

INTERACTIVE ADVERTISING
VS.
TRADITIONAL PRINT MEDIUMS

by:

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Abstract

The general purpose of this study is to evaluate the effectiveness of advertising/marketing at Bemidji State University Men's Basketball games; specifically the effectiveness of traditional printed banners versus fan interaction advertising such as the half-time shootout. The survey research method is the basic research design. This thesis is a quantitative study to determine brand recognition among fans at the game. Each respondent was surveyed at the Bemidji State University gymnasium. The survey itself is a brief questionnaire that measures how often respondents are exposed to the advertising in question, as well as the number of advertisements each respondent can recall. Simple tabulation, chi-square, and cross-tabulations are utilized to analyze the data.

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I. Introduction

This thesis describes the basic habits of Bemidji State University men's basketball fans and their ability to recall advertisements featured in the Bemidji State University gymnasium. The report contains the seven primary sections below.

- I. Introduction:** Describes the study in general
- II. Purpose of Research and Hypothesis:** Provides the rationale for the research, identifies the scope and limitations of the study, and states the researcher's hypothesis
- III. Literature Review:** Background information and secondary data that adds insight and knowledge to the researched topic
- IV. Methodology:** Explains the sampling design, the research design, data collection, and aspects of the statistical procedures are described
- V. Findings:** Explains the results of the research and its relation to the research question
- VI. Summary:** Clarifies the findings and delivers qualitative implications of the study
- VII. Recommendations & Future Work:** Suggests ideas for follow up studies and offers practical recommendations to future advertisers at Bemidji State University

II. Purpose of Research and Hypothesis

A. Rationale for the Research

The general purpose of this study was to evaluate the effectiveness of advertising/marketing at Bemidji State University men's basketball games; specifically the effectiveness of fan based interactive advertising such as the Keith's Pizza Half-Time Shootout versus traditional printed banners. To the researcher's knowledge, no such research has been done on this topic, either through previous thesis or Beaver Pride studies. Therefore, there is no known background information specific to this issue at Bemidji State University.

However, national studies have shown that Americans in general are becoming immune to conventional advertisements. "Consumers are constantly inundated with traditional methods of advertising, such as banner, posters, etc. Alternative advertising seeks to break through the advertising noise by utilizing different media outlets."¹

Keith's Pizza, a local pizza eatery in Bemidji, Minnesota, advertises at the Bemidji State University Men's basketball games. This area business is the only advertiser to utilize alternative media, namely interactive advertising at men's basketball games. For each home game, fans are invited down on the court during half-time to compete for free pizza. Participants gather to form a single file line, which starts at the free throw line. One by one, each participant receives a basketball to shoot at the basket. The first five people to make a basket win a free pizza, compliments of Keith's Pizza.

Although the advertising for Keith's Pizza only remains for roughly five minutes, it literally takes center stage for everyone in the gymnasium to see. It is the researcher's hypothesis, that the five minutes of interaction with the fans, will lead to a higher brand

recall rate for Keith's Pizza than any of the other 23 businesses advertised through the use of traditional posters arranged around the gymnasium.

As advertising budgets become tighter, businesses need to wisely invest their money to capture audience attention. Advertisers in Bemidji are no exception and may want to analyze alternative media options before settling on traditional forms of marketing.

B. Research Question and Objectives

This study is designed to answer the following research question: *What is the effectiveness of interactive advertising at Bemidji State University basketball games versus traditional print mediums?* An answer to this question can guide area and regional businesses in their decisions on how to invest/use their advertising dollars at Bemidji State University. Four research objectives are listed below:

1. To determine how often Bemidji State University basketball fans are exposed to arena advertising messages in a single season?
2. To identify how often Bemidji State University basketball fans are exposed to half-time activities.
3. To determine "unaided" brand recall for product advertised during half-time.
4. To determine "unaided" brand recall for products advertised on print posters in the Bemidji State University gymnasium.

C. Scope of Limitations of the Study

The study's primary purpose was to identify the effectiveness of Keith's Pizza's fan based interactive half-time shootout versus traditional print advertisements with regards to Bemidji State University basketball fans. However, it was not able to include every fan in attendance at the basketball games.

Due to limitations of time and the replacement of the gymnasium floor, only a sampling of basketball fans were used to collect research data. The renovation of the gymnasium floor meant all games would be relocated to Memorial Hall room 100 on the Bemidji State University campus until construction was completed. No advertisements were brought to the Memorial Hall location, so research could not begin until the gymnasium floor was finished. Games did not resume play in the field house until January of 2005. The data collected from this sampling was administered during two home games, dated January 14 & 15, 2005.

Upon completion of the gymnasium floor, the Bemidji State University men's basketball team played eight games in the field house. It is possible that surveys distributed during the other six games may have yielded different results from what was found on January 14 & 15, 2005. It should also be considered that on both January 14 & 15, the Bemidji State University men's hockey team was playing on home ice in the adjacent John Glas Field House. The opportunity for sports fans to venture between both activities, may have effected certain responses on the survey.

The surveys were administered to individuals exiting the gymnasium down the staircase on the west side of the field house. It is possible that potential respondents chose an alternate exit route to avoid the survey, in which case their responses were not

collected. If more time were allowed, additional supervision could have been administered, and a more systematic random sample may have been achieved, rather than the convenience sample that was collected. However, from the nature of the results, it is not likely that an alternate sampling design would have yielded significantly different conclusions.

This survey was composed of four closed-ended questions and two open-ended questions. It is conceivable that respondents may have been confused or misinterpreted the open-ended questions, as no alternative responses were provided. The open-ended questions also provided an opportunity for the interviewer to misinterpret responses during analysis.

D. Definition of Terms

Throughout this report, certain terms will be used. To alleviate individual interpretations of the words, the definition of such terms are defined here.

1. *Interactive advertising*- the involvement of fans in advertising, whether it is realized by the participant or not.
2. *Traditional print medium*- for the purpose of this study, it includes posters, banners, and signs of any size.
3. *Unaided brand recall*- the ability of the respondent to name a brand when asked without being provided any clues. Throughout this research, it is known simply as brand recall.

III. Literature Review

Advertisers are continually finding and inventing new ways to reach their audience. For example, an article from Brandweek in January of 2004 highlighted Spectator Advertising Solutions for recently creating a new way to get their audiences' attention. "Marketers love to get into people's faces, get products right into their hands²," and Spectator Advertising Solutions is on their way with Stadium Trays. Stadium Trays are literally putting brands into laps, such as Pepsi, Best Buy and ESPN. "The trays are sturdy and also glossier and more striking than the typical molded or corrugated cardboard trays that one typically gets for carrying those overpriced snacks from the concession stand.²"

According to exit polls, sponsor memory retention was very high after games. This new medium for messages is expected to increase sales for advertisers.

The Stadium Trays are just one outlet for messages, but advertisers are still looking for more bare spaces to capitalize on. According to Hilary Cassidy of Brandweek, out of home advertising is no longer the typical displays on billboards or bus shelters...it has now reached the front door of sports stadiums. "The next time you go to a sport event, you may find yourself grabbing an ad as you go through the entrance turnstile.³" Martin Hering, founder of Entry Media, who manufactures the turnstile materials for arenas says, "It ties in with the excitement at the event right at the point of entry. You see it quickly but link the sponsor to the event.³"

Verizon Wireless is already on contract with the Chicago Cubs for entrance turnstiles. This baseball club does not have advertisements on or in the prestigious Wrigley Field, so they were looking for some alternative way to recognize their sponsors.

Cubs fans cannot miss this advertisement when they enter the stadium.

New York Times writer Tyler Kepner was also quick to note how the Yankees have also found ways to increase advertising. In his April 9, 2004 article, he states “the Yankees have found more ways to squeeze advertising into Yankee Stadium. Ads now cover the walls and railings of both dugouts; ads take up space on the walls behind the on-deck circles and groundskeepers drag the infield with clearly advertised company logos on their backs.”⁴

Some consumers have become aware of the fact that they are constantly being bombarded with corporate messages at stadiums. For that reason, some spectators may be turned away and choose to watch the event from home. However, sports fans may not realize how susceptible they still are to advertising. Advertisers are finding ways to catch up with that crowd and will stop at nothing short of success.

Sports fans who choose to not pay to see a game in the stadium and watch it from home may actually be paying out of their pockets anyway do to digitally inserted ads. Viewers are exposed to ads and logos that don't actually exist outside TV screens. David Sitt, co-chief executive officer of PVI says, “virtual ads enable advertisers to get inside the game - and inside people's minds.”⁵

Virtual ads have already been inserted into sports telecasts, and will continue to do so. Examples of where they show up: World Series- behind home plate, which gives primetime ad space to large contributors of Major League Baseball such as Anheuser-Busch, Pepsi and MasterCard. College Football- CBS and PVI created “branded first-down lines” where Pontiac and DuPont have already made appearances.

Other areas of advertising to the stay at home sports fan has recently been the talk

of discussions. As the gap between the sexes diminishes, marketers of female products are capitalizing and expanding into areas they've never been...sports.

Marketing to female audiences in male-dominated sports is a new concept that has yet to be proven effective. With the tight economy, advertisers have to be conscientious about where they spend their money. "The reality is that companies don't want to stretch a brand to far from it's original positioning."⁶

Even though 38% of NFL viewers are female, there are other sports that deserve attention. NASCAR claims 40% of their audience is female, and has already received exposure of "female-friendly" products like Tide, Cheerios, and Rubbermaid. Other areas to be considered by marketers could be the growing field of adventure/extreme sports.

Wherever advertisers go, whatever medium they use, it seems that sports fans will eventually pick up on their message. The question for advertisers now is how to compete with the other brands and make their company a household name. Within the last 10 years, corporate advertising has found an outlet...naming rights to stadiums.

In January of 2001, Ralph Nader tried to make Colorado citizens, and all Americans for that matter, be aware of how corporate advertising has taken over so much of our culture and our country. The example he used was the possible naming of Denver's new stadium "Invesco Field at Mile High."

Nader wanted Colorado residents to say no to the \$120 million Invesco Funds Group Inc. would pay to get naming rights; it is the taxpayers who are paying to build the stadium, and no corporation should be able to plaster their name to it.

Nader claims, "Not everything should be for sale. Everywhere you turn, you are barraged with ads: school, airport lounges, bus stops, doctor's offices, movie theaters,

hospitals, gas stations, elevators, convenience stores, on the Internet, on fruit, beach sand, garbage cans, ATMs and countless other places.⁷ Stadiums nation wide are also becoming cluttered with naming rights: Qualcomm Stadium, MCI Arena, Pepsi Center, Bank One Ballpark. These are just to name a few of the stadiums that have transformed into corporate sales-pitches. It is in the opinion of Ralph Nader that all locality has been taken out of stadiums such as these. “There is no community, no bond, and certainly no tradition that binds Coloradoans to each other.”⁷

IV. Methodology

The sampling design, research design, data collection, and data analysis techniques used in this research project are described below. The Human Subjects Approval letter can also be seen as Appendix A.

A. Sampling Design

Surveying every person at the game, or anyone who has ever watched a game in the Bemidji State University gymnasium, was not possible for this research. Therefore, a sample was used. Sampling involves any procedure that uses a small portion of the population to make a conclusion regarding the whole population.⁸

Surveys were handed out through the use of the random convenience sampling technique. It was random convenience sampling because although everyone had a chance of being selected, it was by convenience that respondents exited through the same doors the researcher was standing at. There also was the chance that prospective respondents deliberately avoided the exit to bypass the survey, so the survey could not be simply random.

A survey of one-hundred three (103) Bemidji State University basketball fans provided the source of data for this study. There were no age requirements for respondents, but the researcher used strict judgment to avoid minors from participating in this survey. Before being handed a survey, each respondent was asked if they had yet participated in the research, as duplication would skew the data.

B. Research Design

The type of research conducted was a mix between exploratory research and descriptive research. Initial research was performed to not only clarify a potential problem, but also describe reaction characteristics of a population. The potential problem was the ineffectiveness of traditional print mediums, while the reaction characteristics included a possible higher brand recall when fan interaction occurred in advertisements.

This research was cross sectional, as the sample of data was collected at one point in time to be used to draw inferences about the research question.

Six questions were developed to answer the research question. The actual survey used for this research is attached to this report at Appendix B. The following explanations are provided for each question, to offer rationale why it was included in the survey.

The type of data collected in these surveys are a mix of ratio, ordinal, and nominal data. Question one, a ratio question, was used to calculate a mean of group data (how many games on average each person attends in a single season.) Question two, an ordinal question, was designed to arrange the respondent's half-time habits according to magnitude. Responses are in an ordered sequence, although intervals between alternative

responses is unknown, which makes the question ordinal. Questions three, four, five, and six are all nominal data questions. The unstructured or “yes” and “no” responses serve as a label for identification purposes. Nominal data will help define frequency, percentage, and mode in each category.

Questions one, two, three, and five are all fixed-alternative questions, or closed ended questions. More specifically, questions one and two are determinant choice questions, which require the respondent to choose one response from among multiple alternatives⁹. Questions three and five are simple-dichotomy questions, which require the respondent to choose one of two alternatives.

Survey Items

1. *How many BSU basketball games do you attend in a season?*

This question was asked to evaluate how many times a Bemidji State University basketball fan is exposed to advertising messages in a single season. It would be a burden to the respondent to know the exact number of games they have attended, so the respondent was given four multiple-choice alternatives to select from.

2. *How often do you stay for half-time?*

The researcher was interested in responses for this question because it will help determine the frequency that fans are exposed to half-time activities. Providing a category scale with four possible responses allowed the respondent to choose which category was the closest fit with their own habits.

3. *Did you stay for halftime tonight?*

This item was a necessary filter question, as it screened out respondents who were

not qualified to answer the next question. Without asking such a question, the researcher could have improperly assumed the respondent remained inside the gymnasium during half-time.

4. *What specifically was advertised during half-time?*

This question was aimed at respondents who stayed in the gymnasium during half-time and were exposed to the half-time message. Through the use of an open-ended question, respondents had to answer in their own words without being provided any clues. By not providing alternative answers to select from, the question will determine respondent's "unaided" brand recall for the product advertised during half-time.

5. *Were you a participant in today's half-time?*

This question was an attempt to evaluate if direct participation in the half-time activity/advertising has any effect on brand recall. It should be noted that not one person interviewed had participated in the shootout, so this question is irrelevant to the study.

6. *What product or services were advertised on print posters? Name as many as you can remember.*

This question was aimed at all respondents who were exiting the gymnasium. The survey distribution system insured that each respondent who participated in the survey was in the gymnasium. Through the use of an open-ended question, respondents had to answer in their own words without being provided any clues. By not providing alternative answers to select from, the question will determine respondent's "unaided" brand recall for the products advertised through traditional print mediums.

The budget for this thesis was \$5.00. Expenses included the purchase of pens for the respondents to use while filling out surveys .

C. Data Collection

A total of one-hundred three (103) people attending a Bemidji State University men's basketball game were surveyed on January 14 & 15, 2005 using identical surveys. Both sets of surveys were conducted one minute after the Keith's Pizza Half-Time Shootout until the end of the fourth quarter in the men's basketball game.

All survey questionnaires were distributed to participants by one researcher, Jennifer Erin Finnvik. Participants provided their responses voluntarily on their own survey sheet, and then returned it to the researcher upon completion.

D. Data Analysis

The results were sorted in order of frequency for each response. Frequency was used to standardize the data between each question. Each response category, regardless of frequency, was given consideration in the final analysis.

All questions, except question number six, were analyzed by descriptive analysis. Descriptive analysis of the raw data was used to transform responses into an easily understandable form. Interpretation of this data was made possible by using descriptive statistics such as frequency tables, mean, mode, and percentage distributions.

Statistical data for each question is arranged in a row-and-column format. Frequency tables are used for simple tabulations. Each frequency table also includes the corresponding percentage, as the researcher believes percentages aid in the interpretation of frequency distributions.

The responses to question six progressed beyond descriptive analysis

measurements. The chi-square test was used as an element of univariate statistical analysis. Chi-square and the goodness of fit test allowed the researcher to, “test for significance in the analysis of frequency distributions.¹⁰” The lowest possible probability level used was five percent (.05).

All editing was performed “in-house” by the researcher. Due to the number of participants, field editing was not possible. Not being able to review the surveys right away for completeness and legibility, the researcher had prepared a predetermined decision rule for this situation. In the instance of a non-response item on fixed-alternative questions, the researcher would eliminate the respondent’s blank answer from the final data analysis, and data would be calculated at one less respondent for that particular question. A non-response item on an open-ended question would be coded as if the respondent did not remember any advertisements. In the event of an illegible response, the researcher would ask a third party to help interpret which alternative response the respondent meant to circle or what the handwritten response said. If response was not legible at that point, response would be thrown out, and the data would be calculated at one less respondent for that particular question.

V. Findings

Question one- The responses to this question are highly concentrated around 1-5 and 6-10 games per season (Table 1). With this data, it was possible to find the mean of the group data. Of the respondents surveyed, the researcher discovered that, on average, Bemidji State University men’s basketball fans attended eight (8) games per season (Table 2).

Question two- Averages cannot be calculated on this ordinal set of data, but the researcher did find that nearly seventy (70) percent of respondents sometimes stay for the basketball half-time (Table 3). Meanwhile, less than four (4) percent of basketball fans claim they never stay for half-time activities.

Question three- Responses from this question indicated that sixty three percent (63) of the individuals surveyed stayed for half-time that particular night (Table 4). Sixty three percent of the respondents were exposed to both half-time advertisements and traditional print posters.

Question four- Forty nine percent (49.2) or just under half of the respondents who stayed for the half-time show remembered Keith's Pizza was advertised (Table 5). A chi-square test was ran, and the expected frequency was labeled at nine (9) (Table 6).

Question five- Of the respondents surveyed, nobody had participated in the half-time shootout (Table 7). No correlation could be made about the brand recall rate of respondents who participated versus the respondents who did not participate.

Question six- Of the one hundred three (103) respondents surveyed, sixty three percent (63) of them were able to remember that Keith's Pizza was advertised, while only one person was able to recall that the Northern Inn Hotel and Suites was advertised (Table 8). In total, four (4) traditional posters went unnoticed. Twenty one percent (21) of the respondents could not remember a single traditional poster.

A chi-square test of best fit was also run for this data. When compared to the expected frequency, the researcher found a significant difference between it and the actual frequencies observed. The observed chi-square value was 176.49. Using a degree of freedom number of seventeen (17), the researcher found that the value of 176.49

exceeded the 27.587 value from the chi-square distribution chart found in Appendix D.

VI. Summary

The results of the survey research are noteworthy. The responses to the six questions indicate both the habits of Bemidji State University men's basketball fans and their awareness levels of the advertisements around them.

The surveys indicate that most fans choose to remain in the gymnasium during half-time, therefore being exposed to the half-time advertisement. Even if a basketball fan leaves halfway through the intermission, they still have the opportunity to be reached by interactive advertisements. The data also points out that local and regional business have an average of eight chances per season to connect with possible consumers at Bemidji State University men's basketball games. However, it should be noted that that number eight does not mean the potential consumer will stay for half-time.

Keith's Pizza had higher levels of brand recall than any other advertised brands. Although it is not conclusive, the researcher may infer that the high levels of brand recall was due to the combination of traditional and interactive advertisements.

The researcher came across an oddity that occurred while analyzing data. On open-ended questions, some respondents wrote in brands that are not advertised at all in the Bemidji State University gymnasium. For example, ten (10) people thought Domino's Pizza was advertised, while four (4) people wrote Dave's Pizza, two (2) wrote Coke-a-Cola, and one (1) person wrote Charter Communications. The researcher can infer that the respondents recalled the product category advertised but could not recall the brand. However, the researcher has no explanation for the Coke-a-Cola and Charter

Communication write-ins.

Both chi-square tests that were run on the data confirm that there is significance in the number of observed frequencies of brand recall. The chi-square calculations lead the researcher to the conclusion that interactive advertising is more effective than traditional advertising, with regards to brand recall rates.

VII. Recommendations & Future Work

Applications of this study's findings could help Beaver Pride and local and regional advertisers at Bemidji State University sports facilities determine how they want their advertising dollars to be used. Beaver Pride could work with the donors and tailor an advertising campaign to suit the needs and wants of each client, depending on their donated dollar amount.

Although higher brand recall rates are generated with the interactive advertising, this study does not establish if those brand recalls actually lead to an increase in sales. Additional research would need to be performed to determine if there is a direct correlation between these two phenomena.

Future research could also be performed to reevaluate the brand recall of interactive advertising. Currently, it seems to be a new element to men's basketball games at Bemidji State University, and it is being recognized. However, it is possible that the novelty of this activity could cease to exist, and this form of advertising could fail to draw the same levels of brand recall.

¹“Alternative Advertising” (April 5, 2005). <http://www.onpoint-marketing.com/alternative-advertising.htm>

² Beirne, Mike. (January 12, 2004). *Marketers Look to the Lap*. Brandweek Magazine, v45 i2 p27.

³ Cassidy, Hilary. (May 28, 2001). *Sports Stadiums Go for Turnstile Sponsors*. Brandweek Magazine, p33-34.

⁴ Kepner, Tyler (April 9, 2004). *Advertising Increases*. The New York Times. pD6 column 05.

⁵ McCarthy, Michael. (October 17, 2002). *Digitally Inserted Ads Pop Up More In Sports*. USA Today- Money Section.

⁶ Applebaum, Michael. (September 29, 2003). *If You Build It, Will She Come?*. Brandweek Magazine, v44 i35 p28

⁷ *Nader: Whose Stadium Is It Anyway?* January 30, 2001. www.lists.essentials.org

⁸ Zikmund, William G. *Exploring Marketing Research*, 8th ed. (Mason, OH: Thomson/South-Western, 2003), p. 416.

⁹ Zikmund, William G. *Exploring Marketing Research*, 8th ed. (Mason, OH: Thomson/South-Western, 2003), p. 368

¹⁰ Zikmund, William G. *Exploring Marketing Research*, 8th ed. (Mason, OH: Thomson/South-Western, 2003), p. 567

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The College of Professional Studies / Graduate Studies Office

BUSINESS ADMINISTRATION
Business Administration
Computer Information Systems

Date: March 4, 2005

INDUSTRIAL TECHNOLOGY
Career and Technical Education
Design Technology
Technology Education
Technology Management
Industrial Technology

To: Jennifer Finnvik
410 19th Street NE
Bemidji, MN 56601

PHYSICAL EDUCATION,
HEALTH, & SPORT
Community Health
Health Education
Physical Education
Sport Management

From: Martin Tadlock, Human Subjects Committee

Subj: Human Subjects Request

PROFESSIONAL EDUCATION
Child Development
Clinical Experiences
Early Childhood Education
Elementary Education
Secondary Education

Re: "Traditional Advertising vs. Interactive Advertising"

The Human Subjects Committee has approved your request for your study. A copy of the approval form is enclosed. We have a copy of your proposal on file in the College of Professional Studies office along with the original approval.

Thank you for submitting your request in a timely manner. Should you have questions, please do not hesitate to contact me.

GRADUATE STUDIES
Masters of Art
Biology
English
Masters of Science
English
Environmental Studies
Industrial Technology
Technology/Career & Technical Education
Mathematics
Science
Special Education
Sport Studies
Education

cc. Mark Christensen

Received
Graduate Studies
Attachment A
MAR 02 2005

Bemidji State University
Human Subjects Committee
Human Research Approval Form
College of Professional Studies

Title of Study: Traditional advertising vs. interactive advertising
Date Submitted: 3-2-05 Project starting date: 1/14/05 Project ending date: 1/15/05
Principal Investigator(s): Jennifer Erin Finnvik

Address: 410-19th St. NE Telephone: 333-7232
Bemidji, MN 56601

E-mail Address: jennifer.finnvik@st.bemidjistate.edu

Co-Investigators: _____

Faculty Advisor/Sponsor: Dr. Mark Christensen

Request: _____ Expedited Review (include reasons below) _____ Full Review

Can the title of this study be made public before the completion date: Yes _____ No

All student research must first be approved by the student's faculty advisor. Signature denotes the advisor's approval of the project and must be obtained prior to forwarding to the HSC.

Mark R. Christensen 3/2/05
Signature of Advisor/Sponsor Date

-----HUMAN

SUBJECTS COMMITTEE RECOMMENDATION:

_____ Exempt Review
_____ Approved _____ Revise and resubmit _____ Not approved
 Expedited Review
_____ Approved _____ Revise and resubmit _____ Not approved
_____ Full Review
_____ Approved _____ Revise and resubmit _____ Not approved

Mark J. Jallal 3-3-05
HSC Chair's Signature Date

Appendix B

Survey Instrument

1. How many BSU basketball games do you attend in a season?
 - A. 1-5
 - B. 6-10
 - C. 11-15
 - D. 16-20

2. How often do you stay for half-time?
 - A. Always
 - B. Sometimes
 - C. Rarely
 - D. Never

3. Did you stay for halftime tonight? If no, skip to question 6.
 - A. Yes
 - B. No

4. What specifically was advertised during half-time?

5. Were you a participant in today's half-time?
 - A. Yes
 - B. No

6. What product or services were advertised on print posters? Name as many as you can remember.

Appendix C

Statistical Tabulations of Survey Data

Table 1.

Q1. How many BSU basketball games do you attend in a season?

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
A. 1-5	37	35.9
B. 6-10	48	46.6
C. 11-15	6	5.8
D. 16-20	12	11.7
Total	103	100

Table 2.

Mean of group data- on average, number of games attended in a season

<i>Response</i>	<i>Average</i>		<i>Observations</i>		<i>Product</i>
A. 1-5	3	x	37	=	111
B. 6-10	8	x	48	=	384
C. 11-15	13	x	6	=	78
D. 16-20	18	x	12	=	216

= 789

$$789 / 103 = 7.7 = 8 \text{ games/season}$$

Table 3.

Q2. How often do you stay for half-time?

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
Always	20	19.4
Sometimes	71	68.9
Rarely	8	7.8
Never	4	3.9
Total	103	100

Table 4.

Q3. Did you stay for half-time tonight? If no, skip to question 6.

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
Yes	65	63.1
No	38	36.9
Total	103	100

Table 5.

Q4. What specifically was advertised during half-time?

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
Keith's	32	49.2
Domino's	10	15.4
Don't Know	8	12.3
Pizza	8	12.3
Dave's	4	6.2
Coke	2	3.1
Charter	1	1.5
Total	65	100

Table 6.

Chi-square

	O	E	O-E	$(O-E)^2$	$(O-E)^2 / E$
Keith's	32	9.29	22.71	515.74	55.25
Domino's	10	9.29	0.71	0.5	0.05
Don't Know	8	9.29	-1.29	1.66	0.18
Pizza	8	9.29	-1.29	1.66	0.18
Dave's	4	9.29	-5.29	27.98	3.01
Coke	2	9.29	-7.29	53.14	5.72
Charter	1	9.29	-8.29	68.72	7.4

=72.06

Table 7.
Q5. Were you a participant in today's half-time?

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
Yes	0	0
No	103	100
Total	103	100

Table 8.

6. What product or services were advertised on print posters?
Name as many as you can remember.

<i>Response</i>	<i>Frequency</i>	<i>Percentage</i>
Keith's	65	63.1
Charter	23	22.3
Don't Know	22	21.4
Pepsi	19	18.4
Wells Fargo	15	14.6
PBTv	12	11.7
Schwan's	12	11.7
Hardee's	11	10.7
Bemidji Woolen Mills	9	8.7
US Bank	8	7.8
Best Western	5	4.9
IMS Printing	3	2.9
1st National Bank	3	2.9
Dave's Pizza	2	1.9
NSIC Champs	2	1.9
Domino's Pizza	1	0.01
Northern Inn	1	0.01
NCAA	0	0
BSU	0	0
Four Points Sheraton	0	0
Slim's Bar & Grill/Beaver Pride Golf Classic	0	0

Table 9.
Chi-square

	O	E	O-E	(O-E) ²	(O-E) ² /E
Keith's	64	6.06	57.94	3357.04	553.97
Charter	23	6.06	16.94	286.96	47.35
Don't know	23	6.06	16.94	286.96	47.35
Pepsi	19	6.06	12.94	167.44	27.63
Wells Fargo	15	6.06	8.94	79.92	13.19
Schwann's	12	6.06	5.94	35.28	5.82
Paul Bunyan TV	12	6.06	5.94	35.28	5.82
Hardee's	11	6.06	4.94	24.4	4.03
Woolen Mills	9	6.06	2.94	8.64	1.43
US Bank	8	6.06	1.94	3.76	0.62
Best Western	5	6.06	-1.06	1.12	0.19
Image Printing	3	6.06	-3.06	9.36	1.55
1st National Bank	3	6.06	-3.06	9.36	1.55
Conference Champs	2	6.06	-4.06	16.48	2.72
Dave's	2	6.06	-4.06	16.48	2.72
Northern Inn	1	6.06	-5.06	25.6	4.23
Domino's	1	6.06	-5.06	25.6	4.23
Four Points Sheraton	0	6.06	-6.06	36.72	6.06

=176.49

Appendix D

Chi-Square Distribution Chart

Chi-Square Distribution

df	.99	.98	.95	.90	.80	.70	.50	.30	.20	.10	.05	.02	.01	.001
1	.000157	.000628	.00393	.0158	.0642	.148	.455	1.074	1.642	2.706	3.841	5.412	6.635	10.827
2	.0201	.0404	.103	.211	.446	.713	1.386	2.408	3.219	4.605	5.991	7.824	9.210	13.815
3	.115	.185	.352	.584	1.005	1.424	2.366	3.665	4.642	6.251	7.815	9.837	11.345	16.266
4	.297	.429	.711	1.064	1.649	2.195	3.357	4.878	5.989	7.779	9.488	11.668	13.277	18.467
5	.554	.752	1.145	1.610	2.343	3.000	4.351	6.064	7.289	9.236	11.070	13.388	15.086	20.515
6	.872	1.134	1.635	2.204	3.070	3.828	5.348	7.231	8.558	10.645	12.592	15.033	16.812	22.457
7	1.239	1.564	2.167	2.833	3.822	4.671	6.346	8.383	9.803	12.017	14.067	16.622	18.475	24.322
8	1.646	2.032	2.733	3.490	4.594	5.527	7.344	9.524	11.030	13.362	15.507	18.168	20.090	26.125
9	2.088	2.532	3.325	4.168	5.380	6.393	8.343	10.656	12.242	14.684	16.919	19.679	21.666	27.877
10	2.558	3.059	3.940	4.865	6.179	7.267	9.342	11.781	13.442	15.987	18.307	21.161	23.209	29.588
11	3.053	3.609	4.575	5.578	6.989	8.148	10.341	12.899	14.631	17.275	19.675	22.618	24.725	31.264
12	3.571	4.178	5.226	6.304	7.807	9.034	11.340	14.011	15.812	18.549	21.026	24.054	26.217	32.909
13	4.107	4.765	5.892	7.042	8.634	9.926	12.340	15.119	16.985	19.812	22.362	25.472	27.688	34.528
14	4.660	5.368	6.571	7.790	9.467	10.821	13.339	16.222	18.151	21.064	23.685	26.873	29.141	36.123
15	5.229	5.985	7.261	8.547	10.307	11.721	14.339	17.322	19.311	22.307	24.996	28.259	30.578	37.697
16	5.812	6.614	7.962	9.312	11.152	12.624	15.338	18.418	20.465	23.542	26.296	29.633	32.000	39.252
17	6.408	7.255	8.672	10.085	12.002	13.531	16.338	19.511	21.615	24.769	27.587	30.995	33.409	40.790
18	7.015	7.906	9.390	10.865	12.857	14.440	17.338	20.601	22.760	25.989	28.869	32.346	34.805	42.312
19	7.633	8.567	10.117	11.651	13.716	15.352	18.338	21.689	23.900	27.204	30.144	33.687	36.191	43.820
20	8.260	9.237	10.851	12.443	14.578	16.266	19.337	22.775	25.038	28.412	31.410	35.020	37.566	45.315
21	8.897	9.915	11.591	13.240	15.445	17.182	20.337	23.858	26.171	29.615	32.671	36.343	38.932	46.797
22	9.542	10.600	12.338	14.041	16.314	18.101	21.337	24.939	27.301	30.813	33.924	37.659	40.289	48.268
23	10.196	11.293	13.091	14.848	17.187	19.021	22.337	26.018	28.429	32.007	35.172	38.968	41.638	49.728
24	10.856	11.992	13.848	15.659	18.062	19.943	23.337	27.096	29.553	33.196	36.415	40.270	42.980	51.179
25	11.524	12.697	14.611	16.473	18.940	20.867	24.337	28.172	30.675	34.382	37.652	41.566	44.314	52.620
26	12.198	13.409	15.379	17.292	19.820	21.792	25.336	29.246	31.795	35.563	38.885	42.856	45.642	54.052
27	12.879	14.125	16.151	18.114	20.703	22.719	26.336	30.319	32.912	36.741	40.113	44.140	46.963	55.476
28	13.565	14.847	16.928	18.939	21.588	23.647	27.336	31.391	34.027	37.916	41.337	45.419	48.278	56.893
29	14.256	15.574	17.708	19.768	22.475	24.577	28.336	32.461	35.139	39.087	42.557	46.693	49.588	58.302
30	14.953	16.306	18.493	20.599	23.364	25.508	29.336	33.530	36.250	40.256	43.773	47.962	50.892	59.703

SOURCE: Taken from Table IV of Fisher and Yates: *Statistical Tables for Biological, Agricultural and Medical Research*, published by Longman Group UK Ltd., 1974.