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Predicting the Adoption of Mobile DTV
by Local Television Stations in the U.S.

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Abstract

Just a few years after local TV stations transitioned from analog to digital transmissions, dozens of stations across the U.S. have begun to provide live programming via mobile DTV. An exploratory study of television station managers (adopters and non-adopters of mobile DTV) focused on various perspectives of the technology, adoption motivations, and audience factors. Findings revealed that station owners and management were the ones who primarily determined whether or not to adopt mobile DTV. Additionally, stations that had adopted the technology were more likely than non-adopters to be motivated by a desire to be the first to use mobile DTV.

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For more than a decade, the transition of U.S. television stations from analog to digital dominated the attention of broadcasters, politicians and the public. Barely two years after the transition was complete in June 2009 (DTV.gov), the changing technological landscape continues to challenge local television stations as broadcasting evolves from a half century of over-the-air transmission to multiple channels of distribution.

The present demands for local broadcasters are two-fold: adapting to emerging technologies, while addressing the diverse ways their audiences access content. Compared to decades of terrestrial only broadcasts, stations are now faced with developing a “three-screen strategy”: over-the-air, websites, and content for mobile devices (State of the News Media, 2011). According to research by RTDNA/Hofstra University in the last quarter of 2010 (Papper, 2011), 42% of TV station news departments were “providing content” for mobile devices.

To extend audience reach, some stations are posting news videos to YouTube through the site’s “News Near You” feature (Potter, 2010). Social media also are increasingly becoming a means of connecting with a station’s publics (State of the News Media, 2011). For example, WCTV in Tallahassee, Florida, used Facebook and the station's website when technical problems prevented the station from transmitting its late night news via terrestrial broadcast (Bergman, 2011).

A growing trend in local television is the dissemination of content over mobile devices. According to research by the Consumer Electronics Association (CEA) (2011), the television set is still the preferred means of viewing video content. However, there has been an increase in the number of people watching programming via other technology, including computers, video in

vehicles, and smart phones (CEA, 2011). Research by Nielsen noted that the availability of viewing platforms other than television sets might be one reason for the recent decline in the percentage of TV households (Mandese, 2011). In 2011, “executives from Disney, Turner, and Comcast” predicted that, within the next two years, three-quarters of “TV content” would be available “online and on mobile devices” (Levine, 2011, para.1).

Media organizations are beginning to capitalize on mobile technology through the use of apps. For example, PBS is providing videos from PBS Kids and PBS Kids Go via an iPad app (“PBS introduces,” 2011). HBO Go makes mobile content available anywhere to its subscribers (Corr, 2011). ESPN is available through an iPad app for subscribers through providers such as Time Warner Cable and Verizon (Worden, 2011).

More recently, television stations have begun venturing into program distribution via mobile DTV. The development of this technology and its adoption by television stations in the U.S. is relatively recent. It is, therefore, not surprising that few studies have been conducted on this topic. Scholars have yet to consider the perspective of stations that are considering implementing the technology. The purpose of this exploratory study was to assess the attitudes of television station managers about mobile DTV. Secondly, based on diffusion theory and the prior adoption of new communication tools by local television media, this study also sought to determine which factors might predict the adoption of mobile DTV by television stations.

Mobile Television

Mobile television has different forms that are based on method of dissemination and reception (Orgad, 2009). The distinction is whether programming is streamed versus transmitted. The former constitutes television content that can be received by accessing a TV station’s website on browser-capable portable devices, such as smart phones. In contrast, the latter is

television content that is broadcast (Orgad, 2009). It is the latter definition that is used in the present study of mobile DTV.

The Telecommunications Act of 1996, which mandated the transition of television stations from analog to digital, paved the way for the current development of mobile television. Since stations were transmitting a digital signal, communicating with mobile devices was the next logical step. The development of standards for Mobile DTV was initiated by the Advanced Television Systems Committee (ATSC) in April 2007 (OMVC, 2008). In October 2011, the ATSC approved use of the A/153 standard (OMVC, n.d.), referred to as “ATSC Mobile DTV” (In-Stat, 2011). Rather than requiring additional frequency spectrum, the A/153 standard utilizes part of the station’s digital signal (Jessell, 2011). According to the Open Mobile Video Coalition (OMVC, n.d.), stations only need to add a “Mobile DTV exciter and signal encoding equipment” (para. 2) to transmit a mobile DTV signal. The Coalition reported that, as of August 2011, 96 stations were broadcasting mobile DTV (Palenchar, 2011)

A critical matter for receiving transmissions on mobile devices was the *All Channel Receiver Act*. Enacted by Congress in 1962, the law gave the Federal Communications Commission (FCC) the authority to require that TV sets were “capable of receiving all channels allocated to television broadcasting” (see e.g., FCC, 2001; FCC, 2010). In 2002, amendments were made to the legislation to reflect digital television (McAdams, n.d.), so that it included both analog and digital channels. In June 2010, in response to a petition by Dell, LG Electronics and Hauppauge (McAdams, n.d.), the FCC approved a waiver to the analog tuner requirement to specifically allow mobile digital television devices to be sold without an analog tuner (FCC, 2010). The waiver required that the device contain a A/153 tuner, be “designed to be used in motion,” and carry a message on the packaging that the device does not receive analog channels.

Presently, there are two groups of television broadcasters and networks that are involved in mobile DTV content licensing and service provision (Greenwald, 2011). The Mobile500 Alliance, which started in December 2010 (Mobile500 Alliance, 2011), includes entities such as “Tribune, Sinclair, LIN Media, Grey and more than three dozen other small-market station groups” (Greenwald, 2011, para. 4). The other, Mobile Content Venture (MCV), which was organized 2010, includes the Fox, NBC and Ion networks, as well as nine station groups, such as Belo, Cox, Gannett, Hearst and Scripps (MCV, 2010).

Local broadcasters have several concerns about implementing mobile DTV. First are technical capabilities, both for the stations and their audiences. Several technology companies are offering devices that enable reception of mobile DTV (Winslow, 2011). For example, RCA has introduced digital capable TV sets that operate on batteries (Goetzl, 2011a). Television transmissions may also be received by other communication devices, such as smart phones. The chips that are needed to receive DTV signals in those types of devices are inexpensive (Quain, 2010); however, the critical issue is getting wireless providers to include the chips in their devices (Dickson & Eggerton, 2009; Greenwald, 2011). In addition, as noted above, television stations need special equipment to transmit mobile DTV programming (Dickson, 2010b).

A second issue is distribution rights related to program origination. Distributing content to mobile devices may be potentially problematic for television stations because of the need to obtain rights to transmit signals through means other than terrestrial broadcasts. Specifically, the concern is whether stations will be permitted to simulcast network programs both through traditional over-the-air broadcasts and to mobile devices (Dickson, 2010a). Tangentially related to programming is whether mobile DTV content should be free or require viewer payment. Free

simulcasts of stations' programs is the most probable approach, but subscription services also are possible (Dickson, 2010a).

Audience perceptions also are crucial to station adoption of mobile DTV. Mobile DTV trials that were conducted in Washington, D.C. found that people were pleased with the quality of the picture (Dickson, 2010a). Furthermore, results of the trials showed that content was not as important as viewing times, which can be anytime during the day (Greenwald, 2011).

Diffusion Theory

Diffusion is defined as the process by which an innovation is communicated over time among members of a social system (Rogers, 1995). In the present study, the innovation is mobile DTV. The social system is comprised of management of local television stations in the United States. Communication may occur in diverse ways, including articles in trade publications and newspapers; and interpersonal conversation between managers, as well as news workers and other influential personnel in television stations.

Rogers (1995) posited that there are five perceived characteristics of an innovation that influence its adoption: (1) relative advantage, (2) compatibility, (3) complexity, (4) observability, and (5) trialability. All characteristics except complexity are positively related to the adoption.

Relative advantage is often associated with a cost/benefit analysis in which individuals or organizations determine whether it is in their best interest to adopt an innovation (Rogers, 1995). An important aspect of this characteristic is economics, which can be a crucial issue for broadcasters. For example, Schultz (2005) found that key decision makers at religious television stations did not perceive the transition to digital was beneficial to them. Because the move to digital was mandated of all television stations in the U.S., there was no alternative. In contrast, there is no legislative requirement to adopt mobile DTV. However, it might be to a station's

advantage to do so, given market competition and the growing diffusion of video consumption on smart phones and tablet computers. Adoption of mobile DTV might, therefore, largely be a matter of cost, since stations need special equipment to transmit to portable devices (Dickson, 2010b).

Compatibility is related to the extent to which the innovation is similar to existing objects or practices; how well it fits "values, past experiences, and need of potential adopters" (Rogers, 1995). A high degree of compatibility tends to reduce the level of uncertainty toward the innovation. Because stations already have experience with posting to their websites, there is an assumed degree of congruence in delivering content via mobile DTV.

Complexity is associated with the level of simplicity or complexity in using the innovation (Rogers, 1995). Television stations interested in implementing mobile DTV will need to understand the technological side of distributing content via this method. As noted above, complexity is associated with negatives of adopting an innovation, so that the higher the perceived complexity of the innovation, the lower the tendency to adopt the innovation. For example, a manager who perceives mobile DTV as too complex is less likely to implement the technology. Additionally, given issues related to rights to disseminate content on multiple platforms (see e.g., Flint, 2011; Goetzl, 2011b), managers might view the entire process as too cumbersome. Although content distribution might be the same as terrestrial broadcasts, information must be formatted differently for smaller screens (Jessell, 2011). On the other hand, after the transition to digital, the addition of mobile DTV might seem a relatively simple process.

Trialability is the ability for a potential adopter to try an innovation before deciding whether or not to adopt it (Rogers, 1995). Additionally, this provides an opportunity to see how the innovation works in the potential adopter's particular situation. However, as Rogers (1995)

noted, some innovations are more difficult to try than others. Mobile DTV may be the example of that contention. Coupled with complexity, local television stations might perceive that implementing mobile DTV is too difficult to try, since it requires additional technology.

Observability relates to how well potential adopters can see an innovation in use (Rogers, 1995). Regarding the adoption of mobile DTV, managers can observe other stations' use of the technology, but without being able to observe results in relation to television audiences. The issue is the extent to which adoption of mobile DTV by other stations in a market influence other managers to implement this distribution method.

In addition to the perceived characteristics of an innovation, organizations also adopt innovations based on three types (Rogers, 1995). Adoption from the optional perspective means the organization does not sense a need to adopt or is not mandated to do so. Under collective adoption, the decision to implement an innovation is based on consensus. The third type of innovation adoption in an organization is authority-driven. In that instance, a few people who are in authority positions make the decision to adopt. In the case of mobile DTV, stations that are part of a station group might fall under either collective or authority drive, depending on the amount of participation the local manager has in the decision process. For example, as of 2011, broadcast groups in various markets across the U.S. were working with organizations such as Mobile Content Venture (Friedman, 2011) and Mobile500 (Winslow, 2011) to implement mobile DTV services.

Local Television and Technology

Television station managers have faced a number of issues over the years regarding the implementation of various technologies. Lacy, Atwater, Qin, and Powers (1988) found that cost of equipment was a central concern for news directors when it came to adopting satellite news

gathering (SNG) technology. Additionally, stations were more likely to use SNG when other stations in a market also used the technology. Thus, stations perceived it was to their advantage to adopt SNG when considering their competition.

In an exploratory study, Kiernan and Levy (1999) examined the content of commercial television station websites in relation to the level of competition. They found that web content was not associated with competition or with station financial status, “market rank or network affiliation” (p. 277)

Greer and Ferguson (2011) examined the Twitter sites of commercial and public television stations and found that news was the dominant form of content. They also found that few stations used their Twitter sites to drive followers to the station's broadcasts. Additionally, commercial stations focused their tweets on information and newscast promotion, while public stations focused Twitter content on branding, and promoting the station, its website, and programs.

Media companies are also increasingly adapting to new communication methods, including the adoption of practices associated with a convergent news operation. The concept of convergence carries with it two perspectives. In its basic iteration, media organizations develop content for traditional dissemination (e.g., aired television newscasts), as well as the Web. Smith, Tanner and Duhé (2007) examined convergence from the perspective of television reporters and producers in small and medium markets in the U.S. who provide content both for a newscast and the station's website. They found that convergence resulted in more work for news personnel, with about a quarter of respondents indicating that their work “was suffering” (p. 563). Just over 60% said they felt the station had a positive experience with convergence, while just over half said they personally had a positive experience. The second application of convergence is when

print and broadcast media form partnerships, sharing resources and content for the two platforms, as well for the Web.

Strategic Planning and Local Television

A pertinent issue regarding the implementation of innovations by television stations is the role of strategic planning in their adoption. Central to planning is developing strategies that provide an organization with a “competitive advantage” (Slocum & Albarran, 2006, p. 88; Grünig & Kühn, 2008, p. 119). According to Grünig and Kühn (2008), strategic planning involves “long-term goals” as well as “actions and resources” that are required to reach those goals (p. 16). They also argued that management should formulate the strategies.

A number of studies have examined the role of strategic planning regarding various aspects of local television. Slocum and Albarran (2006) examined strategic planning by local television news directors and found what they termed “strategic tactical planning” (p. 12). Common traits among the stations included market research, recognition of sweeps, good communication with staff, implementation of tactics that would have a positive effect on “ratings, revenue growth, and increased audience loyalty” and the importance of a quality news product (p. 150).

Chan-Olmsted and Ha (2003) studied the manner in which television stations were implementing the Internet as a business strategy. They found that stations focused their online efforts on making better connections with audiences. Stations were using the Internet to supplement their “off-line core product” rather than as a tool for “additional business opportunities” (p. 605). Additionally, they found that the number of staff dedicated to online work had increased compared to prior research, but that a small amount of financial resources (1-5% of budget) were used for the Internet.

In an exploratory study, Chan-Olmsted and Kim (2001) examined the perception of commercial television station managers about branding and its functions. Overall, managers perceived that branding was important for business, success and competitiveness. However, the managers appeared to view branding more from a tactical than a strategic approach. For example, branding was more an issue of position, such as news leadership in a market. Regarding market size, managers of stations in smaller markets viewed news leadership as important to “branding success”, while managers of stations in larger markets tended to view branding more from a “long-term” strategic perspective.

Given issues discussed in prior research, the following questions are posed:

RQ1: What is the relationship between perceived innovation characteristics and motivations to adopt mobile DTV?

RQ2: For non-adopters, what is the relationship between likelihood to adopt, motivations to adopt mobile DTV, strategic planning regarding implementing the technology and perceived innovation characteristics?

RQ3: What is the impact of market size on local managers’ motivations to adopt mobile DTV?

In addition to having a composite perspective of station management, this study also sought to determine whether there were any differences between stations that have or will soon adopt mobile DTV and stations that have not indicated their intent to adopt the technology. To draw comparisons between adopters and non-adopters, we seek to answer the following research questions:

RQ4: Are there differences between stations regarding motivations related to the adoption or non-adoption of mobile DTV?

RQ5: Are there differences between adopters and non-adopters regarding the importance of various TV distribution methods in the future?

RQ6: Are there differences between adopters and non-adopters regarding perspectives about mobile DTV and TV viewers?

Method

During July and August 2011, email invitations to participate in a survey about mobile DTV adoption were sent to two groups of managers of full-power, commercial television stations in the U.S.: (1) those that had adopted or planned to adopt the technology in the near future; and (2) stations that had not adopted mobile DTV. A list of the adopter stations was primarily derived from the website of the Open Mobile Video Coalition (www.OMVC.org), which notes whether the station indicated it had already implemented mobile DTV or would do so within the study year. Based on that list, 75 stations were broadcasting in mobile DTV, 131 planned to do so by the end of 2011, and three were testing the technology. The OMVC list was supplemented by mobile DTV stations on Rabbitears.net, which listed an additional 14 stations that were scheduled to implement the technology at some point in the future.

Since this study focused on commercial television stations, public broadcasting stations were excluded from the study. Also not included in the sample were non-English language stations, and stations that appeared to be carried on cable only. In addition, low power and class A (both analog and digital) stations were excluded, since the FCC had not at that time set a deadline for their transition to digital (FCC, n.d.). The OMVC list also included at least one station that was broadcasting in mobile DTV from two of its digital channels. That station was included only once in the survey invitation list. Twenty-six stations that were managed by the same individual as other stations were removed to avoid duplication of invitations. After

excluding stations based on the criteria noted above, the final list included 53 stations that were currently broadcasting in mobile DTV or testing the service, and 97 stations were scheduled to implement the technology in the future. A total of 150 stations comprised the group of mobile DTV adopters.

To provide comparisons with adopters, a list of non-adopter stations was compiled through a judgmental sample of stations in the same or similar markets as the adopter stations. Two non-adopter stations were selected from each market that had at least two adopter stations. To avoid over-representation of comparison stations, only one non-adopter station was selected from markets that had only one adopter station. In some markets, nearly all the commercial stations would be broadcasting mobile DTV by the end of 2011. In those instances, comparison stations were selected from a market either one or two levels higher or lower to ensure similarity. A total of 114 non-adopter stations were selected.

After the lists were compiled, attempts were made to locate the email address of the manager or a general email address for each station. An email address of any kind was not located for five of the stations. During the address location process, 33 stations appeared to have the same manager as other stations in the list. Those duplicates were removed from the invitation list, leaving a total of 275 adopter and non-adopter stations. A follow-up paper version of the survey was mailed in late August to enhance the response rate. Thirty-seven emails were returned as undeliverable. A total of 6 mailed surveys were returned due to address errors. Three were corrected and remailed. However, the other three were not remailed due to the time frame of the study.

A total of 35 surveys (11 online and 24 mail) were completed, which was deemed adequate for an exploratory study. Cohen (1988) estimates 26 cases as the minimum for

detecting large effects. To find medium-size effects, the sample would have needed at least 64 cases.

The questionnaire focused on several topics that were pertinent to this study. Managers were first presented with a set of general questions that asked for their title, the number of stations they managed, market number, and ownership status. There were 28 participants with the words “general manager” as part of their title (e.g., VP/GM, EVP/GM, President/GM) and the other 7 were “vice-president” (including 2 directors of engineering or technology). Although one manager answered for 60 stations, 35 percent managed one station and 14 percent managed 2 stations, with the remaining half managing 3 to 7 stations. Market size ranged from 1 to 184, with 3 top-10 stations, 17 in the top 50, and 8 above the top-100 (small station) markets. Group ownership accounted for 30 stations (85.7%) and 5 stations (14.3%) were independent.

Next, managers were asked to indicate from a multiple choice list what best described their situation regarding broadcasting in mobile DTV: (1) manage one station that broadcasts in mobile DTV, (2) manage multiple stations with only one station broadcasting in mobile DTV, (3) managing multiple stations that all broadcast in mobile DTV, (4) none of the stations managed broadcast in mobile DTV. There were 22 respondents not presently doing mobile DTV, leaving 13 that had begun mobile DTV roughly dividing the first two of the four categories equally (no one fit the third category). Managers of stations that were broadcasting a mobile signal were asked to indicate the number of months they had used the technology. Of the 13 broadcasting mobile DTV, 6 had been doing so for one year or longer.

This study sought to determine the likelihood of adoption for stations that were not planning to use the technology in the near future. Adapting the work of Van Ittersum and Feinberg (2010), managers of non-adopter stations were asked to indicate their likelihood to

adopt mobile DTV by the end of 2012 based on a scale of 0 (no likelihood) to 10 (highly likely). Responses captured the full range from 0 to 10 ($M=6.00$, $SD=2.94$, $N=20$).

Rogers (1995) posited that the impetus to adopt innovations within organizations ranges from the individual to hierarchical mandate. With that in mind, respondents were asked to indicate on a five-point scale (1 = not at all involved; 5 = highly involved) the role that each of the following had or might have in determining whether or not to adopt mobile DTV: manager ($M=3.83$, $SD=1.22$), other station staff ($M=2.74$, $SD=1.36$), station/group owner ($M=4.71$, $SD=0.79$), viewers ($M=1.83$, $SD=1.04$), advice from friends ($M=1.26$, $SD=0.66$), managers of other stations in their market ($M=1.63$, $SD=1.14$), and corporate consultants ($M=2.26$, $SD=1.44$).

Adoption motivations

Based on prior research (Greer & Ferguson, 2010), managers were asked to indicate the level of importance of 12 items that might serve as motivations to adopt mobile DTV: To improve the station's image with its community ($M=3.74$, $SD=1.11$); to be one of the first television stations in the U. S. to broadcast mobile DTV ($M=3.17$, $SD=1.54$); to provide more viewing options for the public ($M=4.41$, $SD=0.82$); to enable portability of television content ($M=4.66$, $SD=0.68$); to be on the cutting edge of television broadcasting technology ($M=3.82$, $SD=1.17$); to provide extra revenue for my station ($M=3.56$, $SD=1.33$); to provide enhanced local programming ($M=3.58$, $SD=1.25$); to help my station achieve higher ratings in our market ($M=3.41$, $SD=1.40$); to distinguish my station from other stations in this market ($M=3.74$, $SD=1.34$); because other stations in my market are broadcasting mobile DTV ($M=1.91$, $SD=1.25$); to be one of the first television stations in my market to use mobile DTV ($M=3.54$, $SD=1.27$); to increase the number of people watching my station ($M=4.05$, $SD=1.32$).

Strategic planning

Items associated with the implementation of mobile DTV as it relates to strategic planning were adapted from Grünig and Kühn (2008). Respondents ranked their level of agreement (1 = strongly disagree; 2 = strongly agree) for five items: My station has established specific goals for implementing mobile DTV (M=3.14, SD=1.33); my station is conducting or has conducted research to better understand television and mobile DTV in our market (M=2.31, SD=1.39); my station is conducting or has conducted research to better understand audience attitudes toward mobile DTV in our market (M=2.29, SD=1.47); Mobile DTV is a part of my station's long-term strategic planning (M=4.31, SD=0.87); my station is willing to allocate human and financial resources to mobile DTV (M=3.89, SD=1.18).

Mobile DTV constructs

Through analyses of media stories about mobile TV and interviews with industry professionals in the UK, Orgad (2009) found there were four ways in which the technology was perceived or presented. Drawing on those constructs, respondents in the present study were asked to indicate their level of agreement regarding mobile DTV and television audiences (1 = strongly disagree; 2 = strongly agree): It provides for personalized viewing at the convenience of the audience member (M=4.28, SD=1.03); it gives viewers control to watch TV whenever and wherever they want (M=4.47, SD=0.86); it complements viewers who are “on the go” and want to watch only small portions of TV at a time (M=4.38, SD=0.65); it provides opportunities for viewers to interact with programs (M=3.47, SD=1.24).

Mobile DTV characteristics

As noted earlier, Rogers (1995) stated that there are five perceived characteristics of an innovation that either positively or negatively influence the adoption of an innovation. Based on

those characteristics, respondents were asked to indicate their level of agreement (1 = strongly disagree; 5 = strongly agree) to twelve Likert-style items that were adapted from prior research (Van Ittersum & Feinberg, 2010): Mobile DTV will increase the quality of my station (M=3.67, SD=1.24); broadcasting in mobile DTV is worth the cost of the technology (M=3.73, SD=1.15); DTV is better than traditional TV broadcasting by itself (M=2.30, SD=1.43); using mobile DTV is compatible with my station (M=3.97, SD=1.10); using mobile DTV fits well with my TV management philosophy (M=4.33, SD=0.89); implementing mobile DTV would take too much time from my normal activities (M=1.76, SD=1.03); mobile DTV is a complex technology to use at my station (M=1.97, SD=0.98); using mobile DTV would involve too much effort for station operations (M=1.64, SD=0.74); I can use mobile DTV on a trial basis to see what it can do (M=2.61, SD=1.41); it is easy to try out mobile DTV without a big commitment (M=2.09, SD=1.10); I can observe other stations broadcasting in mobile DTV (M=2.76, SD=1.71); the results of using mobile DTV are apparent to me (M=3.21, SD=1.24).

All twelve items were grouped back into the original five perceived characteristics from Rogers (1995) by summing them into scales. The first three items comprised the relative advantage scale (M=9.70, SD=3.03, alpha=.70), the next two became compatibility (M=8.30, SD=1.81, alpha=.77), the next three became complexity (M=5.36, SD=2.38, alpha=.82), the next two became trialability (M=4.70, SD=2.27, alpha=.73), and the final two items comprised observability (M=5.97, SD=2.58, alpha=.65).

Finally, four items assessed the manager's perspective toward the importance of various technologies regarding the future of local television (1 = not at all important; 5 = very important): Broadcasting via traditional, terrestrial signal (M=4.56, SD=0.80); streaming television programming over the Internet/Web (M=3.91, SD=0.96); transmitting to portable

devices through mobile DTV ($M=4.47$, $SD=0.57$); use of apps for mobile devices, such as smart phones and tablet computers ($M=4.298$, $SD=0.63$).

Results

The first research question was addressed by correlating the five innovation characteristics with the twelve motivations to adopt mobile DTV. Three significant associations were identified: compatibility and portability of content ($r=.48$, $p<.01$); trialability and extra revenue ($r=.50$, $p<.01$); trialability and other stations in the market with mobile DTV ($r=.51$, $p<.01$). Moderate size correlations that approached .05 significance were also identified: compatibility and being first in the market with mobile DTV ($r=.32$, $p=.068$); relative advantage and portability of content ($r=.34$, $p=.054$); observability and distinguish my station from other stations ($r=-.32$, $p=.07$).

To answer the second research question, likelihood of adopting mobile DTV was regressed on strategic planning variables and perceived innovation characteristics. The model was not significant, with only one predictor (complexity) attaining a standardized beta (.73) approaching significance ($p=.08$). The relative size of the other beta weights was interesting. Audience research (beta=1.32) ranked first of all variables, and among the four remaining innovation characteristics, trialability (beta=.58) ranked higher than relative advantage (beta=.42), compatibility (beta=.41) or observability (beta=-.32).

The third research question examined the correlation between market size and the twelve adoption motivations. Only one comparison was significant, but it suggests that competition is perceived more important in smaller-size markets (coded with higher-numbered ranks). The association between market size with the managers' motivation to "distinguish my station from other stations in this market" was moderate by Cohen's (1988) standard ($r=.43$, $p=.013$).

The fourth research question compared adopters to non-adopters on the twelve adoption motivations. The difference between adopters ($M=4.00$, $SD=1.35$) with regard to being first in mobile DTV and non-adopters ($M=2.68$, $SD=1.46$) was significant ($t=-2.65$, $df=33$, $p=.012$). But adopters ($M=3.08$, $SD=1.61$) scored lower on distinguishing themselves from the competition than non-adopters ($M=4.14$, $SD=0.99$) making a second significant difference ($t=2.15$, $df=17$, $p<.05$). Finally, there was a difference regarding increase viewers ($t=2.91$, $df=32$, $p<.01$) where non-adopters ($M=4.50$, $SD=0.60$) scored higher than adopters ($M=3.25$, $SD=1.87$).

In answer to the fifth research question regarding distribution methods in the future, the single significant difference between adopters ($M=4.30$, $SD=0.57$) and non-adopters ($M=4.75$, $SD=0.45$) concerned the portability of devices ($t=-2.32$, $df=30$, $p<.05$).

The sixth research question was answered with another set of t-tests comparing adopters and non adopters, this time with regard to perspectives about mobile DTV and TV viewers. No significant differences were found in the opinions of the managers who answered ($N=34$).

Discussion

The changing technological environment continues to present local television stations with new opportunities and challenges to disseminate content. Compared with decades of only terrestrial transmissions, stations now must consider their involvement in programming that encompasses over-the air broadcasting, as well as the Web and portable devices (State of the News Media, 2011). Stations have used a variety of distribution methods, including posting news videos on YouTube (Potter, 2010) and on social networks (Bergman, 2011). More recently, an increasing number of stations across the U.S. are starting to transmit their signal via mobile DTV. This exploratory study examined issues including motivations to adopt the technology, perceptions about mobile DTV, and the role of strategic planning in the process.

Rogers (1995) posited that there are five perceived characteristics of an innovation that are related to the adoption of the innovation: relative advantage, compatibility, complexity, observability and trialability. All but complexity have been shown to positively influence the likelihood of adoption. In the present study, analyses between those five items and motivations to adopt mobile DTV produced three significant relationships. Particularly noteworthy is that compatibility was associated with mobile DTV enabling audiences to have portability of content. This suggests that management considers portability of content to be something that is consistent with the present operation of the station. A second significant relationship was observed between trialability and the perception that mobile DTV might provide extra revenue for the station.

Regarding organizational adoption of an innovation, Rogers (1995) noted that there are various influences on the decision. In the present study, management was asked to indicate what influenced or might influence their implementation of mobile DTV. Topping the list was the station or group owner with a mean of 4.71 out of 5, followed by the station manager (3.83). In contrast, viewers, friends and other stations in their market appeared to play a small role in adoption the technology. Survey respondents also indicated that other station staff would have some influence, but only scored 2.74 on the 5-point scale. This suggests that the primary motivation to adopt the innovation originates from within the organization, specifically the top.

Prior research has examined the role of market size and competition in the adoption of technology (e.g., Lacy et al., 1988; Kiernan & Levy, 1999). The present study compared market size with the motivations to adopt mobile DTV. Results showed a significant relationship between size and the motivation to “distinguish my station from other stations in this market.” Specifically, management in smaller markets viewed this as a more important issue than those in large markets.

In addition to assessing motivations to adopt mobile DTV, this study also sought to compare adopters of the technology with non-adopters. A series of *t*-tests focused on adoption status and the twelve motivations. The first analysis revealed that adopters were more likely to be motivated by a desire to be the first to use mobile DTV. This finding makes sense, given that these stations are, indeed, among the initial users of the technology. They are at least to be considered early adopters, if not innovators. Future research should delve more deeply into the characteristics of TV station management and their views toward technology to determine how closely they fit the notion of an innovator.

A second *t*-test between adopters and non-adopters is especially interesting. Results of the analysis showed that management who were already using mobile DTV were less motivated to adopt the technology based on distinguishing their station from the competition than were non-adopters. Coupled with the *t*-test results reported above, this finding might indicate different perceptions of management regarding the station in relationship to its market. Perhaps these early adopters are more concerned with the station's own standing, while non-adopters are more concerned about what the whole market is doing about the technology.

The third *t*-test showed that there was a significant difference between adopters and non-adopters in relation to desiring an increase in viewers. Again, non-adopters were more likely than adopters to have this motivation. There are several possible reasons for this finding. Perhaps management perceives that new technologies might resolve audience share concerns. It also might be associated with market size, which was not included in this analysis.

Four items measured management perspectives about the future of local television, specifically distribution methods. Management still viewed broadcasting via a traditional terrestrial signal as important with a mean of 4.56 on a 5-point scale. However, transmitting to

portable devices through mobile DTV averaged a close second at 4.47, followed by the use of apps, and then Web delivery. This suggests that, while management remains positive about traditional television, they also appear open to new media and its role of the future of broadcasting. There was one difference, however, between adopters and non-adopters in perceptions about various delivery methods. Non-adopters scored higher than adopters on the importance of transmitting to portable devices through mobile DTV.

Although it is an exploratory study, the findings reported in this paper provide a starting point to assess the adoption of mobile DTV by local TV stations. This topic is especially pertinent for broadcasters, given the role that new media technologies are increasingly playing both in the media industry and for their audiences. Respondents in this study indicated that traditional broadcasting will remain an important method of content distribution. At the same time, TV station management also perceived that portable media are also important for stations' future. A similar perspective was noted in the high average score of enabling portability of TV content as a motivation to adopt mobile DTV.

Several limitations should be noted regarding this study. First is the low response rate, which was quite surprising. For the email invitation, it is easy to hit the delete button. Although the paper survey achieved a higher response rate, there was still a minimal number of respondents. Since the recipients were managers, they simply might not have had the time to complete the questionnaire. Thus, a second limitation is the ability to run more robust statistics. It is possible that some analyses would reach significance with a larger sample.

Future research should continue to examine the adoption of mobile DTV over time. This includes not only the local stations, but also from a regulatory standpoint as the FCC deals with

various spectrum issues. Another aspect of adoption not included in the present study was the notion of risk and the adoption of new communication technologies by broadcasters.

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