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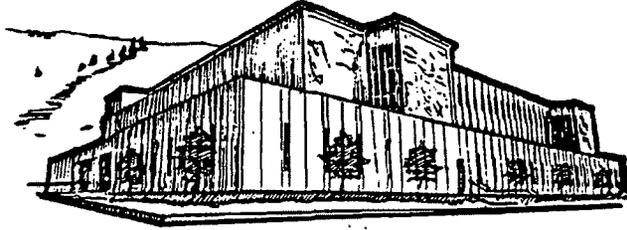
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University of  
**Montana**

**POTENTIAL ELECTRONIC  
INFORMATION MARKETS  
FOR THE BILLINGS GAZETTE**

By

Dennis William Gaub

B.S. Journalism, Northwestern University, 1974

Presented in partial fulfillment of the requirements

for the degree of

Master of Business Administration

University of Montana

1992

Approved by



\_\_\_\_\_  
Clyde Neu, Chairman, Thesis Committee



\_\_\_\_\_  
Dean, Graduate School



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Gaub, Dennis W., M.B.A., December 1992

Business Administration

Potential Electronic Information Markets for the Billings Gazette (52 pp.)

Director: Clyde Neu 

This survey of the Billings/Lockwood/Shepherd market focused on the feasibility of Billings Gazette entry into telephone-and computer-based information services targeted at residential customers. The survey involved a pre-tested questionnaire administered by telephone to 385 randomly-selected households, a sample of the approximately 37,000 households in the population.

Tabulation of the results shows a potentially feasible market for telephone-based, or audiotex, services: 27 percent of the respondents indicated they would be receptive to information provided in that manner. Several specific categories of information elicited a more positive response. For example, more than 50 percent of the respondents said they would be likely or very likely to call the service if it offered classified ads. Almost 37 percent said they would be likely or very likely to call to get updates of local, state, national and international news. Using cross-tabulation and chi-square methods, the survey found statistically significant associations ( $r < .02$ ) between receptiveness to audiotex and two variables: age and frequent use of the Gazette's current telephone service, Weatherline, which provides weather information and brief news highlights.

Survey results indicate a potentially feasible market for computer-based, or videotex, services. Among respondents who have a computer in their home, 31 percent expressed interest in subscribing to an online service if it were offered by the Gazette. Fifty-six percent of the respondents who plan to buy a computer within the next year indicated interest in videotex. Survey data showed a statistically significant association ( $r = .013$ ) between age and videotex interest. However, when responses were analyzed by degree of computer familiarity -- an index that included computer and modem ownership and use of existing online services -- people with lower computer familiarity tended to express more interest in videotex than people with higher computer familiarity ( $r = 0.000$ ).

These findings will help Gazette management develop a strategic response to probable competition from regional Bell telephone companies and other information providers.

# ACKNOWLEDGEMENTS

The author wishes to acknowledge the support of The Billings Gazette, through its tuition-assistance program, in his work toward the M.B.A. degree. Also, he wishes to recognize Gazette sponsorship of this research. Special thanks are due to Wayne Schile, publisher of The Gazette.

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**To Susan and Brian**

# Chapter 1: Introduction

## Statement of the Problem

Newspapers throughout the U.S. face strong and growing competition for their share of the information-industry market. Two federal court rulings in 1991 granted the seven Regional Bell Operating Companies (RBOCs) unprecedented freedom to collect and sell information – not just deliver it as in the past (Gaub and Woods 1992, 289). Groups representing the newspaper and cable television industries, as well as consumers, are lobbying Congress to slow the phone companies' entry into the information-services business. These groups say legal controls are necessary until competition furnishes a safeguard against monopolistic practices by the "Baby Bells" (Gaub and Woods, 293).

Yet it is clear that newspapers cannot rely on newsprint as their sole information-delivery mechanism, nor can they depend on the prospect of a legislative shield against phone company inroads. One newspaper industry observer asks: "What if the RBOCs remain free to offer full information services?" (Bogart 1992, 58). He notes that a newspaper page is superior to an online database for activities such as quick and efficient browsing of information. Newspapers, however, should understand that transmitting information electronically results in a significant advantage to consumers. They gain "the opportunity to stay up-to-the-moment in real time and ... the utility of digging for more and more when there is a motivation to do so. The more and more, as well as the updating, are what newspaper organizations are uniquely equipped to provide," according to Bogart. He observes that newspapers process about 10 times as much information as they print, "much of it useful to someone."

Meanwhile, falling newspaper readership – especially in age groups desired by advertisers, such as people in their 20s and 30s – concerns industry executives. One observer reported that

only 27 percent of people 18 to 34 years old read a newspaper every day -- and regular readers spend only about one-tenth of the time reading newspapers (23 minutes daily) that they spend watching television (Miller 1992, 4). In a related, worrisome development, newspapers lost 2 percent of their advertising share from 1979-89. That decline continued a long-term trend in which print media's share of U.S. advertising dollars dropped from 53 percent in 1935 to 34 percent in the early 1980s (Gaub and Woods, 285). Furthermore, online information services such as Prodigy, CompuServe and Genie allow companies to market directly to home personal computer users, bypassing print and television advertising.

## Purpose of the Study

Industry trends thus compel newspapers to explore ways of diversifying their services. Promising options for the home consumer market include electronic applications such as telephone-based "Talking Newspapers" -- a common industry term for voice information services -- and online databases that can be accessed by personal computers. Some newspapers have ventured into fax information delivery, but this service has mostly been targeted at business customers to date because facsimile machines are more prevalent in offices and other work settings than in the home.

Several major newspapers have introduced Talking Newspaper services. The *Wall Street Journal*, for example, offers 24-hour updates of business news, stock quotes, company news, sports, and weather news and forecasts for almost 1,000 U.S. and international cities. Calls cost 95 cents per minute. The telephone service operated by *USA Today* has the same per-minute charge for calls it says average 2-3 minutes each. *USA Today* callers choose from an extensive menu: weather, airline flight information, stock quotes, personal finance information, used car and truck values, sports scores, lottery numbers, horoscopes, soap opera summaries, movie reviews and Dr. Joyce Brothers' advice line.

Smaller newspapers have joined the field, too. The Cedar Rapids (Iowa) *Gazette*, which has had a voice service for five years, offers a successful model. Of the many topics offered on the paper's Cityline service, the most popular are greyhound racing, horoscopes, local weather forecasts, lottery updates, soap opera updates, sports reports, stocks and other financial information and a trivia quiz. Callers also can hear news of the world, nation, state, region and city, plus business updates (How Cedar Rapids 1992, 6TC). The manager of this service says:

The newspaper of the future is going to change. Newspapers will become a combination of audio, fax and print. I can't imagine not reading a newspaper but there are definite advantages for audiotex [voice service] -- it's available 24 hours a day. With audiotex we can say, 'Here's the information you just have to have.' Now, if you really want to know more, you're going to read it in your newspaper (How Cedar Rapids, 8TC).

Several newspapers within Lee Enterprises, of which the Billings *Gazette* is a division, have introduced voice services. They include the Rapid City (South Dakota) *Journal*, the Carbondale (Illinois) *Southern Illinoisian*, the Bismarck (North Dakota) *Tribune*, the La Crosse (Wisconsin) *Tribune* and the Decatur (Illinois) *Herald & Review* (Welker 1992, 7).

Newspapers have been slower to offer online databases than telephone services, partly because executives remember unprofitable ventures in the early 1980s by large media companies such as Knight-Ridder and Times-Mirror. Today, the record is mixed. Newspapers in Fort Worth, Texas, and Albuquerque, New Mexico, have succeeded with "modest, low-investment videotex [online] systems that give readers access to electronically archived material that can't be fit into the daily newshole" (Underwood 1992, 25). On the other hand, newspapers in Denver and Omaha have closed their online systems because the market for the services was too small.

In view of these national and regional trends, the Billings *Gazette* wants to know if local market conditions warrant entry into the electronic information business. This study investigates that question.

## Significance of the Study

If the *Gazette* makes a “go” decision to offer electronic information services, it will accept risk for the initial capital outlay on equipment plus ongoing personnel costs and other expenses. But, a decision to delay entry also involves risk. Competitors could move first, gain market share and preempt the *Gazette* from being a major player in the new business. Newspaper publishers, along with broadcasters and cable operators, traditionally have operated in monopoly and quasi-monopoly markets (McNamara 1992, 37). Poised to challenge that dominance are a host of entrepreneurial companies and non-traditional media players such as AT&T, the RBOCs, Japan’s Sony, Matsushita and Nintendo; and electronics and computer companies such as Motorola, Hewlett-Packard, IBM, Apple and Microsoft. Consequently, traditional media companies “must face the discipline of the marketplace,” McNamara says. He continues:

For these media, the most important battles will be to revolutionize -- reform is not a strong enough word -- their corporate cultures and the ways they do business. They must take on entrepreneurial characteristics, not just to protect themselves from marauding entrepreneurs, but to match the newest invaders.

The new media paradigm provides both carrot and stick for traditional media companies. While their franchises are threatened, they also have great opportunities to leverage their leadership of the media in the Information Age. The battles are being fought in their backyard, after all, and it’s always an advantage to know the terrain better than your competitors do (McNamara, 37).

In that light, this study is designed to provide information that *Gazette* management needs for sound decision-making. No research, however, can negate the risks that accompany a new course of action.

## Definition of Terms

Regular *Gazette* reader – survey respondent who says he or she read the *Gazette* four or more times in the preceding week.

**Weatherline user** -- respondent who says he or she called the *Gazette's* free Weatherline service at least once in the past week. This service provides callers weather information and news highlights from the latest issue of the *Gazette*.

**Audiotex** -- service whereby people can make a telephone call to a newspaper or other information provider and hear short news items, weather and other information. Callers may be billed on a per-minute basis, or a service may offer free calls and be supported by advertising. Audiotex may include interactive capabilities, i.e. a caller can give information such as a classified advertisement to the service provider.

**Receptive to newspaper audiotex service** -- respondent who scores in the upper half of a range of total possible scores from a six-question index probing interest in different types of voice information, e.g. general news, sports, stock quotes, classified ads. Respondents were asked the likelihood of their using the service to obtain several types of information. Responses were scored on a 5-to-1 scale, corresponding to "very likely," "likely," "undecided," "unlikely," and "very unlikely." Index scores thus ranged from 6 to 30. A respondent with a score of 18 or above satisfies the definition of this term. (The index includes questions 9-14 of the questionnaire; see Appendix A.)

**Videotex** -- information systems in which mainframe computers or minicomputers deliver text and often graphics to modem-equipped personal computers via telephone.

**High computer familiarity** -- respondent who scores in the upper half of a range of total possible scores from a weighted four-question index including presence of a computer in the home (score of 5 for "yes" answer, 0 for "no" answer), presence of a modem (3 for "yes," 0 for "no"), computer-buying plans in the next year (2 for "yes," 0 for "no") and present subscription to an existing online service (2 for "yes," 0 for "no"). Index scores have a possible range of

0-10. A respondent with a score of 5 or above satisfies the definition of this term. (The index includes questions 20-23 of the questionnaire; see Appendix A.)

Prospective videotex subscriber -- respondent who says he or she would be very likely or likely to subscribe to a videotex service if it were offered by the *Gazette*

Well-educated -- respondent who says he or she has at least completed some college course work, earned a college degree, completed some graduate work, or earned an advanced degree.

Higher-income -- respondent who says his or her household income is \$40,000 or more. This threshold encompasses 26.3 percent of all households in Billings and 26.5 percent of all households in Yellowstone County (U.S. Bureau of the Census 1991).

Young person -- respondent who reports his or her age as 40 or younger.

High demographic level -- respondent who scores in the upper half of a range of total possible scores on a four-question index involving education, age, household income and home ownership. For education, possible scores range from 1 (less than 12 years) to 5 (more than 16 years). For age, possible scores range from 1 (71-or-older age group) to 6 (respondents between 20 and 40 years old). For income, possible scores range from 1 (less than \$10,000) to 7 (more than \$75,000). A respondent who said he or she owns the home received a score of 2; a renter received a score of 0. Total possible scores thus range from 3 to 20. Respondents with scores of 12 or above were classified in the high demographic level; respondents with scores of less than 12 were classified in the low demographic level.

## Variables

**Predictor:** These include: *Gazette* readership, Weatherline user, high computer familiarity, high demographic level and four demographic categories: age, sex, educational level, and household income of respondent.

**Criterion:** These include: receptiveness to newspaper audiotex services, prospective videotex subscriber, willingness to pay for audiotex services and willingness to pay more than \$5 per month for videotex services.

## Limitations

The sample for the market survey was drawn from a population of households within local telephone-calling distance of Billings, Montana, an area that includes all residences in Billings plus an unincorporated area surrounding it that takes in the communities of Shepherd and Lockwood. This limit was placed on the survey both because of budget reasons and because it seems unlikely that people would be willing to pay long-distance charges (from Laurel, Montana, for example) in addition to any cost for accessing the prospective information service(s). Caution should limit any inferences from this study to a different or expanded population.

Drawbacks of survey research include non-response error and response bias. Zikmund defines non-response error as the "statistical differences between a survey that includes only those who responded and a survey that also includes those who failed to respond" (Zikmund 1988, 145). Two major sources of non-response error are potential respondents who are not at home and those who refuse to participate in a survey. Interviewers for this survey were instructed to make a maximum of four attempts over a two-day period to reach unanswered telephones or phones with answering machines. This survey posted a 54-percent response rate,

based on 385 interviews from calls to 707 working telephone numbers, excluding residences where no adult was home as well as business and fax numbers.

Zikmund suggests the researcher compare the demographic characteristics of the sample with those of the target population to determine possible biases in response patterns (Zikmund, 145). For this survey, gender of the respondents is the most readily comparable demographic characteristic. The sample was composed of 37 percent males and 63 percent females, compared with a 48-percent, 52-percent composition, respectively, in the population, according to 1990 U.S. Census Bureau figures. This disproportionate percentage of women in the sample is not surprising; those who have studied telephone research note that women are more likely to answer the telephone than men in American homes. In fact, one researcher reports that typical survey composition is one-third male, two-thirds female (Dillman 1978, 248). To compensate for the disproportionate number of women in this survey, results for key variables were cross-tabulated by gender and analyzed to determine if there were statistically significant associations; there were none.

It is more difficult to make other demographic comparisons because categories used by the Census Bureau differ from those used in the survey questionnaire. For example, the questionnaire -- which screened respondents to include persons 18 and older -- used these age categories: under 20, 20-30, 31-40, 41-50, 51-60, 61-70 and 71 and older. Age-group information available from the Census Bureau uses these adult categories: 17-21, 22-29, 30-44, 45-54, 55-64 and 65 and older (U.S. Bureau of the Census).

The reader of this report also should be aware of potential response bias. At least five categories of response bias can influence any survey (Zikmund, 146). They include: acquiescence bias, the tendency of some respondents to agree with questions about new products or ideas; extremity bias, the tendency of some individuals to either use extremes or to

be neutral in answering questions; interviewer bias, which involves interviewer's sex, tone of voice, style of questioning and other factors that influence response; auspices bias, which involves individuals' sometimes negative or positive response to the organization sponsoring the study; and social desirability bias, which might cause respondents to inflate their income, "pad" their educational level, minimize alcohol consumption, indicate support for social causes in which they really don't believe and so on.

Measures were taken to lessen the effect on this study of two types of response bias, interviewer and auspices. Interviewers participated in a training session before they began making telephone calls. They were supervised throughout the calling period so potential problems in interviewer-respondent interaction could be averted. The interviewing team included two men, who both were in their late 50s or early 60s, and four women, ranging in age from about the early 20s to late 40s. Also, to counteract the potential auspices bias from business sponsorship of market research, interviewers stated -- truthfully -- that the survey was being conducted by a University of Montana student working towards a graduate degree in business. This approach was suggested by Ann Brill (1992), a University of Missouri journalism professor. Based on her experience in supervising graduate-level communications research at Marquette University, she told the author that survey respondents often are more willing to participate in a student project than in one conducted by a business.

## Research Question

Is it a feasible business venture for the *Billings Gazette* to enter the electronic information services industry at this time?

# Hypotheses

## AUDIOTEX

H<sub>1</sub>: There is a feasible potential market for newspaper audiotex services in the Billings/Shepherd area, defined as at least 20 percent of the survey respondents being receptive to a newspaper audiotex service. Although this rate was set arbitrarily, it seems reasonable for a new service when compared with the *Gazette's* penetration rate for household delivery of the newspaper: 73 percent within Billings and 64 percent in Yellowstone County (Kasten 1992).

Also, it is hypothesized that a statistically significant association exists between a respondent's receptiveness to newspaper audiotex services and:

H<sub>2</sub>, demographic level, i.e. a respondent from a higher demographic level is more likely to be receptive than a respondent from a lower demographic level.

H<sub>3</sub>, age, i.e. a young person is more likely to be receptive than an older person.

H<sub>4</sub>, household income, i.e. a respondent from a higher-income household is more likely to be receptive than a respondent from a lower-income household.

H<sub>5</sub>, Weatherline use, i.e. a respondent who uses Weatherline is more likely to be receptive than a respondent who does not use Weatherline.

H<sub>6</sub>, newspaper readership, i.e. a regular *Gazette* reader is more likely to be receptive than someone who is not a regular *Gazette* reader.

H<sub>7</sub>, education level, i.e. a well-educated respondent is more likely to be receptive than a respondent who is not well-educated.

H<sub>8</sub>, gender, i.e. men and women differ in their response.

Furthermore ( $H_9$ ), it is hypothesized that there is a statistically significant association between household income and willingness to pay for newspaper audiotex services, i.e. a higher-income respondent is more likely to be willing to pay than a lower-income respondent.

#### VIDEOTEX

$H_{10}$ : There is a potential market for videotex services in the Billings/Shepherd area, defined as at least 10 percent of the respondents saying they are very likely or likely to subscribe to a *Gazette*-operated videotex service. Again, this number was set arbitrarily, but it seems sensible for an untried service when compared with the *Gazette's* penetration rate for household newspaper delivery, as mentioned above.

Also, it is hypothesized that a statistically significant association exists between a respondent's receptiveness to newspaper videotex services and:

$H_{11}$ , demographic level, i.e. a respondent from a higher demographic level is more likely to be receptive than a respondent from a lower demographic level.

$H_{12}$ , computer familiarity, i.e. a respondent with high computer familiarity is more likely to be receptive than a respondent with low computer familiarity.

$H_{13}$ , age, i.e. a young person is more likely to be receptive than an older person.

$H_{14}$ , newspaper readership, i.e. a regular *Gazette* reader is more likely to be receptive than someone who is not a regular *Gazette* reader.

$H_{15}$ , education level, i.e. a well-educated respondent is more likely to be receptive than a respondent who is not well-educated.

$H_{16}$ : gender, i.e. men and women differ in their response.

Furthermore ( $H_{17}$ ), it is hypothesized that there is a statistically significant association between a respondent's household income and willingness to pay more than \$5 a month for

videotex service, i.e. a respondent from a higher-income household is more likely to be willing to pay this amount than a respondent from a lower-income household.

# Chapter 2: Background/ Review of the Related Literature

While extensive literature on newspaper readership patterns exists, research dealing with audiotex and videotex usage is in a rudimentary stage. In fact, a nationwide survey of callers to audiotex services -- conducted in the summer of 1991 for the American Newspaper Publishers Association (ANPA) -- was the first such endeavor, according to the association (American Newspaper Publishers Association [ANPA] 1991, iii). In view of this scarcity, someone researching this subject needs to consult general discussions of attempts at electronic publishing. This scarcity led to the division of the literature review into two categories: empirical findings and anecdotal literature such as articles from trade publications and newspapers.

## Empirical Findings

ANPA Survey: The ANPA in partnership with the Newspaper Voice Network conducted a large (n = about 35,000) survey of callers to audiotex services operated by 15 newspapers in mid-July 1991. The methodology involved administering a 28-question telephone survey to a predetermined sample of people as they called a given service. A drawback of the study was its potential self-selection bias: people could hang up when asked to participate in the survey or could indicate they had taken the survey previously (ANPA, iii). Because results represent responses from people who called and chose to take the survey, extreme positions may be overrepresented, neutral positions may be underrepresented, and the positions of non-users are not represented at all.

Furthermore, the survey was limited to actual audiotex users. No data on penetration and newspaper readership by non-users were reported. The report did not identify usage patterns or openings for new content. Demographic characteristics of audiotex callers were similar to the general newspaper reading population, although more callers tended to be male and younger persons than is typical among traditional readers. The ANPA concluded that systems with strong entertainment packages attracted "elusive" readers such as young females (ANPA, iii). This suggests that Talking Newspapers could be an effective marketing tool to increase circulation and to attract advertisers who aren't using newspapers because they believe their message isn't reaching the intended audience.

The ANPA also found that callers' income levels appeared to be a factor of circulation size and information content. "Unlike the print product, audiotex systems with larger percentages of high income callers didn't necessarily translate into a higher share of callers who are regular newspaper readers" (ANPA, iii).

A majority of the callers called a service between one and six times a week, according to the newspaper group (ANPA, iii). Call frequency did not vary greatly by circulation size, audiotex system size or information content. Call frequency did, however, tend to vary depending on the level of print competition in the market and how much the service was promoted in non-newspaper media. About 40-50% of the adult callers read the daily newspaper five times a week and 60-70% read the Sunday paper four times a month. For under-18 callers, frequent weekday readership dropped to 30-40% and frequent Sunday readership fell to 50%. Since an average of 60% of the callers had the newspaper delivered to their homes, a large percentage (40%) are single-copy buyers, providing newspapers an opportunity to gain subscribers.

MORI Study of "At-Risk" and "Potential" Readers: This 1990-1991 study, conducted by MORI Research, involved a telephone survey of adults (n = 1,264) who were then mailed a

questionnaire and called by the research organization to record answers (American Society of Newspaper Editors [ASNE] 1991, 22-23). An 82-percent response rate was reported for the mail questionnaire.

A multivariate statistical technique, discriminant analysis, was used to classify respondents as loyal readers, at-risk readers, potential readers and poor prospects ( $p < .05$ ). Besides discussing changes based on existing newspaper formats, the study asked respondents' opinions of changing news-editorial concepts and circulation concepts. At least 40% of the respondents reacted positively to all five suggested news-editorial concepts. The two highest-ranked concepts were "more two-way communication between newspapers and their readers, perhaps through electronic means" and "audiotex or videotex access to newspaper information prior to publication" (ASNE, 18).

Other Studies: Cobb-Walgren surveyed 11th and 12th grade students ( $n = 1,000$ -plus) in the Dallas high school system, using factor analysis to screen a large number of potentially correlated variables and to eliminate those that were redundant. Results of the factor analysis were incorporated in a multiple regression analysis to construct a model for predicting teenage newspaper readership (Cobb-Walgren 1990, 340). Perception of time to read the newspaper was found to be the most important predictor, followed by daily usage of magazines and interaction with parents on news events ( $p < .001$  for each variable). Other statistically significant predictors included mother's usage of the newspaper and sense of the newspaper as the most valuable medium ( $p < .001$ ) and availability of newspaper in the home ( $p < .01$ ) (Cobb-Walgren, 345-347).

Using 1990 data from Mediamark Research Inc., Schwartz and Exter reported these findings:

✓ People 18-24 are 37% less likely than the average adult to be heavy newspaper readers -- defined as a man who reads at least 30 papers in four weeks or a woman who reads at least 25 papers in that time.

✓ People 25-34 are 17% less likely than the average adult to be heavy readers.

✓ People 35-44 are 17% more likely than the average adult to be heavy readers.

✓ Heavy readership increases to 24% more likely than average among the 45-54 age group and 22% more likely among 55-64-year-olds. The incidence of heavy readership in the 65-and-older cohort is about average (Schwartz and Exter 1991, 50).

Robinson directed the Americans' Use of Time Project, in which a nationally representative sample of Americans -- no details were provided -- kept one-day diaries of their activities. He found that time spent on newspapers has fallen from 2.5 hours per week in 1965 to 1 hour in 1985. Women spent 18 minutes a day reading the newspaper in 1965 -- and 7 minutes a day 20 years later. Although men spent more time reading newspapers than women, there were few differences in newspaper reading by education, particularly among women (Robinson 1990, 6-7).

## **Anecdotal Accounts**

The Atlanta *Journal* and *Constitution* provide examples of newspaper ventures into electronic information services. These publications offer stock prices, sports scores, movie times, weather reports, soap-opera updates and late-breaking news over the phone. Access Atlanta, a \$6.95-per-month online information service operated by the papers which began in September 1990, allows personal computer owners to view and retrieve classified ads, business and local news, entertainment listings and movie reviews (Cox 1991, 5B). Subscribers to the

service can dial late during the night before publication of the paper and view online versions of two sections of the paper, business and local news. Newspaper officials expected to offer the entire paper online by the end of 1992 (Benson 1992, 20).

Access Atlanta subscribers who pay additional charges ranging from 10 cents a minute to 30 cents a minute gain access to wire service stories and stories from the newspapers' back issues. Paying \$30 a month brings a subscriber a service called Georgia Alert, which is a state legislative database that has all pending bills and information on legislative activity (Benson, 20). Another feature, the Talking Ad service, allows professionals and service businesses to buy ads that reach telephone callers (Cox, 5B).

Access Atlanta's manager said the company was offering the service "because a large and a growing segment of the population has personal computers, either at the office or at their home"; more than 30 percent of homes in Atlanta were said to have personal computers. As of June 1992, the service had about 800 subscribers, and the subscription list was growing at a rate of 50-100 subscribers a month. The projected break-even point was 1,500 subscribers (Benson, 20).

Underwood says newspapers are making "marginal profits at best" with electronic offerings of restaurant and movie reviews, expanded news articles, sports scores, advance classified ads, business news and public records. Telephone information lines recorded the highest level of use; they are being blended into newspaper operations by companies like the Kansas City *Star*. Although past videotex failures have left newspapers leery of future projects, editors expect a growing market for electronic newspapers, especially among computer-savvy young people (Underwood, 26).

# Chapter 3: Research Design and Methodology

## Pre-Test Methodology

The survey was pre-tested by administering a 28-item telephone questionnaire to 12 members of Eastern Montana College's educational research methods class in April 1992. Pre-test results and comments from those reviewing the project resulted in a revised, 35-item questionnaire used for the survey. Both the original questionnaire and the revised version took 10 minutes or less to complete.

## Survey Methodology

The survey questionnaire (Exhibit A-1) includes:

- A question asking respondents to name the major local newspaper, which was designed to give the survey a more neutral tone than readership surveys for the *Gazette* -- something this survey is *not*.
- Seven questions probing respondents' frequency of readership of the *Gazette* and competing newspapers.
- Six successive questions probing the types of audiotex information respondents would prefer, plus two later questions asking respondents about their willingness to pay for audiotex service and their opinion of having advertising underwrite the cost.
- Several questions probing respondents' knowledge and use of the Weatherline service.
- Four questions concerning computers and related equipment and services in respondents' home followed by two questions about prospective newspaper online services and costs.

- Nine questions involving demographic characteristics.
- An open-ended question seeking comments on services the *Gazette* should offer.

The questionnaire was administered by telephone to a sample of 707 households, with 385 usable responses. The sample was drawn from a population of about 56,000 residential telephone listings (US West figures) in the Billings/Shepherd area. The sample size was determined by the goal of attaining a 95-percent confidence level with a 5-percent margin of error on two key indexes and one key measure, all of which were included in the earlier definition of terms. The indexes are receptiveness to newspaper audiotex service and high computer familiarity; the measure involves question 24 on the questionnaire, which asked respondents the likelihood of their subscribing to a videotex service offered by the *Gazette*. In each case, respondents were placed in two groups: those who met the definition and those who did not. Using a standard statistical technique for determining the required sample size for a given population proportion, the largest sample size required was 384 respondents. This assumes the largest variation in the population, a 50-50 split of those in proportions  $p$  and  $q$  ( $1-p$ ). (Calculations of the required sample size for representative population variances are shown in Appendix D.)

Sample results fell within the desired margin of error for the two indexes, receptiveness to audiotex and high computer familiarity. However, an unexpected problem arose with the videotex measure. Only people who answered yes to one of two primary computer-related questions -- computer in the home or plan to buy a computer within the next year -- were asked to indicate their interest in videotex. This left a smaller secondary sample group of 138 respondents, which resulted in an 8-percent margin of error (Table 1).

To increase the probability of including residences with unlisted or unpublished numbers in the sample, the survey used a form of random-digit dialing suggested by Joe Floyd (1992), of

**Table 1 -- Margin of error from survey results**

Receptiveness to:				
	n	Yes	No	Error
Videotex	138	37.7%	62.3%	8.0%
Audiotex	380	27.4%	72.6%	4.0%
<hr/>				
High computer familiarity	n	Yes	No	Error
	381	71.9%	28.1%	5.0%

Eastern Montana College's sociology, political science and Native American studies department and head of the college's computer-assisted telephone interviewing lab. Residential listings in the local telephone directory were the starting point for randomly selecting 25

pages. One of three columns on each page also was randomly selected. Each column contains approximately 80 numbers; the first five digits of the first 80 telephone numbers in each column were drawn. For columns with fewer than 80 numbers, enough numbers to fill that quota were selected sequentially from the next column to the right, or to the far left if the original column was on the far right. To get a seven-digit number, these numbers were completed with two randomly-generated digits, resulting in a 2,000-number list. This method also is discussed by Frankel and Frankel, who note that randomization of the final two, three or four digits "gives a nonzero (but not necessarily equal) probability to a large portion of the unlisted numbers" in a telephone exchange (Frankel and Frankel 1977, 289).

Six interviewers hired by the *Gazette* conducted telephone interviews from the newspaper office under the author's supervision during a one-week period in August 1992. Interviews occurred from 5 p.m. to 9 p.m. on Monday through Thursday, August 17-20; from 5 p.m. to 8 p.m. on Friday, August 21; and from 9 a.m. until noon on Saturday, August 22.

## Method of Analysis

Most data collected during the survey was of an ordinal or nominal nature. Because this data took the form of frequency counts occurring in two or more mutually exclusive categories, a

nonparametric test of significance was the appropriate means of analysis. One such test, a two-way contingency table using chi-square techniques, was used to check the significance of survey findings. KwikStat, a statistical analysis program for personal computers, was used to obtain chi-square and probability values (KwikStat Rel. 3.3). Also, the margin of error reported earlier for interest in audiotex and videotex services served as a control on conclusions about the market for those operations.

As a gauge of sample representativeness, demographic findings from the survey can be compared with data in table C-1, which was derived from The Lifestyle Zip Code Analyst 1992, a national profile of American demographic and lifestyle characteristics, 1990 Census data for Billings and US West figures for touch-tone telephone service in Billings. The sample closely matches the Billings population in several regards. For example, households with incomes of \$40,000 or greater comprise 26.5 percent of the population and 25.7 percent of the sample. Conversely, households with incomes less than \$40,000 comprise 73.5 percent of the population and 74.3 percent of the sample. The home ownership rates for the population and the sample also are quite comparable, 68 percent and 71.5 percent, respectively.

Data for the sample, however, showed a considerably higher rate of computer usage, 28.1 percent compared with 15.7 percent for the population. As discussed earlier, the gender distribution differed markedly for the sample and the population. Finally, 83 percent of the households in the sample had touch-tone telephone service, compared with a 73-percent rate in the population. These differences do not appear to compromise the validity of survey results.

# Chapter 4: Results, Data Analysis and Interpretation

The data showed a high rate of regular readership of the *Gazette*; 57 percent of those surveyed read the newspaper four or more times in the previous week. (For survey results, see Appendix B). However, competing newspapers penetrated the *Gazette's* primary market, gaining at least one day of readership from 30 percent of the sample (Table 2). *USA Today*

In the past week, how many days did you read:						
(n = 383)	Once	Twice	Three	Four	Five-plus	None
<i>Gazette</i>	13.8%	8.6%	6.8%	5.2%	52%	13.6%
Other newspapers	14.9%	7.8%	2.9%	1.3%	3.1%	70%

posted the highest penetration rate, 30 percent of those who read a competing newspaper in the previous week, fol-

lowed by the *Wall Street Journal*, which gained a 23-percent share. The Great Falls Tribune, which is the *Gazette's* major Montana competitor, was the choice of 6 percent of respondents who had read another newspaper.

As described earlier, a series of six questions sought to determine whether respondents appear interested in audiotex services. Responses were used to construct a composite index of receptiveness to audiotex services, and respondents were classified as being likely or unlikely to use those services. Overall receptiveness to the services appeared in 27 percent of those surveyed (see Table 1, p. 21), surpassing the value hypothesized in H<sub>1</sub>.

**Table 3 -- Receptiveness to audiotex, by category**

How likely is it that would call for:

	Very likely	Likely	Unlikely	Very unlikely	Undecided
News updates	6.8%	29.8%	32.1%	27.7%	3.7%
Sports news	10.2%	17.0%	30.8%	40.2%	1.8%
Stock quotes	3.9%	14.7%	33.0%	46.1%	2.4%
Business news	4.2%	26.2%	36.6%	29.6%	3.4%
Voice personal ads	5.2%	16.5%	31.5%	43.3%	3.4%
Classified ads	14.4%	36.2%	22.8%	21.0%	5.5%

Sample sizes (n): News updates and sports news, 383; stock quotes and business news, 382; voice personal ads and classified ads, 381.

The prospect of listening to classified advertisements on an audiotex service generated the highest

degree of interest, 50.6 percent of the respondents saying they would be very likely or likely to call. Updates of local, state, national and international news comprised the category with the second-highest rating, 36.6 percent of respondents saying they would be very likely or likely to call for that information (Table 3).

Survey results show a high degree of resistance to paying a per-minute charge for news and other information obtained from an audiotex service. Nearly 80 percent of those interviewed stated they were not willing to pay anything for information; only 1.8 percent of the respondents indicated they were willing to pay 95 cents a minute, the fee charged by USA Today and the *Wall Street Journal*. A fee of less than 75 cents was most popular among respondents willing to pay for the service (Table 4).

**Table 4 -- Audiotex charges**

Willing to pay per-minute charge of:

75 cents	3.4%
85 cents	0.3%
95 cents	1.8%
Less than 75 cents	15.0%
Nothing	79.5%
(n = 380)	

Analysis of the data also shows a statistically significant association ( $p = 0.000$ ) between respondents' receptiveness to audiotex and their willingness to pay a per-minute charge for audiotex information. Among those receptive to audiotex who also responded to a question about possible per-minute charges ( $n = 103$ ), 38.8 percent said they were willing to pay one of four rates that were mentioned; 61.2 percent said they were unwilling to pay any amount (Table 5).

All respondents were told about free audiotex services supported by advertising, and 37.8 percent said they would be very

likely or likely to call under those circumstances. The data showed a statistically significant association ( $p = 0.000$ ) between receptiveness to audiotex and likelihood of calling a service with advertising: a majority (61.2 percent) of respondents receptive to audiotex said they would be very likely or likely to call a service under those circumstances (Table 6).

**Table 5 -- Receptiveness to audiotex, by willingness to pay per-minute charge**

Receptive	n	Willing to pay	
		Yes	No
Yes	103	38.8%	61.2%
No	276	13.8%	86.2%
Total	379	20.6%	79.4%

Note: Respondents' receptiveness to audiotex was significantly associated with willingness to pay a per-minute charge for audiotex.  $\chi^2 = 28.135$  with DF = 1;  $p = 0.000$ .

**Table 6 -- Receptiveness to audiotex by likelihood of calling ad-supported service**

Receptive	n	Likely to call	
		Yes	No
Yes	103	61.2%	38.8%
No	274	29.2%	70.8%
Total	377	37.9%	62.1%

Note: Respondents' receptiveness to audiotex was significantly associated with likelihood of calling advertising-supported service.  $\chi^2 = 32.494$  with DF = 1;  $p = 0.000$ .

Respondents classified as having any computer knowledge (i.e. computer in the home or plans to buy one within the next year) were told about videotex services, which allow someone with a computer and a modem to call the newspaper's computer to get news and other information. These respondents ( $n = 138$ ) also were told that newspapers offering these services typically

charge a monthly subscription fee, but they were not initially asked if they were willing to pay the fee (see question 24 in Appendix A). Among this group, 38 percent -- 52 respondents --

**Table 7 -- Potential videotex fees**

Respondents willing to pay (per month):

\$5 or less	46.7%
\$6 to \$9	33.3%
\$10 or more	20.0%

(n = 45)

expressed interest in videotex services. A follow-up question on pricing to a smaller group of respondents indicated their leading preference was a service charging \$5 or less per month (Table 7).

Several national online information providers have rates equal to or higher than the options suggested in the survey. It should be noted, however, that these services also include a larger variety of information than most newspapers provide on their online databases. CompuServe, for example, charges \$7.95 per month for a basic-services package that includes Associated Press news, stock quotes, weather forecasts and radar maps, movie reviews, encyclopedia and medical reference information, and several games. Prodigy, another major information vendor known for colorful graphics, recently increased the basic cost for similar services to \$14.95 per month.

Two hypotheses, involving the potential market for audiotex and videotex services, have been discussed. For the other 12 hypothesis, summary results are discussed below.

Respondents likely to be receptive to audiotex services, and for which statistically significant associations exist, include younger persons ( $p = 0.013$ ) and those who regularly use the Weatherline service ( $p = 0.000$ ) (See Table 8, p. 27, for both relationships).

Remaining hypothesized associations for audiotex variables were not statistically significant. Thus, it cannot be concluded that receptiveness to audiotex is associated with gender, demographic level, household income, readership of the *Gazette* and educational level. Also, it

cannot be concluded that an association exists between household income and willingness to pay for audiotex services. Data for these relationships are shown in Tables C-2 through C-7.

Analysis of prospective videotex subscribers revealed two statistically significant

associations, which are both displayed in Table 9. These respondents are more likely to have a lower computer familiarity ( $p = 0.015$ ), possibly because they have less knowledge of the current

**Table 8 -- Receptiveness to Audiotex, by Age Level, Weatherline Use**

Age level	n	Receptive	Non-Receptive
Older	199	22.1%	77.9%
Younger	179	33.5%	66.5%
Total	378	27.5%	72.5%

Note: A significant association exists between respondent age level and receptiveness to audiotex.  $\chi^2 = 6.150$  with DF = 1;  $p = 0.013$ .

Weatherline use	n	Receptive	Non-Receptive
Non-user	237	24.9%	75.1%
User	45	51.1%	48.9%
Total	282	29.1%	70.9%

Note: A significant association exists between Weatherline use and receptiveness to audiotex.  $\chi^2 = 12.604$  with DF = 1;  $p = 0.000$ .

**Table 9 -- Receptiveness to videotex, by computer familiarity, respondent age**

Computer familiarity	n	Receptive	Non-Receptive
Low	37	54.1%	45.9%
High	99	31.3%	68.7%
Total	136	37.5%	62.5%

Note: A significant association exists between respondent computer familiarity and receptiveness to videotex.  $\chi^2 = 5.943$ ; df = 1;  $p = 0.015$ .

Age of respondents	n	Receptive	Non-Receptive
Older	67	22.4%	77.6%
Younger	69	52.2%	47.8%
Total	136	37.5%	62.5%

Note: A significant association exists between respondent age and receptiveness to videotex.  $\chi^2 = 12.867$ ; df = 1;  $p = 0.000$ .

limits of videotex services than respondents whose longer-term computer use probably includes experience with electronic bulletin boards, online information services and the like. Also, prospective videotex subscribers again tend to be younger respondents ( $p = 0.000$ ).

Other hypothesized associations for videotex variables were not statistically significant. Therefore, it cannot be concluded that receptiveness to videotex is associated with demographic level, educational level, readership of the *Gazette* and gender. Furthermore, it cannot be concluded that an association exists between household income and willingness to pay more than \$5 per month for videotex. Data for these relationships are shown in Tables C-8 through C-12.

# Chapter 5: Summary, Conclusions, Implications, Recommendations

Data drawn from responses by 385 individuals to a 35-item question suggests the existence of a potentially feasible market for audiotex and videotex services in the Billings/Lockwood/Shepherd area. This region had 37,146 households in 1990 (U.S. Census Bureau). Using the potential 27-percent market penetration rate found in the sample and allowing for a 5-percent margin of error, it can be inferred that the potential market for various audiotex services ranges from about 8,170 households (22 percent of the population, or 27 percent minus 5 percent) to about 11,880 households (32 percent, or 27 percent plus 5 percent).

This potential market-penetration figure can be put into context by considering the experience of the Austin, Texas, *Statesman-American*, which competes in a market that is more than 4 1/2 times larger than the *Gazette's* (Editor & Publisher 1992, I-194, I-318). The *Statesman-American* began its audiotex service on July 8, 1992. Free to users and fully supported by advertisements, the service was logging 7,000-plus calls per day following a "soft launch" that was not extensively promoted, according to Connie Salinas (1992), voice-information administrator for the *Statesman-American*. She anticipated an increased volume after a "full launch," complete with contests and other promotional aids, in the fall of 1992. Salinas said the newspaper's management is especially pleased by the stock quote hotline. "It's been very widely received," she said, referring to an average of about 1,000 calls per day from investors. Many make 3-5 calls a day to the stock line, Salinas said.

If the *Gazette* launches an audiotex service, survey results suggest management should give a high priority to including classified advertisements and general news updates. The service should be targeted at persons who are 40 or younger and who use the Weatherline service. *Gazette* management, however, should use caution in targeting groups for which a statistically significant association with receptiveness to audiotex services was not found: for example, men vs. women, people in higher demographic levels, higher-income households, regular *Gazette* readers and more well-educated people.

Calculating a potential market-penetration rate for videotex services requires more assumptions than the audiotex calculation. First, the 138 respondents classified as having high computer familiarity represent 35.8 percent of all respondents. Then, using the receptiveness-to-videotex rate shown in Table 1 (37.7 percent) and allowing for the 8-percent margin of error, it was assumed that receptiveness to videotex ranges between 29.7 percent and 45.7 percent of the subgroup with high computer familiarity. Multiplying the computer familiarity rate by these limits resulted in a potential market penetration rate ranging from 10.6 percent (35.8 percent  $\times$  29.7 percent) to 16.4 percent (35.8 percent  $\times$  45.7 percent). It then can be inferred that the potential market for videotex services ranges from about 3,930 households (10.6 percent) to 6,090 households (16.4 percent).

If the *Gazette* enters the videotex business, promotional efforts should be directed at persons who are 40 or younger. People who have just purchased a computer or who are considering a purchase comprise a potentially promising group of customers. It is difficult to explain the relative resistance of more knowledgeable computer users to newspaper videotex services. Perhaps they have grown tired of hearing the prediction that electronic newspapers are just over the proverbial horizon -- a theme expressed by technological futurists for a decade or more. Or, perhaps the rapid growth in recent years of electronic vendors such as Prodigy, CompuServe, Genie, America Online and others has made them skeptical about the need for

more players in the field. In any case, if the *Gazette* decides to launch a videotex service, it will need to make a special effort to attract knowledgeable computer users. If they can be won over from their apparent skepticism, they could become valuable customers. Again, caution is warranted in deciding whether to target groups for which a statistically significant association with receptiveness to videotex was not found: for example, higher demographic level, well-educated, regular *Gazette* readers and men vs. women.

Finally, it is worthwhile to consider comments from someone experienced in the electronic publishing field: the Austin *Statesman-American's* Salinas. Speaking of the paper's audiotex venture, Salinas said callers have been "very complimentary and delighted that the newspaper has given them this service -- and it's free." Salinas suggested the attitude newspapers should adopt as they face impending competition from the regional Bell companies: "We can do it, and we can do it better" (Salinas).

# Appendix A

ELECTRONIC PUBLISHING MARKET SURVEY  
Conducted for The Billings Gazette  
By Dennis Gaub

Respondent # \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

Telephone number \_\_\_\_\_

Hello, my name is \_\_\_\_\_ and I'm calling for a University of Montana student working toward a master's degree in business. We're surveying people in the Billings and Shepherd areas to learn what they think about information services that the local newspaper may offer.

This telephone number was selected at random by computer. [I need to speak with an adult in this household. Are you 18 years old or older?]

IF YES, CONTINUE INTERVIEW.

IF NO: "May I please speak with someone who is 18 or older?"

(WHEN THAT PERSON COMES TO PHONE, REPEAT INTRODUCTION EXCEPT FOR MATERIAL ENCLOSED IN BRACKETS.)

We're asking only for your opinions; we're not trying to sell you anything. This questionnaire will only take a few minutes and your responses will remain confidential. Okay?

1 . What is the major local newspaper in your area?

- A. Billings Gazette
- B. Great Falls Tribune
- C. Yellowstone County News
- D. Other (write in full name) \_\_\_\_\_

2 . Thinking back to last week, how many days did you read the local newspaper?

- A. 1 Day \_\_\_\_\_ |1|
  - B. 2 Days \_\_\_\_\_ |2|
  - C. 3 Days \_\_\_\_\_ |3|
  - D. 4 Days \_\_\_\_\_ |4|
  - E. 5 or more Days \_\_\_\_\_ |5|
  - F. None \_\_\_\_\_ |6|
- > Go to question 3
- > Go to question 7

3 . Do you have this newspaper delivered to your home?

- A. Yes \_\_\_\_\_> Go to question 7  
 B. No \_\_\_\_\_> Go to question 4

4 . Do you have this newspaper delivered to the place where you work?

- A. Yes \_\_\_\_\_>Go to question 7  
 B. No \_\_\_\_\_>Go to question 5

5 . Do you buy single copies of this newspaper?

- A. Yes \_\_\_\_\_>Go to question 6  
 B. No \_\_\_\_\_>Go to question 7

6 . Thinking back to last week, how often did you buy single copies of this newspaper?

- A. Once  
 B. Twice  
 C. Three times  
 D. Four times  
 E. Five or more times  
 F. None

7 . Thinking back to last week, how often did you read another newspaper besides the Billings Gazette?

- A. Once  
 B. Twice  
 C. 3 Times  
 D. 4 Times  
 E. 5 Or More Times  
 F. Did not read another paper \_\_\_\_\_> Go to instructions  
on top of the next  
page

8 . I'm going to read a list of several newspapers. Please tell me if I mention any that you have read in the past week.

- A. Wall Street Journal  
 B. USA Today  
 C. Great Falls Tribune  
 D. Yellowstone County News  
 E. Any other daily or weekly newspaper that I didn't mention

(CALLER: write in any newspapers mentioned) \_\_\_\_\_

---

Some newspapers in other parts of the country have services that allow people to call a special telephone number and hear taped information on various subjects. News, weather and advertising are examples of what is available on these telephone services.

For the next six questions, please give me a response using these choices: very likely, likely, unlikely, very unlikely or undecided.

- 9 . If the local newspaper offered this kind of service and you could get news updates about local state, national and international events, is it:

- [ ] A. Very likely                   |5|  
 [ ] B. Likely                         |4|  
 [ ] C. Unlikely                     |2|  
 [ ] D. Very unlikely               |1|

that you would call the service, or are you:

- [ ] E. Undecided                   |3|

- 10 . If the local newspaper offered this service and you could get sports scores and sports news, is it:

- [ ] A. Very likely                   |5|  
 [ ] B. Likely                         |4|  
 [ ] C. Unlikely                     |2|  
 [ ] D. Very unlikely               |1|

that you would call the service, or are you:

- [ ] E. Undecided                   |3|

- 11 . If the local newspaper offered this service and you could get stock market quotes, is it:

- [ ] A. Very likely                   |5|  
 [ ] B. Likely                         |4|  
 [ ] C. Unlikely                     |2|  
 [ ] D. Very unlikely               |1|

that you would call the service, or are you:

- [ ] E. Undecided                   |3|

- 12 . If the local newspaper offered this service and you could get other business news, is it:

A. Very likely                   |5|  
 B. Likely                           |4|  
 C. Unlikely                       |2|  
 D. Very unlikely                 |1|

that you would call the service, or are you:

E. Undecided                   |3|

- 13 . If the local newspaper offered this service and you could listen to voice personal ads left by other people and leave them a message if you wanted to, is it:

A. Very likely                   |5|  
 B. Likely                           |4|  
 C. Unlikely                       |2|  
 D. Very unlikely                 |1|

that you would call the service, or are you:

E. Undecided                   |3|

- 14 . Some newspaper telephone services allow people to call and listen to classified, or "want," ads. Callers can get more information about what is being sold, and they also can leave a message for the person or business trying to sell something. If the local newspaper offered this kind of service, is it:

A. Very likely                   |5|  
 B. Likely                           |4|  
 C. Unlikely                       |2|  
 D. Very unlikely                 |1|

that you would call the service, or are you:

E. Undecided                   |3|

15. The Billings Gazette has a free service called Weatherline that allows people to call a telephone number and get weather information and highlights of the top news stories in the next day's paper. Are you familiar with this service?

A. Yes \_\_\_\_\_> Go to question 16  
 B. No \_\_\_\_\_> Go to question 17

16 . In the past week, how often did you call Weatherline?

- A. Once \_\_\_\_\_  
 B. Twice \_\_\_\_\_  
 C. 3 Times \_\_\_\_\_ → Go to question 18  
 D. 4 Times \_\_\_\_\_  
 E. 5 Or More Times \_\_\_\_\_  
 F. Didn't call W'line \_\_\_\_\_

17 . Now that I've described Weatherline, how likely is it that you will call that number for weather information? Again, the response choices are:

- A. Very likely                   |5|  
 B. Likely                           |4|  
 C. Unlikely                       |2|  
 D. Very unlikely                 |1|  
 E. Undecided                     |3|

18 . Newspapers that have telephone information services sometimes have a charge if people call to get news and other information. These charges range up to 95 cents a minute for calls that typically last a minute or two. How much would you be willing to pay if you could get news and other information over the telephone?

- A. 75 cents a minute  
 B. 85 cents a minute  
 C. 95 cents a minute  
 D. Less than 75 cents a minute  
 E. Nothing

19 . Some newspapers include advertisements on their telephone information services. That helps pay for the cost. People can then make a free phone call to use the service, but they must listen to the advertisement. If the local newspaper offered a free telephone service with advertising, how likely is it that you would use it? Again, the response choices are:

- A. Very likely                   |5|  
 B. Likely                         |4|  
 C. Unlikely                      |2|  
 D. Very unlikely                |1|  
 E. Undecided                    |3|

20 . Is there is a computer in your home?

- A. Yes \_\_\_\_\_ → Go to question 21   |5|  
 B. No \_\_\_\_\_ → Go to question 22   |0|  
 C. Don't know \_\_\_\_\_ | - |

21 . Does the computer in your home have a modem, which is a device that allows computers to communicate with each other over telephone lines?

- [ ] A. Yes \_\_\_\_\_> Go to question 23 |3|  
 [ ] B. No \_\_\_\_\_> Go to question 24 |0|  
 [ ] C. Don't Know \_\_\_\_\_ | - |

22 . Does anyone in your home plan to buy a computer sometime in the next year?

- [ ] A. Yes \_\_\_\_\_> Go to question 24 |2|  
 [ ] B. No \_\_\_\_\_> Go to question 26 |0|  
 [ ] C. Don't Know \_\_\_\_\_ | - |

23 . People who have computers with modems can call online information services to get news and other information. They pay a monthly fee or a per-minute charge to use the services. Some of the major online services include Prodigy, CompuServe, Genie and America Online. Do you or does anyone in your home subscribe to any of these or similar services?

- [ ] A. Yes |2|  
 [ ] B. No |0|  
 [ ] C. Don't Know | - |

24 . Some newspapers have services that allow someone with a computer and a modem to call the newspaper's computer to get news and other information. This news and information is displayed on a computer screen in your home. You can often select the kind of news or information that you want to read on your computer. Newspapers with these services often charge a monthly fee to use them. If the local newspaper had this type of service, how likely is it that you would subscribe to it? Again, the response choices are:

- [ ] A. Very likely \_\_\_\_\_> Go to question 25 |5|  
 [ ] B. Likely \_\_\_\_\_> |4|  
 [ ] C. Unlikely \_\_\_\_\_> |2|  
 [ ] D. Very unlikely \_\_\_\_\_> Go to question 26 |1|  
 [ ] E. Undecided \_\_\_\_\_> |3|

25 . How much would you be willing to pay if you could call the local newspaper's computer and have it send information to your computer?

- [ ] A. \$5 or less per month  
 [ ] B. \$6 to \$9 per month  
 [ ] C. \$10 or more per month  
 [ ] D. No response

So that we may get an accurate picture of our survey respondents, we would like to ask a few final general questions. We would like to remind you that all responses are confidential and will be combined for analysis.

26 . First, I'd like to ask about your educational level. Please stop me when I come to the best answer. How many years of school have you completed?

- A. Less than 12 years |1|
- B. High school diploma or GED |2|
- C. Some college or Vo-Tech |3|
- D. College degree |4|
- E. More than 16 years |5|

27 . Could you tell your approximate age. Again, please stop me when I come to the best answer. Are you:

- A. Under 20 |5|
- B. 20-30 |6|
- C. 31-40 |6|
- D. 41-50 |4|
- E. 51-60 |3|
- F. 61-70 |2|
- G. 71 or older |1|

28 . I'd also like to ask you about your approximate household income. Please stop me when I come to the best answer. Is your total household income:

- A. Less than \$10,000 |1|
- B. Between \$10,000 and \$20,000 |2|
- C. Between \$20,000 and \$30,000 |3|
- D. Between \$30,000 and \$40,000 |4|
- E. Between \$40,000 and \$50,000 |5|
- F. Between \$50,000 and \$75,000 |6|
- G. More than \$75,000 |7|
- H. Don't know |-|

29 . What is your occupation? \_\_\_\_\_

30 . Do you own or rent your home?

- A. Own |2|
- B. Rent |0|

31 . Do you have a touch tone telephone in your home?

- A. Yes
- B. No
- C. Don't Know

32 . What is your marital status?

- A. Single (never married)
- B. Married
- C. Divorced or separated
- D. Widowed

33 . What is your zip code?

- A. 59101
- B. 59102
- C. 59105
- D. 59106
- E. 59079

34 . Do you have any comments or observations about services that you think the local newspaper should offer?

---

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35 . (This is for the interviewer. If you have determined the gender of the respondent, enter below. Otherwise tell the person that we need to confirm the gender and ask them if they are:)

- A. Male
- B. Female

THANK YOU VERY MUCH FOR YOUR TIME!

# Appendix B

## ELECTRONIC PUBLISHING MARKET SURVEY Conducted for The Billings Gazette 385 Surveys Tabulated

(Note: Percentages based on number of responses excluding don't know/no response.)

1 . What is the major local newspaper in your area? (n=384)

A. Billings Gazette	383	99.7%
B. Great Falls Tribune	0	0%
C. Yellowstone County News	0	0%
D. Other	1	0.3%
E. Don't know/no response	1	-

2 . Thinking back to last week, how many days did you read the local newspaper? (n=383)

A. 1 Day	53	13.8%
B. 2 Days	33	8.6%
C. 3 Days	26	6.8%
D. 4 Days	20	5.2%
E. 5 or more Days	199	52.0%
F. None	52	13.6%
G. Don't know/no response	2	-

3 . Do you have this newspaper delivered to your home? (n=349)

A. Yes	246	70.5%
B. No	103	29.5%
C. Don't know/no response	36	-

4 . Do you have this newspaper delivered to the place where you work? (n=130)

A. Yes	42	32.3%
B. No	88	67.7%
C. Don't know/no response	255	-

5 . Do you buy single copies of this newspaper? (n=97)

A. Yes	70	72.2%
B. No	27	27.8%
C. Don't know/no response	288	-

6 . Thinking back to last week, how often did you buy single copies of this newspaper? (n=81)

A. Once	27	33.3%
B. Twice	12	14.8%
C. Three times	8	9.9%
D. Four times	4	4.9%
E. Five or more times	10	12.3%
F. None	20	24.7%
G. Don't know/no response	304	-

7 . Thinking back to last week, how often did you read another newspaper besides the Billings Gazette? (n=383)

A. Once	57	14.9%
B. Twice	30	7.8%
C. 3 times	11	2.9%
D. 4 times	5	1.3%
E. 5 or more times	12	3.1%
F. Didn't read another	268	70.0%
G. Don't know/no response	2	-

8 . Paper (s) that respondent has read in past week. (n=149)

A. Wall Street Journal	34	22.8%
B. USA Today	45	30.2%
C. Great Falls Tribune	9	6.0%
D. Yellowstone County News	10	6.7%
E. Other	51	34.2%
F. Don't know/no response	108	-

9 . If you could get news updates about local, state, national and international events, how likely is it that you would call the service? (n=383)

A. Very likely	26	6.8%
B. Likely	114	29.8%
C. Unlikely	123	32.1%
D. Very unlikely	106	27.7%
E. Undecided	14	3.7%
F. Don't know/no response	2	-

10 . If you could get sports scores and sports news, how likely is it that you would call the service? (n=383)

A. Very likely	39	10.2%
B. Likely	65	17.0%
C. Unlikely	118	30.8%
D. Very unlikely	154	40.2%
E. Undecided	7	1.8%
F. Don't know/no response	2	-

11 . If you could get stock market quotes, how likely is it that you would call the service? (n=382)

A. Very likely	15	3.9%
B. Likely	56	14.7%
C. Unlikely	126	33.0%
D. Very unlikely	176	46.1%
E. Undecided	9	2.4%
F. Don't know/no response	3	-

12 . If you could get other business news, how likely is it that you would call the service? (n=382)

A. Very likely	16	4.2%
B. Likely	100	26.2%
C. Unlikely	140	36.6%
D. Very unlikely	113	29.6%
E. Undecided	13	3.4%
F. Don't know/no response	3	-

13 . If you could listen to voice personal ads, how likely is it that you would call the service? (n=381)

A. Very likely	20	5.2%
B. Likely	63	16.5%
C. Unlikely	120	31.5%
D. Very unlikely	165	43.3%
E. Undecided	13	3.4%
F. Don't know/no response	4	-

14 . If you could listen to classified ads, how likely is it that you would call the service? (n=381)

A. Very likely	55	14.4%
B. Likely	138	36.2%
C. Unlikely	87	22.8%
D. Very unlikely	80	21.0%
E. Undecided	21	5.5%
F. Don't know/no response	4	-

15 . Are you familiar with the Weatherline service? (n=381)

A. Yes	286	75.1%
B. No	95	24.9%
C. Don't know/no response	4	-

16 . In the past week, how often did you call Weatherline? (n=282)

A. Once	25	8.9%
B. Twice	8	2.8%
C. 3 times	5	1.8%
D. 4 times	0	0%
E. 5 or more times	7	2.5%
F. Did not call	237	84.0%
G. Don't know/no response	103	-

17 . How likely is that you will call Weatherline? (n=97)

A. Very likely	19	19.6%
B. Likely	33	34.0%
C. Unlikely	20	20.6%
D. Very unlikely	22	22.7%
E. Undecided	3	3.1%
F. Don't know/no response	288	-

18 . How much would you be willing to pay to get news and other information over the telephone? (n=380)

A. 75 cents a minute	13	3.4%
B. 85 cents a minute	1	0.3%
C. 95 cents a minute	7	1.8%
D. Less than 75 cents/minute	57	15.0%
E. Nothing	302	79.5%
F. Don't know/no response	5	-

19 . If the newspaper had a free telephone service with advertising, how likely is that you would use it? (n=378)

A. Very likely	33	8.7%
B. Likely	110	29.1%
C. Unlikely	92	24.3%
D. Very unlikely	116	30.7%
E. Undecided	27	7.1%
F. Don't know/no response	7	-

20 . Is there a computer in your home? (n=381)

A. Yes	107	28.1%
B. No	274	71.9%
C. Don't know/no response	4	-

21 . Does the computer in your home have a modem? (n=381)

A. Yes	39	10.2%
B. No or not applicable	342	89.8%
C. Don't know/no response	4	-

- 22 . Does anyone in your home plan to buy a computer sometime in the next year? (n=381)
- |                           |     |       |
|---------------------------|-----|-------|
| A. Yes                    | 41  | 10.8% |
| B. No or not applicable   | 340 | 89.2% |
| C. Don't Know/no response | 4   | -     |
- 23 . Does anyone in your home subscribe to an online information service? (n=381)
- |                           |     |       |
|---------------------------|-----|-------|
| A. Yes                    | 19  | 5.0%  |
| B. No or not applicable   | 362 | 94.8% |
| C. Don't know/no response | 4   | -     |
- 24 . If the local newspaper had a computer-based online information service, how likely it that you would subscribe to it? (n=138)
- |                           |     |       |
|---------------------------|-----|-------|
| A. Very likely            | 12  | 8.7%  |
| B. Likely                 | 40  | 29.0% |
| C. Unlikely               | 35  | 25.4% |
| D. Very unlikely          | 44  | 31.9% |
| E. Undecided              | 7   | 5.1%  |
| F. Don't know/no response | 247 | -     |
- 25 . How much would you be willing to pay to subscribe to an online information service operated by the local newspaper? (n=45)
- |                           |     |       |
|---------------------------|-----|-------|
| A. \$5 or less per month  | 21  | 46.7% |
| B. \$6 to \$9 per month   | 15  | 33.3% |
| C. \$10 or more per month | 9   | 20.0% |
| D. Don't know/no response | 340 | -     |
- 26 . How many years of school have you completed? (n=381)
- |                            |     |       |
|----------------------------|-----|-------|
| A. Less than 12 years      | 24  | 6.3%  |
| B. HS diploma or GED       | 93  | 24.4% |
| C. Some college or Vo-Tech | 132 | 34.7% |
| D. College degree          | 88  | 23.1% |
| E. More than 16 years      | 44  | 11.6% |
| F. Don't know/no response  | 4   | -     |
- 27 . What is your age? (n=380)
- |                           |    |       |
|---------------------------|----|-------|
| A. Under 20               | 1  | 0.3%  |
| B. 20-30                  | 83 | 21.8% |
| C. 31-40                  | 95 | 25.0% |
| D. 41-50                  | 80 | 21.1% |
| E. 51-60                  | 61 | 16.1% |
| F. 61-70                  | 32 | 8.4%  |
| G. 71 or older            | 28 | 7.4%  |
| H. Don't know/no response | 5  | -     |

28 . What is your household income? (n=331)

A. Less than \$10,000	34	10.3%
B. \$10,000-\$20,000	67	20.2%
C. \$20,000-\$30,000	75	22.7%
D. \$30,000-\$40,000	70	21.1%
E. \$40,000-\$50,000	39	11.8%
F. \$50,000-\$75,000	29	8.8%
G. More than \$75,000	17	5.1%
H. Don't know/no response	54	-

29 . What is your occupation? (n=366)

A. Professional	127	34.4%
B. Sales	22	6.0%
C. Service	34	9.3%
D. Skilled	29	7.9%
E. Clerical	26	7.1%
F. Unskilled	6	1.6%
G. Other	121	33.1%
H. Unemployed	1	0.3%
I. Don't know/no response	19	-

30 . Do you own or rent your home? (n=373)

A. Own	267	71.5%
B. Rent	106	28.4%
C. Don't know/no response	12	-

31 . Do you have a touch tone telephone in your home? (n=378)

A. Yes	329	87.0%
B. No	49	13.0%
C. Don't know/no response	7	-

32 . What is your marital status? (n=374)

A. Single (never married)	71	19.0%
B. Married	242	64.7%
C. Divorced or separated	38	10.2%
D. Widowed	23	6.2%
E. Don't know/no response	11	-

## 33 . What is your zip code? (n=377)

A. 59101	114	30.2%
B. 59102	154	40.8%
C. 59104	1	0.3%
D. 59105	81	21.5%
E. 59106	18	4.8%
F. 59108	1	0.3%
G. 59066	1	0.3%
H. 59072	1	0.3%
I. 59079	6	1.6%
J. Don't know/no response	8	-

## 35 . Gender of respondent. (n=382)

A. Male	141	36.9%
B. Female	241	63.1%
C. No response	3	-

# Appendix C

**Table 1 -- Selected demographic comparisons**

Income (in \$ thousands)

	0-	20-	30-	40-	50-	75-
	19.9	29.9	39.9	49.9	74.9	plus
Population	39.4%	18.9%	15.3%	10.2%	11.2%	5.1%
Sample	30.5%	22.7%	21.1%	11.8%	8.8%	5.1%

---

	Home ownership	Personal computer participation	Gender		Touch-tone phone in home
			Female	Male	
Population	68.0%	15.7%	52%	48%	73%
Sample	71.5%	28.1%	63%	37%	83%

Note: Population data are for Billings. Sources: The Lifestyle Zip Code Analyst 1992; U.S. Bureau of the Census 1991; Shors 1992.

**Table 2 -- Receptiveness to Audiotex, by Demographic Level**

	n	Receptive	Non-Receptive
Low demographic	124	32.3%	67.7%
High demographic	202	26.7%	73.3%
Total	326	28.8%	71.2%

Note: There was not a significant association between receptiveness to audiotex and demographic level.  $\chi^2 = 1.143$  with DF = 1;  $p = 0.286$ .

**Table 3--Receptiveness to Audiotex, by Income Level**

	n	Receptive	Non-Receptive
Lower income	244	28.7%	71.3%
Higher income	85	28.2%	71.8%
Total	329	28.6%	71.4%

Note: There was not a significant association between receptiveness to audiotex and income level.  $\chi^2 = 0.006$  with DF = 1;  $p = 0.937$ .

**Table 4 -- Receptiveness to Audiotex, by Gazette readership**

	n	Receptive	Non-Receptive
Non-regular reader	162	30.2%	69.8%
Regular reader	216	25.5%	74.5%
Total	378	27.5%	72.5%

Note: There was not a significant association between receptiveness to audiotex and Gazette readership.  $\chi^2 = 1.062$  with DF = 1;  $p = 0.303$ .

**Table 5 -- Receptiveness to Audiotex, by Education Level**

	n	Receptive	Non-Receptive
Not well-educated	117	28.2%	71.8%
Well-educated	262	27.1%	72.9%
Total	379	27.4%	72.6%

Note: There was not a significant association between receptiveness to audiotex and education level.  $\chi^2 = .050$  with DF = 1;  $p = 0.824$ .

**Table 6 -- Receptiveness to Audiotex, by Gender**

	n	Receptive	Non-Receptive
Men	139	29.5%	70.5%
Women	238	26.1%	73.9%
Total	377	27.3%	72.7%

Note: There was not a significant association between receptiveness to audiotex and gender.  $\chi^2 = 0.525$  with DF = 1;  $p = 0.469$ .

**Table 7 -- Willingness to pay for audiotex, by household income**

	n	Willing	Not willing
Lower income	245	22.4%	77.6%
Higher income	84	20.2%	79.8%
Total	329	21.9%	78.1%

Note: There was not a significant association between willingness to pay for audiotex and household income level.  $\chi^2 = 0.179$  with DF = 1;  $p = 0.673$ .

**Table 8 -- Receptiveness to videotex, by demographic level**

	n	Receptive	Non-Receptive
Low demographic	22	50.0%	50.0%
High demographic	102	37.3%	62.7%
Total	124	39.5%	60.5%

Note: There was not a significant association between receptiveness to videotex and demographic level.  $\chi^2 = 1.230$  with DF = 1;  $p = 0.268$ .

**Table 9 -- Receptiveness to videotex, by Gazette readership**

	n	Receptive	Non-Receptive
Non-regular reader	59	42.4%	57.6%
Regular reader	79	34.2%	65.8%
Totals	138	37.7%	62.3%

Note: There was not a significant association between receptiveness to videotex and Gazette readership.  $\chi^2 = 0.966$  with DF = 1;  $p = 0.326$ .

**Table 10 -- Receptiveness to videotex, by education level**

	n	Receptive	Non-Receptive
Not well-educated	27	25.9%	74.1%
Well-educated	111	40.5%	59.5%
Total	138	37.7%	62.3%

Note: There was not a significant association between receptiveness to videotex and education level.  $\chi^2 = 1.975$  with DF = 1;  $p = 0.161$ .

**Table 11 -- Receptiveness to videotex, by gender**

	n	Receptive	Non-Receptive
Men	58	46.6%	53.4%
Women	79	31.6%	68.4%
Totals	137	38.0%	62.0%

Note: There was not a significant association between receptiveness to videotex and gender.  $\chi^2 = 3.156$  with DF = 1;  $p = 0.076$ .

**Table 12 -- Willingness to pay more than \$5 per month for videotex, by income level**

	n	Willing	Not willing
Lower income	25	52.0%	48.0%
Higher income	17	58.8%	41.2%
Totals	42	54.5%	45.5%

Note: There was not a significant association between willingness to pay more than \$5 per month for videotex and income level.  $\chi^2 = 0.190$  with DF = 1;  $p = 0.663$ .

# Appendix D

The required sample size can be calculated using the following statistical formula:

$n = (Z^2) \rho q / \beta^2$  where  $n$  = sample size

$Z$  = value for a given confidence level (e.g. 1.96 represents 95% confidence level)

$\rho$  = probability for "successful" outcome in binomial distribution

$q = 1 - \rho$  = probability for "failure" outcome in binomial distribution

$\beta^2$  = bound on error

Using a conservative approach where the variation in the population is set at its maximum value, it can be assumed that  $\rho$  is near 1/2 and  $\rho q = .25$ . The required sample size, using a bound on error of .05, then is:

$$n = (1.96)^2 (.25) / (.05)^2 = 384.$$

Other representative sample sizes for smaller variations in the population include:

$$\rho = .6, q = 1.0 - .6 = .4; \rho q = .24; n = 369$$

$$\rho = .7, q = 1.0 - .7 = .3; \rho q = .21; n = 323$$

$$\rho = .8, q = 1.0 - .8 = .2; \rho q = .16; n = 246$$

$$\rho = .9, q = 1.0 - .9 = .1; \rho q = .09; n = 138$$

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