terrestrial radio stations streaming online (established companies) and Internet-only radio stations (Internet start-ups) could be distinguished in this strategic approach, although online transaction of radio websites has not been popular.

The interdependent relationship between companies and consumers reflects the importance of a more customizable and intelligent Web presence. Gupta et al. (2001) added the importance of the website content management. As the volume of information online continues to grow at a rapid pace, controlling complexity is central. Centralized, distributed, and hybrid approaches had been suggested to enrich information sharing and collaboration, improve data security, and lower Web publishing costs, as well as reutilize the content for multiple media.

Even though website design becomes more friendly and interactive in recent years, information still dominates website contents. Communication is increasingly influential since consumers' feedback can benefit the website content and performance. The website content management can dramatically help a website to improve these functions and to draw more visitors. In spite of that, commercial websites serve the purpose of generating revenue directly or indirectly. A well-rounded e-commerce function is the final achievement of a successful commercial website. In summary, the characteristics and content management of the commercial websites reflect the Internet's strategic value, in which proper control of information flow, communication efficiency, reduction of costs, and serviceable e-commerce are among the most profitable assets for Internet strategic approaches.

Broadcast Media Internet Approaches

The Internet has become a main channel to disseminate information, which is presented increasingly through multiple media. The convergence of traditional media and the Internet expands the information flow and accelerates the delivery of information change. Even for broadcast media, an increasing number of programming products are created exclusively for distribution online (Chan-Olmsted, 2000). How do broadcast media design their websites and have they done enough in order to be in accordance with the audience's taste? Some studies examining the Web presence of TV and radio stations are discussed to offer a blueprint of the Internet broadcasting industry. Furthermore, current online business strategies and practices of Internet radio stations are also illustrated specifically to gain more knowledge for the industry in its infancy.

Analyses of broadcast media websites

For academic research on broadcasters' use of the Internet, Kiernan and Levy (1999) examined 62 websites of commercial TV stations. The result showed that the characteristics of a station's website had no relationship with either the degree of broadcast competition faced by the station or the extent of websites operated by competing stations. A direct competition among different broadcasting websites as business presences is insufficient from the scenario previously suggested. Moreover, Chan-Olmsted and Park (2000) analyzed 300 broadcast TV stations' websites. No obvious interactivity and personalization were observed, but news-related content played an important role. While there is a great percentage of network logos on homepages (84%) as part of a branding strategy, market size was marked as the least relevant to all variables investigated regarding website content. In general, broadcast television stations reassembled and repurposed their existing products for online delivery.

Lind and Medoff (1999) examined radio stations' websites combining survey, interview, and content analysis. Of 900 radio station websites, only 210 provided streaming audio, and 83 of them had other downloadable audio. As a result, most radio broadcasters were underutilizing the Internet and their websites. The e-commerce business models of radio websites have not yet been completely established. Lin and Jeffres (2001) analyzed 422 websites associated with local newspapers, radio stations, and TV stations in 25 of the largest metro markets. The findings showed that radio websites were utilized primarily as station promotion for branding efforts. News was not a strong feature except for public radio and news/talk radio stations. The results regarding TV websites had strongly confirmed the studies previously mentioned by Kiernan and

Levy (1999), as well as Chan-Olmsted and Park (2000). In shaping the content of media websites, market size was also found to be of no importance.

Illustration of Internet radio business strategies and practices

Terrestrial radio stations, especially larger groups, stepped into the Internet business with extreme caution, even though the medium can bring their businesses to a world market. For instance, Clear Channel Chairman Lowry Mays said that the company has "a tremendous potential opportunity to drive people to these websites and try to focus them on doing commerce on those websites. . . . [But getting there is] a huge challenge. We don't want to hemorrhage money" (Rathbun, 2000). Infinity Broadcasting, the biggest on-air competitor of Clear Channel, has not done much toward e-commerce at present. Meanwhile, under Viacom's president Mel Karmazin's reserved business style, the company argued there were no obvious revenues on the Web at this time, and thus worked out its own Internet strategies in a conservative way (Kover, 1999; Rich, 2000).

Nonetheless, many Internet radio stations have jumped onto the e-commerce bandwagon. Anajana (2000) presented existing Internet business models as advertising, subscription sites, customer services, directory services, content providers, and product sales. Among those models, advertising is the most common method of revenue in the Internet radio industry at present (Palumbo, 2002).

Many Internet radio stations, besides offering banners or other pop-up ads on their websites, also provide audio advertisement opportunities embedded between songs as an advertising choice. Arbitron's study suggested that advertisers, who want to target high-value Internet users, should focus their marketing on streaming media consumers because these users spent more time online and were more oriented to e-commerce (Arbitron, 2001a). Some advertising support systems seem to be developing as five media

companies allied to create LMiV,[3] an independent media company that helps local radio stations and advertisers build business by expanding their relationships with audiences online. The aim of this group is to urge smaller radio stations to go online and to attract national advertising by coordinating content-sharing, signing up e-commerce partners, and providing technological support (Rathbun, 2000; LMiV, 2002).

In spite of Internet radio being a relatively new industry, the subscription option is becoming more and more popular. Arbitron's study indicated that nearly 16 million listeners would pay a subscription fee for the audio channel they listen to the most. The result shows a great subscription opportunity for business models involving unique and compelling audio content (Arbitron, 2002c). Listen.com has begun to sell standard subscription services, ranging from $5.95 to $7.95 a month, which offer commercial-free Internet radio and a variety of on-demand music (Boulton, 2001b).

Another e-commerce choice for Internet radio stations is product sales. Some webcasters provide links to their sponsors' e-commerce sites that sell CDs, cassettes, and relevant products. No matter which users are browsing the site or are listening to the music online, the easy access and content relevancy help lead consumers to the e-commerce sites that they are interested in. An alternative choice of product sales is through affiliated network programs, as product providers pay a slight fee to the webcasters for purchases made through links. Moreover, selling digital downloads, media products, and other merchandise or content gives Internet radio stations an alternative to reach consumers and to generate profits at the same time. RAB eCom Solution, presented

[3] LMiV is short for Local Media Internet Venture and has established in September 2000. The five companies are Bonneville International Corp., Corus Entertainment, Emmis Communications, Entercom Communications, and Jefferson-Pilot Communications.

by the Radio Advertising Bureau, is an e-commerce shopping mall with links to selected national retailers. A customized local page can be added for an additional charge to generate local revenue by selling links to other websites, banner advertisements, click-throughs, and more (RAB, 2000). More than 400 participating Internet radio stations earn 85 percent of the total commission on each purchase that visitors to the websites make through the mall.

The radio-related business models present the ambition in beginning the e-commerce revolution in the Internet radio industry. The more time consumers spend on radio stations' websites, the more possible for the online radio stations to generate profits. At present, these possibilities seem to rest in advertisements, sponsorship, subscription, and product sales.

Internet radio stations' relationships between advertisers and consumers shape the economic systems. Figure 2-1 presents the economic structure of terrestrial radio stations streaming online. Terrestrial on-air radio stations and online streaming websites share their programs and consumers beneficially. It is a reciprocal relation between radio and the Internet harnessing the media power to attract and introduce consumers to each another. On-air radio stations allure consumers to advertising products and generate income from advertisers. However, with their streaming websites, those business models applying for the Internet also become the means in generating revenues, where profits can flow from both advertisers and consumers to terrestrial radio streaming stations. Eventually, advertisers generate income from consumers who receive advertising messages and are interested in their products, and consumers obtain the products and services.

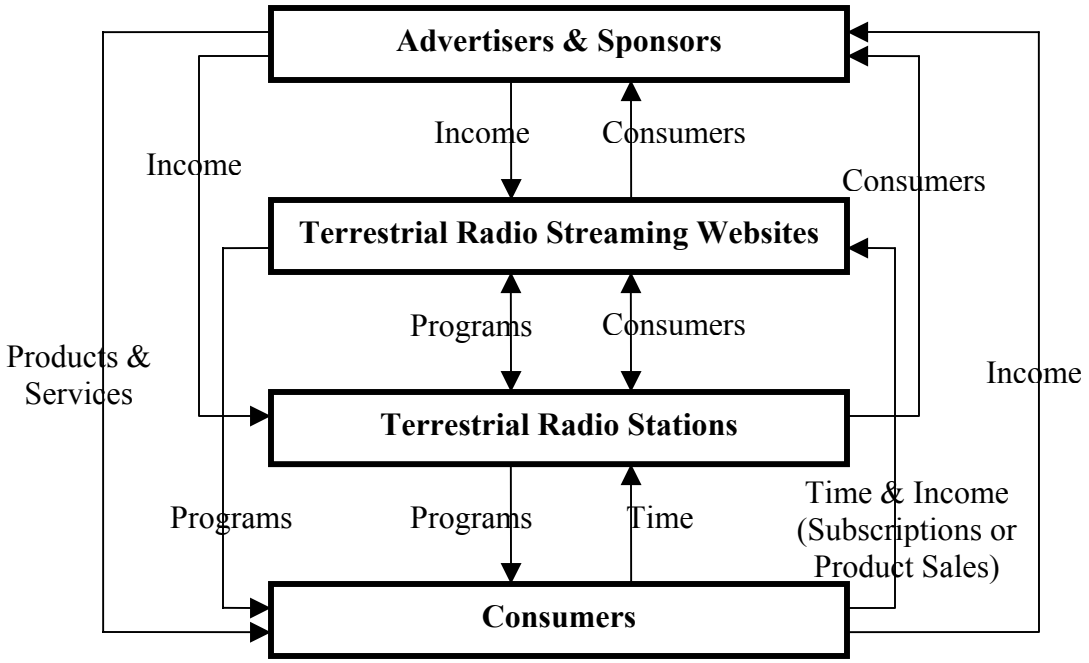

Figure 2-1. The economic structure of terrestrial radio stations streaming online.

The economic structure of Internet-only radio stations is simpler than terrestrial radio stations streaming online. In Figure 2-2, Internet-only radio stations provide programs to consumers and attract consumers to their advertisers and sponsors. The stations generate profits from both consumers and advertisers and are also the intermediates between consumers and advertisers.

Overall, Internet-only radio stations do not have terrestrial radio broadcasting as a source of content audience flow and promotional avenues. For terrestrial radio stations streaming online, traditional broadcasting and Internet webcasting can share the same programs and attract consumers from one medium to another. Moreover, while Internet-only radio stations have solely Internet business to generate profits, traditional radio broadcasting has both the Internet and airtime to sell (see Figure 2-1, 2-2). The overview

of these different economic structures provides a more comprehensive context for the analysis of the Internet strategic approaches.

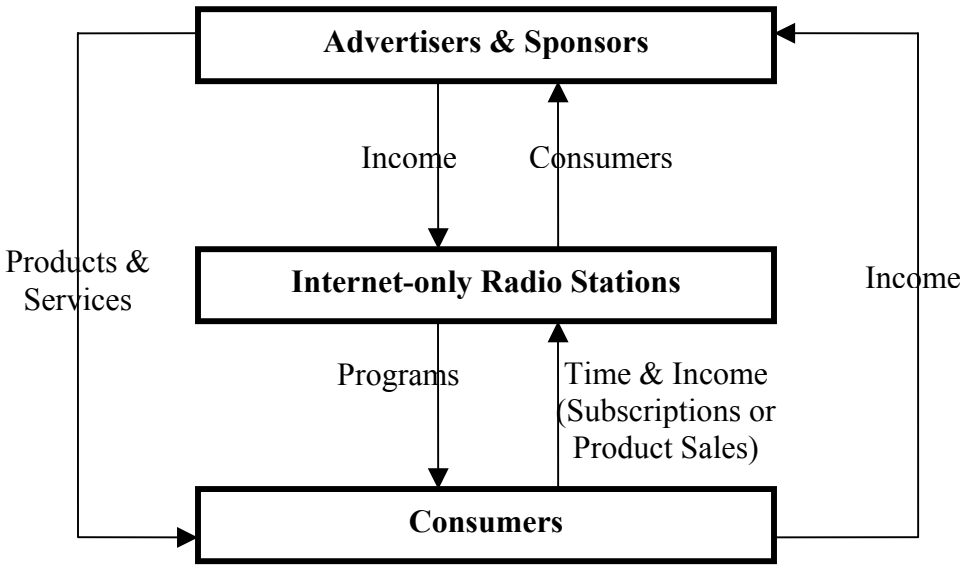

Figure 2-2. The economic structure of Internet-only radio stations.

The Value-Added Internet Strategic Approaches

Advertisers and/or consumers provide income to Internet radio stations. A company is willing to buy the advertisement space when targeted consumers visit the websites. Therefore, some studies research how Internet companies utilize their website to attract consumers are presented next. Hoffman et al. (1995) proposed a structural framework for examining the commercial development on the Web according to its business function. Two major categories were specified as “Destination Sites” and “Web Traffic Control Sites.” Under “Destination Sites,” online storefronts, Internet presence sites, and content sites were identified as the ultimate destinations housing a company’s virtual counterpart. Malls, incentive sites, and search agents were under “Web Traffic Control Sites,” whose purpose was to direct users to those various destination sites. The model that reinforced the benefits of the relationship between companies and customers

must establish a key feature of the medium—interactivity. The relationships must be updated constantly.

Interactivity means "allowing users to change the course of wants based on their own decisions with regard to the rules of whatever they are interacting with" (Cook & Sellers, 1995, p. 553). Ha and James (1998) simply stated that interactivity means "the extent to which the communicator and the audience respond to each other's communication need" (p. 457). An abundant amount of academic studies defined and examined interactivity online. Coyle and Thorson (2001) analyzed interactivity and vividness in commercial websites. Participants explored four websites. Increases in interactivity were associated with users' increased feelings of telepresence.[4] Tremayne and Dunwoody (2001) proposed and tested a model of interactive information processing. Users of the more complex site engaged in more interactive behavior and demonstrated greater levels of cognitive elaboration and subsequent recall of content. In general, research suggests that interactivity is one of the key ingredients in creating a website to attract consumers (Hoffman et al., 1995; Hoffman & Novak, 1997; Haeckel, 1998; King, 1998; Arbitron, 2001b). However, this study utilizes content analysis to examine Internet radio websites. Consumer's perspective is not observable content and therefore cannot be applied to this study.

Ha and James (1998) examined 110 business websites to assess the business strategic approaches on the Web. Website interactivity had been divided and examined by "audience-oriented interactivity dimension" and "source-oriented interactivity dimension." Audience-oriented interactivity includes the presence of curiosity arousal

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[4] Telepresence is defined as "the mediated perception of an environment" (Steuer, 1992). As presence is the direct experience of reality, telepresence is the simulated perception of direct experience.

devices and games (playfulness), choice of color, speed, language, and information about content of interest to the visitor (connectedness). Source-oriented interactivity is measured by monitoring mechanisms, such as registration at websites (information collection) and response mechanisms, such as e-mails, purchasing, surveys, and chat rooms (reciprocal communication). In fact, the audience-oriented dimension was considered as the attraction leading users to source-oriented interactivity. The study found that reciprocal communication, a source-oriented interactivity dimension, is most prevalent accounting for 61 percent, while choices, an audience-oriented interactivity dimension, ranked second (Ha & James, 1998).

By classifying four distinct domains for development of Internet strategies, Angehrn (1997) suggested the ICDT model as a systematic framework to comprehend and to take advantage of Internet business opportunities. A virtual information space (VIS), a virtual communication space (VCS), a virtual distribution space (VDS), and a virtual transaction space (VTS) are segmented as channels of the Internet commercial activities. The VIS is for presenting and accessing information related to company, products, and services. Presence in the VIS means the intention of a business expanding its traditional marketing strategy by exchanging information through Internet-based initiatives interactively from a one-to-many to a many-to-many marketing flow (Hoffman & Novak, 1996), which leads to the VCS presence. The VCS is a communication channel for a deeper engagement with actions in relationship, ideas, and opinions. A business presence in the VCS reveals that the Internet is used for monitoring and affecting the targeted groups to strength the perception of company, products, and services, which may operatively improve a company's entire image and may provide positive periphery

effects. The VDS is for distributing products and services, such as digital goods and software. Its business presence offers a new channel for effective delivery, which could be utilized to reduce the cost, make progress on the quality, and distribute auxiliary services. The VTS is for initiating and executing business-related transactions, such as invoicing and payments. A VTS presence reflects strategies engaging in business-to-business or business-to-consumer transactions online, which cannot only speed the process and provide convenience, but also keep the transaction expense down (Angehrn, 1997).

Two dimensions of sophistication level and customization level had further been proposed, indicating the developing degree of the Internet's specific characteristics and the individualization of the services to users (Angehrn, 1997). Moreover, Quelch and Klein (1996) defined a multinational company as any company that establishes a website on the Internet. The multinational company increases the opportunities for cross-border information flow (Quelch & Klein, 1996) and direct transactions, which are defined as two generic characteristics—globalization and disintermediation (Smithson & Evans, 2000)—of the Internet business. As the Internet business strategies have been presented and modeled in various angles, a close look of business models for broadcasters is depicted in the subsequent discussion.

Internet business models for broadcasters

Websites can add value in distinct ways, whether they are commerce-enabled or merely promotional vehicles (Thompson, 2000). Besides traditional media sectors, broadcast media use the Internet as another powerful promotional medium, and in the meantime, an increasing number of broadcast media websites engage in e-commerce transactions. Chan-Olmsted and Ha (2002) suggested that a TV broadcaster may choose

to utilize the Internet to generate revenue from the sales of online advertising space, sponsorship, e-commerce, content subscription, content syndication, and/or affiliate programs. However, the findings showed that TV stations have focused their online activities on building audience relationship, rather than generating online ad sales. It is reasonable to conclude that the Internet is in a support position to complement the off-line core products (Chan-Olmsted & Ha, 2002). Its promotional character is essential in broadcasting business.

The radio and TV industries have their similarities as broadcast media. In assessing the radio industry, promotion is the most important marketing activity to increase traffic in terrestrial radio stations. It is plausible to believe that the benefit of promotion may be transferred online. As the Internet provides a global presence for terrestrial radio stations to add value to their traditional business and for Internet-only radio stations to start a new business, their websites are likely to offer a virtual promotion space (VPS) to raise their visibility in the international community. While contests and banner ads of a station are considered to be an internal VPS, the sales of online advertising space are referred to as external VPS.

Since radio is free for listeners to access and the industry relies chiefly on advertising revenues in tradition, the beginning of the Internet venture may encounter some uncertainty from its profitable sources, especially with too many advertising online websites. As a result, other Internet strategies previously suggested for the TV industry to generate revenue (Chan-Olmsted & Ha, 2002) also need to apply in the Internet radio industry. A VTS presence is measured by selling merchandise, paid subscription, and affiliate programs involving monetary transaction with particular items. A virtual

sponsorship space (VSS) with monetary activity is separated independently for its commendatory opportunities.

Meanwhile, the ICDT model had been applied in broadcast and cable TV networks for their Internet strategic patterns. Chan-Olmsted (2000) categorized all reported Internet ventures of six broadcast TV networks and the top 20 cable networks into VIS, VCS, VDS, and VTS sectors. The dominant sector of the Internet in the TV networks was VIS presence, where companies can further build on their current business strengths.

Moreover, strategic alliances with partners were mostly concentrated on VCS, VDS, and VTS dimensions. Chan-Olmsted (1998) explained a strategic alliance is "a business relationship in which two or more companies, working to achieve a collective advantage, attempt to integrate operational functions, share risks, and align corporate cultures" (p. 34). A strategic alliance relationship, a dominant theme of the global telecommunications industry (Chan-Olmsted & Jamison, 2001), is a major avenue for a company to acquire new capabilities and to pursue growth in the global market (Joshi et al., 1998; Ernst et al., 2001). Strategic alliances are among the most effective accesses for achieving the globalization ambition.

Furthermore, the developments of the VIS, VCS, VDS and VTS presence would bring traditional broadcasting markets to a more sophisticated level. With higher phases to be achieved, market penetration, market development, product development, and/or diversification are the four growth alternatives opening to a business (Ansoff, 1957). An advanced suggestion was proposed: TV networks should solidly base their ventures on the marketing space (VIS and VCS) for the purpose of market penetration in which the

Internet can be valued to increase sales by extending the size of the market or gaining market shares from competitors. At the same time, the broadcasting business would want to expand to the commerce space (VDS and VTS) toward a market/product development and diversification strategy in which the Internet can facilitate existing products into new markets, create new products for existing consumers, and finally produce new products for new markets (Chan-Olmsted, 2000).

CHAPTER 3
RESEARCH QUESTIONS AND METHODS

The Analytical Framework within the Context of Internet Radio's Website Content

Based on the previous literature review, an Internet company's strategic patterns are presented in six virtual spaces of website contents: information, communication, promotion, distribution, sponsorship, and transaction. Audience-oriented and source-oriented aspects are further categorized as two interactive dimensions of website contents (see Figure 3-1). In this study, the ICDT framework of four virtual spaces (VIS, VCS, VDS, and VTS) and two other characteristics (VPS and VSS) of broadcasters' Internet usage are utilized to examine the strategic patterns of Internet radio stations' websites. With the irresistible trend of interactive contents, interactivity criteria suggested by Ha and James (1998) have been modified to analyze the tendency of website contents. "Audience-oriented interactivity dimension" observes the presence of information delivery to users' interest (connectedness), as well as the playfulness and choice of distribution softwares, products, or prizes from the angle of consumers' viewpoint; therefore, VIS, VPS, and VDS present its strategic disposition. "Source-oriented interactivity dimension" is based on interdependent commercial communications of collecting information to improve business and of processing transactional functions to further generate profits for a company. Thus, VCS, VSS, and VTS are under its strategic tendency.

Interactive dimensions and strategic patterns are major analytical elements for Internet radio website contents. From traditional radio market space, the development of

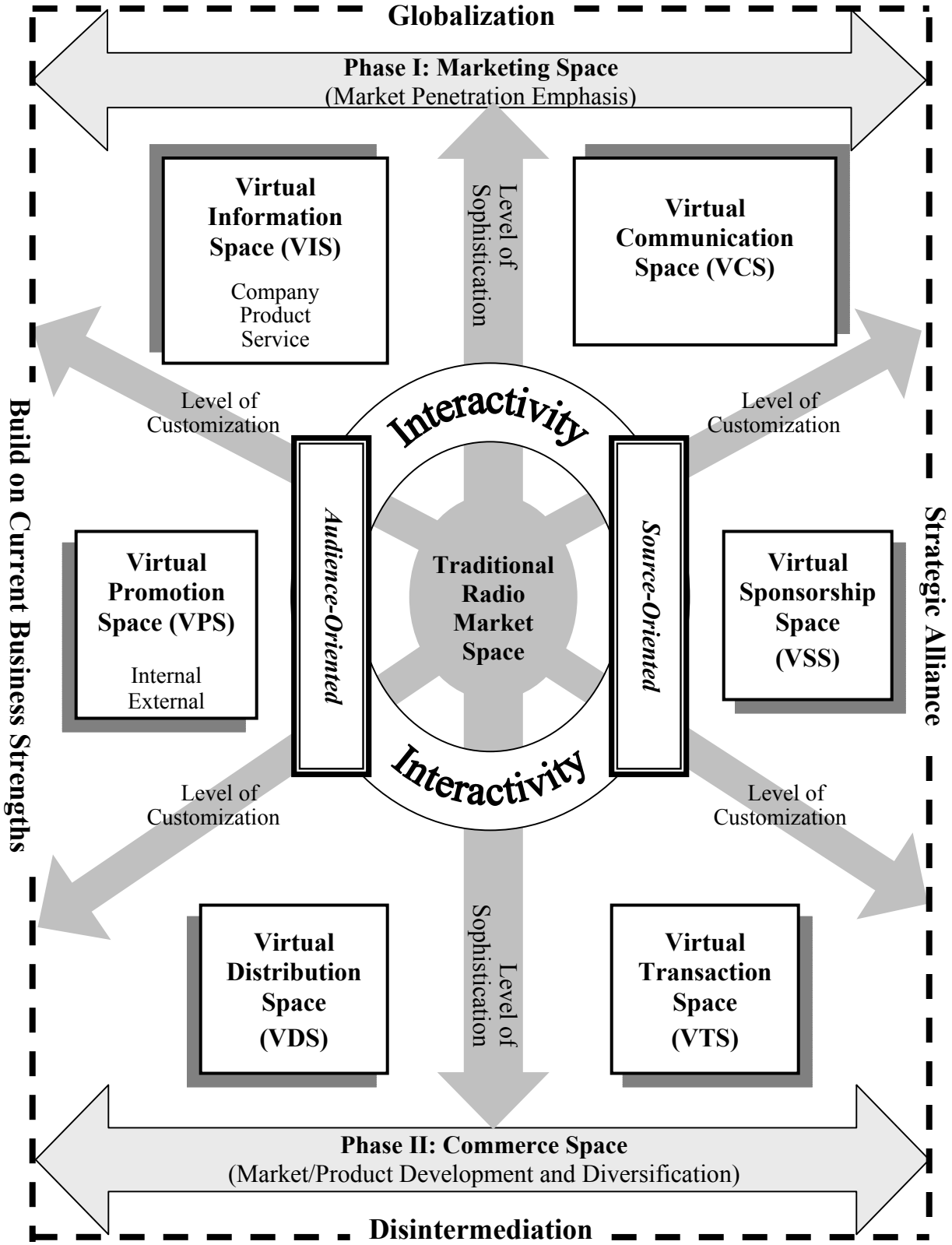

Figure 3-1. A framework for analyzing interactive dimensions and strategic patterns of Internet radio website contents. Note: The outline is summarized and modified based on Angehrn (1997), Ha and James (1998), Chan-Olmsted (2000), and Chan-Olmsted and Ha (2002).

the sophistication level can bring the traditional radio market to an expansion of marketing and commerce spaces. The development of customization level raises the individualization of the services to users. Further Internet strategic approaches can be practiced building on current business strengths and in pursuing strategic alliances. The generic and unique characteristics of the Internet's globalization and disintermediation are included in the framework for their business presence. Table 3-1 shows operational definitions of the variables of the analytical framework.

Table 3-1. Operational definitions of the variables according to the analytical framework

Variable	Definition
Audience-oriented interactivity	The interactive presence from consumers' point of view such as the connectedness of information delivery and the playfulness of distribution products.
VIS	A virtual information space is for presenting and accessing information related to company, products, and services.
Company information	Information regarding station background/logo/press release, personnel information, and/or employment opportunities.
Product information	Information regarding product reviews, product news, playlist, program schedule, and/or program guide.
Service information	Information regarding date/time, weather, sitemap, coverage map, local/national community events, entertainment/ leisure information, media links, general news, search engine, and/or customer support/FAQs.
VPS	A virtual promotion space is for promoting internal and/or external company image, products and services through certain promotional tools.
Internal promotion	Promotion regarding station banner ads, contests/ sweepstakes, promotional events, coupons, and/or bookmark request.
External promotion	Promotion regarding outside ads, mention of sponsors/partners, and/or non-station coupons.
VDS	A virtual distribution space is for distributing products such as audio goods and/or services, such as text files, video, and software.
Source-oriented interactivity	The interactive presence from companies' point of view, such as registration for information collection and reciprocal communication, including online sponsorship and transaction.

Table 3-1—continued.

VCS	A virtual communication space is a communication channel for a deeper engagement with actions in relationship, ideas, and opinions.
VSS	A virtual sponsorship space is the opportunity for listeners to sponsor/donate monetarily to the station.
VTS	A virtual transaction space is for initiating and executing business-related transactions like invoicing and payments, including paid subscription, online shopping for station/non-station merchandise, and/or online shopping through affiliate program.
Level of sophistication	The developing degree of the Internet's specific characteristics.
Marketing space	Emphasis on market penetration in which the Internet can be valued to increase sales by extending the size of the market or gaining market shares from competitors.
Commerce space	Emphasis on market/product development and diversification in which the Internet can facilitate existing products into new markets, create new products for existing consumers, and produce new products for new markets.
Level of customization	The individualization of the products and services to users.
Strategic alliance	A business relationship in which two or more companies, working to achieve a collective advantage, attempt to integrate operational functions, share risks, and align corporate cultures.
Globalization	Cross-border and worldwide information flows to a great extent.
Disintermediation	Direct transactions which eliminate traditional intermediaries.

Source: Angehrn (1997), Ha and James (1998), and Chan-Olmsted (1998, 2000).

The framework is formed to examine the Internet radio stations' interactive dimensions, which are sorted as audience-oriented and source-oriented interactivities, and strategic patterns, which are divided as VIS, VPS, VDS, VCS, VSS, and VTS presence. From these strategic approaches, "information," "promotion," "distribution," "communication," "sponsorship," and "transaction" are six elements to analyze website contents of the Internet radio stations.

Research Questions

Previous discussions show that increasing users' active interaction with the Internet may change the traditional radio concept. Websites provide a visible possibility where users can choose what they want by clicking on images or links. Creating a chat room could easily form an online community of people who have the same music taste. As both Internet radio stations and online listeners are increasing, the Web content of their choice plays a significantly strategic role (King, 1998; Zinkhan & Watson, 1998; Gupta et al., 2001).

Although the purpose of using websites retaining and attracting users to generate revenues is expectable, Internet-only radio stations and terrestrial radio stations streaming online may have a different emphasis on their website contents. From the standpoint of business models, Internet-only radio stations lack the business alternative of selling air-time to advertisers, and thus the sponsorship and transaction elements may be more crucial to ensure their survival. Moreover, Internet-only radio stations may not have established the support of local listeners as terrestrial radio stations streaming online may have; therefore, their contents may provide more personalized communication options (e.g. a customized radio function that the users' preference can be matched by requesting) in order to lock in their worldwide consumers. The interactive and strategic approaches in examining the website contents can give later adopters a better understanding of the initial stage of the Internet radio industry. Accordingly, the author expects to answer the following research questions in the study:

R. Q. 1) What are the most and the least common features in the website contents of Internet radio stations?

R. Q. 2) According to the website contents of Internet radio stations, what strategic patterns (VIS, VPS, VDS, VCS, VSS, and VTS) and interactive

dimensions (audience-oriented and source-oriented) have Internet radio stations adopted?

R. Q. 3) Do two types of Internet radio firms—Internet-only radio stations and terrestrial radio stations streaming online—have different strategies regarding "information," "promotion," "distribution," "communication," "sponsorship," and "transaction" elements in their website contents?

R. Q. 4) Do two types of Internet radio firms—Internet-only radio stations and terrestrial radio stations streaming online—have different strategies regarding the interactive dimensions of "audience-oriented" and "source-oriented" in their website contents?

Research Method

This research is a comparative study that examines Internet radio websites, using content analysis to explore the similarities and distinctions of Internet-only radio stations and terrestrial radio stations streaming online. Content analysis is a systematic and quantitative scientific method for measuring the content of messages. Berelson (1952) defines content analysis as "a research technique for the objective, systematic, and quantitative description of the manifest content of communication" (p. 18). McMillan (2000) found that content analysis is a stable research technique that can be applied to the dynamic environment of the Internet but with some challenges. In the study, a content analysis is conducted on the Web-based content messages of Internet radio stations to address the research questions. The author divides the U.S.-based Internet radio stations into two groups: terrestrial radio stations streaming online and Internet-only radio stations.

Internet radio websites are content analyzed with two broad interactive dimensions, and each contains three strategic virtual space concepts. Two broad dimensions are defined as audience-oriented interactivity covering concepts of a virtual information space (VIS), a virtual promotion space (VPS), and a virtual distribution space

(VDS), as well as source-oriented interactivity including concepts of a virtual communication space (VCS), a virtual sponsorship space (VSS), and a virtual transaction space (VTS). Two-point (yes and no) coding categories have been further constructed to investigate the website contents under six virtual space concepts: information, promotion, distribution, communication, sponsorship, and transaction.

Research Design

To compare Internet-only radio stations with terrestrial radio stations streaming online, an U.S.-based Internet radio stations list reported on the BRS website was obtained in September 2002. BRS Media is a full service Internet e-commerce firm that helps radio and multimedia websites build and brand on the power of the Web. Its Web-radio directory is the only list classifying Internet-only and terrestrial radio stations, and is also one of the leading portals for tuning in radio on the Internet.

Lind and Medoff (1999) examined the relationship between radio stations and the World Wide Web in the late 1990s using the MIT list of radio broadcast stations on the Internet and also consulting the BRS Web-radio list. However, the MIT list of radio stations on the Internet and now the radio-locator does not yet file Internet-only radio stations on its list. Meanwhile, the radio-locator and the BRS Web-radio list have a similar number of the U.S. terrestrial radio stations streaming online. Thus, the BRS Web-radio list is selected for its well-categorized classification and the completeness of the study. Its directory under URL: http://www.radio-directory.fm is updated once or twice every week. The website uses five links to classify its radio directory. They are call letters, states, international, format, and Internet only. In this particular study, the population of Internet-only radio stations is from the link of Internet only, and the population of terrestrial radio stations streaming online uses the link of call letters.

Excluding terrestrial radio stations without webcasting, there were 3,113 terrestrial radio stations streaming online. Excluding Internet-only radio stations outside of the United States, 197 Internet-only radio stations were listed on the BRS Web-radio list as of September 2002.

Compared to the number of terrestrial radio stations, the size of Internet-only radio stations is relatively small. To ensure representation, more units from the smaller portion of the population are selected. Disproportional stratified sampling guarantees that the group of Internet-only radio stations is adequately represented. It is used to make estimates and comparisons for subgroups of the population, as well as for the entire population. As Agresti (1997) suggested:

> Disproportional stratified sampling is especially useful when we want to compare strata on some variable(s), but the size of at least one stratum is relatively small. A group that comprises a small proportion of the population may not have enough representation in a simple random sample to allow one to make precise inferences, especially if the total sample size is not very large. (p. 23)

Sample and Procedure

After checking the links on the list of Internet-only radio stations, the author found some duplicated websites and several dead links. A possible reason for those dead links may be because this study researched at the time when the final regulation of webcasting royalty fees has just been ruled and the situation for independent webcasters has been uncertain. There were only 88 websites left conforming to the criteria as Internet-only radio stations, including commercial and noncommercial groups. All 88 websites were examined because of the small population of Internet-only radio stations.

On the other hand, another 88 terrestrial radio streaming websites were chosen by using a skip interval sampling with a random start. When an obsolete or nonstreaming Internet radio website was randomly chosen from the list of terrestrial radio stations

streaming online, it was excluded. The random selection continued until 88 qualified websites were chosen in the group containing both commercial and noncommercial radio stations. A sample of 176 Internet radio websites was examined in total (see Appendix A). The websites were collected and analyzed between 9 October and 19 October 2002. All website contents under the same radio station's domain name were analyzed, but the actual audio streaming content is not included in the analysis.

Measures and Coding Scheme

The unit of analysis in this study was an Internet radio station's complete website. Starting with the homepage, all other HTML pages under an Internet radio station's domain name were examined. However, the extension content of audio streaming programs is excluded. The following content categories were analyzed for each unit of analysis. "Audience-oriented" and "source-oriented" are two broad dimensions for the interactive tendency of Internet radio stations. "Information," "promotion," "distribution," "communication," "sponsorship," and "transaction" are six concepts with detailed variables to examine their strategic approaches. The variables under "virtual information space" are related to the information a website provides, including company, product, and service information. The variables under "virtual promotion space" are related to the internal and external promotion a website provides to promote company image, products, and services. The variables under "virtual distribution space" are related to the distribution channels a website provides to distribute products and services. The variables under "virtual communication space" are related to direct but maybe delayed communication a website provides. The variable under "virtual sponsorship space" is related to monetary sponsorship and/or donation a website provides. The variables under

"virtual transaction space" are related to a transaction process, such as orders and payments a website provides. Table 3-2 details the coding categories for the analysis.

A coding form (see Appendix B) and an operational definition for coders listed in the same order of the coding form (see Appendix C) were established for the study. Two coders were trained on both coding category systems and procedures. The coders clicked

Table 3-2. Website content coding categories

Audience-oriented interactivity	Measured by the presence of a virtual information space, a virtual promotion space, and a virtual distribution space.
Virtual Information Space	Two-point (yes and no) coding categories were established to measure a station's company, product, and service information.
Company information	Measured by the presence of station-related content such as station information, logo, press release, personnel information, and employment opportunities.
Product information	Measured by the presence of programming-related content such as product reviews, product news, playlist, program schedule, and program guide.
Service information	Measured by the presence of service-related content such as date/time, weather, sitemap, coverage map, community events, entertainment/leisure section, media links, general news, search engine, and customer support.
Virtual Promotion Space	Two-point (yes and no) coding categories were established to measure a station's internal and external promotion.
Internal promotion	Measured by the presence of station ads, contests, promotional events, coupons, bookmark request, and referral links.
External promotion	Measured by the presence of non-station ads, mention of sponsors or partners, and non-station coupons.
Virtual Distribution Space	Two-point coding categories were established to measure the presence of distribution content such as text or photo files, and audio, video, and software goods.
Source-oriented interactivity	Measured by the presence of a virtual communication space, a virtual sponsorship space, and a virtual transaction space.
Virtual Communication Space	Two-point coding categories were established to measure the presence of e-mail click-through, form mechanism, rating, survey or poll, newsletter subscription, chat room, forum or bulletin, and referral mail.
Virtual Sponsorship Space	Two-point coding categories were established to measure the presence of monetary sponsorship or donation.
Virtual Transaction Space	Two-point coding categories were established to measure the presence of paid subscription and online shopping for station or non-station merchandise and through affiliate program.

through and coded items seen on the homepage and then on all subsequent pages. To obtain intercoder reliability, the coders practiced coding for 10 percent of the analyzed Internet-only radio websites and terrestrial radio streaming websites. To account for the element of chance in coder agreement, Scott's pi formula was utilized to calculate intercoder reliability. The final overall intercoder reliability for the selected sample coding was .87 (see Appendix D).

Inferential tests were utilized to determine the confidence of the collected data. The Statistical Package for the Social Science (SPSS release 11.0 for Windows) was used in the study for statistical computer analysis. Two-way contingency table analyses using cross-tabulations were performed to evaluate whether statistical relationship exists between two types of Internet radio stations and distinct interactive and strategic variables. Chi-square statistics were used to assess the statistical significance of the variable relationships and were reported at .001, .01, and .05 levels.

CHAPTER 4
FINDINGS

The content analysis of Internet radio websites was conducted to examine two broad interactive dimensions (audience-oriented and source-oriented) and six strategic virtual space concepts (VIS, VPS, VDS, VCS, VSS, and VTS). Based on the BRS Web-radio list, a total of 176 stations in which 88 qualified Internet-only radio websites (50%) and an equivalent number of terrestrial radio streaming websites (50%) were analyzed.

The frequency and comparison of the music formats are listed in Table 4-1. Of the 176 websites, 65 percent of the stations provided mainstream music formats and 14 percent of them offered nonmainstream music,[1] while other stations had a mix of programming styles with more than one kind of music format (21%). Although mainstream music was the majority of music formats in both types of Internet radio stations, there was a relationship between the type of Internet radio firms (Internet-only vs. terrestrial radio streaming stations) and the choice of music formats (mainstream vs. nonmainstream). Specifically, Internet-only radio stations (72%) provided more nonmainstream music formats for listeners compared to terrestrial radio stations streaming online (28%). Since terrestrial radio stations often stream the same music format online as they broadcast on-air, it is logical that Internet-only radio stations would contribute more diversity in music variety.

[1] The range of mainstream music is according to the music formats of R&R Online, which includes AC (adult contemporary), Alternative, CHR (current hit radio)/POP, Christian, Country, News/Talk/Sports, Rock, Smooth Jazz, Triple A (adult album alternative), and Urban. R&R Online is home of Arbitron Ratings for radio markets in the United States providing instant information for the radio and record industries.

Table 4-1. Frequency and comparison of music formats.

Mainstream vs. Nonmainstream[a]	***Music Formats***	***Frequency***		***Internet-Only Radio***		***Terrestrial Radio Streaming***		***Total (N=176)***	
		N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Mainstream Music Formats	Adult Alternative	8	4.5	50	43.9	64	56.1	114	100.0
	Adult Contemporary	10	5.7						
	CHR-Top 40	10	5.7						
	Christian (Religion)	20	11.4						
	Country	8	4.5						
	Jazz/Smooth Jazz	5	2.8						
	News/Talk/Sports	20	11.4						
	Rock	31	17.6						
	Urban	2	1.1						
	Total	*114*	*64.8*						
Nonmainstream Music Formats	Adult Standards	1	0.6	18	72.0	7	28.0	25	100.0
	Classical	3	1.7						
	Dance	2	1.1						
	Easy Listening	1	0.6						
	Oldies	6	3.4						
	Other	12	6.8						
	Total	*25*	*14.2*						
Not Applicable	Variety[b]	37	21.0	-	-	-	-	-	-

X^2=6.498, df=1, *p*=.011

[a]The range of mainstream music is according to R&R Online. Other music formats that are not included as mainstream music are classified as nonmainstream music.
[b]Variety is a music type that contains more than one kind of music format, which could be both mainstream and nonmainstream; therefore, it is not analyzed in this table.

Major Website Content of Internet Radio Stations

The descriptive results for website contents of the 176 Internet radio stations are found in Table 4-2. To answer the research questions, the author elaborates and discusses strategic patterns (VIS, VPS, VDS, VCS, VSS, and VTS) and interactive dimensions (audience-oriented and source-oriented) on an individual basis.

Table 4-2. Website contents of the 176 Internet radio stations.

AUDIENCE-ORIENTED INTERACTIVITY

Virtual Information Space (VIS)	**Frequency (YES)**	
	N	**%**
Company Information		
Station Information	150	(85.2%)
Station Logo	175	(99.4%)
Station Press Release	11	(6.3%)
Personnel Information	102	(58.0%)
Employment Opportunity	71	(40.3%)
Product Information		
Product Reviews	58	(33.0%)
Product News	129	(73.3%)
Regulation Information	24	(13.6%)
Playlist	77	(43.8%)
Program Schedule	117	(66.5%)
Program Information	109	(61.9%)
Service Information		
Date/Time	55	(31.3%)
Weather Report	75	(42.6%)
Sitemap	12	(6.8%)
Coverage Map	25	(14.2%)
Local/National Community Information	118	(67.0%)
Entertainment/Leisure Section	51	(29.0%)
Media Links	162	(92.0%)
Non-product News	59	(33.5%)
Search Engine	87	(49.4%)
Customer Support/FAQs	107	(60.8%)
Virtual Promotion Space (VPS)		
Internal Promotion		
Station Advertisements	123	(69.9%)
Contests/Sweepstakes	74	(42.0%)
Station Promotional Events	75	(42.6%)
Station Online Coupons	2	(1.1%)
Bookmark/Homepage Request	18	(10.2%)
Referral Links	23	(13.1%)

Table 4-2—continued.

Virtual Promotion Space (VPS)	**Frequency (YES)**	
External Promotion	**N**	**%**
Outside Advertisements	121	(68.8%)
Mention of Sponsors/Partners/Affiliates	81	(46.0%)
Non-station Online Coupons	7	(4.0%)
Virtual Distribution Space (VDS)		
Text/Photo Files Download	22	(12.5%)
Audio Download/Streaming	61	(34.7%)
Video Download/Streaming	45	(25.6%)
Software Download/Links	139	(79.0%)

SOURCE-ORIENTED INTERACTIVITY

	Frequency (YES)	
Virtual Communication Space (VCS)	**N**	**%**
E-mail Click-through	170	(96.6%)
Form Mechanism	121	(68.8%)
Online Rating	14	(8.0%)
Online Survey/Poll	57	(32.4%)
Newsletter Subscription	71	(40.3%)
Chat Room	33	(18.8%)
Forum/Bulletin	55	(31.3%)
Referral Mail	35	(19.9%)
Virtual Sponsorship Space (VSS)		
Monetary Sponsorship/Donation	49	(27.8%)
Virtual Transaction Space (VTS)		
Paid Subscription	18	(10.2%)
Online Shopping for Station Merchandise	54	(30.7%)
Online Shopping for Other Merchandise	32	(18.2%)
Online Shopping through Affiliate Program	82	(46.6%)

R. Q. 1: What are the most and least common features in the website contents of Internet radio stations?

As shown in Table 4-2, station logo (99%), media links (92%), and station information (85%) are the most dominant content in the virtual information space. This information is generally the basic content a radio website would provide. The least common features are stations press release (6%), sitemap (7%), and regulation information (14%). There are very few websites that offer press releases, and a possible reason may be due to the characteristics of a radio station website. Terrestrial radio stations are controlled by a handful of powerful corporate owners because of the consolidation of the radio industry. However, radio is still a very local business and its websites are generally local-oriented. Therefore, a corporate website may provide more press releases in regard to its business presence, but the website of a terrestrial radio station may offer more news and events for local listeners. As for Internet-only radio stations, the feature is not popular chiefly because the industry is in its early stages and most stations are small.

A virtual promotion space is divided into internal and external promotion. As the internal promotion provides functions from a station's own resources, the external promotion is for other firms, and the station is normally able to generate income. Advertisement is the most common promotional content in the virtual promotion space, with station ads (internal) reaching 70 percent and outside ads (external) approximately 69 percent. The finding supports that advertising is the most adopted business strategy of the websites. Also, 46 percent of the websites mention sponsors, partners, or affiliates as part of their business upholders. On the other hand, online couponing, which a station

provides its own station's coupons (1%) or coupons from other companies (4%) on its website, is the least frequently used strategy on the Internet radio websites.

In the virtual distribution space, software downloads/links (79%) have the most presence. This function is greatly in need because this research studies streaming audio websites, and the player software is required to listen to streaming radio. Besides software links, audio download/streaming (35%) has a higher percentage than video and text/photo downloads. Although the distribution presence has not been greatly adopted in general, Internet radio stations still present their audio characteristics as their major online medium delivery. Conversely, text/photo files download is the least common feature with 13 percent of the radio websites. The majority of the download files are flyers, posters, or even wallpapers for collection and distribution.

E-mail click-through (97%) and form mechanism (69%) are the two most popular contents in the virtual communication space. The one-way communication seems to still be the dominant function the websites offer at present. Although rating is an extremely important guide for radio stations in general, it is surprisingly rare that only 8 percent of the radio websites request listeners to rate the music that the station plays. Chat room (19%) is also not as common as it may seem when the general idea is that online radio is a channel to create a better community.

Monetary sponsorship/donation (28%) is the only variable examined in the virtual sponsorship space. The variable is described as a request or a link to form a mechanism that is specifically for inviting listeners to sponsor or donate both online and offline. It is chiefly found in the public radio station websites, but is increasingly widespread on the websites of the Internet-only radio stations.

In the virtual transaction space, the most common feature is online shopping through affiliate programs with a 47 percent presence. Most of the affiliate programs are media-related e-commerce websites such as CDNow and Amazon vending music products. Thirty-one percent of websites are selling station merchandise, including a variety of clothes and caps, featuring the station logo. The least common function of the VTS is paid subscription (10%). Since consumers do not need to pay for listening to radio, it is reasonable that an online paid subscription function requires more effort to be implemented at the beginning.

Table 4-3 lists the 10 most and the 10 least commonly found content features in the Internet radio websites. Overall, the results indicate that station logo (99%) and e-mail click-through (97%) are the most commonly found content features of the sampled websites. Media links (92%), station information (85%), and software download/links (79%) are also popular features.

Table 4-3. The 10 most and least common features in the Internet radio websites.

	Features in Internet Radio Websites			
	Ten Most Common	**%**	**Ten Least Common**	**%**
1	Station Logo (VIS)	99.4	Station Online Coupons (VPS)	1.1
2	E-mail Click-through (VCS)	96.6	Non-station Online Coupons (VPS)	4.0
3	Media Links (VIS)	92.0	Station Press Release (VIS)	6.3
4	Station Information (VIS)	85.2	Sitemap (VIS)	6.8
5	Software Download/Links (VDS)	79.0	Online Rating (VCS)	8.0
6	Product News (VIS)	73.3	Bookmark/Homepage Request (VPS)	10.2
7	Station Advertisements (VPS)	69.9	Paid Subscription (VTS)	10.2
8	Outside Advertisements (VPS)	68.8	Text/Photo Files Download (VDS)	12.5
9	Form Mechanism (VCS)	68.8	Referral Links (VPS)	13.1
10	Local/National Community Information (VIS)	67.0	Regulation Information (VIS)	13.6

The least common features of the Internet radio websites are station online coupons (1%) and non-station online coupons (4%). It seems reasonable as the sales promotion tactic, couponing, is not an idea closely related to the radio broadcasting business. Other least common features include station press release (6%), sitemap (7%), and online rating (8%).

R. Q. 2: According to the website contents of Internet radio stations, what strategic patterns (VIS, VPS, VDS, VCS, VSS, and VTS) and interactive dimensions (audience-oriented and source-oriented) have Internet radio stations adopted?

As shown in Table 4-2 and also previously discussed, the VIS and the VCS appear to be the dominant presence with station logo reaching 99 percent and 97 percent of e-mail click-through. Almost 80 percent of software download/links indicates a VDS presence. Instead of delivering the station's own products, however, the distribution mainly offers links to download streaming media players for listening to webcasting.

In the VPS, both station and non-station advertisements account for nearly 70 percent of radio websites. As discussed in Research Question 1, both internal and external promotions are included in the virtual promotion space; however, internal promotion does not generate revenues. The amount of outside advertisements (external) supports that advertising revenue is the most popular business strategy for generating income as reflected by the station websites. In the VTS, online shopping through affiliate programs (47%) appears to be adopted more than online shopping for station merchandise (31%), non-station merchandise (18%), and paid subscription (10%). As for the VSS presence, only one variable has been measured. Twenty-eight percent of the

websites has clearly requested monetary sponsorship or donation in support of the radio stations.

Interactive dimensions are shown on both audience-oriented and source-oriented interactivities. Information delivery to provide and arouse users' interest is the general idea of a commercial website, which performs an audience-oriented interactivity. However, the final purpose for stations to communicate with users is to collect information to improve business in which the source (company) is the focus for those interactive communication features. Since the VIS and the VCS are the two most adopted strategies, both audience-oriented and source-oriented interactive functions are applied on Internet radio website contents. However, as shown in Table 4-3, audience-oriented interactivity exhibits greater significance regarding online presence of the Internet radio stations, since the VIS, the VPS, and the VDS are all considered audience-oriented by offering information to the listeners.

Overall, the findings show that the Internet radio stations have a strong presence in the VIS and the VCS. However, only the basic communication mechanism performs in the VCS. Also, the VDS and the VPS have been adopted in a certain manner, as software distribution and advertising are common among the Internet radio stations. In addition, the audience-oriented dimension presents the dominant interactive strategy due to the popularity of the information, promotion, and distribution functions.

Internet Radio Types and the Content of Station Websites

The chi-square results for contrasting website contents between the Internet-only radio stations and the terrestrial radio stations streaming online are listed in Table 4-4. There is statistical significance among approximately half of the variables. These two

Internet radio types are discussed individually in regard to their strategic patterns and interactive dimensions.

R. Q. 3) Do two types of Internet radio firms—Internet-only radio stations and terrestrial radio stations streaming online—have different strategies regarding "information," "promotion," "distribution," "communication," "sponsorship," and "transaction" elements in their website contents?

The overall relationship between the strategic variables and the Internet radio types has been performed in 2*2 cross-tabulations to assess the statistical significance. As shown in Table 4-4, more than half of the variables in the VIS are found relationships with two types of Internet radio firms. Of six company information variables, station information (*p*=.000), personnel information (*p*=.000), and types of employment opportunity (*p*=.000) are yielded to be strongly significant. Of six product information variables, all of them (product review, product news, regulation information, playlist, program schedule, and program information) are found relationships with the Internet radio types. Of ten service information variables, six of them (date/time, weather report,

Table 4-4. Chi-square results contrasting two types of Internet radio websites.

Interactive dimensions	*VARIABLES*	*INTERNET RADIO TYPES*
		p
AUDIENCE-ORIENTED INTERACTIVITY	**Virtual Information Space (VIS)**	
	Company Information	
	Station Information	.000
	Station Logo	n.s.
	Station Press Release	n.s.
	Personnel Information	.000
	Employment Opportunity	n.s.
	Types of Employment Opportunity	.000

Table 4-4—continued.

Interactive dimensions	*VARIABLES*	*INTERNET RADIO TYPES*
		p
AUDIENCE-ORIENTED INTERACTIVITY	Product Information	
	Product Reviews	.010
	Product News	.027
	Regulation Information	.000
	Playlist	.004
	Program Schedule	.000
	Program Information	.000
	Service Information	
	Date/Time	.000
	Weather Report	.000
	Sitemap	n.s.
	Coverage Map	.001
	Local/National Community Information	.000
	Entertainment/Leisure Section	.002
	Media Links	n.s.
	Non-product News	.038
	Search Engine	n.s.
	Customer Support/FAQs	n.s.
	Virtual Promotion Space (VPS)	
	Internal Promotion	
	Station Advertisements	n.s.
	Contests/Sweepstakes	.000
	Station Promotional Events	.000
	Station Online Coupons	n.s.
	Bookmark/Homepage Request	n.s.
	Referral Links	.000
	External Promotion	
	Outside Advertisements	n.s.
	Mention of Sponsors/Partners/Affiliates	n.s.
	Non-station Online Coupons	n.s.
	Virtual Distribution Space (VDS)	
	Text/Photo Files Download	n.s.
	Audio Download/Streaming	.039
	Video Download/Streaming	n.s.
	Software Download/Links	.042

Table 4-4—continued.

Interactive dimensions	*VARIABLES*	*INTERNET RADIO TYPES*
		p
SOURCE-ORIENTED INTERACTIVITY	**Virtual Communication Space (VCS)**	
	E-mail Click-through	n.s.
	Form Mechanism	n.s.
	Online Rating	n.s.
	Online Survey/Poll	n.s.
	Newsletter Subscription	n.s.
	Chat Room	.001
	Forum/Bulletin	.035
	Referral Mail	n.s.
	Virtual Sponsorship Space (VSS)	
	Monetary Sponsorship/Donation	n.s.
	Virtual Transaction Space (VTS)	
	Paid Subscription	n.s.
	Online Shopping for Station Merchandise	n.s.
	Online Shopping for Other Merchandise	n.s.
	Online Shopping through Affiliate Program	n.s.

coverage map, local/national community information, entertainment/leisure section, and non-product news) have statistical significance.

In the VPS, no variable of external promotion shows statistical relationship; however, three (contests/sweepstakes, station promotional events, and referral links) of six internal promotion variables perform strong significance with p=.000. Of the four variables of the VDS, there are relationships between two variables (audio download/ streaming and software download/link) and the Internet radio types.

Chat room (p=.001) and forum/bulletin (p=.035) are the only two of eight variables in the VCS presented relationship with two types of Internet radio firms. The results indicate that Internet radio types had statistic significances with VIS, VPS, VDS,

and VCS. However, Internet radio types were found to yield no relationship with either the sponsorship or transaction variables. The percentage comparison of the significantly individual measures in each virtual space is further reported and discussed in detail.

Table 4-5 shows the VIS comparison between Internet-only radio websites and terrestrial radio streaming websites. Among 21 variables, there are statistically significant differences in 14 of them. In company information, terrestrial radio accounted for 57 percent of providing station information and 66 percent of offering personnel information, while Internet-only accounted for 43 percent and 34 percent, respectively. The results indicate that terrestrial radio websites were more likely to provide detailed information about the stations and the staff. The possible reason is because many Internet-only radio stations are owned by individuals so no personnel information can be listed.

Although no relationship is found between employment opportunity and Internet radio types, there is a statistically significant difference between different types of employment opportunity and Internet radio types (see Table 4-6). The result indicates that terrestrial radio tended to offer more work opportunities (78%) such as jobs, internships, and volunteers (mostly found in public radio stations). On the other hand, Internet-only radio stations provided opportunities for people to submit their personal work for streaming online, which are more like a freelance job, and none of the terrestrial stations did offer this possibility.

Relationships are found between all the variables of product information and two types of Internet radio stations. The result shows that terrestrial radio websites provided more product news (55%), program schedule (68%), and program information (66%)

than Internet-only radio websites. However, there were less product reviews (36%), regulation information (4%), and playlist (38%) mentioned on their websites. The huge difference is especially evident in regulation information regarding the recent copyright

Table 4-5. Comparison of virtual information space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	***Internet-Only Radio***		***Terrestrial Radio Streaming***		***Total***	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Information Space (VIS)						
Company Information						
*Station Information****	*43.3*	*65*	*56.7*	*85*	*100*	*150*
Station Logo	49.7	87	50.3	88	100	175
Station Press Release	72.7	8	27.3	3	100	11
*Personnel Information****	*34.3*	*35*	*65.7*	*67*	*100*	*102*
Employment Opportunity	43.7	31	56.3	40	100	71
(Types of Employment Opportunity*** [see Table 4-5])						
Product Information						
*Product Reviews***	*63.8*	*37*	*36.2*	*21*	*100*	*58*
*Product News**	*45.0*	*58*	*55.0*	*71*	*100*	*129*
*Regulation Information****	*95.8*	*23*	*4.2*	*1*	*100*	*24*
*Playlist***	*62.3*	*48*	*37.7*	*29*	*100*	*77*
*Program Schedule****	*31.6*	*37*	*68.4*	*80*	*100*	*117*
*Program Information****	*39.4*	*43*	*60.6*	*66*	*100*	*109*
Service Information						
*Date/Time****	*29.1*	*16*	*70.9*	*39*	*100*	*55*
*Weather Report****	*21.3*	*16*	*78.7*	*59*	*100*	*75*
Sitemap	33.3	4	66.7	8	100	12
*Coverage Map****	*20.0*	*5*	*80.0*	*20*	*100*	*25*
*Local/National Community Information****	*39.0*	*46*	*61.0*	*72*	*100*	*118*
*Entertainment/Leisure Section***	*31.4*	*16*	*68.6*	*35*	*100*	*51*
Media Links	49.4	80	50.6	82	100	162
*Non-product News**	*39.0*	*23*	*61.0*	*36*	*100*	*59*
Search Engine	51.7	45	48.3	42	100	87
Customer Support/FAQs	44.9	48	55.1	59	100	107

Note: * = $p<.05$; ** = $p\leq.01$; *** = $p\leq.001$

Table 4-6. Comparison of employment opportunity types between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	*Internet-Only Radio*		*Terrestrial Radio Streaming*		*Total (N=71)*	
	%	**N**	**%**	**N**	**%**	**N**
Types of Employment Opportunity						
Job & Internship & Volunteer	22.0	11	78.0	39	100.0	50
Personal Work [a]	100.0	13	0.0	0	100.0	13
Others	87.5	7	12.5	1	100.0	8

X^2= 32.562; df=2[b]; p=.000

[a]Personal work is not from record companies and is like a freelance job possibly from listeners.
[b]2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.49.

disputation of the loyalty fee. Since websites are the only business territories for Internet-only radio stations, the reason of the high percentage rate for Internet-only radio stations to provide current regulation news (96%) may be due to the stations' desire to influence the public opinion to their favor.

In service information, there are relationships between types of Internet radio and date/time, weather report, coverage map, local/national community information, entertainment/leisure section, and non-product news. Of the total number of each of these variables provided on their websites, terrestrial stations accounted for 71 percent of date/time, 79 percent of weather report, 80 percent of coverage map, 61 percent of local/national community information, 69 percent of entertainment/leisure section, and 61 percent of non-product news. Results indicate that terrestrial radio presented more service information than Internet-only radio on their websites. Overall, terrestrial radio stations were found to offer more presence of virtual information space than Internet-only radio stations.

Table 4-7 shows the VPS comparison between Internet-only radio websites and terrestrial radio streaming websites. Among nine variables, only three of them reveal statistically significant differences ($p \leq .001$). In internal promotion, terrestrial websites accounted for 69 percent of the total number of providing contests/sweepstakes and 71 percent of offering station promotional events. However, Internet-only radio websites had 87 percent of the total number of requesting users to put stations' links on their personal websites (referral links). While contests and promotional events may increase expenses, referral links do not require monetary expense. Therefore, the different approaches of the VPS presence may be due to the terrestrial radio stations' generally more mature financial mechanism, compared to Internet-only radio stations as a beginning group of

Table 4-7. Comparison of virtual promotion space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	***Internet-Only Radio***		***Terrestrial Radio Streaming***		***Total***	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Promotion Space (VPS)						
Internal Promotion						
Station Advertisements	47.2	58	52.8	65	100	123
*Contests/Sweepstakes****	*31.1*	*23*	*68.9*	*51*	*100*	*74*
*Station Promotional Events****	*29.3*	*22*	*70.7*	*53*	*100*	*75*
Station Online Coupons	100.0	2	0.0	0	100	2
Bookmark/Homepage Request	50.0	9	50.0	9	100	18
*Referral Links****	*87.0*	*20*	*13.0*	*3*	*100*	*23*
External Promotion						
Outside Advertisements	50.4	61	49.6	60	100	121
Mention of Sponsors/Partners/Affiliates	54.3	44	45.7	37	100	81
Non-station Online Coupons	28.6	2	71.4	5	100	7

Note: *** = $p \leq .001$

radio operations. In external promotion, there is no relationship found between Internet radio types and any of the variables.

Table 4-8 performs the VDS comparison between the Internet-only radio websites and the terrestrial radio streaming websites. Two of the four variables are found to be statistically significant ($p<.05$) with Internet radio types. While terrestrial radio offered more audio download/streaming with the original radio program streaming excluded (61%), Internet-only radio provided a slightly higher percentage of software download/links (54%). Although the distribution functions have not been offered widely, both Internet-only and terrestrial radio stations seem to utilize their websites as a virtual distribution space at an equal speed.

The VCS comparison between Internet-only radio websites and terrestrial radio streaming websites is found in Table 4-9. There are statistically significant differences between Internet-only radio websites and terrestrial radio websites in chat room and forum/bulletin. Internet-only radio websites presented a more interactive communication function, with chat room accounting for 76 percent and forum/bulletin accounting for 62

Table 4-8. Comparison of virtual distribution space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	***Internet-Only Radio***		***Terrestrial Radio Streaming***		***Total***	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Distribution Space (VDS)						
Text/Photo Files Download	54.5	12	45.5	10	100	22
Audio Download/Streaming[a]*	*39.3*	*24*	*60.7*	*37*	*100*	*61*
Video Download/Streaming	44.4	20	55.6	25	100	45
*Software Download/Links**	*54.0*	*75*	*46.0*	*64*	*100*	*139*

Note: * = $p<.05$

[a]Original radio program streaming is not included.

Table 4-9. Comparison of virtual communication space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	*Internet-Only Radio*		*Terrestrial Radio Streaming*		*Total*	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Communication Space (VCS)						
E-mail Click-through	49.4	84	50.6	86	100	170
Form Mechanism	47.9	58	52.1	63	100	121
Online Rating	64.3	9	35.7	5	100	14
Online Survey/Poll	43.9	25	56.1	32	100	57
Newsletter Subscription	46.5	33	53.5	38	100	71
*Chat Room****	*75.8*	*25*	*24.2*	*8*	*100*	*33*
*Forum/Bulletin**	*61.8*	*34*	*38.2*	*21*	*100*	*55*
Referral Mail	45.7	16	54.3	19	100	35

Note: * = $p<.05$; *** = $p\leq.001$

percent. The results show that Internet-only radio stations have a stronger emphasis on interactive communication presence. A possible reason is to retain better relationships and personalized communities with listeners.

Table 4-10 and Table 4-11 show the VSS and VTS comparisons between Internet-only radio websites and terrestrial radio streaming websites. No relationship was found between Internet-only radio websites and terrestrial radio websites in utilizing sponsorship and transaction mechanisms. The results indicate that these two types of Internet radio stations had similar strategies in regard to sponsorship and transaction spaces as website contents. Normally, commercial radio stations generate profits from business transaction; sponsorship or donation is a more noncommercial phenomenon.

The reason for terrestrial radio stations having a nearly equal presence of the sponsorship function as Internet-only stations might be due to the fact that commercial

Table 4-10. Comparison of virtual sponsorship space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	*Internet-Only Radio*		*Terrestrial Radio Streaming*		*Total*	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Sponsorship Space (VSS)						
Monetary Sponsorship/Donation	44.9	22	55.1	27	100	49

Table 4-11. Comparison of virtual transaction space between Internet-only radio websites and terrestrial radio streaming websites.

VARIABLES	*Internet-Only Radio*		*Terrestrial Radio Streaming*		*Total*	
	%	**N**	**%**	**N**	**%**	**N**
Virtual Transaction Space (VTS)						
Paid Subscription	61.1	11	38.9	7	100	18
Online Shopping for Station Merchandise	57.4	31	42.6	23	100	54
Online Shopping for Other Merchandise	62.5	20	37.5	12	100	32
Online Shopping through Affiliate Program	57.3	47	42.7	35	100	82

and public radio stations are both included in terrestrial radio streaming stations of this study. As public radio streaming stations continue their quest for financial sponsorship, many Internet-only radio stations also adopted the donation concept, even using online payment transaction companies such as PayPal.

In the virtual transaction space, as paid subscription is rarely adopted, online shopping through affiliate programs seems to become a more popular method in generating revenues for both Internet-only and terrestrial radio streaming stations. Although there is no statistically significant relationship, the percentages show that

Internet-only radio stations have a slightly stronger presence regarding operating websites as an electronic commerce mechanism.

R. Q. 4) Do two types of Internet radio firms—Internet-only radio stations and terrestrial radio stations streaming online—have different strategies regarding the interactive dimensions of "audience-oriented" and "source-oriented" in their website contents?

The variables having statistically significant differences in Internet radio types are listed in Table 4-12, under two interactive dimensions—audience-oriented interactivity and source-oriented interactivity. Under each variable, Internet-only radio websites or terrestrial radio websites with a higher percentage rate are marked in bold.

As shown in Table 4-12, terrestrial radio streaming websites present generally higher numbers of these variables than Internet-only radio websites under audience-oriented interactivity, and Internet-only radio websites have variables with greater percentages under source-oriented interactivity. The results indicate that website contents of terrestrial radio stations tend to have more audience-oriented interactivities and website contents of Internet-only radio stations have the tendencies to include source-oriented interactivities.

Table 4-12. Comparison of interactive dimensions between Internet-only radio websites and terrestrial radio streaming websites.

Interactive dimensions	*VARIABLES* (* = $p<.05$; ** = $p\leq.01$; *** = $p\leq.001$)	*Internet-Only Radio*		*Terrestrial Radio Streaming*	
		%	**N**	**%**	**N**
AUDIENCE-ORIENTED INTERACTIVITY	**Virtual Information Space (VIS)**				
	Station Information***	43.3	65	**56.7**	85
	Personnel Information***	34.3	35	**65.7**	67
	Product Reviews**	**63.8**	37	36.2	21
	Product News*	45.0	58	**55.0**	71
	Regulation Information***	**95.8**	23	4.2	1
	Playlist**	**62.3**	48	37.7	29
	Program Schedule***	31.6	37	**68.4**	80
	Program Information***	39.4	43	**60.6**	66
	Date/Time***	29.1	16	**70.9**	39
	Weather Report***	21.3	16	**78.7**	59
	Coverage Map***	20.0	5	**80.0**	20
	Local/National Community Information***	39.0	46	**61.0**	72
	Entertainment/Leisure Section**	31.4	16	**68.6**	35
	Non-product News*	39.0	23	**61.0**	36
	Virtual Promotion Space (VPS)				
	Contests/Sweepstakes***	31.1	23	**68.9**	51
	Station Promotional Events***	29.3	22	**70.7**	53
	Referral Links***	**87.0**	20	13.0	3
	Virtual Distribution Space (VDS)				
	Audio Download/Streaming*	39.3	24	**60.7**	37
	Software Download/Links*	**54.0**	75	46.0	64
SOURCE-ORIENTED INTERACTIVITY	**Virtual Communication Space (VCS)**				
	Chat Room***	**75.8**	25	24.2	8
	Forum/Bulletin*	**61.8**	34	38.2	21
	Virtual Sponsorship Space (VSS)	-	-	-	-
	Virtual Transaction Space (VTS)	-	-	-	-

CHAPTER 5
DISCUSSION

This study investigated strategic patterns and interactive dimensions of the Internet radio station website contents in October 2002 from a descriptive and comparative prospect. Internet radio stations were categorized into two types—terrestrial radio stations streaming online and Internet-only radio stations. The author has attempted to answer the question of what similarities and distinctions of strategic and interactive approaches Internet radio stations have in their website contents. The model, which combined more than one conceptual framework of website content research, aimed to examine two broad interactive concepts (audience-oriented and source-oriented interactivity) and six strategic patterns (VIS, VPS, VDS, VCS, VSS, and VTS).

Chi-square values were computed to test the statistical significance of the differences. The findings indicated that Internet-only radio stations and terrestrial radio stations had distinct strategic approaches in regard to website contents. This study also found that both terrestrial radio stations and Internet-only radio stations provided more audience-oriented interactivity offering information to users. Nevertheless, Internet-only radio stations tended to build more on source-oriented interactivity to collect users' information, and they attempted to establish a stronger relationship with users through interactive Web functions compared to terrestrial radio streaming stations.

The following section summarizes the findings and discusses the technological, regulatory, and business implications of the findings. Additionally, limitations and suggestions for future research are proposed.

Website Approaches of Internet Radio Stations

Various studies have explored users' preference of website content and found that information and interaction were among the most cited reasons why the majority of people utilize the Internet (Kraut et al., 1997; King, 1998; Murphy, 1998; Arbitron, 2000). It seems that media companies have adopted this trend in creating and designing their websites. Research has also shown that product-related and text-oriented information had been used extensively in the online content of media firms (Lind & Medoff, 1999; Chan-Olmsted & Park, 2000; Lin & Jeffres, 2001). In addition, communication mechanisms found on the broadcasters' websites have focused chiefly on e-mail and feedback devices rather than interactive functions that offer personalized content (Chan-Olmsted & Park, 2000; Lin & Jeffres, 2001).

The present findings are generally consistent with past studies of broadcasting media website contents. The high-percentage presence of information and communication functions among different Internet radio websites was observed. The overriding applications were text-oriented information and also e-mail and feedback devices. Nevertheless, Internet-only radio stations as Internet start-ups and terrestrial radio streaming stations as established companies have created different approaches to emphasize their Web contents. Visible differences were in nearly half of the content variables analyzed.

Content and Strategic Characteristics

Table 5-1 summarizes the findings of the present study. The following discussion of Internet radio websites' content and the implied strategic approaches includes information, promotion, distribution, communication, sponsorship, and transaction presences, as well as audience-oriented and source-oriented interactive dimensions.

Table 5-1. Summary of findings.

Inter-activities	*Variables* / *Internet Radio Types*[b]		*Internet-Only*	*Terrestrial Streaming*	*Findings*
AUDIENCE-ORIENTED INTERACTIVITY (Information Provider)	**Virtual Information Space (VIS)**	*Fre-quency*			- In general, Internet radio websites were predominantly informational. - Terrestrial radio streaming websites were more likely than Internet-only radio websites to display introductory information. - Internet-only radio websites were more likely than terrestrial radio streaming websites to present advanced product information.
	Company Information				
	Station Information	+		X	
	Station Logo	+			
	Station Press Release	−			
	Personnel Information	+		X	
	Employment Opportunity	−			
	Product Information				
	Product Reviews	−	X		
	Product News	+		X	
	Regulation Information	−	X		
	Playlist	−	X		
	Program Schedule	+		X	
	Program Information	+		X	
	Service Information				
	Date/Time	−		X	
	Weather Report	−		X	
	Sitemap	−			
	Coverage Map	−		X	
	Local/National Community Information	+		X	
	Entertainment/Leisure Section	−		X	
	Media Links	+			
	Non-product News	−		X	
	Search Engine	−			
	Customer Support/FAQs	+			
	Virtual Promotion Space (VPS)				- In general, Internet radio websites offered both internal and external advertisements as promotional tactics. - Terrestrial radio websites were more likely than Internet-only websites to use traditionally promotional tactics.
	Internal Promotion				
	Station Advertisements	+			
	Contests/Sweepstakes	−		X	
	Station Promotional Events	−		X	
	Station Online Coupons	−			
	Bookmark/Homepage Request	−			
	Referral Links	−	X		
	External Promotion				
	Outside Advertisements	+			
	Mention of Sponsors/Partners/Affiliates	−			
	Non-station Online Coupons	−			
	Virtual Distribution Space (VDS)				- In general, distribution products were not greatly provided among Internet radio stations, except for streaming player software.
	Text/Photo Files Download	−			
	Audio Download/Streaming	−		X	
	Video Download/Streaming	−			
	Software Download/Links	+	X		

Note:
[a] In the Frequency column, + is a presence of more than 50%, and − is a presence of less than 50%.
[b] Between two Internet radio types, X shows a statistical significance of the variable and places on the Internet radio type that has a higher presence.

Table 5-1—continued.

Inter-activities	*Variables* / *Internet Radio Types*[b]		*Internet-Only*	*Terrestrial Streaming*	*Findings*
SOURCE-ORIENTED INTERACTIVITY (Information Collector)	**Virtual Communication Space (VCS)**	*Fre-quency*			- In general, Internet radio websites provided predominant one-way communication functions. - Internet-only radio websites were more likely than terrestrial radio streaming websites to perform interactive two-way communication mechanism.
	E-mail Click-through	+			
	Form Mechanism	+			
	Online Rating	−			
	Online Survey/Poll	−			
	Newsletter Subscription	−			
	Chat Room	−	X		
	Forum/Bulletin	−	X		
	Referral Mail	−			
	Virtual Sponsorship Space (VSS)				- In general, there was no strongly monetary sponsorship offered among Internet radio stations.
	Monetary Sponsorship/Donation	−			
	Virtual Transaction Space (VTS)				- In general, there was no strongly transactional e-commerce presented among Internet radio stations.
	Paid Subscription	−			
	Online Shopping for Station Merchandise	−			
	Online Shopping for Other Merchandise	−			
	Online Shopping through Affiliate Program	−			
Findings	- In general, Internet radio websites were predominantly audience-oriented. - Strategically, terrestrial radio streaming stations were more likely than Internet-only radio stations to demonstrate themselves as information providers, as Internet-only radio stations were more likely than terrestrial radio stations to portray themselves as information collectors.				

Note:
[a] In the Frequency column, + is a presence of more than 50%, and − is a presence of less than 50%.
[b] Between two Internet radio types, X shows a statistical significance of the variable and places on the Internet radio type that has a higher presence.

Similarities of Internet radio websites

The Internet radio medium in general placed its strongest emphasis on station logo, station information, product news, media-related links, station and non-station advertisements, software download/links, as well as e-mail and form mechanisms. In spite of information being the dominant presence, the relatively competitive nature of radio stations—as there are more radio stations than other media stations in any market—might explain the focus on station promotion.

Also, because the sampled websites of this study were Internet radio stations, each station has a streaming audio function.[1] On the other hand, for a user to listen to webcasting, a media player is required on the user's computer. Since several companies provided different streaming media software, most of these stations offered software downloads or links to ensure that listeners were able to receive and listen to their streaming content. In fact, these dominant virtual spaces logically illustrated that audience-oriented interactivity was the major online strategy of Internet radio stations.

E-mail click-through and form mechanisms were found to be the major communication tools in the virtual communication space. Most Internet radio stations have not provided users with a more interactive communication mechanism, such as forum/bulletin or chat room. It seems that Internet radio stations need to devote increasing effort to the online presence of interactive communication. By creating a virtual community that is able to collect data from users, Internet radio stations may simultaneously improve their business presence through an interactive relationship building process.

As for the sponsorship and transaction presences, less than half of the stations have adopted an electronic commerce mechanism. The transaction-oriented structure among Internet radio websites was somewhat limited. In general, source-oriented interactivity that collects users' information for business purposes was not pervasive.

Distinctions between Internet-only and terrestrial radio websites

Internet-only and terrestrial radio stations are fundamentally two distinct types of business entities. For a terrestrial radio station, as an existing company, its website

[1] Three Internet-only radio stations, which remained on the BRS Web-radio list, have just ceased webcasting in protest of the royalty fee, which had also been analyzed.

generally presents an extension of its on-air broadcast. On the other hand, an Internet start-up, such as an Internet-only radio station, needs to develop all content from scratch. When comparing Internet-only radio stations with terrestrial radio streaming stations, differences have been found in several aspects.

First, terrestrial radio stations had a stronger informational online presence than Internet-only radio stations in the majority of the virtual information variables. However, Internet-only radio stations took the lead in product reviews, regulation information, and playlist. With regard to regulation information concerning the current Internet music streaming royalty fee enforced by the U.S. Copyright Office, it is clearly a bigger threat to Internet-only radio stations. While Internet radio websites do not yet generate revenues that justify their existence, the law is somewhat kinder to the terrestrial radio stations because their online entities are merely an additional outlet for their radio business. However, an Internet-only radio station without webcasting cannot be classified as a radio station. Therefore, regulation information was particularly emphasized on the Internet-only radio websites.

A possible reason for product reviews being more prominent on the Internet-only radio websites might be because more Internet-only radio stations were owned by individuals. A person who establishes his own Internet radio station may tend to have a stronger music preference and be more opinionated about music products. Since a product review is not like basic information, such as program information and schedule, it is not a necessity for radio programs and needs more personal investment.

As for the playlist function, traditional radio broadcasters announce title and singer in between each song. Since their webcasting is the repurposed program of the on-

air broadcasting, playlist has been offered in the program. Moreover, many privately-owned Internet-only radio stations stream their program via one of the biggest independent streaming providers—Live365.com. The company, which is the host hub for more than 30,000 Internet radio stations, helps these stations to generate their playlist while webcasting.

In the virtual information space, it is also worth mentioning the different types of informational content provided by Internet-only and terrestrial radio stations. Some terrestrial radio stations offered job, internship, or volunteer opportunities, while some Internet-only radio stations provided openings for personal work. Personal work is like a freelance job but not all the radio stations necessarily pay for it. It can be a song, a talk show, or even a complete DJ program that is made by any listener. One certain point is that terrestrial radio providing mainstream music formats plays music from major record companies; therefore, it is almost impossible for them to accept personal CDs or tapes. The advantage of the freedom in music selection from the Internet-only radio stations further supports the fact that the existence of Internet-only radio stations strengthens diversity in music formats.

The finding also indicated that terrestrial radio stations provided more promotional materials and activities for listeners than Internet-only radio stations in the virtual promotion space. Radio seems to extend its offline promotional tactics, such as contests and events, to its online presence. Several Internet-only radio stations have also adopted this marketing tactic, yet there are difficulties in implementing such promotional activities due to their economic situation and geographic limitation. Most Internet radio stations have not been able to generate profits; on the other hand, a terrestrial radio

streaming station is normally in better financial shape because of its ability to generate offline revenues. In addition, unlike terrestrial radio stations, which have acquired a set of local listeners through their offline presence, Internet-only radio stations target individuals all over the world. The location of an Internet-only radio station, therefore, does not reflect the location of its listeners, and thus it is more difficult to hold promotional events.

Nevertheless, Internet-only radio stations seemed to utilize their websites with another marketing approach. Several of them designed station banner advertisements for linking to their websites or a clickable logo for listening to their webcasting, and then requested users to put the URL link on users' personal websites. Such a promotional tactic, though it offers less incentive, requires no financial investment and is not limited to geographic location.

Third, the terrestrial radio stations provided more audio download/streaming function (audio streaming other than regular radio programs) than the Internet-only radio stations, while the Internet-only radio websites had more of a presence of software download/link in the virtual distribution space. Most audio downloads/streamings were music clips to introduce new releases or showcase current popular songs of the music format in the terrestrial radio stations. The Internet-only radio stations, however, had a diverse range in audio downloads, including a station's theme song or a personal song, if provided. It is possible that the terrestrial radio stations with an established relationship with main record companies often have more sources to obtain streaming content.

Fourth, the Internet-only radio stations presented a higher interactive communication mechanism than the terrestrial radio stations in the virtual communication

space. The Internet-only radio stations had relatively more presence in both chat rooms and forums/bulletins. A possible reason is the stronger need for the Internet-only radio stations to build their own music community to retain listeners.

Fifth, there was no statistical relationship found between monetary sponsorship/ donation and the types of the Internet radio stations in the virtual sponsorship space. The website contents of both Internet-only and terrestrial radio streaming stations had a similar amount of sponsorship presences. One of the reasons might be that the terrestrial public radio stations were included in the analyzed sample. Almost all the terrestrial public radio stations offered their listeners the opportunity to donate money online.

Sixth, there was no statistical relationship found between the transaction variables and the types of the Internet radio stations in the virtual transaction space. The website presence of transaction-related activities among the Internet radio stations was generally low. It seems that a clear business model has yet to be established in the e-commerce space of these radio stations, as both Internet-only and terrestrial radio stations have had limited e-commerce-related content on their websites.

To summarize, Internet radio stations provide an online presence that is predominantly informational. Compared to Internet-only radio stations, terrestrial radio stations generally display more introductory information. Moreover, most Internet radio websites offer basic one-way communication functions as a more interactive communication mechanism is still limited. For the most part, Internet-only radio stations were more likely than terrestrial radio streaming stations in performing two-way communicational interactivity online. Furthermore, the radio's promotional characteristic, online advertisement, is highly visible in both Internet-only and terrestrial radio stations.

In regard to other promotional tactics, as terrestrial radio stations keep the promotional lead in accordance with the traditional ways (contests, events), Internet-only radio stations conversely perform an innovative manner (referral links) in promotion online.

An overall interactive trend shows that audience-oriented interactivity is still dominant among Internet radio websites even though source-oriented interactivity has been gradually implemented. With respect to the business strategies, terrestrial radio stations tend to demonstrate themselves as information providers in that their websites are mainly the extension of their on-air broadcasts. Although Internet-only radio stations also show a highly audience-oriented interactive presence, they seem to portray themselves more firmly toward the roles of information collectors (source-oriented) than terrestrial radio streaming stations.

Managerial Implications in the Internet Radio Industry

The present study divided website strategies into two interactive dimensions and six virtual spaces to capture the business presence of the Internet radio websites in the United States. The similarities and the distinctions of the commercial strategies of the Internet-only radio stations and the terrestrial radio streaming stations are due to the same online business characteristics and the different market approaches. As this paper is being written, streaming technologies and peripheral products continue to develop rapidly and become commercially available, while regulatory decisions concerning Internet radio proceed to settlement. The environmental influences shape the industry as Internet radio stations aim to become independent e-business entities. This study contributes some empirical analysis of the Internet radio industry in its early stage.

Impact of Market Characteristics on Business Presence

The general idea is that media websites are predominantly informational and communicational. As Internet radio stations present their strong information and communication functions, they also extend their online presence to promotional tactics. From the perspective of market competition, the radio industry has more stations in any given market compared to other media industries, and thus has a more competitive characteristic. The unlimited opportunities of websites offer Internet radio stations a large exertion of promotional tactics; however, the majority of tactics that has transferred online is still traditional and is one of the reasons why advertising is also the dominant business strategy online.

One of the major concerns with Internet-only radio stations and terrestrial radio streaming stations is how they present their business strategies online. From the standpoint of market positions, the online presence of terrestrial radio stations means an additional avenue for branding, direct communication to consumers, and potential advertising/retailing opportunities (Lin & Jeffres, 2001). Nonetheless, it is the only outlet for Internet-only radio stations to brand, communicate, and generate income. It is thus reasonable that Internet-only radio stations provide increasingly innovative and advanced functions, as terrestrial radio stations merely transform their on-air appearance to online presence. In addition, Internet-only radio stations also perform a stronger interactive communication mechanism than terrestrial radio stations. Surprisingly, however, as the Internet is the major conduit in generating revenues, Internet-only radio stations have neither a better presence in the transaction space nor in any other business models.

In summary, the online presence of Internet radio stations does not deviate from their conventionally industrial characteristics. Although the radio industry seems to

discover an additional value in the online business presence, radio firms generally underutilize their websites and commercial opportunities of the Internet. As a result, Internet radio stations have not exerted e-commerce business models efficiently to generate economic gains.

Impact of Technology and Regulation on Business Presence

The previous discussion addresses the impact of the radio market characteristics. The external forces, such as technology and regulation, are also crucial factors that may facilitate the business performance.

Utilizing an entire range of text, graphic, audio, and video techniques, Internet radio stations are able to present their content elements in a technically sophisticated manner. However, most Internet radio stations exert less effort to offer new channels for effective delivery. Audio and video contents are not commonly adopted among radio websites. Specifically, Internet radio stations have not taken the advantage of the distribution service to integrate with the medium offering content in the most attractive and absorbing fashion, which would gradually improve the quality of the website content.

Even though the delivery of the basic player software is the dominant distribution option, innovative streaming software has notably helped accelerate the commercial growth of the Internet radio industry. For instance, listening and advertising solutions of Live365.com[2] has attracted and assisted numerous Internet-only radio stations webcasting through its host. A new marketplace idea that Live365.com provides for Internet radio

[2] Most stations pay a small fixed fee, and Live365.com covers other charges with its own commercials inserted. A "pro" station is allowed to place its own advertisements, but with a higher fee. A revenue-sharing program has to sign up for a certain package of features. When a user listens to an associated station, a window pops out for choosing an audio player and then the player window shows up with playlist, audio functions, affiliate programs, and advertisements.

stations is gathering many Internet radio stations in one large host. The idea makes small Internet-only radio stations more visible and strengthens their power in marketing. Also, online streaming audio advertisement replacement such as HiWire[3] has solved the regulatory issue of triple rates for performer fees when streaming terrestrial radio commercials featuring American Federation of Television and Radio Artists talent.

The development of audio streaming technologies has bolstered the fact that webcasting is a thriving business space. Regulatory attention from governmental organizations has further enhanced public interest in the Internet radio industry. As discussed in Chapter 2, the U. S. Copyright Office has decided the royalty fee per song and per listener for streaming music from record companies online. It is particularly significant for Internet-only radio stations since online streaming is the only presence of their radio programs. The relatively higher information presence of regulation issues on their websites, compared to terrestrial radio streaming stations, is therefore understandable. Even so, the concern of the potential expense due to the regulatory decision does not reflect on the business presence of Internet-only radio stations in generating income.

On November 15, 2002, the Small Webcaster Settlement Act of 2002 was approved offering webcasters a percentage-of-revenues royalty rate (Pruitt, 2002). With the relief of the copyright pressure for small Internet radio stations, applying strategies in turning their stations into viable online business would be endeavored.

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[3] When a user listens to an associated streaming radio channel, an opt-in data collection window has to be filled out for gender and location. A HiWire customized player therefore can be downloaded for listening, and then targeted advertisements are sent to selected listeners during breaks.

Business Structures and Opportunities

The Internet radio industry has yet to establish a proven business model. Concurrently, various means in generating income have emerged. Table 5-2 summarizes and compares the business models between Internet-only radio stations and terrestrial radio streaming stations. Traditional advertising seems to be embraced first by these streaming stations, while the public broadcasting model of direct donation is becoming an alternative. Around half of the Internet radio stations have provided indirect sponsorship and shopping through affiliate programs, which are the second dominant business models online. Some other financing mechanisms, such as paid subscription and online shopping for station or non-station merchandise are also adopted, even though the acceptance of

Table 5-2. Comparison of business models among Internet radio stations.

Internet Radio Types / **Business Models**		*Internet-only* (N=88)	*Terrestrial Streaming* (N=88)	*Findings*
Advertising[a]		69 %	68 %	- There was no relationship between business models and Internet radio types. In general, Internet-only and terrestrial radio streaming stations have a similar adopted rate regarding different business models. - Advertising was the most dominant business model. - Indirect sponsorship and affiliate programs were the second dominant business models with around half of the Internet radio stations offered. - Paid subscription was the least adopted business model.
Paid Subscription		13 %	8 %	
Sponsorship/ Donation[b]	*Indirect*	50 %	42 %	
	Direct	25 %	31 %	
E-commerce[c]	*Station*	35 %	26 %	
	Outside	23 %	14 %	
Affiliate Programs[d]		53 %	40 %	

Note:
[a] Advertising refers to websites that offer outside (external) advertisements.
[b] Indirect sponsorship refers to websites that mention sponsors, partners, and/or affiliates. Direct sponsorship refers to websites that request directly monetary sponsorship or donation.
[c] Station e-commerce refers to a transactional presence of online shopping for station merchandise. Outside e-commerce refers to a transactional presence of online shopping for non-station merchandise.
[d] Affiliate programs refer to a transactional presence of online shopping through affiliate programs.

the subscription model is relatively low. However, the majority of Internet radio stations are still losing money.

Internet radio stations as “business entities” are struggling to generate e-commerce revenues; this is especially true for Internet-only radio stations. While trying to figure out whether the radio station belongs to a commercial or noncommercial organization, the author had some personal e-mail communication with owners or staff of several stations. As almost all the terrestrial radio streaming stations have clear positions according to their own local radio stations’ approaches, several Internet-only radio stations do not know how they are classified. Most of the Internet-only radio stations claimed themselves as independent radio stations. Some built the stations for personal enjoyment and paid the relevant costs from their own pockets. Some tried to follow a traditional radio business model, hoping advertisers would follow once the station has attracted a bigger audience. An owner of two Internet-only radio stations attempted to start accepting commercials or becoming subscription-only services in order to pay the $1,100 expenses incurred monthly. It seems that many Internet-only radio stations have not generated enough earnings to pay their operating costs, not to mention profits.

As shown in Table 5-2, the terrestrial radio stations adopted those business models as equally as the Internet-only radio stations even though online income could be substantial revenues. Many radio station groups were able to consolidate their design and maintenance of Web functions for many local stations providing nationwide affiliate programs, advertisement space, and informational functions. However, the topics of the main content were mostly according to a station’s music format and strongly local-oriented. Small radio groups, on the other hand, often presented all their radio stations

under the same website and layered them with links. This manner could be useful for online branding, since their radio stations are less, and therefore it is easier for users to browse from one radio website to another.

Starting from a traditional radio market space, a terrestrial radio station is now able to present its content online and develop a relationship with its audiences directly and efficiently. An Internet-only radio station also has the same abilities to utilize its online presence. With an increasingly service-oriented approach toward consumers, the growth of the Internet radio market means a tremendous opportunity. Internet radio stations that apply direct sponsorship and subscription as the major business models would defer to the opinions of its consumers in particular. Concurrently, the trend of audience sovereignty would create a better business position for those who offer customized content and a sound Web presentation by incorporating the ideas of the public.

As Internet radio stations might generate most of their revenues from both listeners and advertisers, the provision of customized, relevant, and attractive products is extremely crucial in shaping their future market potential. Over time, the advancement of the relevant technologies would support any natural valuation, pricing, and payment mechanisms online (Searls, 2002). The Internet's economic efficiency in globalization and disintermediation would further accelerate the diversification of the Internet radio business presence.

Limitations and Suggestions for Future Research

Limitations are inherent in any research effort and this study was no exception. Some potential weakness must be noted when interpreting the findings of this analysis. First, even though a valid and complete database was used in this research, the population

of Internet-only radio stations was somewhat a limited list. Unlike terrestrial radio stations, Internet-only radio stations can be established from any independent location. With its short history and fluid regulatory enforcement, it is more difficult to generate a complete list, especially from an organization with credibility. Although the BRS Web-radio directory is updated once or twice every week according to the company, many stations listed were not functional.

The second notable limitation is that the corresponding variables could not be divided equally under each virtual space. The comparison of six strategic patterns had been made with regard to the percentage ranking of each variable. Therefore, a virtual space was considered having a better strategic presence, even though only one variable under the virtual space ranks higher (yet with the relevant findings also noted under the same virtual space). This is a drawback concerning the interactive dimensions because the variables in examining source-oriented interactivity were relatively few compared to those of audience-oriented interactivity.

The focus of the study was only on Internet radio stations in the United States. It would be interesting to compare the results with Internet radio stations outside the United States. Also, music formats of Internet radio stations, though coded and categorized in this research, were not distinguished and analyzed in detail. There could be some unique findings regarding diverse music formats. As distinct music formats attract different groups of listeners, their online contents may also present heterogeneous characteristics. However, it would require a different and bigger sampling approach in examining music formats.

To further address the online content of Internet radio stations, their audio streaming content could be investigated for future study. Radio commercials are the primary revenue source for traditional radio markets. When transferring to online radio, new means would be integrated in operating the online streaming business. Although an increasing number of radio stations have their online presence, they are not technology savvy in tradition. Internet radio stations would try to form strategic alliances with technology firms that are expert in streaming content. As online audio technologies continue to improve, it would be interesting to explore how Internet radio stations present their streaming content.

This study was researched just after the ruling of the copyright regulation, and the regulatory disputations have not yet been completely settled; therefore, the industry might be in a period of flux. Moreover, the Internet radio industry in general is not a mature business. A longitudinal study could be further applied after a few years of development, when Internet radio stations mature as economic entities.

APPENDIX A
LIST OF INTERNET RADIO WEBSITES ANALYZED

Internet-Only Radio Stations

BCR	http://radio.babson.edu
BEARCAST	http://bearcast.uc.edu
BEETHOVEN.COM	http://www.beethoven.com
BLUEGRASS COUNTRY	http://www.bluegrasscountry.org
BNETRADIO	http://www.bnetradio.com
BONANZA RADIO	http://www.bonanzaradio.com
BOOMER RADIO	http://www.boomerradio.com
BTR	http://www.businesstalkradio.net
CLASSIC METAL RADIO	http://www.classicmetalradio.com
CLEVELAND HITS	http://www.clevelandhits.com
COUNTRY GOLD 56K	http://63.147.19.59
COUNTRYBEAR	http://www.countrybear.com
CPR	http://www.christianpirateradio.com
CYBS IR	http://www.cyberstationusa.com
DAER.COM	http://www.internetradiodaer.com
DC.FREESOUNDS.NET	http://dc.freesounds.net
DESTROY RADIO	http://www.destroyradio.com
DETROIT INDUSTRIAL UNDERGROUND	http://www.detroitindustrial.org
DIGITALLY IMPORTED RADIO	http://www.di.fm
DJRADIO	http://www.djradio.fm
DYNAMICRADIO	http://www.dynamicradio.net
ELECTRIC EYE RADIO	http://www.electriceyeradio.com
EVANSTONRADIO	http://www.evanstonradio.com
FEDERALNEWSRADIO.COM	http://www.federalnewsradio.com
HIJACKRADIO.COM	http://www.hijackradio.com
THE FIX	http://www.thefix.org
RCNRADIO.NETWORKS	http://www.rcnradio.net
ROCK FROM THE BEACH	http://www.rockfromthebeach.com
UNDERGROUND FM	http://www.underground.fm
KCSC INTERNET RADIO	http://kcsc.asbookstore.com
KHAHA.COM	http://www.khaha.com
KMNU	http://www.mnu.edu/humanities/kmnu
KSEX	http://www.ksexradio.com
LIFENET.FM	http://www.lifenet.fm
LUVER	http://www.luver.com
LYCOS RADIO	http://music.lycos.com/rhapsody
M4RADIO	http://www.m4radio.com
MEGAROCK	http://www.megarock-radio.com
NIGHT BREEZE	http://www.wtpi.com/nite/index.html
OMEGAROCK	http://www.omegarock.com
ONTOURRADIO.NET	http://www.ontourradio.net
ORCORADIO.COM	http://www.orcoradio.com
PRAISE ON FIRE	http://www.praiseonfire.com
RADIO FREE KANSAS	http://www.tafcommedia.net

RADIO MARGARITAVILLE	http://www.margaritaville.com/radiomargaritaville
RADIO VALVE	http://www.radiovalve.com
RADIO WAZEE	http://www.wazee.org
RADIOALBANY	http://www.radioalbany.com
RADIOGOOD	http://www.radiogood.com
RADIOIO.COM	http://www.radioio.com
RADIOSTORM.COM	http://www.radiostorm.com
RBR	http://www.rbr.com
RENRADIO	http://renradio.com
RICHMOND UNDERGROUND	http://rva.freesounds.net
RKNA	http://rkna.cjb.net
ROCK&ROLL.FM	http://www.rockandroll.fm
SAVAGE ROCK	http://www.savagerock.com
SEISMIC RADIO	http://www.seismicradio.com
SKY FM	http://www.skyfm.com
SMOOTH JAZZ.COM	http://www.smoothjazz.com
SNAKE	http://www.snakenetmetalradio.com
SP RADIO ONE	http://www.skaparade.com
STATIC RADIO	http://216.61.189.94/~static/static8.html
SURF	http://surfingradio.com
THE LOST 45'S	http://www.lost45.com
THECHILL.COM	http://www.lost45.com
TOASTIE RADIO	http://www.toastieradio.com
RADIO PIPELINE	http://www.radiopipeline.com
TOTAL 70S FM	http://www.total70s.fm
TOTALLYRADIO.COM	http://www.totallyradio.com
TRUMPETS	http://www.trumpetsoftruth.com
ULTIMATE-80S	http://www.ultimate80s.com
ULTRAGOLD.FM	http://www.ultragold.fm
VILLAGE VOICE RADIO	http://www.villagevoice.com
ERADIO	http://www.fmtalk.cc
WAKE	http://radio.wfu.edu
THE X STATION	http://www.thexstation.com
WDEO	http://www.wdeo.org
WEBR	http://www.fcac.org/webr/webr.htm
WEBROCK.NET	http://www.webrock.net
WJTB	http://www.wjtb.org
WKRP	http://wkrp.fm
WOLF FM	http://www.wolffm.com
WOMB	http://www.thewomb.com
WPR	http://www.wpr.org
WRIV WEBRADIO	http://www.wriv.cjb.net
WRPS	http://www.webradiopugetsound.com
WVRR VIRTUAL REALITY RADIO	http://www.wvrr.com

Terrestrial Radio Stations Streaming Online

KABL	960 AM	http://www.960kabl.com
KAOW	88.9 FM	http://www.afr.net
KATB	89.3 FM	http://www.katb.org
KBEL	96.7 FM	http://www.kbelcountry.com
KBPK	90.1 FM	http://www.kbpk-fm.com
KBSW	91.7 FM	http://radio.boisestate.edu
KCFX	101.1 FM	http://www.thefoxrocks.com
KCMS	105.3 FM	http://www.spirit1053.com
KCRG	1600 AM	http://www.kcrg.com
KCXL	1140 AM	http://www.kcxl.com
KEOM	88.5 FM	http://www.keom.fm
KFBK	1530 AM	http://www.kfbk.com
KFTX	97.5 FM	http://www.kftx.com
KGKS	93.9 FM	http://www.kiss939.com
KHTS	93.3 FM	http://www.channel933.com
KHYZ	99.5 FM	http://www.thehighwaystations.com
KJIO	104.1 FM	http://www.kjlo.com
KKCB	105.1 FM	http://kkcb.com
KKMC	880 AM	http://www.kkmc.com
KKRW	93.7 FM	http://www.kkrw.com
KLDG	102.7 FM	http://www.kscb.net
KNAA	90.7 FM	http://www.knauradio.org
KNTU	88.1 FM	http://www.kntu.fm
KPAM	860 AM	http://www.kpam.com
KQRS	92.5 FM	http://www.92kqrs.com
KRLA	870 AM	http://www.newstalk870.com
KRUX	91.5 FM	http://www.krux.nmsu.edu
KSAL	1150 AM	http://www.ksal.com
KSJO	92.3 FM	http://www.ksjo.com
KSLZ	107.7 FM	http://www.z1077.com
KTNE	91.2 FM	http://sun1.unl.edu
KUVO	89.3 FM	http://www.kuvo.org
KWHI	1280 AM	http://www.kwhi.com
KWNA	1400 AM	http://www.kwnaradio.com
KWUF	1400 AM	http://www.kwuf.com
KXTN	107.5 FM	http://kxtn.netmio.com
KYFW	88.3 FM	http://www.bbnradio.org/bbn
KYLD	94.9 FM	http://www.wild949.com
KZND	87.7 FM	http://www.kznd.com
WAFL	97.7 FM	http://www.eagle977.com
WAPN	91.5 FM	http://www.wapn.net
WBAR	94.7 FM	http://www.whaz.com
WBGG	970 AM	http://www.970theburgh.com
WBTS	95.5 FM	http://955thebeat.com
WCBU	89.9 FM	http://www.bradley.edu/wcbu

WCFB	94.5 FM	http://star94fm.com
WDET	101.9 FM	http://www.wdetfm.org
WDYL	105.7 FM	http://y101rocks.com
WELY	94.5 FM	http://www.wely.com
WETH	89.1 FM	http://www.weta.org
WFLA	970 AM	http://www.970wfla.com
WFSI	107.9 FM	http://www.toad.net/~wfsi
WGTC	102.3 FM	http://www.pulsefm.com
WHAD	90.7 FM	http://www.wpr.org/ideas
WHYI	100.7 FM	http://www.y100miami.com/index.html
WIOJ	1010 AM	http://www.wioj.net
WIXL	1190 AM	http://www.wixl1190.com
WJHS	91.5 FM	http://www.wjhs915.org
WJKL	94.3 FM	http://www.klove.com
WJSE	102.7 FM	http://www.wjse.com
WJZD	94.5 FM	http://www.wjzd.com
WKLC	105.1 FM	http://www.wklc.com
WKOK	1070 AM	http://www.wqkx.com/koaindxf.htm
WMNR	88.1 FM	http://www.wmnr.org
WMTU	91.9 FM	http://wmtu.mtu.edu
WMVY	92.7 FM	http://www.mvyradio.com
WNCW	88.7 FM	http://www.wncw.org
WNOX	99.1 FM	http://www.newstalk99.com
WNWC	1190 AM	http://www.nwc.edu/radio/wnwchome
WNZK	680/690 AM	http://www.wnzk.com
WOUC	89.1 FM	http://woub.org/radio
WPLN	90.3 FM	http://www.wpln.org
WQME	98.7 FM	http://www.wqme.com
WQTM	740 AM	http://www.740theteam.com
WREK	91.1 FM	http://cyberbuzz.gatech.edu/wrek
WRNB	96.9 FM	http://www.wrnb.com
WSBA	910 AM	http://www.wsba910.com
WSLU	89.5 FM	http://www.northcountrypublicradio.org
WSPN	91.1 FM	http://www.skidmore.edu/~wspn
WTBT	103.5 FM	http://www.thunder1035.com
WTEM	980 AM	http://www.sportstalk980.com
WTMD	89.7 FM	http://wwwnew.towson.edu/wtmd
WTNE	97.5 FM	http://www.wtneamfm.com
WUWM	89.7 FM	http://www.wuwm.com
WVMX	94.1 FM	http://www.wvmx.com
WWHP	98.3 FM	http://www.wwhp.com
WWWQ	100.5 FM	http://www.wwwq.fm
WXLT	103.5 FM	http://www.wxlt.com

APPENDIX B
CODING FORM

Date Viewed: _____ ***Coder Initial:*** _____

Name of the Internet Radio Website: _____
☐ Internet-Only Radio Station ☐ Terrestrial Radio Station Streaming Online

Streaming Media Software (check all that apply):
☐ RealPlayer ☐ Windows Media Player ☐ Winamp ☐ ChainCast
☐ Live365 ☐ Hiwire Other _____

Music Format:
☐ Adult Alternative ☐ Adult Contemporary ☐ Adult Standards ☐ CHR-Top 40
☐ Classical ☐ Country ☐ Dance ☐ Easy Listening
☐ Jazz/Smooth Jazz ☐ News/Talk/Sports ☐ Oldies ☐ Religion
☐ Rock ☐ Urban ☐ Variety ☐ World Music
Other _____

AUDIENCE-ORIENTED INTERACTIVITY

Virtual Information Space

Company Information

Does the website provide Station Information…….. ☐Yes ☐No 1
Does the website provide Station Logo……..... ☐Yes ☐No 2
Does the website provide Station Press Release..……..... ☐Yes ☐No 3
Does the website provide Personnel Information……..… ☐Yes ☐No 4
Does the website provide Employment Opportunity…..…… ☐Yes ☐No 5
If yes, it's ☐Job ☐Internship ☐Volunteer ☐Personal Work ☐Not Sure 6

Product Information
Does the website provide Product Reviews……..…….. ☐Yes ☐No 7
Does the website provide Product News……..…….. ☐Yes ☐No 8
Does the website provide Regulation Information……...……. ☐Yes ☐No 9
Does the website provide Playlist…….……. ☐Yes ☐No 10
Does the website provide Program Schedule……..….. ☐Yes ☐No 11
Does the website provide Program Information……... ☐Yes ☐No 12

Service Information
Does the website provide Date/Time…….……..….. ☐Yes ☐No 13
Does the website provide Weather Report…….……..…. ☐Yes ☐No 14
Does the website provide Sitemap…….…….……..…. ☐Yes ☐No 15
Does the website provide Coverage Map……..…… ☐Yes ☐No 16

Does the website provide Local/National Community Information.. ☐Yes ☐No 17
Does the website provide Entertainment/Leisure Section……..…... ☐Yes ☐No 18
Does the website provide Media Links……. ☐Yes ☐No 19
Does the website provide Non-product News…….…….. ☐Yes ☐No 20
Does the website provide Search Engine…….…… ☐Yes ☐No 21
Does the website provide Customer Support/FAQs……. ☐Yes ☐No 22

Virtual Promotion Space

Internal Promotion

Does the website provide Station Advertisements..…….…. ☐Yes ☐No 23
Does the website provide Contests/Sweepstakes…….. ☐Yes ☐No 24
Does the website provide Station Promotional Events……. ☐Yes ☐No 25
Does the website provide Station Online Coupons….…….. ☐Yes ☐No 26
Does the website provide Bookmark/Homepage Request …… ☐Yes ☐No 27
Does the website provide Referral Links…….....……..... ☐Yes ☐No 28

External Promotion

Does the website provide Outside Advertisements……..... ☐Yes ☐No 29
Does the website provide Mention of Sponsors/Partners/Affiliates.. ☐Yes ☐No 30
Does the website provide Non-station Online Coupons……..... ☐Yes ☐No 31

Virtual Distribution Space

Does the website provide Text/Photo Files Download ……. ☐Yes ☐No 32
Does the website provide Audio Download/Streaming……..... ☐Yes ☐No 33
Does the website provide Video Download/Streaming……..... ☐Yes ☐No 34
Does the website provide Software Download/Links……... ☐Yes ☐No 35

SOURCE-ORIENTED INTERACTIVITY

Virtual Communication Space

Does the website provide E-mail Click-through…….……..…... ☐Yes ☐No 36
Does the website provide Form Mechanism…….……..…….. ☐Yes ☐No 37
Does the website provide Online Rating.….……. ☐Yes ☐No 38
Does the website provide Online Survey/Poll…….……...…... ☐Yes ☐No 39
Does the website provide Newsletter Subscription …….…..... ☐Yes ☐No 40
Does the website provide Chat Room….…….. ☐Yes ☐No 41
Does the website provide Forum/Bulletin……..... ☐Yes ☐No 42
Does the website provide Referral Mail……..…….....……..... ☐Yes ☐No 43

Virtual Sponsorship Space

Does the website provide Monetary Sponsorship/Donation……. ☐Yes ☐No 44

Virtual Transaction Space

Does the website provide Paid Subscription……...…….. ☐Yes ☐No 45
Does the website provide Online Shopping for Station Merchandise ☐Yes ☐No 46
Does the website provide Online Shopping for Other Merchandise.. ☐Yes ☐No 47
Does the website provide Online Shopping through Affiliate Program ☐Yes ☐No 48

APPENDIX C
OPERATIONAL DEFINITION FOR CODING INSTRUCTION

- *The variables under "Virtual Information Space" are related to the information a website provides, including company, product, and service information.*

Company Information

Station Information: Information about the station's location, telephone number, history, current status, or photographs. (E-mail address is excluded.)

Station Logo: A logo or a trademark of the station.

Station Press Release: The station's own press release about the company.

Personnel Information: Information about on-air staff, including job descriptions, photographs, biographies, or stories. (E-mail addresses are excluded.)

Employment Opportunity: A place to post opening positions/opportunities for working or webcasting, including jobs, internships, volunteers, and personal works.

Product Information

Product Reviews: Any kind of reviews related to the station or its programs, including books, movies, CDs, songs, music videos, or its own products.

Product News: News or news links about related products of the station. It could be news about the station's activities, products, or its own music format. For example, if it's a news talk station, then national news is considered as "Product News", but music news is not.

Regulation Information: Regulation information related to the Internet/radio industry.

Playlist: A list of songs that the station plays or each song the station is currently playing.

Program Schedule: The station's program schedule with time frame or any program description with the broadcasting time.

Program Information: The station's program description or guide.

Service Information

Date/Time: Updated date or time.

Weather Report: Updated weather forecasts or links to weather forecasts.

Sitemap: A sitemap of the station's website.

Coverage Map: A map of the area covered by the station's signal or a map/list showing the station's international coverage of listeners.

Local/National Community Information: Information about events locally or nationally, including music, school, or sport events, which are not provided by the station.

Entertainment/Leisure Section: A place for entertaining and leisure purposes, including game, horoscope, recipes, jokes, comics, movies, or travels. (News and reviews are excluded.)

Media Links: Any links to other media related to the station or its programs, including magazine sites, TV sites, media organization sites, or other radio sites.

Non-product News: News or news links with no relation to the station. News that is not considered as "Product News" is taken to be "Non-product News."

Search Engine: Any kind of search engines/links or a searchable database.

Customer Support/FAQs: A place for helping users' questions and problems.

- *The variables under "Virtual Promotion Space" are related to the internal and external promotion a website provides.*

<u>Internal Promotion</u>

Station Advertisements: The station's own ads, including any kind of banner ads or the instruction for other companies to advertise with the station.

Contests/Sweepstakes: Any contest or sweepstake provided on the station's website.

Station Promotional Events: Any promotional event or activity provided by the station.

Station Online Coupons: Any online coupon used for the station's products or services.

Bookmark/Homepage Request: Any request for users to bookmark the website or to set the website as homepage or favorite.

Referral Links: Any URL address for users to put the link on personal or other websites.

External Promotion

Outside Advertisements: Any advertisement from other companies.

Mention of Sponsors/Partners/Affiliates: A place/link for listing sponsors, partners, or affiliates of the station's website.

Non-station Online Coupons: Any online coupon not related to the station.

- *The variables under "Virtual Distribution Space" are related to the distribution channels a website provides.*

Text/Photo Files Download: The ability to download text or photo files, including doc/pdf forms, posters, or wallpapers.

Audio Download/Streaming: The ability to download or stream audio files other than the station's own radio webcasting.

Video Download/Streaming: The ability to download or stream video files.

Software Download/Links: The station's own downloadable software or links to downloadable software.

- *The variables under "Virtual Communication Space" are related to direct but maybe delayed communication a website provides.*

E-mail Click-through: Any mailing system enables users to mail directly to the station.

Form Mechanism: Any form embedded in the system enables users to send to the station, which may be for registration, request, or feedback.

Online Rating: Any rating system enables users to rate for their preference.

Online Survey/Poll: Any form of survey or poll.

Newsletters Subscription: Any newsletter provided by the station for subscription.

Chat Room: Any place allowing users to talk in real time, including instant messager.

Forum/Bulletin: Any place/mail for posting users' opinions, including Yahoo! Groups.

Referral Mail: Any mailing system enables users to refer the station to others.

- *The variable under "Virtual Sponsorship Space" is related to monetary sponsorship or donation a website provides.*

Monetary Sponsorship/Donation: The opportunity for a station's users to sponsor/donate the station with money.

- *The variables under "Virtual Transaction Space" are related to transaction process such as orders and payments a website provides.*

Paid Subscription: Users need to pay in order to access certain content.

Online Shopping/Renting for Station Merchandise: The station has its own merchandise for sale or for rent.

Online Shopping for Other Merchandise: The station has non-station merchandise for sale.

Online Shopping through Affiliate Program: Links for users traveling through a station's website to the online shopping store of the partner.

APPENDIX D
CODING DATA SHEET AND CODER RELIABILITY TEST

Coder reliability test																			
	CODERS	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%
	WEBSITES	bluegrass			boomer			dc.free…			khaha			lycos			omegarock		
	Virtual Information Space																		
1	Station Information	1	1	O	0	0	O	0	0	O	0	0	O	1	1	O	1	1	O
2	Station Logo	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
3	Station Press Release	0	0	O	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O
4	Personnel Information	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
5	Employment Opportunity	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
6	Type of Employment Opportunity	9	9	-	9	9	-	9	9	-	4	4	-	9	9	-	9	9	-
7	Product Reviews	1	1	O	1	0	X	0	0	O	0	1	X	1	1	O	0	0	O
8	Product News	0	1	X	0	0	O	0	0	O	1	1	O	1	1	O	0	1	X
9	Regulation Information	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
10	Playlist	0	1	X	0	0	O	1	0	X	0	0	O	1	1	O	0	0	O
11	Program Schedule	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
12	Program Information	1	1	O	1	1	O	0	0	O	0	0	O	1	1	O	1	0	X
13	Date/Time	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
14	Weather Report	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
15	Sitemap	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
16	Coverage Map	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
17	Local/National Community Info	0	0	O	0	0	O	0	0	O	1	0	X	0	0	O	1	1	O
18	Entertainment/Leisure Section	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
19	Media Links	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O	1	1	O
20	Non-product News	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
21	Search Engine	1	1	O	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O
22	Customer Support/FAQs	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	0	0	O
	Virtual Promotion Space																		
23	Station Advertisements	1	1	O	0	0	O	0	0	O	1	1	O	1	1	O	1	1	O
24	Contests/Sweepstakes	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
25	Station Promotional Events	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
26	Station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
27	Bookmark/Homepage Request	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
28	Referral Links	1	1	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
29	Outside Advertisements	0	0	O	1	1	O	0	0	O	1	1	O	0	0	O	0	0	O
30	Mention of Sponsors/Partners	1	1	O	0	0	O	0	0	O	0	1	X	0	0	O	0	0	O
31	Non-station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Distribution Space																		
32	Text/Photo Files Download	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
33	Audio Download/Streaming	1	1	O	0	1	X	0	0	O	0	0	O	0	0	O	0	0	O
34	Video Download/Streaming	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
35	Software Download/Links	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O
	Virtual Communication Space																		
36	E-mail Click-through	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
37	Form Mechanism	0	0	O	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O
38	Online Rating	0	0	O	0	0	O	0	0	O	0	0	O	0	1	X	0	0	O
39	Online Survey/Poll	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
40	Newsletter Subscription	0	0	O	0	0	O	0	0	O	0	0	O	1	0	X	0	0	O
41	Chat Room	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
42	Forum/Bulletin	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
43	Referral Mail	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Sponsorship Space																		
44	Monetary Sponsorship/Donation	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	1	1	O
	Virtual Transaction Space																		
45	Paid Subscription	0	0	O	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O
46	Shopping for Station Merchandise	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
47	Shopping for Other Merchandise	1	0	X	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
48	Shopping through Affiliate Program	0	0	O	1	0	X	0	0	O	0	0	O	1	0	X	0	0	O

	CODERS	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%
	WEBSITES	radioalbany			totally			wake			KBEL			KBPK			KRUX		
	Virtual Information Space																		
1	Station Information	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O	1	1	O
2	Station Logo	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
3	Station Press Release	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
4	Personnel Information	1	1	O	1	1	O	1	1	O	0	1	X	0	0	O	0	0	O
5	Employment Opportunity	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
6	Type of Employment Opportunity	9	9	-	9	9	-	9	9	-	9	9	-	9	9	-	9	9	-
7	Product Reviews	1	0	X	0	1	X	0	0	O	1	1	O	0	0	O	0	0	O
8	Product News	1	1	O	1	1	O	0	0	O	1	1	O	0	0	O	0	0	O
9	Regulation Information	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
10	Playlist	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O
11	Program Schedule	0	0	O	1	1	O	1	1	O	1	1	O	0	0	O	0	0	O
12	Program Information	0	0	O	1	1	O	1	1	O	1	1	O	0	0	O	0	0	O
13	Date/Time	1	0	X	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
14	Weather Report	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
15	Sitemap	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
16	Coverage Map	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
17	Local/National Community Info	1	1	O	0	1	X	0	0	O	1	1	O	0	0	O	0	0	O
18	Entertainment/Leisure Section	1	1	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
19	Media Links	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	0	0	O
20	Non-product News	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
21	Search Engine	1	1	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
22	Customer Support/FAQs	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Promotion Space																		
23	Station Advertisements	1	0	X	1	0	X	0	1	X	0	1	X	1	1	O	0	0	O
24	Contests/Sweepstakes	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
25	Station Promotional Events	1	0	X	0	0	O	0	0	O	0	1	X	0	0	O	0	0	O
26	Station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
27	Bookmark/Homepage Request	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
28	Referral Links	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
29	Outside Advertisements	1	1	O	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O
30	Mention of Sponsors/Partners	0	0	O	1	1	O	1	0	X	1	1	O	0	0	O	0	0	O
31	Non-station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Distribution Space																		
32	Text/Photo Files Download	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
33	Audio Download/Streaming	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
34	Video Download/Streaming	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
35	Software Download/Links	0	0	O	1	1	O	1	1	O	0	0	O	1	1	O	0	0	O
	Virtual Communication Space																		
36	E-mail Click-through	1	1	O	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O
37	Form Mechanism	0	0	O	1	1	O	1	1	O	1	1	O	0	0	O	0	0	O
38	Online Rating	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
39	Online Survey/Poll	1	0	X	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
40	Newsletter Subscription	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
41	Chat Room	0	0	O	0	0	O	1	0	X	0	0	O	0	0	O	0	0	O
42	Forum/Bulletin	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
43	Referral Mail	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Sponsorship Space																		
44	Monetary Sponsorship/Donation	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Transaction Space																		
45	Paid Subscription	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
46	Shopping for Station Merchandise	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
47	Shopping for Other Merchandise	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
48	Shopping through Affiliate Program	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O

	CODERS	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%	A	B	%
	WEBSITES	KSLZ			WIOJ			WJHS			WJKL			WQME			WWWQ		
	Virtual Information Space																		
1	Station Information	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
2	Station Logo	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
3	Station Press Release	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
4	Personnel Information	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
5	Employment Opportunity	1	1	O	0	0	O	0	0	O	1	1	O	0	0	O	1	1	O
6	Type of Employment Opportunity	1	1	-	9	9	-	9	9	-	1	1	-	9	9	-	1	1	-
7	Product Reviews	0	1	X	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
8	Product News	1	1	O	1	1	O	1	0	X	1	1	O	0	0	O	1	1	O
9	Regulation Information	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
10	Playlist	1	1	O	1	1	O	1	0	X	0	0	O	0	1	X	0	0	O
11	Program Schedule	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	0	X
12	Program Information	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
13	Date/Time	0	0	O	1	1	O	0	0	O	0	0	O	1	1	O	1	0	X
14	Weather Report	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	0	0	O
15	Sitemap	0	0	O	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O
16	Coverage Map	0	0	O	1	1	O	0	0	O	0	0	O	1	1	O	0	0	O
17	Local/National Community Info	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O	1	1	O
18	Entertainment/Leisure Section	1	1	O	0	0	O	0	0	O	1	0	X	0	0	O	0	0	O
19	Media Links	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
20	Non-product News	1	1	O	0	1	X	0	0	O	1	1	O	0	0	O	0	0	O
21	Search Engine	0	0	O	1	1	O	0	0	O	1	1	O	1	1	O	1	0	X
22	Customer Support/FAQs	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O
	Virtual Promotion Space																		
23	Station Advertisements	1	1	O	0	0	O	0	1	X	1	1	O	1	0	X	1	0	X
24	Contests/Sweepstakes	1	1	O	0	0	O	0	0	O	1	1	O	1	1	O	1	1	O
25	Station Promotional Events	1	1	O	0	0	O	0	0	O	1	1	O	1	1	O	1	1	O
26	Station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
27	Bookmark/Homepage Request	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
28	Referral Links	0	0	O	1	1	O	0	0	O	1	1	O	0	0	O	0	0	O
29	Outside Advertisements	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O
30	Mention of Sponsors/Partners	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O	0	0	O
31	Non-station Online Coupons	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
	Virtual Distribution Space																		
32	Text/Photo Files Download	0	0	O	1	1	O	0	0	O	1	0	X	0	0	O	0	0	O
33	Audio Download/Streaming	1	0	X	1	1	O	0	0	O	1	1	O	0	1	X	1	1	O
34	Video Download/Streaming	1	1	O	1	1	O	0	0	O	1	1	O	0	0	O	1	1	O
35	Software Download/Links	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O
	Virtual Communication Space																		
36	E-mail Click-through	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O	1	1	O
37	Form Mechanism	1	1	O	1	1	O	0	0	O	1	1	O	1	1	O	1	1	O
38	Online Rating	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O	0	0	O
39	Online Survey/Poll	1	1	O	1	1	O	0	0	O	0	0	O	0	0	O	1	0	X
40	Newsletter Subscription	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	1	1	O
41	Chat Room	1	1	O	1	1	O	0	0	O	0	0	O	0	0	O	0	0	O
42	Forum/Bulletin	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O	0	0	O
43	Referral Mail	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	1	0	X
	Virtual Sponsorship Space																		
44	Monetary Sponsorship/Donation	0	0	O	0	0	O	1	1	O	1	1	O	0	0	O	0	0	O
	Virtual Transaction Space																		
45	Paid Subscription	0	0	O	0	0	O	0	0	O	1	0	X	0	0	O	0	0	O
46	Shopping for Station Merchandise	0	0	O	1	1	O	1	1	O	1	1	O	0	0	O	1	0	X
47	Shopping for Other Merchandise	0	0	O	0	0	O	0	0	O	1	1	O	0	0	O	0	0	O
48	Shopping through Affiliate Program	1	1	O	0	0	O	0	0	O	1	1	O	1	0	X	1	1	O
	Scott Pi=.87																		

REFERENCES

Agresti, A., & Finlay, B. (1997). *Statistical methods for the social sciences*. 3rd ed. Upper Saddle River, NJ: Prentice Hall.

Albarran, A. B., & Pitts G. G. (2001). *The radio broadcasting industry.* Needham Heights, MA: Allyn & Bacon.

Albiniak, P. (2001, August 6). What price streaming? *Broadcasting & Cable, 131* (33), 33.

Alderton, D., Krim, K., Schmitt, J., & Sheehy, F. (1999). Digital what? The coming revolution in radio. *The McKinsey Quarterly,* (2), 124-129.

Anajana, C. S. (2000). Internet business models. *Stylusinc.com.* Retrieved August 14, 2002, from http://stylusinc.com/website/business_models.htm

Angehrn, A. (1997). Designing mature Internet business strategies: The ICDT model. *European Management Journal, 15* (4), 361-369.

Ansoff, H. I. (1957). Strategies for diversification. *Harvard Business Review, 35* (2), 113-124.

The Arbitron Company. (1999, September 2). Broadcasters vs. webcasters: which business model will win? *Arbitron/Edison Media Research.* Retrieved August 14, 2002, from http://www.arbitron.com/downloads/InternetIII.pdf

The Arbitron Company. (2000, November 21). Radio station website content: an in-depth look. *Edison Media Research/Arbitron.* Retrieved August 14, 2002, from http://www.arbitron.com/downloads/radiostationwebstudy.pdf

The Arbitron Company. (2001a, February 2). Internet VI: streaming at a crossroads. *Arbitron/Edison Media Research*. Retrieved August 14, 2002, from http://www.arbitron.com/downloads/internetvi.pdf

The Arbitron Company. (2001b, September 5). Internet study VII: what consumers want next? *Arbitron/Edison Media Research*. Retrieved August 14, 2002, from http://www.arbitron.com/downloads/internet7.pdf

The Arbitron Company. (2002a). Arbitron webcast services website. Retrieved August 14, 2002, from http://www.arbitron.com/Webcast_ratings

The Arbitron Company. (2002b, February 26). Internet study VIII: advertising vs. subscription – which streaming model will win? *Arbitron/Edison Media Research*. Retrieved September 9, 2002, from http://www.arbitron.com/downloads/Internet8.pdf

The Arbitron Company. (2002c, September 5). Internet study VIIII: the media and entertainment world of online consumers. *Arbitron/Edison Media Research*. Retrieved November 20, 2002, from http://www.arbitron.com/downloads/I9summary.pdf

Associated Press. (2001, June). Internet radio booms despite advertising ban." *IEEE Communications, 39* (6), 66.

Babbie, E. (2000). *The Practice of Social Research*. 9th ed. Belmont, CA: Wadsworth.

Bajarin, T. (2001, December 14). From walkman to ipod. *ABCNews.* Retrieved August 15, 2002 from, http://abcnews.go.com/sections/business/dailynews/silicon_insights_bajarin_011214.html

Bates, B., & King, R. (1995). Television and the web: how local television broadcasters are using the World Wide Web. *Broadcast Education Association Convention 1996*, Las Vegas, Nevada.

Bates, B., Chambers, T., Emery, M., Jones, M., McClung, S., & Park, J. (1996). Television on the Web 1996: local television stations' use of the World Wide Web. *AEJMC Annual Convention 1997*, Chicago, IL.

Bates, B., & Chambers, T. (1999). The economic basis for radio deregulation. *The Journal of Media Economics, 12* (1), 19-34.

Batista, E. (2000, September 25). Wireless radio, for a price. *Wired News.* Retrieved August 15, 2002, from http://www.wired.com/news/wireless/0,1382,39015,00.html

Beard, M. (2002, May 8). Streaming media gains with broadband. *Media Life.* Retrieved August 13, 2002, from http://www.medialifemagazine.com/news2002/may02/may06/3_wed/news4wednesday.html

Beardi, C., & Linnett, R. (2001, April 16). Initiative media turns off Web radio. *Advertising Age, 72* (16), 1 & 37.

Benton Foundation. (1999, May 28). Radio for the next millenium. *The Digital Beat, 1* (8). Retrieved August 10, 2002, from http://www.benton.org/DigitalBeat/db052899.html

Berelson, B. (1952). *Content Analysis in Communication Research*. New York, NY: American Book-Stratford.

Black, D. A. (2001). Internet radio: a case study in medium specificity. *Media, Culture & Society, 23* (3), 397-408.

Boulton, C. (2001a, August 30). Autodesk buys BMWfilms.com distributor. *Internet.com.* Retrieved September 16, 2002, from http://www.internetnews.com/bus-news/ article.php/8161_876061

Boulton, C. (2001, December 3). Listen.com pumps up volume on rhapsody. *Internet.com.* Retrieved August 10, 2002, from http://www.internetnews.com/ec-news/article/0,,4_ 932471,00.html

Broadcast & Cable Yearbook. (2001). New Providence, NJ: R.R. Bowker.

Broadcasting timeline. (2001). *Learning Network*. Retrieved August 8, 2002, from http://www.infoplease.com/ipea/A0151956.html

BRS Media Inc. (2002). Retrieved September 27, 2002, from http://www.brsmedia.fm

Chan-Olmsted, S. M. (1998). Mergers, acquisitions, and convergence: the strategic alliances of broadcasting, cable television, and telephone services. *Journal of Media Economics, 11* (3), 33-46.

Chan-Olmsted, S. M. (2000, November). Strategizing the net business: How television networks compete in the age of the Internet. *Broadcast Education Association 2001 Conference.*

Chan-Olmsted, S. M., & Park, J. S. (2000). From on-air to online world: Examining the content and structures of broadcast TV stations' websites. *Journalism and Mass Communication Quarterly, 77* (2), 321-339.

Chan-Olmsted, S. M., & Jamison, M. (2001, January). Rivalry through alliances: competitive strategy in the global telecommunications market. *European Management Journal, 19* (3), 317-331.

Chan-Olmsted, S. M., & Ha, L. (2002). *Internet business models for broadcasters: How television stations perceive and integrate the Internet.* Paper submitted for publication to the Journal of Broadcasting and Electronic Media.

Child, J. (1987). Information technology, organization, and the response to strategic challenges. *California Management Review, 30* (1), 33-50.

Chyi, H., & Lasorsa, D. (1999). Access, use and preferences for online newspapers. *Newspaper Research Journal, 20* (4), 2-14.

Cockburn, A., & McKenzie B. (2001). What do web users do? An empirical analysis of web use. *International Journal of Human-Computer Studies, 54* (6), 903-922.

Compaine, B., & Smith, E. (2001, October). Internet radio: a new engine for content diversity? *International Telecommunications Society Conference,* Dublin, Ireland. Retrieved August 15, 2002, from http://users.primushost.com/~bcompain/articles/Internet_radio_ITC.pdf

Cook, D., & Sellers, D. (1995). *Launching a business on the web*. Indianapolis, IN: Que.

Coyle, J. R., & Thorson, E. (2001). The effects of progressive levels of interactivity and vividness in Web marketing sites. *Journal of Advertising, 30* (2), 65-78.

Dalmas, R., Molina, J., Navarro-Grau, M., & Sugiyama, A. (2001). From vertical to concentric: the impact of Internet in traditional media. *Kellogg Tech Ventures Anthology.* Retrieved August 15, 2002, from http://www.ranjaygulati.com/teaching/tv2001/VERT-CON.pdf

Drushel, B. (1998). The Telecommunications Act of 1996 and radio market structure. *The Journal of Media Economics, 11* (3), 3-20.

Epstein, E. (2000, May 22). Streaming audio takes on radio challenge. *Info World, 22* (21), 40.

Ernst, D., Halevy, T., Monier, J. J., & Sarrazin, H. (2001). A future for e-alliances. *McKinsey Quarterly, Special Edition* (2), 92-102.

Evans, C. L. (2000, July). Broadcasters streaming into the future: a Delphi study on the future of broadcasting on the World Wide Web. *Doctoral Dissertation.* Oklahoma State University.

Federal Communications Commission. (1997). Review of the radio industry, 1997. MM Docket No. 98-35. Washington, D.C.: Media Bureau.

Federal Communications Commission. (2001, August 9). Federal Communications Commission releases data on high-speed services for Internet access. Retrieved August 18, 2002, from http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/2001/nrcc0133.html

Federal Communications Commission. (2002a, February 6). Deployment of advanced telecommunications capacity: Third report. CC Docket No. 98-146. Washington, D.C.: Media Bureau.

Federal Communications Commission. (2002b, June 13). Competition in the wireless industry: Seventh report. FCC 02-179. Washington, D.C.: Wireless Telecommunications Bureau.

Fisher, M. (2000, December). Resurgent radio. *American Journalism Review, 22* (10), 32-37.

Foege, A. (2001, October). Radio days. *ON Magazine.* Retrieved August 13, 2002, from http://www.onmagazine.com/on-mag/magazine/article/0,9985,174257,00.html

Freedman, H. (2000, April/June). Radio ownership and management: a top down view of radio and the Internet. *iRADIO.com*. Retrieved August 15, 2002, from http://www.iradio.com/Archives/02_2000.html

Gove, M. (2000, August 25). Eyeing the streaming media market. *Atlanta Business Chronicle.* Retrieved September 15, 2002, from http://atlanta.bizjournals.com/atlanta/stories/2000/08/28/story8.html

Graham, J. (2002, July 22). Royalty fees killing most Web-based radio stations. *News Factor Network.* Retrieved August 18, 2002, from http://www.newsfactor.com/perl/story/18687.html

Grenfell, R. L. (1998). A content analysis of interactivity on the Internet's World Wide Web. *Master's Thesis.* California State University, Fresno.

Guiding business through technology: micro-communities. (2000). *Mind Harbor.* Retrieved July, 27, 2002, from http://www.mindharbor.com/Marketing/communities.asp

Gupta, V. K., Govindarajan, S., & Johnson, T. M. (2001, December). Overview of content management approaches and strategies. *Electronic Markets, 11* (4), 281-287.

Gurley, J. W. (1998, March 16). Creating a great e-commerce business. *Fortune, 136* (5), 146-147.

Gwynne, R. E. (1998, August). Radio broadcasting and the World Wide Web: an exploratory study. *Doctoral Dissertation.* The University of Tennessee, Knoxville.

Ha, L., & James, E. L. (1998) Interactivity reexamined: a baseline analysis of early business websites. *Journal of Broadcasting and Electronic Media, 42* (4), 457-474.

Ha, L. (2002). Webcasting and the future of the broadcasting business. *An essay for publication in The Internet Encyclopedia.* Retrieved August 25, 2002, from http://www.bgsu.edu/departments/tcom/faculty/ha/webcasting.pdf

Haeckel, S. H. (1998). About the nature and future of interactive marketing. *Journal of Interactive Marketing, 12* (1), 63-71.

Hanson, K. (2002). Give me the story in 90 seconds, you ask. Okay, I'll try… *Rain: Radio and Internet Newsletter.* Retrieved August 17, 2002, from http://www.saveinternetradio.org/ 90seconds.asp

Harmon, A. (2002, April 1) Royalties proposal casts shadow over webcasters. *The New York Times.* Retrieved August 17, 2002, from http://www.nytimes.com/2002/04/01/technology/ebusiness/01RADI.html

Hendy, D. (2000). *Radio in the global age.* Malden, MA: Blackwell Pub.

Hoffman, D. L., Novak, T. P., & Chatterjee, P. (1995, December). Commercial scenarios for the Web: opportunities and challenges. *Journal of Computer-Mediated Communicaton, 1* (3).

Hoffman, D. L., & Novak, T. P. (1996, July). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing, 60* (3), 50-68.

Hoffman, D. L., & Novak, T. P. (1997, December). A new marketing paradigm for electronic commerce. *The Information Society, 13,* 43-54.

Hohenberger, A. (2001, April 9). New media on the hunt for revenue: streaming media. *Broadcasting & Cable, 131* (15), 44.

Huntemann, N. (1999, October). Corporate interference: the commercialization and concentration of radio post the 1996 Telecommunications Act. *Journal of Communication Inquiry, 23* (4), 390-407.

Jacobs, A. (2001, October 31). Use of streaming media to rise sharply. *Network World Fusion.* Retrieved August 18, 2002, from http://www.nwfusion.com/newsletters/accel/2001/01083477.html

J.D. Power and Associates. (2001, September 26). 2001 wireless industry trend and analysis report. Retrieved August 15, 2002, from http://www.jdpa.com/presspass/pr/pressrelease.asp?ID= 170

Johnston, C. (2002). Tech tools for radio streamers. *RWOnline.* Retrieved November 6, 2002, from http://www.rwonline.com/reference-room/special-report/rw-techTools.shtml

Joshi, M. P., Kashlak, R. J., & Sherman, H. D. (1998). How alliances are reshaping telecommunications. *Long Range Planning, 31* (4), 542-548.

Jupiter Media Metrix. (2001, September 10). Fast and efficient websites will drive greater customer retention than expensive rich media enhancements. *Jupiter Media Matrix.* Retrieved July 28, 2002, from http://www.jmm.com/xp/jmm/press/2001/pr_091001a.xml

Karp, J. (2001, January 29). Local stations hitching ride online. *Crain's Chicago Business, 24* (5), 21-22.

Kehoe, C., Pitkow, J., Sutton, K., & Aggarwal, G. (1999, May 14). GVU's tenth World Wide Web user servey. Retrieved August 8, 2002, from http://www.gvu.gatech.edu/user_surveys/survey-1998-10/tenthreport.html

Kiernan, V., & Levy, M. R. (1999). Competition among broadcast-related websites. *Journal of Broadcasting & Electronic Media, 43* (2), 271-279.

King, R. E. (1998) The uses and gratifications of the World Wide Web: an audience analysis for local television broadcasters. *Doctoral Dissertation.* The University of Tennessee, Knoxville.

Kover, A. (1999, September). How CBS is bartering its way into the dot.com world. *Business2.0.* Retrieved August 13, 2002, from http://www.business2.com/articles/mag/0,1640,5250,00.html

Krattenmaker, T., & Powe, L. (1995). *Regulating broadcast programming.* Cambridge, MA: MIT Press; Washington, D.C.: AEI Press.

Kraut, R., Lundmark, V., Kiesler, S., Mukhopadhyay, T., & Scherlis, W. (1997, April). Why people use the Internet. *HomeNet Study.* Retrieved August 18, 2002, from http://homenet.hcii.cs.cmu.edu/progress/purpose.html

Kraut, R., Mukhopadhyay, T., Szczypula, J., Kiesler, S., & Scherlis, W. (2000). Information and communication: alternative uses of the Internet in households. *Information Systems Research, 10*, 287-303.

Krishnan, V., & Chang, S. G. (2000). Customized Internet radio. *Computer Network*, *33*, 609-618.

Kuchinskas, S. (1999, April 19). Tune in to Internet radio – RealNetworks, NetRadio, Broadcast.com and Imagine Radio compete in the Internet radio market. *Mediaweek, 9* (16), 94-98.

Lee, S. (1999, November). Adoption of Internet broadcasting among radio stations in the United States. *Doctoral Dissertation.* Ohio University, Athens.

Lin, C. A., & Jeffres, L.W. (2001). Comparing distinctions and similarities across websites of newspapers, radio stations, and television stations. *Journalism & Mass Communication Quarterly, 78* (3), 555-573.

Lind, R. A., & Medoff, N. J. (1999). Radio stations and the World Wide Web. *Journal of Radio Studies,* 6 (2), 203-221.

LMiV. (2002). *The LMiV Company.* Retrieved August 16, 2002, from http://www.lmiv.com

Luo, V. (2000, January 31). Streaming media: opportunities and challenges. *Pacific Telecommunication Council 2000*, Honolulu HI. Retrieved July 28, 2002, from http://web.ptc.org/ library/proceedings/ptc2000/sessions/monday/m35/m352

Macaluso, N. (2001, August 13). Report: nearly 60 percent of U.S. homes are online. *NewsFactor Network.* Retrieved July 18, 2002, from http://www.newsfactor.com/perl/story/12743.html

MeasureCast, Inc. (2000, August 14). An analysis of streaming audience measurement methods. *MeasureCast.* Retrieved August 6, 2002, from http://www.measurecast.com/docs/Audience_Measurement_Methods.pdf

MeasureCast, Inc. (2002, March). MeasureCast Internet radio listening index 2001-2002. *MeasureCast.* Retrieved August 6, 2002, from http://www.measurecast.com

Merli, J. (2001, April 23). MP3PRO to put the stereo stream in radio. *Broadcasting & Cable, 131* (17), 98.

McCracken, H. (2001, February). Turning in to Internet radio. *PC World, 19* (2), 41-42.

McMillan, S. J. (2000). The microscope and the moving target: the challenge of applying content analysis to the World Wide Web. *Journalism and Mass Communication Quarterly, 77* (1), 80-98.

Media fragmentation could become a pain for advertisers. (2000). *MediaTel.* Retrieved July 28, 2002, from http://www.mediatel.co.uk/newsline/mqt2000/2000intro.htm

Miller, S. (1973). Ends, means, and galumphing: some leitmotifs of play. *American Anthropologist, 75* (1), 87-98.

Morris, C. (2000, September 25). Building an Internet radio station. *Web Developer's Virtual Library.* Retrieved September 6, 2002, from http://www.wdvl.com/Multimedia/WebRadio/index.html

Motion, J. (2001, February). Electronic relationships: interactivity, Internet branding and the public sphere. *Journal of Communication Management, 5* (3), 217-230.

Murphy, R. E. (1998). Determining the value of radio station websites: an exploratory study. *Doctoral Dissertation.* University of Tennessee.

Musich, P. (2000, June 26). What's upstream for media? New services monitor quality of audio and video. *eWeek, 17* (26), 27.

Nel, D., van Niekerk, R., Berthon, J. P., & Davies, T. (1999). Going with the flow: websites and customer involvement. *Internet Research: Electronic Networking Application and Policy, 9* (2), 109-116.

Nelson, G. (2000). Exposed on the Net: a comparison of Internet business exposures with standard business policies. *CPCU Journal, 53* (2), 106-121.

Nelson, K. (2001, March 5). The case for streaming. *Electronic Media, 20* (10), 22 & 28.

NetRatings, Inc. (2001a, February 8). Broadband access soars nearly 150 percent at home, according to Nielsen//NetRatings. *Nielsen//NetRatings.* Retrieved August 15, 2002, from http://www.nielsen-netratings.com/pr/pr_010208.pdf

NetRatings, Inc. (2001b, December 6). Nielsen//NetRatings reports that nearly 15 million people worldwide gained Internet access in Q3. *Nielsen//NetRatings.* Retrieved August 15, 2002, from http://www.nielsen-netratings.com/pr/pr_011206_eratings.pdf

NetRatings, Inc. (2001c, December 11). Broadband audience surpasses 21 million in November, setting a record high, according to Nielsen//NetRatings. *Nielsen// NetRatings.* Retrieved August 15, 2002, from http://www.nielsen-netratings.com/pr/pr_011211.pdf

Noble, I. (2001, March 26). Time for plug and go Internet? *BBC News.* http://news.bbc.co.uk/1/hi/business/1243747.stm

O'Leary, M. (1999, July/August). Internet radio: listening to the Web. *Online, 23* (4), 69-70.

Owen, B. M. (1999, March). *The Internet challenge to television*. Cambridge, MA: Harvard University Press.

Palumbo, P. (2002, June 25). Streaming content sites favor advertising over subscription. *Streamingmedia.com.* Retrieved August 16, 2002, from http://streamingmedia.com/article.asp?id=8240

Pease, E. C., & Dennis, E. E. (1993). Radio the forgotten medium: preface. *Media Studies Journal, 7* (3), xi-xix.

Phelan, A., Griffiths, J., & Fisher, S. (2000). Pushing worldwide aftermarket support of manufactured goods. *Managing Service Quality, 10* (3), 170-178.

Pollack, W. M. (2000, May). Tuning in: the future of copyright protection for online music in the digital millennium. *Fordham Law Review, 68*, 2445.

Porter, M. E. (1998). *On competition*. Boston, MA: Harvard Business School.

Pruitt, S. (2002, November 15). Congress approves bill to help small webcasters. *IDG News.* Retrieved November 18, 2002, from http://www.idg.net/english/crd_webcasters_964781.html

Quelch, J. A., & Klein, L. R. (1996). The Internet and international marketing. *Sloan Management Review, 37* (3), 60-75.

The Radio Advertising Bureau. (2000, May 8). RAB debuts newest phase (level III) of its e-commerce program: Radio stations can now offer online shopping options to local retailers. Retrieved August 9, 2002, from http://www.rab.com/pr/ecomlev3.html

Rathbun, E. A. (2000, September 25). Emmis Internet club. *Broadcasting & Cable, 130* (40), 6-7.

Reuters. (2001, January 24). Satellite and radio set to fill broadband gaps. *ZDNet UK News.* Retrieved September 16, 2002, from http://news.zdnet.co.uk/story/0,,t269-s2083934,00.html

Rich, L. (2000, November 17). Radio giant finally wakes up to the Net. *The Industry Standard.* Retrieved August 16, 2002, from http://www.thestandard.com/article/0,1902,20216,00.html

Riffe, D., Lacy, S., & Fico, F. G. (1998). *Analyzing media messages: using quantitative content analysis in research*. Mahwah, NJ: Lawrence Earlbaum Associates, Inc.

Robison, K. K., & Crenshaw, E. M. (2002). Post-industrial transformations and cyber-space: a cross-national analysis of Internet development. *Social Science Research, 31* (3), 334-363.

Rogers, R., & Woodbury, J. (1996). Market structure, program diversity, and radio audience size. *Contemporary Economic Polic*y, *14*, 81-91.

Rosencrantz, M. J. (1997, November). Push technology. *CPA Journal, 67* (11), 34-38.

Rothenbuhler, E. W. (1996). Commercial radio as communication. *Journal of Communication, 46* (1), 125-143.

Sanford, A. (2001, February). Internet radio: the future is now. *Live365.com.* Retrieved July 28, 2002, from http://www.live365.com/futureisnow/future0-3.pdf

Searls, D. (2002). Why are so many Internet radio stations still on the air? *Linux Journal.* Retrieved on November 6, 2002, from http://www.linuxjournal.com/article.php?sid=6218

Sinnreich, A. (2000, December 20). Online music radio: luring listeners as worlds collide. *Jupiter Vision Report, 3.* Retrieved August 15, 2002, from http://www.hiwire. com/downloads/reports/jupiter/jupiter_online_music_radio_summary.pdf

Shapiro, C., & Varian, H. R. (1999). *Information rules: a strategic guide to the network economy.* Boston, MA: Harvard Business School Press.

Sheets, J. (2000, Fall). Copyright misused: the impact of the DMCA anti-circumvention measures on fair and innovative markets. *Hastings Communications and Entertainment Law Journal, 23,* 1.

Silberman, M. (Ed.). (2000). *Brecht on film and radio.* London, UK: Methuen Pub.

Smithson, S., & Evans, R. (2000). Value-added Internet strategies (The 2000 worldwide web 100 survey). *Novell, Inc.* Retrieved September, 25, 2002, from http://www.novell.com/offices/emea/uk/news/press/part1_2000www100.pdf

Spring, T. (2000, June 8). Dial-up ain't dead. *PCWorld.com.* Retrieved September 15, 2002, from http://www.pcworld.com/news/article/0,aid,17076,00.asp

Spring, T. (2001, April 30). Better modems for dial-up diehards? *PCWorld.com.* Retrieved September 15, 2002, from http://www.pcworld.com/news/article/0,aid,48684,00.asp

Steiner, P. O. (1952, May). Program patterns and preferences, and the workability of competition in radio broadcasting. *The Quarterly Journal of Economics, 66* (2), 194-223.

Sullivan, J. (1999). What are the functions of corporate home pages? *Journal of World Business, 34* (2), 193-210.

Sulski, J. (2001, January 29). Net radio seeks ears, profits: technological advances may soon make Webcasts viable. *Crain's Chicago Business, 24* (5), 22.

Tacchi, J. (2000). The need for radio theory in the digital age. *International Journal of Cultural Studies, 3* (2), 289-298.

Thompson, I. (2000). The eBrand: brand strategies for the multichannel environment. *Reuters Business Insight.* Retrieved October 7, 2002, from MarketResearch.com database.

Tremayne, M., & Dunwoody, S. (2001). Interactivity, information processing, and learning on the World Wide Web. *Science Communication, 23* (2), 111-134.

Trigoboff, D. (2001, May 14). That dammed streaming. *Broadcasting & Cable, 131* (21), 42-44.

Trombly, R. (2000, December 4). E-business models. *Computerworld, 34* (49), 61.

U.S. Copyright Office. (1998, December). The Digital Millennium Copyright Act of 1998. Retrieved August 18, 2002, from http://www.loc.gov/copyright/legislation/dmca.pdf

Veronis Suhler Stevenson Media Merchant Bank. (2000). Media industry segments. Retrieved July 28, 2002, from http://www.veronissuhler.com/top50/index.html

ViewCast Corporation. (2000, October). Streaming media guide. *ViewCast.com.* Retrieved July 28, 2002, from http://www.theproductcafe.com/downloads%5CVC-Viewcast%20Streaming%20Media%20White%20Paper.pdf

Walker, J. (1999, December). Station to station. *Reason, 31* (7), 75-77.

Watson, R. T., & Zinkhan, G. M. (1997). Electronic commerce strategy: Addressing the key questions. *Journal of Strategic Marketing, 5,* 189-209.

Wendland, M. (2000). Why broadcast journalists need the Net. *Poynter Report.* Retrieved August 16, 2002, from http://www.poynter.org/centerpiece/022601sidebar.htm.

Weston, A. (2000, July/August). Introducing the Internet value equation. *Managing Intellectual Property, 101*, 23-24.

Wiener, L. (2001, May 28). Listen up! Internet radio runs into unexpected static. *U.S. News & World Report, 130* (21), 54.

Wittenstein, D. J., & Ford, M. L. (1999, February). The Webcasting wars. *Journal of Internet Law, 2* (8), 1-10.

Yoshida, J. (2001, May 1). Wireless infrastructure: Richer media awaits bandwidth. *EE Times.* Retrieved August 18, 2002, from http://www.eetimes.com/story/OEG20010501S0018

Zinkhan, G. M., & Watson, R. T. (1998). Electronic commerce: A marriage of management information systems and marketing. *Journal of Market Focused Management, 3,* 5-22.

BIOGRAPHICAL SKETCH

Wen Ren was born and raised in Taipei, Taiwan. After graduating with her Bachelor of Arts degree in sociology from the National Taiwan University in 1995, she worked as a research assistant in investigating several family issues and conducting research projects. She began her career as an editor and a planner at different magazines and book publishing companies after the research projects were completed in 1996.

Ren planned to pursue further study after being an editor for several years. In the fall of 2000, she started her graduate studies in the University of Florida College of Journalism and Communications. She began her studies with international communication, and gradually focused her specialization on telecommunication. During her graduate studies, she worked as a data analyst in the Tobacco Research Survey Project for Community Context Studies. She also interned with local radio stations in Gainesville and trained as an announcer with WUFT Classic Radio Station at the University of Florida. In this period of time, she developed her skills in conducting research proficiently and gained an abundance of knowledge of the telecommunication industry.