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Abstract

This study concerned how radio station managers' attitude toward change relates to their willingness to adopt technologies.

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This study concerned how radio station managers' attitude toward change relates to their willingness to adopt technologies. By looking at the relationship, the NDSU Extension Service (ES) could develop a plan for the future service it would provide for its radio station audience. North Dakota radio station managers were surveyed to collect the data. Although no statistical relationship existed between the two main variables, results revealed: (1) Station managers are more willing to innovate when competition exists in a community; (2) Station managers at growing stations have stronger attitudes toward change, yet are less willing to innovate; and (3) Station managers who use external services tend to be more willing to adopt innovations. Because the NDSU-ES radio programming is most popular with the state's smaller, rural radio stations, results indicate traditional mail delivery continues to be the best delivery method. It can be concluded from this study that cutting-edge technology is not always warranted or necessary.

Introduction

In its prime, information delivery via local radio stations was considered to be at the cutting edge of innovative technological information delivery. But that was nearly a half a century ago. Today, telecommunication technologies like fiber optics and digital transmissions have moved to the vanguard of innovative technological delivery systems.

Yet amidst today's innovative technologies, the desire for radio news and information has not diminished. A study of radio usage in

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the mid-1980s found that more than 80 percent of the nation's farmers surveyed still relied on the medium for news and information (Allen, 1985).

Today, the radio news and information efforts of the NDSU Extension Service remain nearly unchanged from the mid-1940s (Baker, 1981): Record and mail a weekly set of taped programs to participating stations. After nearly 50 years of using the same delivery technology, it is necessary to assess the possibilities for change.

There are a number of advantages to adopting one of today's innovative technologies, like satellite delivery or a computer connected to a toll-free telephone line. For instance, news can be received by the media nearly instantaneously, which is especially important in the summer months when Extension agricultural news is time-sensitive. Or, the ease of accessing the information can be improved, which would give the stations the opportunity to access information on demand.

On the other hand, the advantages of using a traditional delivery method like the postal service still exist. A pre-produced program requires little effort on the part of the participating stations; it's ready for playback as soon as it arrives in the mail. And, the production costs remain a bargain, an important consideration at times when budgets are flat or shrinking.

This study surveyed AM radio station managers in North Dakota to assess their propensity to adopt an innovative radio delivery technology. FM radio station managers were not included in the survey because many are sister stations to their AM counterparts and typically are managed by the same individual. And, historically, FM stations have not used the news and information programs made available by the Extension Service.

By applying Rogers' *Diffusion of Innovation* theory (1983), we should get results that characterize the station managers' attitude toward an innovative change. And by looking at the station managers' propensity to change, we can make an assessment as to the potential success of implementing an innovative delivery technology.

Related Research

Radio has been a popular medium for Extension. The first Extension radio program in North Dakota was delivered in 1922 (Bale, 1989). During the early years, the news and information programs were mailed from the university to the radio stations. WATS telephone lines were tried in the 1970s, but the experiment was later abandoned without explanation (Baker, 1981).

Recording and making delivery systems packages to radio stations has been a tradition for many land-grant institutions across the country (Atkinson, 1990; Barclay, 1986; Brooks, 1988; Jones, 1987; Quinn, 1972; Townsend, 1980), and a number of Extension-sponsored studies have been conducted to evaluate the effectiveness of these programs (Barclay, 1986; El-Adly, 1972; Kingdom, 1973; Springer & Hall, 1981; Wilkerson, 1976). However, the goal of the research was to develop better programs. None attempted to look at variables that might affect the adoption of delivery technologies.

A subset of Rogers' (1983) *Diffusions of Innovations* theory—called *Innovations in Organizations*—provides one avenue to predict radio stations' potential adoption of innovative delivery technologies. Rogers identified three classifications of independent variables related to organizational innovativeness: the internal characteristics of the organizational structure, the external characteristics of the organization, and the individual (leader) characteristics.

A current review of literature suggests that adoption of innovations is greatly influenced by individual (leader) characteristics. A leader's attitude toward change is a key element in determining whether or not an innovation will be adopted by an organization.

The first published research on an individual's characteristics did not find a strong link to an organization's innovativeness. Hage and Aiken (1967) found other variables to be stronger measures of innovation. In subsequent research Hage and Dewar (1973) hypothesized that there is some group, an elite, that has more control over decisions to adopt innovations than does the specified leader. However, they also made it clear that a leader's values, aside from those of the elite in an organization, are important.

Receptiveness is another factor contributing to attitudes toward change. Chang (1984) determined the willingness to adopt begins at the individual level. Ormrod (1990) concluded that a leader's receptiveness toward change, although tied to each community's cultural, social, and economical circumstances, strongly influenced the organization's propensity for adoption. Brown (1981) found early adopting organizations—whether in large, medium, or small firms—are directly linked to the aggressiveness of the leader's management style. Along this line Greer (1987) showed the competitiveness of the industry or market to be positively related to early adoption.

Methods and Procedures

To gather data, all North Dakota AM radio station managers were surveyed by telephone. Of the 37 station managers, the survey yielded a relatively high response rate of nearly 84 percent.

Data were analyzed using correlation coefficients, frequencies, means, and percentages. In terms of the station managers' willingness to innovate and their attitude toward change, the internal consistency was found to have acceptable reliability. The station managers' willingness-to-innovate scale obtained a Cronbach's alpha reliability coefficient of .69, and the station managers' attitude toward change scale obtained a .82. The analysis also looked to identify statistically significant relationships with regard to other variables measured in the survey. Finally, frequencies, means, and percentages were calculated for the stations' current use of the Extension Service radio programming, as well as for demographics.

The survey found almost 70 percent of the station managers have increased their reliance on programming from outside sources during the past 10 years. In the next 10 years, more than 40 percent of the station managers thought their reliance on outside services would continue to expand, whereas almost 55 percent of the station managers figured their reliance would remain the same. In terms of audience growth, more than half of the respondents said their audience size had increased during the past 10 years.

As for station size and competition, most of North Dakota's radio stations fall into two categories. On one end of the spectrum, 45 percent of the responding population competed with two to four other stations in their communities. On the other end, about 42 percent did not have any competition.

Results

The station managers' attitude toward change was measured with a 13-item change-related scale. The first five questions originated from a work-related change scale (Shaw & Wright, 1967; Trumbo, 1961). The remaining questions were pulled from a rigidity scale (Wesley, 1953). Once the set of 13 items was chosen, each was reconfigured into a six-point Likert-type scale. The summation of these items produced a mean of 50.29, with a standard deviation of 11.05. The station managers' willingness to adopt innovative delivery technologies was measured with a four-item, six-point scale. The summation of these items produced a mean of 12.06, with a standard deviation of 5.50.

The Pearson product-moment correlation coefficient was calculated to assess whether the radio station managers' attitude toward change might be related to their willingness to adopt innovative delivery technologies. A correlation of a negative .12 was obtained, with a significance level of .27. Thus, there was no evidence of a significant relationship between the two variables because the .05 level of significance was not achieved.

Pearson product-moment correlations were also computed between the radio station managers' innovativeness and attitude toward change with a number of other variables (see Table 1).

When competition between AM stations was correlated with the station managers' willingness to innovate, a moderately positive relationship (.39) existed, significant at the .05 level. This relationship means that as the competitiveness between stations increases, the station managers at the more competitive stations are more likely to adopt innovations.

TABLE 1: Relationships Between AM Radio Station Managers' Willingness to Innovate and Their Attitude Toward Change With Other Variables

Other Variables	Willingness to Innovate	Attitude Toward Change
Competition	.39	-.19
Change in size	-.39	-.35
Outside reliance (past 10 yrs.)	.28	-.23
Outside reliance (next 10 yrs.)	-.25	-.03

As for the change in audience size during the past 10 years, the results in Table 1 revealed a negative relationship (-.38) existed between the change in audience size and willingness to innovate. This relationship indicates that station managers with increasing listeners are less willing to adopt innovations.

On the other hand, the correlational analysis found a negative relationship (-.35) existed between the change in audience size and the station managers' attitude toward change. These results indicate that station managers with increasing listenership are more open to change.

The correlation analysis reported in Table 1 also found two relationships approaching the .05 significance level. Because the small population size (31 respondents) makes it difficult to obtain statistically significant results, relationships approaching significance are worth examining. The correlation analysis between the radio stations' reliance on outside programming services during the past 10 years and the station managers' willingness to innovate produced a small, positive relationship (.28), with a .07 significance. The

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correlation and the station managers' reliance on programming services in the next 10 years and the station managers' willingness to innovate produced a small, negative relationship (-.25), with a significance level of .09.

Discussion

The NDSU Extension Service radio programs are popular. Every radio station in the state can subscribe to the service and almost 40 percent of the AM stations do (see Figure 1). Of those subscribers, two-thirds use a program every day and 25 percent use programs two to three times a week (see Figure 2).

As shown in Figure 3, nearly 42 percent of the regular users thought the value of the service was high. About half thought it was fair, and only 8.3 percent thought the overall value was low.

In terms of measuring how the present delivery service fits the station managers' needs, 75 percent think it fits well (see Figure 4). Furthermore, two-thirds of the regular users said they would be unwilling to adopt an innovative technology in order to continue receiving the programming.

One of the statistically significant relationships found by this study was that as the competition between radio stations in North Dakota

FIGURE 1: Stations Who Currently Use Extension Service Programming

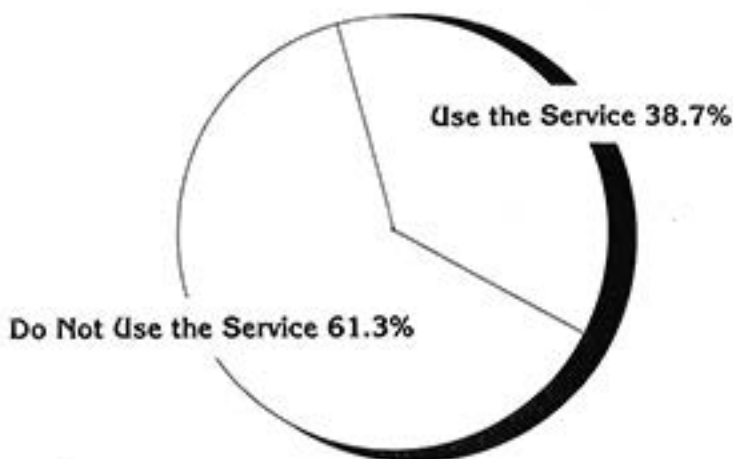


FIGURE 2: Frequencies for User Respondents: Stations Average Use of Extension Service Information.



FIGURE 3: Frequencies for User Respondents: Present Value of Extension Service Programming

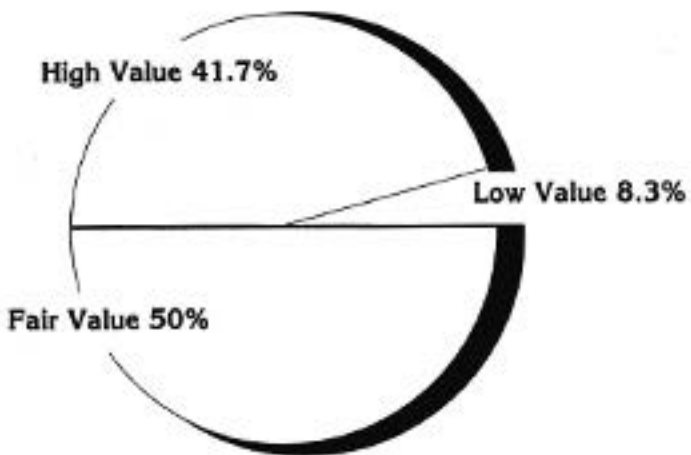
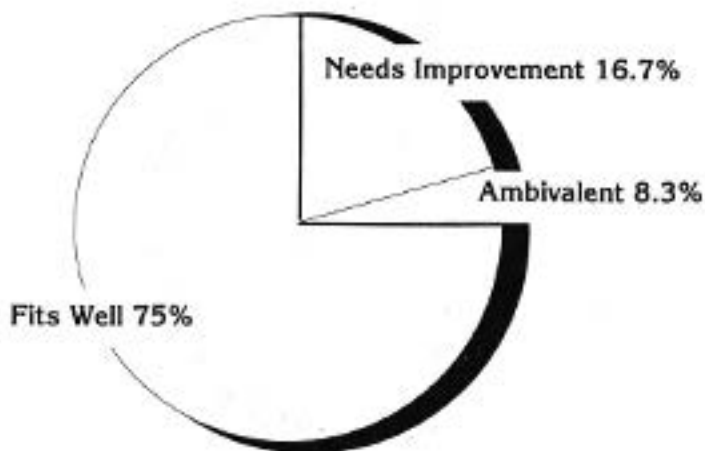


FIGURE 4: Frequencies for User Respondents: How the Present Service Fits the Needs of Stations



communities increases, so does the managers' willingness to adopt innovative technology. Thus, if one AM radio station exists, it is less likely to adopt an innovative communication delivery technology.

The results of the data analysis indicate that the heaviest users of the Extension Service programming are those stations that do not have any competition in their community. This fact may at least partially explain why current users are not interested in adopting an innovative delivery technology. They have no incentive to try to gain a competitive advantage. The theory of diffusion in organizations reinforces this interpretation. The theory states that larger, more competitive organizations tend to be more innovative, whereas smaller, less competitive organizations will be less innovative.

Another finding of this study points out that in locations where North Dakota radio station audience size has increased during the past 10 years, the station managers reflected a stronger, positive attitude toward change. Radio stations with growing audiences have seen steady changes in audience demographics. In order to keep up with the changing audience, these station managers have developed a willing attitude to try new ideas and innovations.

From this finding it could be argued that stations with decreasing audiences will typically be found in areas with a decreasing population base: Smaller, rural communities. Again, the heaviest users of

the NDSU Extension programming exist in the smaller, rural communities where the station managers have expressed attitudes that reflect negatively toward change. This finding correlates with similar, previous studies on diffusion in organizations.

What do these findings suggest? First, the most innovative radio stations exist in larger communities. Second, the station managers most willing to adopt a change are located at radio stations in larger communities. Conversely, the rural station managers, who are the strongest users of the service, are less interested in adopting innovative communication delivery technologies. Thus, as long as the more innovative station managers in the larger, more urban areas of the state do not subscribe to the NDSU Extension radio service, there will be little chance of an innovative delivery technology succeeding.

However, a related finding puts a wrinkle in the developing pattern. The data suggest that stations with increasing audience size tend to be less innovative. This finding does not fit with the above findings. How can it be that, where the audience size has increased in the past 10 years, station managers have a willing attitude toward change, yet, at the same time, are unwilling to adopt an innovation?

As discussed in the literature review, a leader's attitude toward change is just one of a number of variables that affect one's innovativeness. Factors like equipment requirements, manpower, and cost versus potential benefits of the innovation cloud the issue. Most likely, when faced with making a decision between adopting an innovative technology or remaining with a traditional method, station managers have to consider how the impact of the innovation will affect the load on systems and personnel.

Another significant finding of this study suggested that North Dakota station managers who in the past 10 years have increased their reliance on programming service from outside sources are more willing to adopt innovations. In contrast, those station managers who predict that reliance will continue into the future express a strong unwillingness to adopt innovative technologies.

The results of these findings suggest that station managers who use outside sources for programming have a vested interest in obtaining those services by any means. But, first, they have to want the service. And if they want the service, they probably have to stretch resources to obtain it. Generally, resources may not be available for outside programs.

This dilemma may indicate that the NDSU Extension Service has to offer programs that are both valued and desired by the radio stations, to the point that they are more valuable than similar services being received by the stations. In addition, the programs need

to remain inexpensive or free of charge. If the NDSU Extension Service was able to redevelop a reputation for offering valuable and inexpensive radio programming, new subscribers could be lured to the service. And once a large user base was formed with a strong desire for the service, the station managers may become more willing to adopt an innovation.

One station manager was straightforward and to the point: "It's (the delivery method) just fine the way it is. Why change it?" The same sentiments were expressed by a number of other station managers who use the service as well. These results indicate that the Extension Service radio programming service needs to take a look at the type, style, and length of programs being delivered rather than the method being used to transmit them.

Summary and Conclusions

This study indicates that the North Dakota AM radio station managers' attitude toward change does not have a significant relationship with their willingness to adopt an innovative communication delivery technology. However, a number of other significant findings provide a framework for drawing some conclusions.

An argument could be made for the continuation of the mail delivered service. A strong base of users currently exists within the population of North Dakota AM radio stations. A majority of those station managers are using the service on a regular basis and are satisfied with the current method of delivery.

The potential for the adoption of an innovative technology in the delivery of the NDSU Extension Service programming does not exist with the current users of the service. In fact, typical stations using the service expressed an unwillingness to adopt an innovative delivery technology. In addition, a majority of the stations willing to adopt innovations exist in predominantly competitive situations. But, those stations do not presently subscribe to the current service.

Because the attitude-toward-change variable is not significantly related to the station managers' innovativeness, we assumed that variables other than the attitude toward change affected those decisions. Those variables need to be probed if the NDSU Extension Service wants to adopt a future delivery change.

In general, additional research could focus on a number of different areas. For instance, some station managers viewed the current programming to be mainly agricultural. Although agriculture continues to be the "bread and butter" of the NDSU Extension Service, a greater emphasis could be placed on non-farm topics like family, child, and community development. However, this survey only

addressed attitude toward change versus the potential adoption of innovative delivery technologies. A future study would be necessary to determine topics in which station managers would have interest.

The program's news value and structure also could be addressed. None of the station managers in this survey thought the current service provided hard news. By offering more hard news, there is a chance that urban stations would subscribe to the service. But enter the chicken or egg principle. The only way to increase the hard news value of the service is to adopt an innovative delivery technology. The current delivery method does not support a hard news format. In addition, the station managers may need to be asked, "What is more important to your operation with regard to extension programming, hard news or the delivery method?"

A number of the radio station managers said the program's structure did not fit the needs of their station. The possibility exists that the four-minute program is archaic and the mail delivery method is not. Again, more research would have to be conducted to determine station-manager needs.

This study recommends both a short-term and long-term plan of action. For the short term, the results indicated that the Extension Service should continue to deliver its programming with the current record and mail cassette. For the long term, additional studies could look at what types of outside services are already being used by the stations, their content, their delivery method, and what it is about the programs that make them beneficial to the stations using them. By probing this area, the Extension Service may be able to tailor its programming and delivery method in a fashion that is similar to an already successful operation.

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