

Radio Systems Analysis and Remote Broadcasting (WICN Jazz Radio)



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WPI

Radio Systems Analysis and Remote Broadcasting (WICN Jazz Radio)

An Interactive Qualifying Project
Submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfillment of the requirements for the
Degree of Bachelor of Science

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Date:
4 March 2022

This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on the web without editorial or peer review.

Abstract

The internet has introduced a degree of volatility to the operations of traditional broadcast radio stations (TBRS). This requires constant innovation of TBRS to keep relevant while competing for the attention of more convenient digital alternatives such as streaming services. Websites and social media outlets continue to be an invaluable means for stations to interact with their listeners and promote content. This paper investigates the website design of WICN, a local public radio station, and offers recommendations for the site that will reflect the current trends in website design research.

Acknowledgements

V. J. Manzo, for being our project advisor

Rebecca Callaway, for guiding us on how to conduct qualitative interviews and reviewing our questions.

WICN staff: David Ginsburg, Michelle Willson, Melanie Perrault-LeBoeuf, Julie Drummey, and Emily Morrow for participating in our research and making this all possible

IRB: Ruth McKeogh for helping us through the human subjects process

Executive Summary

Introduction

Worcester's Inter-Collegiate Network (call sign WICN) is a broadcast radio station based in Worcester, Massachusetts. The station focuses on jazz and jazz-influenced genres, as well as a number of news and discussion programs. WICN is a non-profit, commercial-free station that generates most of its revenue through donations, endowments, and an array of recording and educational services. Before 2018, WICN's site was outdated and lacked an appealing design. The previous IQP group (Hou et al., 2018) suggested WICN move its site to Wordpress, and the station followed this suggestion. However, the user experience still needs improvement. Our group explored how to further improve the user experience of the site and broaden WICN's audience.

Background and Literature Review

Before the internet was created, traditional broadcast radio stations (TBRS) dominated the media space as a means of disseminating information and entertainment. Following the invention and proliferation of the internet, TBRS have faced increased competition and pressure, and they have struggled to stay relevant in the internet era. Many TBRS have moved to websites and incorporated social media into their branding, with varied results. Even so, a large number of stations have suffered tremendous losses in audience engagement or ceased operations entirely.

WICN has adapted to the internet age while still broadcasting via conventional methods. WICN has social media pages on Facebook, Twitter, Instagram, and WhatsApp, with varying degrees of audience interaction. Most of the station's audience is made up of older listeners, who may not be making use of their social media and website features. In our interview with David Ginsburg, the general manager of WICN, he stated that he is worried about WICN losing its older listeners as they age, and that finding younger listeners (of the middle-aged demographic) is of the utmost importance.

In 2018, the previous IQP group gave suggestions on redesigning WICN's website, with the goal of making the site more user-friendly and visually appealing. They compared the site with several websites of similar radio stations and chose WordPress as the ideal content management system (CMS) for WICN's needs. The group also created a procedure for migrating to the new platform, which the station followed. It is now 2022, and we have had enough time to see the merits of this new version of the website. We can now evaluate what worked and make new changes and help WICN grow its audience further.

Our group looked at the websites of ten similar radio stations in Worcester and found some trends, e.g. most of the sites have between four and nine links in their

navigation bar, a “listen live” toolbar at the bottom, and a list of recently played songs on the front page.

Methodology

We conducted interviews with five WICN staff members to inform our recommendations. We took a qualitative approach to gain a deeper understanding of their points of view. Among other things, we asked them about their history with the radio industry, their role at WICN, what makes WICN special, and their opinions on the current state of the WICN website.

Results

When asked what sets WICN apart, most of the interview subjects said that WICN is helping to keep jazz, a genre that is waning in popularity these days, alive, and that its passionate hosts hand-select the songs they play. Multiple subjects suggested that the website should list the playlist history, because listeners often call in asking what songs were recently played on-air. Two subjects felt that the site is difficult to navigate, and that the listen live feature and newsletter are hard to find. One subject also found some information on the site that was outdated and incomplete.

Conclusions and Recommendations

There are three main areas where we believe WICN could improve its site:

1. Correct factual content

During one of the interviews, we discovered that the page listing underwriting sponsors is out of date. This could lead to conflicts with current sponsors. We recommend that WICN look for and correct any other factual errors on the site. In addition, WICN would benefit from establishing a formalized process for making changes to the site, so that when errors are found WICN can quickly pass that information to a designated staff member who can update the site.

2. Access to station information

The navigation bar at the top of the site is visually dense, and some of its dropdown menus contain too many links. The links “about WICN”, “history of WICN”, and “Board of Directors” could be condensed into one page. Alternatively, the links to “history of WICN” and “board of directors” could be moved from the navigation bar to the bottom of their respective sections on the “about WICN” page. The “meeting dates” page could also be merged with or linked to from either the “about WICN” or the “board of directors” page. In addition, the “about us” heading and the “overview” link both lead to the WICN blog. We recommend that the “overview” link be renamed to “blog” or something similar, so that users can find the blog more easily. The “about us” heading could then lead to the “about WICN” page instead. The “hosts” links under “about us” and “programs” lead to the same page, so it could be removed from the “programs” heading and the heading could then be replaced with

its one remaining item: the show schedule. One interview subject suggested that since the “events” link leads to a list of events around Worcester rather than WICN-specific events, the link should be renamed to “community events”. We agree with this suggestion.

3. Access to music

Most of the other radio station websites we looked at had a “listen live” function as a horizontal toolbar across the bottom of the page. WICN’s current “listen live” function requires two clicks to access and contains a redundant button. We suggest that this feature be redesigned to be more similar to other radio station websites. Most other radio station websites also display the most recent section of their playlist history. Multiple interview subjects suggested adding this feature to WICN’s site, and we agree. Introducing a system that lets hosts record the most recently played tracks on the website would allow staff to better assist call-in listeners who want to know what song they just heard on the air. Making WICN’s site more in line with other radio station websites also would make it more familiar to users who have used other sites, so it would make navigation easier for those users. While these changes may be challenging to implement, we highly recommend further investigation and implementation of these features.

Contributions

Charlotte - Comparative analysis of radio station websites; methodology & interview questions; lead interviewer; results; recommendations, research

Javery - Abstract; introduction; background; research; interview notes

Aaron - Executive summary; comparative analysis of radio station websites; interview questions; interview notes

All members were involved with editing.

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Introduction

Worcester's Inter-Collegiate Network (call sign WICN) is a broadcast radio station based in Worcester, Massachusetts, serving about 50,000 listeners in the Central Massachusetts area. WICN focuses primarily on broadcasting music from jazz and jazz-derivative genres, as well as a selection of news and discussion programs. As a commercial-free station, WICN generates most of its revenue through donations, endowments, and a variety of recording and educational services. In recent years, WICN has struggled with incorporating the internet effectively as a means to increase its audience-base.

The work done by the previous group (Hou et al., 2018) focused on expanding WICN's audience by revamping its official website. This was accomplished by comparing the features of several websites of similar radio stations, and determining which platforms would be most effective for developing an updated website for WICN. The features deemed most valuable included integration of social media channels, visually appealing layouts and backgrounds, and user-friendliness. WordPress was recommended as the ideal content management system (CMS) for the needs of WICN, and a procedure for migrating to the new platform was provided. WordPress is an affordable CMS known for its reliability, support, and clean user interface, which includes a variety of features and pre-designed widgets that can be implemented into the website with minimal required programming expertise. The goal of our project was to explore elements of the user experience on the website and the ways in which the site meets the needs of WICN's current audience as well as the potential for it to meet the needs of a broader audience. Our findings will be used to inform recommendations about the user experience and design of the website.

Background

In this chapter, we provide a short discussion of the problems faced by traditional broadcast radio stations (TBRS), specifically outlining some of the difficulties they encounter to stay relevant as the internet continues to dominate the media space. We will begin by explaining the issues TBRS must deal with in order to acquire and maintain an audience of paying subscribers, without which stations could not afford operating costs (or justify airing). The next section will delineate some of the obstacles that these traditional stations must overcome to compete with the growing influence of the internet. We will close this chapter with a more involved explanation of the previous group's work, and detail how we intend to extend this research in our paper to expand the listener base at WICN.

Traditional Broadcast Radio Stations

Traditional broadcast radio stations operate using physical broadcasting towers which transmit audio signals to an audience within range of their effective radius. Prior to the advent of the internet, this form of radio dominated the media space as a primary means of media dissemination, along with television and newspaper. Following the invention--and exacerbated in more recent years by further proliferation-- of the internet, traditional media outlets have faced pressure to become increasingly competitive (Bonini, 2014). Broadcast radio stations in particular have been compelled to find novel ways to compete with, or better utilize, the emerging medium. Many TBRS have migrated to websites and incorporated a social media presence into their branding in order to stay relevant, with varied results (Laor et al., 2017; Cordeiro, 2012). One case study of iCat fm in Catalonia highlights the increasing necessity for diverse offerings. The station, a public service broadcasting station, has shifted their efforts to a position as public service *media* instead, fanning out to use social media and other cross-media (Bonet, 2011). Even with these changes, many stations have ceased operations or suffered tremendous losses in audience engagement.

WICN continues to broadcast its station by conventional methods while adapting to the modern environment. Under the supervision of David Ginsburg, the general manager, the station employs five members of staff and more than a dozen radio hosts, broadcasting material twenty-four hours a day, every day of the week, and providing social media and blog outlets for audience engagement. Social media platforms currently being utilized by WICN include Facebook, Twitter, Instagram, and WhatsApp, with varying degrees of user participation. While WICN has listeners of all ages, the bulk of their listeners are from an older demographic and may not be making use of their social media and website features. WICN's audience includes around 50,000 listeners, of which some are paying supporters.

A reality for traditional stations is that their consumer base will continue to evolve as technology does, in some cases losing listeners to more attractive media offerings (Chan-Olmsted et al., 2019). For WICN, there is a legitimate concern for the loss of older listeners as they age, which warrants efforts to improve outreach to new members. In an interview, David Ginsburg expressed concern that the older listeners will be phased out, and stressed the importance of finding more younger listeners (of the middle-aged demographic), who may feel a nostalgic connection to the genres featured on WICN.

One common way for traditional stations to stay relevant and promote their material to the younger demographic is through social media. Studies suggest that grassroots-style promotion through social media websites like Facebook can provide an extension of the traditional radio experience while staying relevant to younger users (Laor, 2019; Asni Gani et al., 2019). Other studies support this conclusion, but note that content-building strategies and significant time investments are essential to promoting stations in a meaningful way to their listeners (Steinfeld & Laor, 2019; Laor, 2019).

Website Design and User Experience

User experience (UX) design is a process of creation that includes the entire scope of an end-user's interactions with a product or company, including its website and services. Rather than focusing on individual details of a product, UX focuses on the product as a whole and how it is experienced by the end user. Usability is one aspect of this design, the poor execution of which can dissuade users from using a product entirely, or at the very least instill a lack of confidence in a product on the part of the user (Hartson, 2012, pp. 7-11).

User experience can be improved on websites by keeping the end-user's needs in mind while designing layouts and implementing features. Examples of this can be seen from research, like in the study conducted at the University of Oviedo. This study found, by observing 592 participants performing mouse actions on a website interface, that age and gender played a significant role in the way users navigated online (Fernandez-Lanvin et al., 2018). Other studies have used machine learning to observe the way users of different skill levels use websites (Ghazarian, 2010). While implementing elaborate machine learning algorithms is unnecessary for small public radio stations, it is still clear that the design of a website can affect the quality of the experience for certain user demographics. As an example, older users may be discouraged from using a website with features that have not been optimized.

Previous Work

User experience was also an issue of focus for the 2018 IQP group's research, when they were tasked with renovating the WICN website (Hou et al., 2018). At the time, WICN's site used an outdated CMS and lacked a visually appealing design. The research team evaluated the functionality of the website by creating a checklist and found that all of the necessary features were present, but the design affected navigability to them and in some cases rendered them useless. In some cases, features were hidden behind expanding menus, and in others they were obscured by lack of contrast in font type or color between clickable links. These design choices negatively impacted the user experience and made it more difficult to lead the user to the features WICN was looking to showcase.

Similar stations WWOZ and KRTU were then used as case studies for design trends to adopt. This required migrating to a new CMS, which was chosen based on the criteria of user friendliness, reliability of plug-ins, and non-requirement of technical expertise. Ultimately, WordPress was chosen as the CMS and a procedure for setting up the new site was created. WICN has since followed these recommendations and updated the website, but the issue of improving the audience experience still persists. Now that we have had some time for the changes made to the website to show their merits, we can evaluate what worked and make more minute adjustments to the content on the website or the way social media is integrated into the functioning of WICN.

Examination of Comparable Radio Station Websites

To further inform our analysis of WICN's website, we also investigated the websites of other comparable radio stations. We selected ten radio stations based on their proximity to Worcester, MA, size, popularity, and genre. Through studying these other sites, it became apparent that there are vast differences in quality and content prioritization between stations. However, in spite of these differences, we were able to identify some trends.

All of the sites followed a similar page layout consisting of: a navigation bar at the top featuring key links; a content body section with articles, advertisements, and show schedule; a footer with additional links to supplement the primary navigation bar; and a "listen live" toolbar on the bottom to listen to the station online. The most common deviations from this basic pattern include placing the "listen live" web player functionality in the navigation bar and omitting the footer section.

Most sites have between four and nine links in their navigation bar, which usually include some combination of listening options, about pages, donations, advertising, content exploration, schedule, and contact information. Additionally, most also utilize small icon links to the station's social media pages. Out of ten sites, only two varied in that they had the bulk of their navigation placed in a hidden menu on the left side of the page rather than at the top. Instead, the top of their page only had the station logo and a button to reveal the side navigation. This hides the clutter of links from users, but it could also make it more

difficult to find what they are looking for.

The content included in the navigation bars often overlaps heavily with the footer, especially in the case of sites with more links in the navigation bar. One notable difference, however, is that legal information is almost exclusively placed in the footer, as well as archives and detailed contact information.

The main content areas of the sites have less variation than the navigation components. Across the board, this is where stations display articles; events; schedule and playlist information; contests; and of course, advertising. These elements are usually cards showing the title of the event or article and a supporting image. The cards were typically arranged in rows categorized by type, with some sites having featured content highlighted at the top of the page.

We found that sites using high-quality images and original content were more enjoyable to explore, while sites that heavily leaned on stock images or "clickbait" articles tended to feel corporate and impersonal. The remaining sites which featured original content but in a disorganized way or with low quality images felt amateur compared to the former groups of sites.

The web player functionality was also largely similar across all but four of the sites examined. The typical implementation placed a toolbar at the bottom of the screen. When the page is loaded, it shows the currently playing song and controls start listening. Some sites chose to also display additional information such as the song's album art or links to the song on other platforms like Spotify.

Another pattern shared by two of the sites had the web player embedded in the top navigation bar. This design choice means that there is less space for the web player, leading to more concise information and controls. However, it does have the benefit of being one of the first things you see when loading the page for the first time.

The two remaining sites had more complicated systems where users enter a separate page and make a selection before listening along. These stations both had multiple streams of music running simultaneously, so users first have to choose which they want to listen to before they can click "play." Interestingly, one of the sites with a horizontal web player also had multiple streams, but both streams were displayed on the home page side by side. This implementation makes it easier to choose and start listening to music because it removes the barrier of opening a separate page first.

We can use this information about typical site layouts to look for places where we can tweak WICN's design. Using a similar layout to other radio station websites could make it easier for users to navigate the site, as they will recognize patterns that they have come to expect from other sites.

Header

[About](#)

[Schedule](#)

[Donate](#)

[Contact](#)

Content area

- [Articles & blog posts](#)
- [Show schedule & playlist history](#)
- [Information about events](#)
- [Advertisements](#)

Playlist History

Previous Song

Previous Artist

Previous Song

Previous Artist

Previous Song

Previous Artist

Footer

- [Legal information](#)
- [Archives](#)
- [Detailed contact information](#)
- [Newsletter, RSS feed](#)

Current Song

Current Artist



Methodology

Websites are a critical element of the user experience for modern radio stations. While WICN's website is easy to manage and contains valuable information about their programming, it can be reorganized and streamlined to make it easier for end users to learn about and engage with WICN. Our objective was to assess the perception of the value of certain features on WICN's website by interviewing personnel and stakeholders.

We conducted short interviews with five WICN employees to determine which features are most important to include on the website. We believed that people who work with WICN have the best understanding of which services define what makes WICN special. The interviews took a conversational, qualitative approach because we wanted to capture information as organically as possible. In order to effectively evaluate the responses, we recorded the interviews so that we could reference specific quotes and timestamps. We will store this data for a maximum of one year before deleting the records.

By taking a qualitative approach to the interviews, we were able to form a more personal connection with the subjects and gain a deeper understanding of what informs their opinions. This also mitigates some of the drawbacks to a very small sample size, because we have more insight into their specific history and rationale.

Our questions for WICN staff were as follows:

1. How long have you been working in the radio industry?

This question was intended to gather background information about the subject. We wanted to understand more about their background and perspective on the radio industry so that we could better understand which aspects they value.

2. What is your favorite thing about radio as a medium?

Aside from providing insight into what the subject feels is important, this fun question is also partially an icebreaker. We wanted to know what the interview subject thought was important about radio because it informed what features we want to promote the most on the website.

3. How long have you been working with WICN?

Knowing how long the subject has worked for WICN specifically gives us an idea of how familiar they are with WICN's history and programming. If they have been there for a long time, they have probably seen many different iterations of programming and know which are most popular and successful. This is important because we wanted to be able to promote the most popular programs while also uplifting any "hidden gems."

4. Can you describe your role at WICN?

This question was meant to flesh out more background information about the subject. Their work at WICN certainly informs which elements they think are most important, so knowing what they do allowed us to better analyze their response to the final questions.

5. In your opinion, what programming and/or services offered by WICN are most important to listeners?

This is the first of two questions that directly address the goal of these interviews. We wanted to know which features the WICN staff feel are most important to listeners, so that we could emphasize them most effectively.

6. In your opinion, what programming and/or services set WICN apart from other stations? What makes them special?

In addition to offerings that are already known to listeners, we also wanted to promote the unique features of WICN in our design. For example, the Studio 50 recording studio on premise is not something you would necessarily expect from a radio station. We wanted to identify other such features so that we could make them more accessible to listeners via the website. WICN staff are most familiar with the variety of programming and services offered, so they could help us identify which ones really make WICN special.

7. When you use the WICN website, what do you notice first?

This question told us what the most prominent aspect of the website's home page is.

8. When listeners look at the WICN website, what do you want them to see first? What do you want the experience to feel like?

We asked this question after the previous question so as not to get a biased answer for what the subject notices first. If this lines up with what the subject wants listeners to see first or with what they think are WICN's most important services, then great! But if not, then we would know what to potentially change about the website.

9. What, if anything, about the current WICN website do you dislike? Why do you dislike these things? What do you want to keep? Why?

This was a more direct question, just to see if the staff had any particular strong opinions about the WICN website. We did not necessarily follow their suggestions.

With the data from these interviews, we highlighted key elements that are most commonly identified as important. Then, we drafted new ways to organize the website in order to emphasize these critical features. We achieved this by removing extraneous or duplicated entries from the main navigation, and replacing them with only the most important pieces of information.

When we crafted our recommendations, we also considered common layouts for other radio station websites. We aimed to find a balance between promoting WICN's unique characteristics while also maintaining a layout that is intuitive to users. Comparing the suggested changes to existing websites also provided insight as to whether the new features are feasible and useful to implement. By using the layouts of other sites as a template, we generated suggestions that are both functional and familiar.

Results

Conversations with WICN staff members generally fell into two categories: artistically focused and business focused. These categories also generally aligned with their role at the station, be it on-air host or underwriting manager. Out of our five interviews, two were more artistically inclined and three were about business and logistics.

Across both groups, when asked what sets WICN apart from other radio stations, the most common response was always "the people." As a non-profit station, many of the hosts are passionate volunteers rather than paid employees of the station. Multiple subjects also expressed that they felt WICN is contributing to keeping jazz alive in the age of rock, hip-hop and pop music dominance, as they are one of only 65 jazz-oriented stations across the United States and Canada (*radio-locator.com*, 2019). WICN also maintains a physical collection of music to be played on air, which is often hand-selected by hosts song-by-song. This is a unique feature compared to commercial radio stations, where the playlist is typically pre-determined with little to no input from the host.

These characteristics are becoming more and more rare as radio stations become increasingly commercialized and merged. Several subjects had been involved in the radio industry for decades, and each of them described a shift in the industry over the past ten years, as many smaller stations either went out of business or were purchased by corporate entities such as iHeartRadio. In the latter case, subjects described that station budgets were cut and they were often relocated to share a building with multiple other stations.

WICN functions almost as a time capsule, preserving not just the music from eras gone by, but also a style of operation that is rare to see today. Their volunteer hosts bring unique perspectives to the airwaves, and being an independent nonprofit station means that they are able to stay true to their focus on jazz music.

Where the two groups diverged is their opinions on the usability of WICN's website. The more artistically-oriented subjects were less interested in the experience of the website, and more focused on changes to existing content. However, subjects who were on the business side had specific ideas about features and updates that would improve site usability.

Multiple subjects reported that listeners often call to inquire about songs that were recently played on-air. Currently, the staff who operate the phones at the station do not have any way to access the playlist history. This leads to frustration on both ends as they are unable to answer the listeners' questions. A popular suggestion to resolve the issue was to list the playlist history on WICN's website. Then, when listeners call in to ask about recent songs, staff members would be able to quickly and easily find that information, and direct listeners to where they can find it themselves in the future.

Two subjects felt that the navigation system on the site is difficult to use. The length of the dropdowns that appear from the main navigation bar was pointed to as a potential source of confusion for users, as the dropdowns only appear when hovered over and have up to nine items to select from. This could be mechanically difficult for some users to navigate. Additionally, some of the organizational choices were also criticized for being difficult to find. Specifically, navigating to the newsletter sign-up, as well as the listen live feature were called out as sources of possible confusion for users.

Aside from aesthetic and organizational comments, another issue that arose was incorrect information. A subject exploring the site during the interview discovered that some information listed was outdated and incomplete. While this only occurred in one instance, the subject felt that it was embarrassing and possibly damaging to have these inaccuracies publicly viewable.

Conclusions and Recommendations

Based on these results, there are three main themes in which we believe WICN could improve its site user experience.

1. Correct factual content
2. Access to station information
3. Access to music

Factual Content

It is important that all information posted on the website be correct. While the average end user may not notice the errors, it is still important to ensure correctness in order to mitigate confusion.

While browsing the site with an interview subject, we discovered that the page listing underwriting sponsors was possibly years out of date. This could potentially lead to conflicts with current sponsors and also raises questions about the accuracy of information across the site.

We advise that WICN closely inspect their site for other factual errors that may persist. While it would be a significant task to fully crawl through every page, this could potentially be combined with other organizational changes we will be discussing.

In addition to correcting existing errors, WICN should establish a formalized process for making edits and updates to the site going forward. This way, when possible errors are discovered, there is a clearly defined process to pass corrected information to a designated staff member who can update the site quickly and accurately.

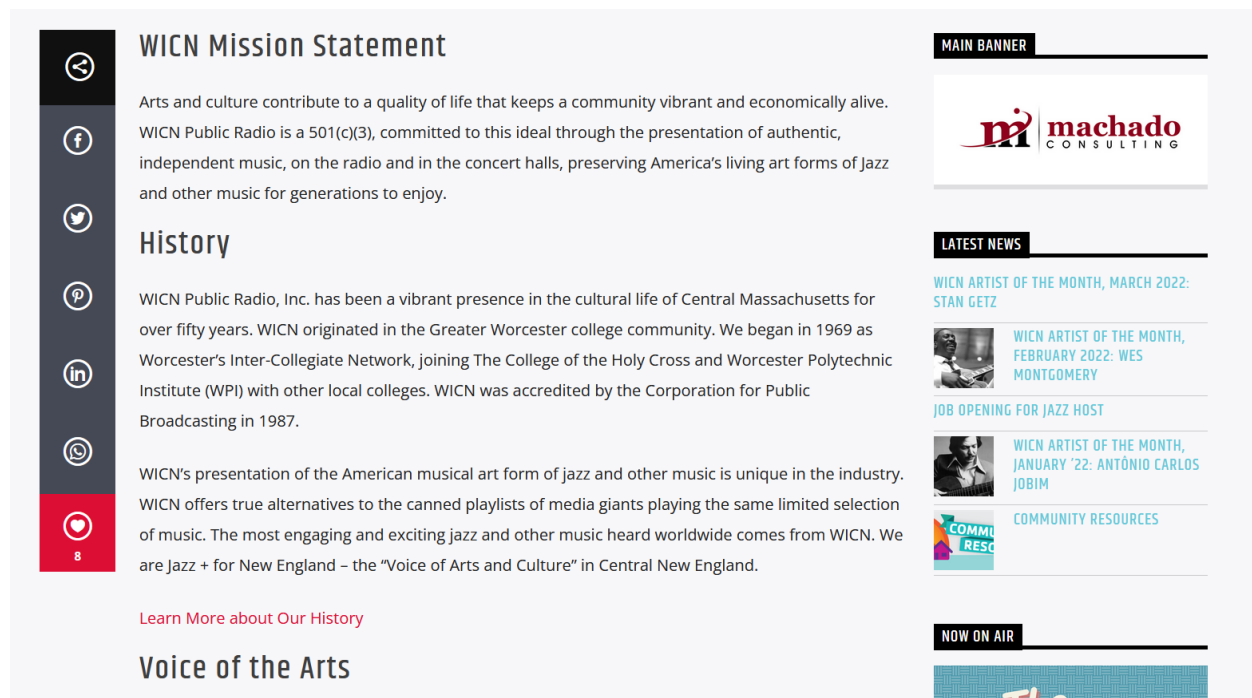
Access to Information

The purpose of the website is to convey information about the station to end users, such as the show schedule, events, and even the station's history. However, even if all of the information is present, users need to be able to effectively navigate the site for it to be successful.

Currently, the navigation bar at the top of the site has eight headings, six of which have dropdown menus that appear when hovering over with the mouse. These dropdowns contain between two and nine links themselves. This layout is very visually dense, and the longer dropdown menus extend almost halfway down the page.

The content of the dropdowns could also be a source of confusion. For example, the "About Us" heading contains nine items: about WICN; history of WICN; overview; board of directors; meeting dates; staff; hosts; five questions with...; and WICN artist of the month archives.

On closer inspection, the "about WICN" page also contains information about the history of WICN and its board of directors. While their respective links do lead to separate, more in-depth pages, condensing the content into one page should be considered. Alternatively, links to the detailed history and board of directors pages could be placed beneath their respective sections on the "about WICN" page. They could then be removed from the navigation bar, which would reduce visual clutter.



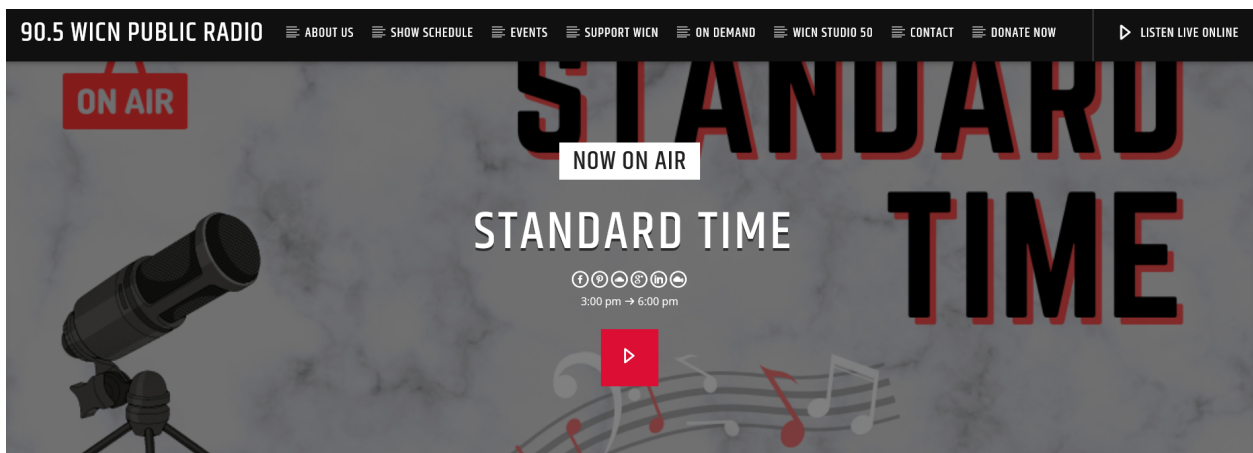
The screenshot displays the WICN website's 'History' page. On the left, a dark sidebar contains social media icons for Facebook, Twitter, Pinterest, LinkedIn, and YouTube. The main content area features the 'WICN Mission Statement' and 'History' sections. The 'History' section includes text about WICN's founding in 1969 and its accreditation in 1987. A red heart icon with the number '8' is visible in the sidebar. On the right, a 'MAIN BANNER' for Machado Consulting is shown, followed by a 'LATEST NEWS' section with three news items: 'WICN ARTIST OF THE MONTH, MARCH 2022: STAN GETZ', 'WICN ARTIST OF THE MONTH, FEBRUARY 2022: WES MONTGOMERY', and 'JOB OPENING FOR JAZZ HOST'. Below this is a 'COMMUNITY RESOURCES' section and a 'NOW ON AIR' section.

In a similar vein, the "meeting dates" item leads to a page detailing the times of open board of directors meetings. This content could also likely be either merged with or linked to from the "about WICN" page or the "board of directors" page.

Selecting the "overview" item brings you to the WICN blog. Also, clicking on the "about us" heading itself leads to the same page. While many radio station websites do feature blog posts, we would recommend that the title of the link be changed to reflect the content. Users who are looking for WICN blog posts may struggle to find them there. The heading link could then be switched to direct users to the "about WICN" page, which may be more expected behavior given the title.



Going beyond just the "about us" tab, we also noticed that the "hosts" links under "about us" and "programs" lead to the same page. Since there is only one other item under "programs," we would suggest that "hosts" be removed from that dropdown. Then, the "programs" heading could be replaced by the other remaining item: the show schedule.



Lastly, we can look at the "events" heading. One idea suggested in our interview with a WICN staff member is to relabel the "events" item in the dropdown to "community events." We agree with this suggestion as the link brings you to a list of events happening generally around Worcester, and not a list of WICN-specific events. These WICN events typically get their own list item under the "events" heading.

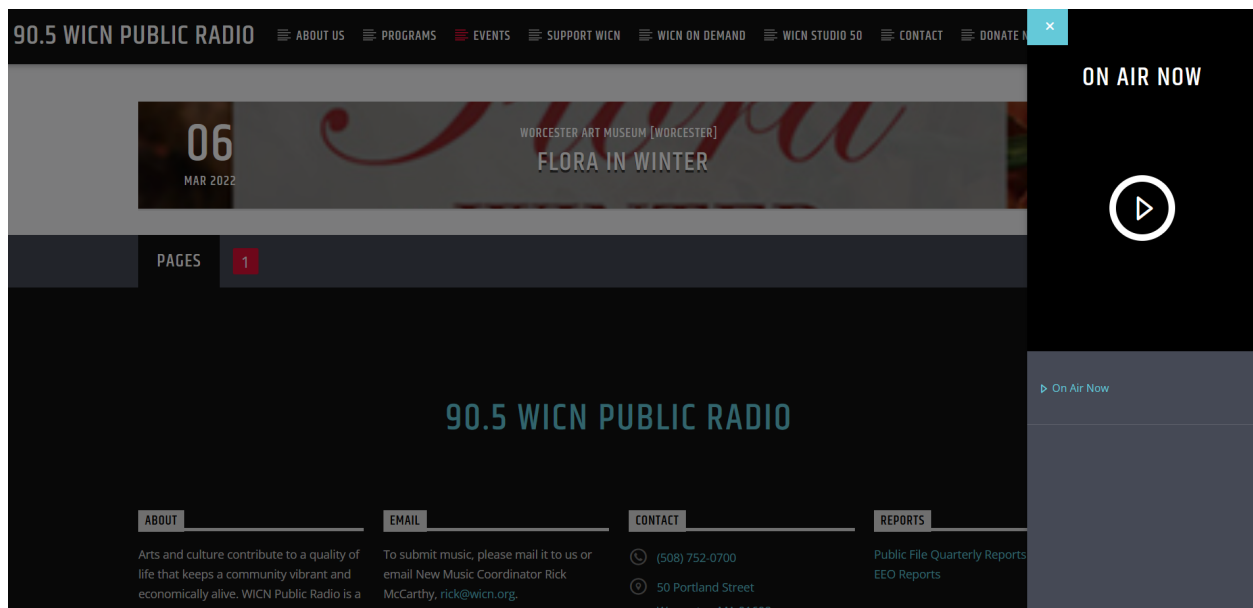
These recommendations are informed not just by our interview results but also by walking through the site as a user. Our main objectives of reducing clutter can also be applied throughout the site, beyond these specific instances. We advise that WICN continue to work through their website, specifically looking for redundancies and fragmented information which could be either reduced or combined together.

Access to Music

Most importantly, the website should serve as a portal to the music of WICN. WICN is a relatively small station with a limited range, but through the internet they can be accessed from anywhere in the world. Currently, there are improvements that can be made to the site to make it easier for users to appreciate WICN's music.

In our examination of other radio station websites, we discovered that there is a typical design pattern for listening online. The majority of websites we looked at had the feature as a horizontal toolbar across the bottom of the page, which displays the currently playing song and a one-click play button to start listening.

However, WICN deviates from this pattern. To listen along, users have to click on "listen live online" in the navigation bar, which expands a drawer from the left which shows two buttons which can be pressed to start the music.



This drawer does not show which song is currently playing, and having two buttons which do the same thing is a possible source of confusion. Two interview subjects reported that they have had to walk listeners through the process of starting the stream over the phone.

We suggest that this feature be redesigned to fall more in line with other radio station websites. While it does not have to be the exact implementation described above, showing the currently playing song from the home page, and having just one button to start the music would both entice users to listen and reduce barriers to doing so.

In addition to being able to listen along, most other radio stations display a short list of their playlist history on their websites. This is a feature that multiple interview subjects suggested would be useful to have on WICN's site. Currently, listeners often call in to the

station to try to find out the name of a recently played song. Because WICN's hosts often select their own music as they go, the staff who answer the phones frequently do not know what songs have recently played and have no way of finding out. Introducing a system to log the most recently played tracks on the website would enable staff to better assist those listeners, and also allow them to focus more on their primary duties, instead of trying to explain that they do not know what the most recent song was.

Aligning the site layout more closely with other radio station websites has the added benefit of utilizing design patterns that users are already familiar with, meaning that they are more likely to be able to figure out how to navigate the site without additional assistance.

These two changes may require more radical changes to the website than simply rearranging a few links. However, they would improve the experience for both listeners and staff. Streamlining the listen along feature, and displaying the playlist will enable users to be more independent and rely less on help from staff to start listening or find information.

Further research is needed to determine whether the existing WordPress theme can be adapted to the new design choices. Displaying previously played songs may also require significant changes to the code of the website in order to retrieve the names of the songs being played on air. While this has the potential to be challenging, we highly recommend further investigation and implementation of these features.

Appendix A: Comparative Analysis of Stations

<https://www.wers.org/> Emerson college radio, alternative

Navbar

- Logo
- 7 links (3 elevated)
 - Sponsorship, listen live, donate
 - Listen, discover content, donate, about staff
 - Lengthy drop down menus
- Social media links

Page Content

- Broadcasting from...
- Cards
 - Promotion with collab
 - History of the station
 - Info about staff
- Ads
- Playlist
- Blog posts
- Program info

Listen live

- Horizontal on the bottom of the page
- Always present
- Default paused
- Shows what is currently playing
- Album art
- Menu for more song info, share, like, etc

Impressions: not terrible. The double-layer navbar is distracting. Obvious use of stock images. Menu on listen live is awkward because it obscures the main content.

<https://www.wbru.com/> online radio, formerly broadcast, alternative

Navbar

- Logo
- 4 links
 - Read, watch, listen, info
- Social media links

Content

- Heavily image driven
- Articles
- Album reviews
- Embedded videos

Bottom navigation

- Podcast festival, contact, how to listen, legal, get involved, archive

Listen live

- Horizontal across the bottom
- Shows currently playing
- Default off

- Album art
- Spotify link

Impressions: Very minimalist, almost jarringly modern compared to other radio sites, most fleshed out listen live. My grandma would not want to use this site.

<https://kiss108.iheart.com/> popular in Boston area, top40

Navbar

- Logo
- Hamburger menu
- Search
- Login

Side Navigation

- Listen live, DJ info, other programming, music/podcast info, misc, contests/promos, contact, newsletter, advertising contact, social media

Page content

- Current DJ + up next
- Articles/Ads
- Self-Ads promoting iHeartRadio app
- Contests
- Recent/Top songs
- Shows/Podcasts
- Events

Bottom navigation

- Podcast, Google Home/Alexa connection, Contests, Contact, Advertising, iHeartRadio, Find a podcast, social media

Listen live

- Horizontally across bottom
- Shows currently playing song
- Default off
- Radio station logo

Impressions: Site seems to be mobile optimized and is kind of odd on desktop. The content seems largely "bought" and clickbaity. I wish the listen live had the album art instead of the logo. The "connect" section on the navigation is full of unrelated things?

<https://www.whrb.org/> Harvard college radio, jazz

Navbar

- Logo
- Currently playing
- 6 links
 - Departments, Programming, Contact, About, Advertising, Donate
- Social media

Page Content

- Articles
- Now Playing/Show Schedule tabbed together
- Advertising their app

Bottom Navigation

- Departments, programming, contact, advertising, support, archive, about
- Newsletter
- Departments (fully listed)
- Special programs

Listen live

- Embedded into the top navigation bar

Impressions: Nice how currently playing, schedule, listen live are close together at the top of the page. Use of layered navbar is less distracting than WERS. Clickable context menus are nicer than hover menus when they are this long.

<https://wumb.org/> UMass Boston college radio, folk

Navbar

- Logo
- Hamburger menu
- Listen live/currently playing
- 13 links
 - Login, programs, news, events, calendar, artists, playlist archives, weekend archives, membership, new music, audio archives, streams, donate
- Social media

Page Content

- Articles
- Ads
- UMass Boston logo
- Programs/news

Bottom Navigation

- About, Community, Support, Contact

Listen live

- Embedded in navbar

Impressions: Very cluttered navigation, crazy color scheme, overall very dated looking. Too much stuff is in the navbar, even though I liked listen live in the navigation of WHRB.

<https://www.wxlo.com/> popular in Worcester area, adult contemporary

Navbar

- Logo
- Social media
- Listen live
- Search
- 9 links: shows, music, podcasts, features, events, contests, connect, sweet deals, epic guarantee
 - Most of these have drop down menus

Page Content

- Slideshow with ads/collabs
- The queued playlist for the day with a link to "see 30 days of our song history"
- Concert calendar (shows upcoming Worcester concerts)
- The jen & frank podcast with a vertical list of episodes
- Ads
- Articles
- Embedded facebook & twitter pages
- Follow us on instagram
- National news
- Entertainment news

- Free apps

Bottom Navigation

- Has a menu that expands when you click it
- 5 buttons: now playing, top hits, listen live, favorites, player controls
- A list of the queued songs for today

Listen live

- Horizontally across bottom
- Shows currently playing song
- Default off
- Album art
- Plays an ad when you click on it, then starts the music

Impressions: pretty cluttered and overwhelming, puts big ads in your face right away. Some of the social media stuff looks dated. The menus look modern though, I especially like the menu right next to the listen live.

<https://961srs.heart.com/> popular in Worcester area, adult contemporary

Navbar

- Logo
- Search
- On air (name of host w/ picture)
- Up next (name of host w/ picture)

Page Content

- Articles
- Contests & promotions
- Recently played songs
- Shows
- Podcasts
- More articles at the bottom (“Latest Stories”, “Don’t Miss This”)

Bottom Navigation

- Social media
- Amazon Alexa/Google Home
- Contact
- Advertise on 96-1 SRS
- Download The Free iHeartRadio App
- Find a Podcast

Listen live

- Horizontally across bottom
- Shows currently playing song and the show it’s on i.e. “Today’s Variety, Worcester”
- Default off
- Radio station logo

Impressions: Has a popup ad in the center of the screen when you first load the site, which is annoying. The navbar looks simple and clean, and overall this website doesn’t have too many things on it. It has multiple sections dedicated to articles that could probably be combined into one section. The aesthetic looks modern and minimalist.

<https://kkjz.org/> Los Angeles jazz radio

Navbar

- Logo
- Large photo of a jazz musician; it changes to a different musician each time you reload the page
- Small link to the musician’s official website in the upper right corner
- 5 small buttons at the top: home, programming, support, events, about, fcc applications

- 4 larger buttons: listen now, donate now, support kjazz, contest rules

Page Content

- Only 3 articles
- 1 ad
- Contact us
- Latest tweets
- Latest facebook
- Newsletter

Bottom Navigation

- More social media links
- Links to download the kjazz app on iphone + android

Listen live

- You have to click “listen now” and pick from 3 options that all open a new tab. The options are:
 - Kjazz live stream (this option takes you to a very plain-looking black and white page where you can listen to the station. It does tell you what song is playing, but there’s no album art. It didn’t work very well on my mac when I was in Alden, but that may have been an issue with my internet connection.)
 - Kjazz hd2 cool jazz stream (takes you directly to a dated-looking page where you can listen to another station. The page doesn’t tell you the name of the currently playing song.)
 - Kjazz archived programs (takes you to a list of play buttons labeled with their show name and date. Doesn’t tell you what the currently playing song is.)

Impressions: very purple. This site is vertically very short, which I like because scrolling through tall lists is annoying. However, there is no listen live function on the home page; you have to go through a strange process to actually get to the music. I like the aesthetic of the home page but the website overall isn’t very functional.

<https://thebirn.com/> Berklee Internet Radio Network - may be of interest because they have a large jazz community and are mostly of the younger crowd

Navbar

- Logo
- 4 buttons: home, channels, about, blog. The latter 3 have dropdown menus

Page Content

- Blog posts
- A list of 4 BIRN shows
- Featured broadcasts
- The BIRN on youtube
- The BIRN on twitter

Bottom Navigation

- Ad for a Berklee concert
- search
- Mailing list
- Social media

Listen live

- You can click on any of the four shows to be taken to a separate page where you can listen to the music. The pages have a list of the most recently played songs, and you can click the play button on all of them, but some of the songs won’t load.

Impressions: It's very clean and minimalist. I like that there isn't much space dedicated to articles/blog posts, and there are no irrelevant ads. I wish there was a listen live function at the bottom of the screen like some of the other websites though.

Appendix B: Literature Review

We believe that there is room to expand and engage WICN's listener base by making improvements to their online presence. Social media continues to exert a pronounced influence over the dissemination of media. As social media demands more consumer attention, many brands in the traditional media space have had to expand their social media presence dramatically in order to maintain and grow their audiences (Chan-Olmstead 2011). While WICN does already have a website and social media accounts, we would like to examine what changes can be made to improve discoverability and further engage the audience.

For traditional media outlets like a radio station, social media is an invaluable source of feedback from the audience. It can be used to create a two-way flow of information between content creators and listeners, making it easier to assess what types of content the audience prefers, and what they might like to hear in the future (Chan-Olmstead 2011). Especially since WICN does not currently gather metrics about listeners, interactions on social media could potentially be used to estimate which community members are most engaged with the station.

Social media platforms are also valuable for marketing and self-promotion. They are designed for content to spread and be shared, which can be taken advantage of by companies who are trying to raise awareness of their product. However, not all social media platforms are created equal, and we hope to investigate how to maximize the effectiveness of social media use on a per-platform basis. For example, while Twitter might be a preferred place for fans to gather and converse, Instagram is better suited to engaging with the business (Phua 2017). We would like to more thoroughly examine WICN's current social media usage to determine how it can be finely tuned to different platforms to best connect with its audience.

In addition to social media platforms, a business's website is also a critical point of audience contact. In order to ensure that the entire online WICN experience is positive, we will also research how we can improve the website, which serves as a central source of information about the station's schedule and events, as well as a live broadcast.

We will also be exploring the usage of apps and other mediums that are friendly to mobile users, an ever-increasing population of listeners. While applications exist to listen to radio, it may benefit broadcast radio to develop their own custom applications to serve their music. Broadcast radio can work towards further distinguishing itself from music streaming services as listeners do find them unique from one another even when presented on a mobile platform (Chan-Olmstead 2011).

Overall our goal is to improve WICN's online marketing and ability to gather listener metrics, primarily through the usage of social media and the WICN website. We believe that

with little financial investment WICN can improve their outreach to their audience and make further impressions on those not aware of the station. With this online presence, WICN can also receive valuable feedback from listeners and gather metrics based on platform analytics. Feedback and metrics can be used to further inform how to market WICN and the type of content to broadcast for their audiences.

Ashley, C., & Tuten, T. (2015). Creative Strategies in Social Media Marketing: An Exploratory Study of Branded Social Content and Consumer Engagement. *Psychology & Marketing*, 32(1), 15–27. <https://doi.org/10.1002/mar.20761>

The Journal Psychology & Marketing (P&M) publishes research about the application of psychological techniques and theories to marketing. P&M serves as an outlet for articles designed to be of interest to practitioners and scholars in the fields of psychology and marketing.

This study observed the creative strategies being used by a sample of popular brands. The researchers analyzed the social media channels of 28 brands, all of which were in the top 100 in brand equity, and were recognized as having “social media excellence” by another report called Engagementdb. They found that out of the 28, the brands that used more social media platforms and the brands who used social media more frequently had higher engagement. The journal also included strategies that tended to lead to higher engagement, such as making posts that have opportunities for consumer participation, and giving the consumer a positive self-image. They mentioned an example of a social media campaign by Proctor and Gamble that asked consumers to send in stories about their mothers. WICN could do something similar, maybe with a post that asks “what’s the best jazz concert you’ve been to?” or something like that.

This info is relevant to WICN because it shows that using social media more frequently and adopting more platforms increases audience engagement. The journal also makes some suggestions for what kinds of posts are most effective for leading consumers to the WICN website and shows, e.g. interactive posts that ask for responses from consumers. Getting the audience to respond to and discuss WICN’s posts will make the posts more engaging and make people more likely to check out the station itself.

Chan-Olmsted, S. (2011). Media Branding in a Changing World: Challenges and Opportunities 2.0. *International Journal on Media Management*, 13(1), 3–19. <https://doi.org/10.1080/14241277.2011.568305>

The International Journal of Media Management publishes on a wide array of media types, with a focus on management and transitions in the industry. It aims to be a forum for academics and industry experts to discuss how economic and organizational success can be achieved in the rapidly-changing industry.

In the article *Media Branding in a Changing World*, Sylvia Chan-Olmsted discusses how social media impacts traditional media and how it can be converted into a beneficial factor. Social media is extremely prolific in today's world and is a direct competitor to traditional media for consumer attention. Because of this, the world of branding has shifted to be centered on conversations and buzz surrounding the media.

Social media can be used to facilitate one-on-one interactions between consumers of media and its creators. This is mutually beneficial because it provides feedback to the

creators about what consumers want to see, while the consumer becomes more engaged with the media when they have a direct connection to it. These one-on-one interactions tend to benefit personality-oriented media more, but other strategies can be applied for other media types as well.

For WICN, expanding their social media presence could greatly benefit their connection to their audience by allowing listeners to communicate with their favorite hosts and provide feedback on the shows they listen to. In the absence of formal metrics, WICN could also leverage this feedback from listeners on social media to learn more about their audience.

Chan-Olmsted, S., Wang, R., & Hwang, K.-H. (2019). Substitutability and complementarity of broadcast radio and music streaming services: The millennial perspective. *Mobile Media & Communication*, 205015791985664.
<https://doi.org/10.1177/2050157919856647>

This paper was headed by researcher Sylvia M. Chan-Olmsted, the Director of Media Consumer Research at the University of Florida, who has written papers published in other reputable journals focused around media like *The International Journal of Media Management* and the *Journalism & Mass Communication Quarterly*.

In this paper the use of media by millennials is analyzed to gain an understanding of the mediums that a majority of the population will use in the future for music. The paper goes even further to address how traditional music broadcasting may have to adapt to meet the challenge of music streaming services. Specifically, it focuses on the use of mobile apps that music broadcasting services have deployed and how demographics affect the likelihood to use different mediums for music.

The paper first approaches the question of how substitutable broadcast radio, streaming, and radio apps are to each other. To get this data they surveyed millennials' perceptions of the platforms and found that the traditional broadcasting and radio apps are easily substituted with one another whereas music streaming is seen as being distinct. They also surveyed to see how complementary the mediums were to one another and millennials responded that with similar levels of complementation between all mediums.

In reference to its own data and the studies of others, the paper comes to the conclusion that broadcast radio is in a unique position where viewers use radio to become more informed on the music they listen to. Many listeners may use listening stream services complementary to radio. The paper also postulates that the usage of apps and other online mediums makes it possible for radio stations to monetize without injecting advertisements into their broadcast.

Felix, R., Rauschnabel, P. A., & Hinsch, C. (2017). Elements of strategic social media marketing: A holistic framework. *Journal of Business Research*, 70, 118–126.
<https://doi.org/10.1016/j.jbusres.2016.05.001>

The *Journal of Business Research* is focused on relating business theory to actual practices. It publishes articles on many of the subareas of business, including marketing. The author of this article, Dr. Reto Felix, is a professor of marketing at the University of Texas Rio Grande Valley, College of Business and Entrepreneurship.

This article identifies a framework of four features to holistically categorize approaches to social media marketing: culture, scope, structure, and governance. These four elements tend to be interdependent on each other and operate on a sliding scale between extremes. To gather this information, the authors interviewed and surveyed marketing professionals in Europe.

Culture is how open and authentic a company's online presence is. Companies that tend to keep their internal personality closed to the public would be more conservative, while more interactive companies are considered more modern. The scope of a company's online presence refers to how heavily it is used internally and externally. Structure refers to whether social media activity is constrained to one department, or if it is in the hands of multiple users within the company. Lastly, governance is how closely a company regulates its social media presence.

The experts interviewed in this study indicate that using social media more broadly as a tool to connect with users, rather than just posting content without interaction, is more preferable to a closed scope. However, for the other three pillars, opinions were more mixed, being more on a case-by-case basis.

We can more closely examine WICN's handling of social media to identify where they fall on each of the scales, and then assess whether it may be more beneficial to adjust some or all of these areas. These definitions give us a framework to assess how WICN operates on social media and compare to other similar companies.

Phua, J., Jin, S. V., & Kim, J. (Jay). (2017). Gratifications of using Facebook, Twitter, Instagram, or Snapchat to follow brands: The moderating effect of social comparison, trust, tie strength, and network homophily on brand identification, brand engagement, brand commitment, and membership intention. *Telematics and Informatics*, 34(1), 412–424. <https://doi.org/10.1016/j.tele.2016.06.004>

The journal *Informatics and Telematics* is an interdisciplinary journal which explores the complex effect digital media has on the world. Among other topics, it publishes research on the psychosocial effects of social media. Author Dr. Joe Phua is a professor at the University of Georgia College of Journalism and Mass Communication, and has published other works exploring branding in the online space.

This study explores and analyzes how social media platforms are utilized in different ways by end users. Social media is a key element for users to discover and research brands, and 96% of businesses use social media to promote their products. The authors aim to find explanations for why users utilize specific social media.

This study collected data on 297 end users and analyzed which social media platforms they used and how they used them. The key social media sites analyzed were Facebook, Twitter, Instagram, and Snapchat. The general uses of social media are passing time, showing affection, following fashion, sharing problems, demonstrating sociability, and improving social knowledge.

Coming back to branding, the study focused on four elements regarding brand communities: identification, engagement, commitment, and intention. Out of the four dominant platforms, Twitter has the best identification and membership intention of brand communities, while Instagram has the best engagement and commitment to brand communities.

This information is valuable to WICN because it shows which platforms are most important to developing and solidifying connections with consumers. While the social media landscape is constantly changing, this research from 2017 should largely still be relevant as a starting point. WICN primarily focuses on Facebook, which is still the dominant platform in terms of user base, but Twitter and Instagram are more effective for establishing connections with users as a brand.

References

- Antonopoulos, N., & Veglis, A. (2012). Technological characteristics and tools for Web Media Companies in Greece. *2012 16th Panhellenic Conference on Informatics*.
<https://doi.org/10.1109/pci.2012.20>
- Asni Gani, N., Maulianza, M., & Rifat Adi Mulya, M. (2019). Social Media and radio broadcasting integration to expand the market of I-Radio Jakarta. *KnE Social Sciences*. <https://doi.org/10.18502/kss.v3i26.5409>
- Bonet, M., Fernández-Quijada, D., & Ribes, X. (2011). The changing nature of Public Service Radio: A case study of ICAT FM. *Convergence: The International Journal of Research into New Media Technologies*, 17(2), 177–192.
<https://doi.org/10.1177/1354856510394593>
- Bonini, T., *View of the new role of radio and its public in the age of social network sites: First Monday*. View of The new role of radio and its public in the age of social network sites | First Monday. (2014.). Retrieved March 2, 2022, from
<https://firstmonday.org/article/view/4311/4093>
- Chan-Olmsted, S., Wang, R., & Hwang, K.-H. (2019). Substitutability and complementarity of broadcast radio and Music Streaming Services: The millennial perspective. *Mobile Media & Communication*, 8(2), 209–228.
<https://doi.org/10.1177/2050157919856647>
- Cordeiro, P. (2012). Radio becoming r@dio: Convergence, interactivity and broadcasting trends in perspective. *Journal of Audience & Reception Studies*.
- Fadel, L. M. (2014). Experience-centered web design model. *Design, User Experience, and Usability. User Experience Design for Diverse Interaction Platforms and Environments*, 92–103. https://doi.org/10.1007/978-3-319-07626-3_9
- Fernandez-Lanvin, D., Andres-Suarez, J. de, Gonzalez-Rodriguez, M., & Pariente-Martinez, B. (2018). The dimension of age and gender as user model demographic factors for automatic personalization in e-commerce sites. *Computer Standards & Interfaces*, 59, 1–9. <https://doi.org/10.1016/j.csi.2018.02.001>
- Finstad, K. (2010). Usability metric for user experience. *PsycTESTS Dataset*.
<https://doi.org/10.1037/t81952-000>

Garrett, J. J. (2011). *The elements of user experience: User-centered design for the web and beyond*. New Riders.

Ghazarian, A., Noorhosseini, S.M. Automatic detection of users' skill levels using high-frequency user interface events. *User Model User-Adap Inter* 20, 109–146 (2010). <https://doi.org/10.1007/s11257-010-9073-5>

Hartson, H. R., & Pyla, P. S. (2018). *The Ux book: Process and guidelines for ensuring a quality user experience*. Morgan Kaufmann.

Hendricks, & Mims, B. (2018). *The Radio station : broadcasting, podcasting, and streaming* (Tenth edition.). Routledge, an imprint of Taylor and Francis.

Krause, North, A. C., & Hewitt, L. Y. (2015). Music-listening in everyday life: Devices and choice. *Psychology of Music*, 43(2), 155–170. <https://doi.org/10.1177/0305735613496860>

Laor, T. (2019). "hello, is there anybody who reads me?" radio programs and popular Facebook posts. *International Journal of Interactive Multimedia and Artificial Intelligence*, 5(7), 80. <https://doi.org/10.9781/ijimai.2019.10.003>

Laor, T., Galily, Y., Tamir, I. (2017). Radio presence in online platforms in Israel, *Israel Affairs*, 23:5, 951-969, DOI: 10.1080/13537121.2017.1345420

Steinfeld, N., Laor, T. (2019). New Arenas or More of the Same? Public and Commercial Radio Stations on Facebook, *Journal of Radio & Audio Media*, 26:2, 194-209, DOI: 10.1080/19376529.2018.1431890