

INFLUENCE OF ADVERTISING ATTRIBUTES ON AUDIO AD EFFECTIVENESS

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ABSTRACT

This research focuses on the key attributes of audio advertising. Content analysis are conducted for the 121 audio ads objects with labels of attributes. Regression models and cluster analysis are then conducted based on the data collected from surveys. As a result, we find the relationship between attributes and willingness to buy, willingness to recommend a product and enjoyment level of an audio ad.

BIOGRAPHICAL SKETCH

Lingyi Xu, Lu Wang and Yingying Yu are all current Master of Professional Studies students at Cornell University, Ithaca, New York.

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CHAPTER 1

INTRODUCTION

Recently, audio advertising has become a new form of audio advertising in music stream services. Audio ads are defined as the ads that are exposed to audio messages from advertisers between two different songs when users are listening to music (Samaneh et al, 2018). By analyzing audio advertisements, not only advertisers can ensure a better user experience resulting in longer user engagement, but they also can get higher advertising revenues from it .

Existing efforts towards ad analysis have mainly focused on visual perceptions such as display ads and text ads, in which audio perceptions were largely ignored (Eric Sodomka et al., 2013). The attributes of typical audio ads consist of its message, music accompaniment, production effects, and the number of speakers, as well as the speakers' tone, tempo, and gender (Meinard Müller, 2015). In the fields of Digital Signal Processing (DSP) and Music Information Retrieval (Music-IR) acoustic features are computed from the audio signal to capture elements of timbre, rhythm, and harmony, which can be used to model high-level subjective concepts, such as genre and mood of sound and audio understanding (Meinard Müller, 2015). Latest research have shown some interesting findings that speaking slowly with less jarring sound effect and only simple music can lead to better audio ad quality, and conversational tones are usually more engaging (Samaneh Ebrahimi, 2018).

Some researchers also proved the illustrated effects of audio advertisements, in which audio ads could be able to produce an image inside listeners' minds. Such finding supports the application of perception-based conceptualization to process audio-evoked images (Emma Rodero,

2010). Auditory processing of message calls for the listener to use a host of sensory and perceptual skills to extract meaningful information from sound (Kraus & Banai, 2007). Therefore, the finding may be applied to any audio fiction product using acousmatic sounds. Furthermore, the conclusions drawn in the research are of great interest for the audio industry and can be directly applicable to the teaching of sound, especially of radio production (Emma Roderio, 2010).

Our project focuses on how advertising attributes influence the effectiveness of audio ads. It aims to answer the following three research questions:

- (1) What audio ad features are the most effective, that is, can get the highest evaluations by participants?
- (2) How do the reasons for Liking/Disliking of audiences influence the Effectiveness of ads?
- (3) How do the attributes of ads influence the Effectiveness of ads?

CHAPTER 2

METHODOLOGY

The study focuses on the influence of advertisement attributes on effectiveness of audio ads. To get the answer of the research questions, data analysis was conducted using regression models and crosstabs with the data collected from surveys.

2.1 Ads Coding

We got in total 121 audio ads from the internet radio company with unique ad IDs from 1 to 121 for each object. All the objects were coded with advertisement attributes including Narrator Gender, Number of Voices, Narrator Age, Narrator Accent, Spanish Included or Not, Direction of Words, Keywords, Pronunciation, Ads Length, Music Bed, Music Bed Genre, Music Bed Tempo, Instrumentation, and Advertiser Industry. All the attributes and levels are listed in Table 1 below:

Table 1 Audio Ads attribute labels

| Attribute | Levels |
|---------------------------|-------------------|
| Narrator Gender | Female |
| | Male |
| | Both |
| Number of Male Voices | / |
| Number of Female Voices | / |
| Number of Voices in Total | / |
| Narrator Age | Child |
| | Young |
| | Middle |
| | Old |
| Narrator Accent | American/Canadian |
| | British |
| | Australian |
| | Other |
| Spanish Included | Yes |
| | No |

| | |
|---------------------|----------------------|
| Direction of Words | / |
| Keywords | / |
| Pronunciation | / |
| Ads Length | (Calculated in sec.) |
| Music Bed | Yes |
| | No |
| Music Bed Genre | Ambient |
| | Blues |
| | Cinematic |
| | Country |
| | Electronic |
| | Folk |
| | Indie |
| | Pop |
| | Post Rock |
| | Rock |
| | Soul |
| | Hip Hop |
| Music Bed Tempo | (calculated in BMP) |
| Instrumentation | Guitar |
| | Drums |
| | Brass |
| | Trumpet |
| | Sax |
| | Piano |
| | Keyboard |
| | Violin |
| | Other |
| Advertiser Industry | Retail |
| | Automotive |
| | Education |
| | Health Care |
| | Financial/Insurance |
| | Shipping |

Those attributes, used as regression predictors later on, were selected based on the business options offered by the internet radio company to the advertisers. Besides, some attributes were

added to this study due to the pilot surveys, which were distributed in the first phase of the study to see what attributes might have an impact on effectiveness of audio ads.

2.2 Survey Design

The formal audio ads effectiveness scoring survey consisted of 7 audio ads and 10 questions after each ad. Each respondent was first asked to listen to an ad, which is randomly picked up from the pool of 121 audio ads. Based on the advertisement, survey included questions about who the advertiser is to make sure that the respondent is treating the survey carefully. The following five questions asked the respondents to score the audio ad on a scale of 0 to 100 for each effectiveness metric, including relevance with the product, enjoyment of the ad, willingness to get more information, willingness to purchase the product, and willingness to recommend the product to others. Questions 7 to 10 were check-box questions asking about the reasons for liking or disliking the audio ad they heard, with options including: message clarity, sound clarity, trustworthiness, entertainment value, familiarity, and music of the ad. This process of above 10 questions was repeated for the additional 6 randomly selected ads and at the end of the survey, respondents were asked to recall the ads in the order from the most memorable to the least memorable. They were also asked to give answer to demographic questions about their gender, age, race, marital status, income, and zip code.

2.3 Data Collection

The survey was distributed via Amazon Mechanical Turk and every respondent received \$2 for completing the survey. 498 valid responses were received at the end. In each survey, the respondent listened to 7 ads that were randomly picked from the pool of 121 ads. Therefore, each

ad on average received evaluations from 29 people. The summary of the number of each ad evaluation is shown below:

Table 2 Summary of the number of ad evaluations

| | |
|---|-------|
| Total Number of Evaluations | 3486 |
| Average Number of Evaluations | 28.81 |
| Max Number of Evaluations | 44 |
| Min Number of Evaluations | 16 |
| Standard Deviation of Number of Evaluations | 4.6 |

2.4 Data Analysis

We conducted crosstab analysis, descriptive analysis and regression analysis. For regressions, we took effectiveness scores as dependent variables and advertisement attributes as predictors, and constructed the mixed effect linear regression model as below:

$$Y_i = \beta_0 + \sum_{j=1}^n (\beta_j \times X_j) + \alpha_i + \gamma_i$$

To specify:

- Y_i = Effectiveness Score
- X_j = Attribute j
- β_j = Effect of Attribute j
- α_i = Respondent Effect $\sim N(0, \sigma_1^2)$
- γ_i = Ad Effect $\sim N(0, \sigma_2^2)$

When running regressions, we took male narrator, middle age, American accent, no Spanish included and no music bed as the excluded values. The regressions results compared the effectiveness scores of the combinations of other attribute levels with the default ones.

CHAPTER 3

DATA ANALYSIS

3.1 Descriptive Analysis

The respondents were asked how much they enjoy the ads they listened based on a 100-point scale. We wanted to find out what were the likely reasons that affected the enjoyment scores. By doing this, first we ranked all of the ads by average enjoyment score. Then we analyzed the Top 15 and Bottom 15 ads and scores. Finally, we did descriptive analysis of why respondents enjoyed or not enjoyed the ads. The findings are as follows.

Analyzing the attributes and respondents' comments of Top 15 ads, we found some likely reasons that might positively influence the enjoyment score:

1) Respondents may enjoy ads with music like Pop and Blues, or ambient sounds. 2) Respondents may enjoy music that includes sounds from instruments such as drums, piano or guitar. 3) Respondents may enjoy ads in the forms of dialogues, storytelling or conversations that can quickly set them in a situation. 4) Respondents may enjoy ads with narrators speaking gently, or with tone up. 5) Respondents may enjoy ads of the products or brands they are familiar with. 6) Respondents may enjoy ads with British accents.

Table 3 Advertisers with Top 15 Enjoyment score

| Top Rank | Advertiser | Enjoyment Score |
|----------|--|-----------------|
| 1 | Cumberland Farms | 64.565 |
| 2 | Ann & Robert H. Lurie Children's Hospital of Chicago | 60.419 |
| 3 | Shipt: Grocery Delivery | 60.160 |

| | | |
|----|---|--------|
| 4 | State Farm | 59.481 |
| 5 | Dominion Jewelers | 59.387 |
| 6 | Mattress Firm | 58.548 |
| 7 | Wells Fargo App | 58.485 |
| 8 | Publix Green Wise organic grocery store | 58.235 |
| 9 | Party City | 57.458 |
| 10 | O'riley Auto Parts | 57.336 |
| 11 | Home Depot | 56.567 |
| 12 | Firefly Credit Union | 56.172 |
| 13 | Akron Children's Hospital | 56.042 |
| 14 | Elephant Auto Insurance | 55.923 |
| 15 | 29th Street.com | 55.917 |

Relatively, by analyzing the attributes and respondents' comments of Bottom 15 ads, we also found some likely reasons that might negatively influence the enjoyment score: 1) Respondents may not enjoy ads with narrators speaking fast or speeding up. 2) Respondents may not enjoy ads with noisy music like Rock. 3) Respondents may not enjoy ads with no music or ambient sounds. 4) Respondents may not enjoy ads with narrators using aggressive voices or in a salesman tone. 5) Respondents may not enjoy ads that are not relevant to them.

Table 4 Advertisers with Bottom 15 Enjoyment score

| Bottom Rank | Advertiser | Enjoyment Score |
|-------------|---|-----------------|
| 1 | VITAS Healthcare | 41.400 |
| 2 | Amarillo National Bank | 41.167 |
| 3 | Chevrolet | 39.500 |
| 4 | University at Albany, School of Public Health | 39.400 |
| 5 | American Family Insurance | 39.231 |
| 6 | University Credit Union | 39.226 |
| 7 | Advia Credit Union | 39.069 |
| 8 | SELCO Community Credit Union | 38.636 |
| 8 | Stanford Children's Health | 38.636 |
| 10 | Kumon | 38.440 |
| 11 | Airport dealership | 37.862 |
| 12 | Plato's Closet | 37.833 |
| 13 | CCRM | 37.750 |
| 14 | Toyota | 37.057 |
| 15 | Commerce Bank | 36.969 |

3.2 Regression Analysis

3.2.1 Correlations Between Effectiveness Metrics

Before regressions were conducted, correlations between the effectiveness metrics were calculated to see which scores valid dependent variables should be. According to the correlation table as below:

Table 5 Correlation between effectiveness metrics

| | Relevance | Enjoyment | More Info | Purchase | Recommendation |
|----------------|-----------|-----------|-----------|----------|----------------|
| Relevance | 1 | | | | |
| Enjoyment | 0.52 | 1 | | | |
| More Info | 0.73 | 0.63 | 1 | | |
| Purchase | 0.77 | 0.60 | 0.83 | 1 | |
| Recommendation | 0.54 | 0.67 | 0.69 | 0.68 | 1 |

The correlations are mostly larger than 0.6, indicating that the five metrics are highly correlated. Although advertisers may care most about the purchase conversion rate and the willingness to recommend the product to others as an indicator of sales performance and brand awareness, the scores of relevance, enjoyment, and getting more info should also be attached emphasis to as they all have a significant influence on the effectiveness result. Therefore, in the regression, we took all the five metrics as responses to see the influences of attributes.

3.2.2 Regressions on effectiveness scores and reason dimensions

For the regressions, we took the 0.05 significance level and thus taking the cutoff t-value at 1.65.

The regression results show that ad trustworthiness, ad entertainment, ad familiarity and message clarity all have a significantly positive influence on the effectiveness scores. Among them, familiarity affects relevance score most, while trustworthiness affects recommendation score most. People evaluate the relevance of ads with a higher score when they hear a familiar product and are more willing to recommend the product to others if the audio ad makes the product feel trustworthy. Besides, ad entertainment level has the largest impact on the scores of enjoyments, willingness to buy and willingness to get more information. In addition, sound clarity and music of the ads also affects the enjoyment score.

The regression results are shown in the table as follows:

Table 6 Regression between relevance score and reason dimensions

| | Estimate | Std. Error | t-value |
|-------------------------------|-----------------|-------------------|----------------|
| (Intercept) | 38.6749 | 2.0839 | 18.559 |
| like_claritymessage | 5.4772 | 1.1235 | 4.875 |
| like_claritysound | 0.2536 | 1.1219 | 0.226 |
| like_trustworthy | 3.8692 | 1.1353 | 3.408 |
| like_entertaining | 8.3633 | 1.3999 | 5.974 |
| like_familiar | 11.2332 | 1.3095 | 8.578 |
| like_music | -1.6607 | 1.3573 | -1.223 |
| like_other | 3.1880 | 2.9797 | 1.070 |
| like_none | -11.3647 | 1.7637 | -6.444 |
| dislike_claritymessage | -3.9457 | 1.7743 | -2.224 |
| dislike_claritysound | 1.0279 | 2.2032 | 0.467 |
| dislike_trustworthy | 1.3217 | 1.6228 | 0.814 |
| dislike_entertaining | -3.0773 | 1.4108 | -2.181 |
| dislike_familiar | -3.2874 | 1.5061 | -2.183 |
| dislike_music | 2.0546 | 1.6572 | 1.240 |
| dislike_other | -7.6351 | 1.7829 | -4.282 |
| dislike_none | 1.1401 | 1.5384 | 0.741 |

Table 7 Regression between enjoyment score and reason dimensions

| | Estimate | Std. Error | t-value |
|-------------------------------|-----------------|-------------------|----------------|
| (Intercept) | 39.3814 | 1.3199 | 29.836 |
| like_claritymessage | 6.4852 | 0.7420 | 8.740 |
| like_claritysound | 4.6615 | 0.7442 | 6.264 |
| like_trustworthy | 7.5437 | 0.7481 | 10.084 |
| like_entertaining | 13.5954 | 0.8976 | 15.146 |
| like_familiar | 4.1043 | 0.8183 | 5.015 |
| like_music | 7.4410 | 0.8639 | 8.613 |
| like_other | 8.3013 | 1.9465 | 4.265 |
| like_none | -9.8250 | 1.1591 | -8.476 |
| dislike_claritymessage | -6.9633 | 1.1434 | -6.090 |
| dislike_claritysound | -3.2248 | 1.4236 | -2.265 |
| dislike_trustworthy | -6.9366 | 1.0598 | -6.545 |
| dislike_entertaining | -7.8617 | 0.9331 | -8.426 |
| dislike_familiar | -1.5927 | 0.9694 | -1.626 |
| dislike_music | -4.4526 | 1.0826 | -4.113 |
| dislike_other | -9.0456 | 1.1688 | -7.739 |
| dislike_none | 3.0639 | 1.0145 | 3.020 |

Table 8 Regression between purchase score and reason dimensions

| | Estimate | Std. Error | t-value |
|-------------------------------|-----------------|-------------------|----------------|
| (Intercept) | 28.0086 | 1.8370 | 15.247 |
| like_claritymessage | 5.5803 | 0.9835 | 5.674 |
| like_claritysound | 0.7156 | 0.9828 | 0.728 |
| like_trustworthy | 5.9952 | 0.9928 | 6.039 |
| like_entertaining | 10.4092 | 1.2165 | 8.556 |
| like_familiar | 10.8189 | 1.1347 | 9.534 |
| like_music | -1.5649 | 1.1823 | -1.324 |
| like_other | 5.0231 | 2.5876 | 1.941 |
| like_none | -8.9053 | 1.5383 | -5.789 |
| dislike_claritymessage | -3.4904 | 1.5380 | -2.269 |
| dislike_claritysound | -0.3208 | 1.9096 | -0.168 |
| dislike_trustworthy | -2.6654 | 1.4130 | -1.886 |
| dislike_entertaining | -2.7631 | 1.2336 | -2.240 |
| dislike_familiar | -3.0480 | 1.3108 | -2.325 |
| dislike_music | 0.5950 | 1.4449 | 0.412 |
| dislike_other | -7.8863 | 1.5573 | -5.064 |
| dislike_none | 3.6212 | 1.3432 | 2.696 |

Table 9 Regression between more info score and reason dimensions

| | Estimate | Std. Error | t-value |
|-------------------------------|-----------------|-------------------|----------------|
| (Intercept) | 30.0782 | 1.8831 | 15.973 |
| like_claritymessage | 7.3873 | 1.0368 | 7.125 |
| like_claritysound | 1.0860 | 1.0370 | 1.047 |
| like_trustworthy | 7.4141 | 1.04620 | 7.087 |
| like_entertaining | 11.7932 | 1.2752 | 9.248 |
| like_familiar | 10.0880 | 1.1827 | 8.530 |
| like_music | -0.1654 | 1.2371 | -0.134 |
| like_other | 8.5543 | 2.7242 | 3.140 |
| like_none | -8.2934 | 1.6206 | -5.117 |
| dislike_claritymessage | -4.0900 | 1.6144 | -2.533 |
| dislike_claritysound | -1.2328 | 2.0061 | -0.615 |
| dislike_trustworthy | -3.7560 | 1.4869 | -2.519 |
| dislike_entertaining | -5.5509 | 1.3011 | -4.266 |
| dislike_familiar | -3.0419 | 1.3779 | -2.208 |
| dislike_music | -0.5064 | 1.5203 | -0.333 |
| dislike_other | -8.3501 | 1.6395 | -5.093 |
| dislike_none | 1.5296 | 1.4160 | 1.080 |

Table 10 Regression between recommendation score and reason dimensions

| | Estimate | Std. Error | t-value |
|-------------------------------|-----------------|-------------------|----------------|
| (Intercept) | 39.9533 | 1.5957 | 25.039 |
| like_claritymessage | 7.6086 | 0.8776 | 8.670 |
| like_claritysound | 0.6257 | 0.8793 | 0.712 |
| like_trustworthy | 7.9817 | 0.8847 | 9.021 |
| like_entertaining | 7.5529 | 1.0670 | 7.078 |
| like_familiar | 8.4898 | 0.9799 | 8.664 |
| like_music | 0.8345 | 1.0320 | 0.809 |
| like_other | 6.6179 | 2.2961 | 2.882 |
| like_none | -11.1810 | 1.3490 | -8.167 |
| dislike_claritymessage | -6.4421 | 1.3538 | -4.758 |
| dislike_claritysound | 0.8663 | 1.6838 | 0.514 |
| dislike_trustworthy | -6.0001 | 1.2532 | -4.788 |
| dislike_entertaining | -5.1931 | 1.1019 | -4.713 |
| dislike_familiar | -4.6883 | 1.1594 | -4.044 |
| dislike_music | -1.8146 | 1.2813 | -1.416 |
| dislike_other | -7.2131 | 1.3836 | -5.213 |
| dislike_none | 3.9685 | 1.1979 | 3.313 |

3.2.3 Regressions between effectiveness scores and reason dimensions

Likewise, we took the 0.05 significance level and thus taking the cutoff t-value at 1.65.

According to the wide range of regressions, it is shown that audio ads with both male and female narrators tend to have a higher score of willingness to buy, to get more information and to recommend the product to others. However, the number of voices has a negative correlation with willingness to get more information, indicating that an increase in the number of voices will lead to a decrease in the score for wanting more information. Meanwhile, comparing to the middle voice, child voice can increase the relevance and more info score, whereas old voice adds only to the relevance dimension. Spanish is negatively related with the score of enjoyment, willingness to get more information, and willingness to recommend, Compared with American accent, British accent seems to be liked by the consumers, increasing the enjoyment score, while ‘other accent’

including French and Asian accents influences enjoyment and more info scores negatively. Meanwhile, Australian accent is positively correlated with relevance score, but negatively correlated with enjoyment score.

In terms of audio ads music bed, the audios with background music have a better effectiveness score on relevance, willingness to buy, and willingness to recommend. Among all the music genres, pop music is the one that has a statistically significant influence with a positive coefficient on all the effectiveness scores. Alongside, ambient music also contributes positively to the willingness of getting more info, purchase and recommendation likelihoods. Moreover, instrumentations do not have a significant influence, but sax has a positive influence on the willingness to recommend the product to others.

The regression results are shown in the table as follows:

Table 11 Regression between relevance score and reason dimensions

| | Estimate | Std. Error | t-value |
|--|-----------------|-------------------|----------------|
| (Intercept) | 41.8901 | 14.8587 | 2.819 |
| female_gender | 0.3163 | 2.9041 | 0.109 |
| both_gender | 5.8222 | 3.9704 | 1.466 |
| child_voiceage | 10.4583 | 11.0104 | 0.950 |
| old_voiceage | 13.7439 | 8.2675 | 1.662 |
| young_voiceage | 0.6729 | 2.7402 | 0.246 |
| aus_accent | 11.6974 | 6.6153 | 1.768 |
| brit_accent | 3.2764 | 13.7748 | 0.238 |
| other_accent | 2.4125 | 9.1427 | 0.264 |
| spanish_accent | 1.7556 | 13.6271 | 0.129 |
| yes_musicbed | 8.8128 | 4.9998 | 1.763 |
| ad_numberofvoices | -1.2773 | 1.0340 | -1.235 |
| yes_spanish | -21.0255 | 11.9307 | -1.762 |
| instr_drums | -3.9426 | 3.1086 | -1.268 |
| instr_guitar | -0.3172 | 3.3536 | -0.095 |
| instr_brass | 10.7420 | 11.2867 | 0.952 |
| instr_trumpet | -1.9981 | 6.7761 | -0.295 |
| instr_sax | 7.1134 | 10.8583 | 0.655 |
| instr_piano | -6.6185 | 3.7598 | -1.760 |
| instr_keyboard | -13.9662 | 12.1866 | -1.146 |
| instr_violin | -9.1404 | 6.3561 | -1.438 |
| instr_other | -3.0457 | 3.2735 | -0.930 |
| automotive_advertiserindustry | 4.2176 | 14.9880 | 0.281 |
| education_advertiserindustry | -13.1669 | 15.8437 | -0.831 |
| financialinsurance_advertiserindustry | 6.0949 | 14.9260 | 0.408 |
| government_advertiserindustry | 18.7899 | 19.1518 | 0.981 |
| healthcare_advertiserindustry | -8.1714 | 15.7379 | -0.519 |
| othershipping_advertiserindustry | 31.4972 | 18.8105 | 1.674 |
| retail_advertiserindustry | 10.1430 | 15.0222 | 0.675 |

Table 12 Regression between enjoyment score and reason dimensions

| | Estimate | Std. Error | t-value |
|--|-----------------|-------------------|----------------|
| (Intercept) | 53.1572 | 9.2229 | 5.764 |
| female_gender | -0.5245 | 1.8071 | -0.290 |
| both_gender | 3.9243 | 2.4692 | 1.589 |
| child_voiceage | 0.7212 | 6.6876 | 0.108 |
| old_voiceage | -7.5274 | 5.0988 | -1.476 |
| young_voiceage | -0.5191 | 1.7031 | -0.305 |
| aus_accent | -4.3820 | 4.0707 | -1.076 |
| brit_accent | 25.0035 | 8.5487 | 2.925 |
| other_accent | -22.4629 | 5.7089 | -3.935 |
| spanish_accent | 4.2632 | 8.3703 | 0.509 |
| yes_musicbed | 4.0607 | 3.1000 | 1.310 |
| ad_numberofvoices | -0.2455 | 0.6559 | -0.374 |
| yes_spanish | -24.8472 | 7.3107 | -3.399 |
| instr_drums | -0.2147 | 1.9304 | -0.111 |
| instr_guitar | 0.2608 | 2.0787 | 0.174 |
| instr_brass | -1.1984 | 6.9751 | -0.172 |
| instr_trumpet | -7.2036 | 4.2124 | -1.710 |
| instr_sax | 15.9124 | 6.7526 | 2.356 |
| instr_piano | 0.6176 | 2.3349 | 0.265 |
| instr_keyboard | -7.5987 | 7.5300 | -1.009 |
| instr_violin | 5.7694 | 3.9528 | 1.463 |
| instr_other | 1.2013 | 2.0276 | 0.592 |
| automotive_advertiserindustry | -11/0704 | 9.2799 | -1.193 |
| education_advertiserindustry | -8.3587 | 9.8141 | -0.852 |
| financialinsurance_advertiserindustry | -10.1022 | 9.2438 | -1.093 |
| government_advertiserindustry | -13.2438 | 11.9034 | -1.113 |
| healthcare_advertiserindustry | -8.2418 | 9.7487 | -0.845 |
| othershipping_advertiserindustry | 2.8941 | 11.6594 | 0.248 |
| retail_advertiserindustry | -3.1366 | 9.3000 | -0.337 |

Table 13 Regression between purchase score and reason dimensions

| | Estimate | Std. Error | t-value |
|--|-----------------|-------------------|----------------|
| (Intercept) | 34.33043 | 12.57978 | 2.729 |
| female_gender | 1.39400 | 2.45962 | 0.567 |
| both_gender | 8.94864 | 3.36227 | 2.662 |
| child_voiceage | 6.85358 | 9.28207 | 0.738 |
| old_voiceage | 3.49146 | 6.98952 | 0.500 |
| young_voiceage | -0.06737 | 2.32034 | -0.029 |
| aus_accent | 11.15917 | 5.59029 | 1.996 |
| brit_accent | 8.97700 | 11.65950 | 0.770 |
| other_accent | -3.40204 | 7.74865 | -0.439 |
| spanish_accent | 6.26146 | 11.51181 | 0.533 |
| yes_musicbed | 6.76550 | 4.23155 | 1.599 |
| ad_numberofvoices | -1.15505 | 0.87910 | -1.314 |
| yes_spanish | -18.90427 | 10.07395 | -1.877 |
| instr_drums | -2.61440 | 2.63179 | -0.993 |
| instr_guitar | 0.61256 | 2.83806 | 0.216 |
| instr_brass | 5.50261 | 9.54599 | 0.576 |
| instr_trumpet | -0.17173 | 5.73770 | -0.030 |
| instr_sax | 17.06650 | 9.19496 | 1.856 |
| instr_piano | -6.09610 | 3.18306 | -1.915 |
| instr_keyboard | -7.59757 | 10.30660 | -0.737 |
| instr_violin | -3.24212 | 5.37965 | -0.603 |
| instr_other | -1.54228 | 2.76979 | -0.557 |
| automotive_advertiserindustry | -0.13335 | 12.68018 | -0.010 |
| education_advertiserindustry | -13.04884 | 13.40555 | -0.973 |
| financialinsurance_advertiserindustry | -0.92366 | 12.62840 | -0.073 |
| government_advertiserindustry | -1.82420 | 16.21530 | -0.112 |
| healthcare_advertiserindustry | -6.75663 | 13.31583 | -0.507 |
| othershipping_advertiserindustry | 30.29767 | 15.91807 | 1.903 |
| retail_advertiserindustry | 11.12169 | 12.70878 | 0.875 |

Table 14 Regression between more info score and reason dimensions

| | Estimate | Std. Error | t-value |
|--|-----------------|-------------------|----------------|
| (Intercept) | 50.1456 | 12.1611 | 4.123 |
| female_gender | 1.5526 | 2.3806 | 0.652 |
| both_gender | 8.5718 | 3.2535 | 2.635 |
| child_voiceage | 10.0308 | 8.9022 | 1.127 |
| old_voiceage | 9.0087 | 6.7423 | 1.336 |
| young_voiceage | 0.5424 | 2.2447 | 0.242 |
| aus_accent | 4.7654 | 5.3880 | 0.884 |
| brit_accent | 10.8910 | 11.2737 | 0.966 |
| other_accent | -18.4765 | 7.5095 | -2.460 |
| spanish_accent | 10.6866 | 11.0877 | 0.964 |
| yes_musicbed | 8.1466 | 4.0900 | 1.992 |
| ad_numberofvoices | -1.6957 | 0.8571 | -1.978 |
| yes_spanish | -22.2009 | 9.6942 | -2.290 |
| instr_drums | -4.1076 | 2.5453 | -1.614 |
| instr_guitar | -0.2318 | 2.7429 | -0.085 |
| instr_brass | 4.8651 | 9.2152 | 0.528 |
| instr_trumpet | -2.3209 | 5.5513 | -0.418 |
| instr_sax | 14.4145 | 8.8974 | 1.620 |
| instr_piano | -6.3720 | 3.0785 | -2.070 |
| instr_keyboard | -12.5381 | 9.9491 | -1.260 |
| instr_violin | -6.6545 | 5.2007 | -1.280 |
| instr_other | -2.3810 | 2.6762 | -0.890 |
| automotive_advertiserindustry | -13.0140 | 12.2503 | -1.062 |
| education_advertiserindustry | -23.5269 | 12.9531 | -1.816 |
| financialinsurance_advertiserindustry | -11.9711 | 12.2014 | -0.981 |
| government_advertiserindustry | -24.8273 | 15.6879 | -1.583 |
| healthcare_advertiserindustry | -18.1207 | 12.8667 | -1.408 |
| othershipping_advertiserindustry | 2.7682 | 15.3843 | 0.180 |
| retail_advertiserindustry | -4.5121 | 12.2774 | -0.368 |

Table 15 Regression between recommendation score and reason dimensions

| | Estimate | Std. Error | t-value |
|--|-----------------|-------------------|----------------|
| (Intercept) | 39.7132 | 9.6230 | 4.127 |
| female_gender | 1.0893 | 1.8854 | 0.578 |
| both_gender | 8.2214 | 2.5760 | 3.192 |
| child_voiceage | -1.2130 | 6.9578 | -0.174 |
| old_voiceage | 2.7020 | 5.3143 | 0.508 |
| young_voiceage | -0.7229 | 1.7767 | -0.407 |
| aus_accent | -4.1368 | 4.2416 | -0.975 |
| brit_accent | 0.6610 | 8.9164 | 0.074 |
| other_accent | -8.8329 | 5.9585 | -1.482 |
| spanish_accent | 4.9410 | 8.7199 | 0.567 |
| yes_musicbed | 6.5849 | 3.2330 | 2.037 |
| ad_numberofvoices | -0.8871 | 0.6858 | -1.293 |
| yes_spanish | -21.8377 | 7.6139 | -2.868 |
| instr_drums | -4.0932 | 2.0136 | -2.033 |
| instr_guitar | -0.6132 | 2.1677 | -0.283 |
| instr_brass | -2.5514 | 7.2717 | -0.351 |
| instr_trumpet | -1.3820 | 4.3945 | -0.314 |
| instr_sax | 18.5412 | 7.0449 | 2.632 |
| instr_piano | -3.5974 | 2.4354 | -1.477 |
| instr_keyboard | -10.9945 | 7.8499 | -1.401 |
| instr_violin | -0.2495 | 4.1121 | -0.061 |
| instr_other | -0.3310 | 2.1143 | -0.157 |
| automotive_advertiserindustry | 2.2735 | 9.6763 | 0.235 |
| education_advertiserindustry | 1.4313 | 10.2338 | 0.140 |
| financialinsurance_advertiserindustry | 2.1356 | 9.6389 | 0.222 |
| government_advertiserindustry | 11.2617 | 12.4174 | 0.907 |
| healthcare_advertiserindustry | 6.9578 | 10.1656 | 0.684 |
| othershipping_advertiserindustry | 25.5831 | 12.1592 | 2.104 |
| retail_advertiserindustry | 12.6560 | 9.6971 | 1.305 |

3.3 Crosstab Analysis

We did crosstab analysis between demographic statistics of respondents and recommendation score as well as purchase score, trying to find the influences of the demographic information on these scores. First we coded the demographic information: For gender of respondents, we coded female as 0, male as 1; For age of respondents, we coded age ranging from 20 to 30 as 0, age ranging from 31 to 40 as 1, age ranging from 41 to 50 as 2, age ranging from 51 to 60 as 3, age ranging from 61 to 70 as 4; For the race of respondents, we coded White / Caucasian as 0, Asian / Asian American as 1, Hispanic / Latino as 2, African American / Black as 3, Native American as 4, Southeast Asian / Indian as 5; For the marital status of respondents, we coded married as 1, single as 0. For the income of respondents, we coded annual income below equal to \$10,000 as 0, \$10,001 to \$25,000 as 1, \$25,001 to \$50,000 as 2, \$50,001 to \$75,000 as 3, \$75,001-\$100,000 as 4, income above \$100,000 as 5. Then we coded the recommendation score and purchase score respectively, with 4 categories ranging from 0 – 25 points, 26 – 50 points, 51 – 75 points, 76 – 100 points as 0,1,2 and 3.

We clustered four groups with similar recommendation score and purchase score by Kmeans clustering method using STATA.

Table 16 Cluster groups summarized by recommendation score

| -> _clus_1 =1 | | | | | |
|---------------|-----|----------|-----------|-----|-----|
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q6_recommend | 671 | 40.19076 | 8.009098 | 26 | 50 |

| -> _clus_1 =2 | | | | | |
|---------------|-------|----------|-----------|-----|-----|
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q6_recommend | 1,136 | 61.16637 | 7.948488 | 51 | 75 |
| -> _clus_1 =3 | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q6_recommend | 631 | 88.26783 | 8.329688 | 76 | 100 |
| -> _clus_1 =4 | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q6_recommend | 1,048 | 6.780534 | 8.398135 | 0 | 25 |

Table 17 Cluster groups summarized by purchase score

| -> _clus_2 = 1 | | | | | |
|----------------|-----|----------|-----------|-----|-----|
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q4_purchase | 637 | 81.77865 | 9.795214 | 69 | 100 |
| -> _clus_2 = 2 | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q4_purchase | 813 | 55.33333 | 6.882786 | 42 | 68 |
| -> _clus_2 = 3 | | | | | |
| Variable | Obs | Mean | Std. Dev. | Min | Max |
| q4_purchase | 686 | 28.36443 | 7.611449 | 16 | 41 |

-> _clus_2 = 4

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|-------------|-------|----------|-----------|-----|-----|
| q4_purchase | 1,350 | 2.863704 | 4.446946 | 0 | 15 |

Based on the tabulation, we found some influences of respondents' demographics on recommendation score:

- 1) Female respondents are more likely to recommend the products to their friends than male.
- 2) Elder respondents are less likely to recommend the products to their friends than the younger respondents.
- 3) Native American and Southeast Asian / Indian respondents are less likely to recommend the products to their friends relative to other races.
- 4) Married respondents are slightly more likely to recommend the products to their friends than single respondents.
- 5) Respondents with income below or equal to 10000 are less likely to recommend the products to their friends.

The above are the summary points and details are interpreted as below.

Table 18 Tabulation between gender and cluster group (by recommendation score)

| Subject_gender | _clus_1 | | | | Total |
|----------------|---------|-------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| Female | 16.71 | 28.76 | 22.58 | 27.74 | 100.00 |

| | | | | | |
|-------|--------|--------|--------|--------|--------|
| | 39.05 | 45.51 | 56.10 | 41.51 | 44.98 |
| Male | 21.32 | 32.27 | 14.44 | 31.96 | 100.00 |
| | 60.95 | 54.49 | 43.90 | 58.49 | 55.02 |
| Total | 19.25 | 32.59 | 18.10 | 30.06 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above shows that in cluster group 3 with the highest mean recommendation score 88.26, 22.58% of female respondents are in the group while 14.44% of male respondents are in it. In cluster group 4 with lowest mean recommend score 6.79, 58.49% male respondents are in while 41.51% of female are in it. This indicates that female respondents are likely to recommend the products to their friends than male.

Table 19 Tabulation between age of respondents and cluster group (by recommendation score)

| Subject_agecategory | _clus_1 | | | | Total |
|---------------------|---------|-------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| 20~30 | 22.63 | 32.10 | 13.96 | 31.30 | 100.00 |
| | 42.03 | 35.21 | 27.58 | 37.21 | 35.74 |
| 31~40 | 18.94 | 33.00 | 17.55 | 30.51 | 100.00 |
| | 36.36 | 37.41 | 35.82 | 37.50 | 36.95 |

| | | | | | |
|-------|--------|--------|--------|--------|--------|
| 41~50 | 18.65 | 35.91 | 24.40 | 21.03 | 100.00 |
| | 14.01 | 15.93 | 19.49 | 10.11 | 14.46 |
| 51~60 | 12.50 | 31.79 | 26.43 | 29.29 | 100.00 |
| | 5.22 | 7.83 | 11.73 | 7.82 | 8.03 |
| 61~70 | 9.52 | 24.40 | 20.24 | 45.83 | 100.00 |
| | 2.38 | 3.61 | 5.39 | 7.35 | 4.82 |
| Total | 19.25 | 32.59 | 18.10 | 30.06 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above shows that in cluster group 4 with the lowest mean recommendation score 6.79, 45.83% of respondents with age ranging from 61-70 are in the group, which is highest among other percentages with different age categories. This indicates that elder respondents are more likely not to recommend the products to their friends than the young.

Table 20 Tabulation between race of respondents and cluster group (by recommendation score)

| Subject_racial | _clus_1 | | | | Total |
|-------------------|---------|-------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| White / Caucasian | 18.81 | 33.02 | 18.16 | 30.01 | 100.00 |
| | 78.09 | 80.99 | 80.19 | 79.77 | 79.92 |

| | | | | | |
|--------------------------|--------|--------|--------|--------|--------|
| Asian / Asian American | 29.00 | 25.97 | 15.15 | 29.87 | 100.00 |
| | 9.99 | 5.28 | 5.55 | 6.58 | 6.63 |
| Hispanic / Latino | 19.05 | 34.20 | 18.61 | 28.14 | 100.00 |
| | 6.56 | 6.95 | 6.81 | 6.20 | 6.63 |
| African American / Black | 14.29 | 35.96 | 20.69 | 29.06 | 100.00 |
| | 4.32 | 6.43 | 6.66 | 5.63 | 5.82 |
| Native American | 7.14 | 14.29 | 17.86 | 60.71 | 100.00 |
| | 0.30 | 0.35 | 0.79 | 1.62 | 0.80 |
| Southeast Asian / Indian | 71.43 | 0.00 | 0.00 | 28.57 | 100.00 |
| | 0.75 | 0.00 | 0.00 | 0.19 | 0.20 |
| Total | 19.25 | 32.59 | 18.10 | 30.06 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above showed that in cluster group 2 and 3 with high mean recommend score 61.17 and 88.27, no Southeast Asian / Indian respondents are in these group, while only 32.15% of Native American are in these groups. This indicates that Native American and Southeast Asian / Indian respondents are less likely to recommend the products to their friends relative to other races.

Table 21 Tabulation between gender of respondents and cluster group (by recommendation score)

| Subject_marriage | _clus_1 | | | | Total |
|------------------|---------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | |
| Single | 20.15 | 30.27 | 16.70 | 32.88 | 100.00 |
| | 63.49 | 56.34 | 55.94 | 66.32 | 60.64 |
| Married | 17.86 | 36.15 | 20.26 | 25.73 | 100.00 |
| | 36.51 | 43.66 | 44.06 | 33.68 | 39.36 |
| Total | 19.25 | 32.59 | 18.10 | 30.06 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above shows that in cluster group 2 and 3 with high mean recommend score 61.17 and 88.27, 56.41% of married respondents are in the two groups, while 46.97% of single respondents are in these groups. This indicates that married respondents are slightly more likely to recommend the products to their friends than single.

Table 22 Tabulation between income of respondents and cluster group (by recommend score)

| Subject_incomesalary | _clus_1 | | | | Total |
|----------------------|---------|-------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| <= \$10,000 | 13.53 | 19.55 | 13.53 | 53.38 | 100.00 |
| | 2.68 | 2.29 | 2.85 | 6.77 | 3.82 |

| | | | | | |
|--------------------|--------|--------|--------|--------|--------|
| \$10,001~\$25,000 | 20.29 | 30.68 | 17.37 | 31.66 | 100.00 |
| | 18.63 | 16.64 | 16.96 | 18.61 | 17.67 |
| \$25,001~\$50,000 | 20.11 | 32.24 | 16.92 | 30.73 | 100.00 |
| | 37.56 | 35.56 | 33.60 | 36.74 | 35.94 |
| \$50,001~\$75,000 | 19.60 | 37.80 | 20.23 | 22.38 | 100.00 |
| | 23.10 | 26.32 | 25.36 | 16.89 | 22.69 |
| \$75,001~\$100,000 | 13.33 | 34.76 | 19.05 | 32.86 | 100.00 |
| | 8.35 | 12.85 | 12.68 | 13.17 | 12.05 |
| >\$100,000 | 23.81 | 26.37 | 19.78 | 30.04 | 100.00 |
| | 9.69 | 6.34 | 8.56 | 7.82 | 7.83 |
| Total | 19.25 | 32.59 | 18.10 | 30.06 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above shows that in cluster group 4 with lowest mean recommend score 6.79, 53.38% of respondents with income below or equal to \$10,000 are in the group, which is highest among other percentages with different income categories. This indicates that respondents with income below or equal to \$10,000 show strong preference not to recommend the products to their friends.

Likewise, we found some influences of respondents' demographics on purchase score:

1) Native American respondents and Southeast Asian / Indian respondents have lower likelihood of purchase intentions.

2) Married respondents are slightly more likely to purchase the products than single respondents.

3) Respondents with income below or equal to \$10,000 are less likely to purchase the products.

Table 23 Tabulation between race of respondents and cluster group (by purchase score)

| Subject_racial | _clus_2 | | | | Total |
|-----------------------------|---------|-------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| White / Caucasian | 18.27 | 23.01 | 19.45 | 39.27 | 100.00 |
| | 79.91 | 78.84 | 79.01 | 81.04 | 79.92 |
| Asian / Asian American | 14.29 | 27.71 | 24.24 | 33.77 | 100.00 |
| | 5.18 | 7.87 | 8.16 | 5.78 | 6.63 |
| Hispanic / Latino | 22.51 | 22.94 | 21.21 | 33.33 | 100.00 |
| | 8.16 | 6.52 | 7.14 | 5.70 | 6.63 |
| African American / Black | 19.21 | 25.12 | 15.27 | 40.39 | 100.00 |
| | 6.12 | 6.27 | 4.52 | 6.07 | 5.82 |
| Native American | 14.29 | 14.29 | 17.86 | 53.57 | 100.00 |
| | 0.63 | 0.49 | 0.73 | 1.11 | 0.80 |

| | | | | | |
|-------------------|--------|--------|--------|--------|--------|
| Southeast Asian / | 0.00 | 0.00 | 42.86 | 57.14 | 100.00 |
| Indian | 0.00 | 0.00 | 0.44 | 0.30 | 0.20 |
| Total | 18.27 | 23.32 | 19.68 | 38.73 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above shows that in cluster groups 1 and 2 with high mean purchase score 81.78 and 55.33, 0% of Native American respondents are in the two groups, while only 29.58% of Southeast Asian / Indian respondents are in the groups. This indicates that Native American respondents and Southeast Asian / Indian respondents have lower likelihood of purchase intentions.

Table 24 Tabulation between marital status of respondents and cluster group (by purchase score)

| Subject_marriage | _clus_2 | | | | Total |
|------------------|---------|--------|--------|--------|--------|
| | 1 | 2 | 3 | 4 | |
| Single | 15.70 | 20.72 | 20.81 | 42.76 | 100.00 |
| | 52.12 | 53.87 | 64.14 | 66.96 | 60.64 |
| Married | 22.23 | 27.33 | 17.93 | 32.51 | 100.00 |
| | 47.88 | 46.13 | 35.86 | 33.04 | 39.36 |
| Total | 18.27 | 23.32 | 19.68 | 38.73 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above showed that in cluster group 1 and 2 with high mean purchase score 81.78 and 55.33, 49.66% of married respondents are in the two groups, while 36.42% of single respondents are in the groups. This indicates that married respondents show slightly more likely to purchase the products than single.

Table 25 Tabulation between income of respondents and cluster group (by purchase score)

| Subject_incomesalary | _clus_2 | | | | Total |
|----------------------|---------|--------|-------|-------|--------|
| | 1 | 2 | 3 | 4 | |
| <= \$10,000 | 7.52 | 11.28 | 15.79 | 65.41 | 100.00 |
| | 1.57 | 1.85 | 3.06 | 6.44 | 3.82 |
| \$10,001~\$25,000 | 15.26 | 20.78 | 18.83 | 45.13 | 100.00 |
| | 14.76 | 15.74 | 16.91 | 20.59 | 17.67 |
| \$25,001~\$50,000 | 17.24 | 24.42s | 19.79 | 38.55 | 100.00 |
| | 33.91 | 37.64 | 36.15 | 35.78 | 35.94 |
| \$50,001~\$75,000 | 24.65 | 27.43 | 19.97 | 27.94 | 100.00 |
| | 30.61 | 26.69 | 23.03 | 16.37 | 22.69 |
| \$75,001~\$100,000 | 17.62 | 22.62 | 18.57 | 41.19 | 100.00 |
| | 11.62 | 11.69 | 11.37 | 12.81 | 12.05 |

| | | | | | |
|------------|--------|--------|--------|--------|--------|
| >\$100,000 | 17.58 | 19.05 | 23.81 | 39.56 | 100.00 |
| | 7.54 | 6.40 | 9.48 | 8.00 | 7.83 |
| Total | 18.21 | 23.32 | 19.68 | 38.73 | 100.00 |
| | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

The tabulation above showed that in cluster group 4 with lowest mean recommend score 2.86, 65.41% of respondents with income below or equal to \$10,000 are in the group, which is highest among other percentages with different income categories. This indicates that respondents with income below or equal to \$10,000 are less likely to purchase the products..

CHAPTER 4

DISCUSSION AND CONCLUSION

What is the DNA of a successful audio ad? What features of an audio advertisement can contribute to its quality and popularity? These are the ultimate questions this research seeks to answer. By doing descriptive analysis and crosstab analysis, we're now able to answer the questions below.

1) What are the likely reasons that make audiences enjoy the ads:

Pop, Blue and ambient music, music of drums, piano or guitar, dialogues, storytelling, conversations, gentle and upbeat tone, or with tone up, familiarity, British accents.

2) What are the likely reasons that make audiences not enjoy the ads:

Talking too fast, rock music, aggressive voices, salesman tone, irrelevant products.

3) What kind of people are more likely to recommend products to others after listening to the ads:

Female respondents, Married respondents. On contrary, the elder, Native American, Southeast Asian / Indian and respondents with income below or equal to 10000 are less likely to recommend.

4) What kind of people are more likely to purchase products after listening to the ads:

Married respondents. On contrary, Native American, Southeast Asian / Indian respondents and respondents with income below or equal to \$10,000 are less likely to purchase.

Another major approach we took was collecting answers from a survey from almost 500 people. That's how we obtained the valuable data to answer more questions. The following are the highlights of what are the most important audio attributes:

Instead of using only male or female voices, the combination of both voices was received better. If there is chance to use a voice of children or the elderly, do use them. This would give audio advertisement a sense of freshness and lightness. However, it is still important to control the number of narrators. Do not include too many speakers, which would make the ad crowded and less clear. American and British accents are appreciated and British accent could add to the enjoyment of the ads. Other accents need to be avoided because they might not work well in comparison to the American and British accents .

If you struggle with whether to incorporate music background or not, this would be a no brainer – music helps. Music greatly elevates the enjoyment of an ad. When it comes to music genre, pop music and ambient music were strongly preferred among our participants. We did not study the exact mechanism of why these genres were preferred, but our results seem to suggest that they improve the enjoyment of ads. Also, Saxophone was perceived as a great instrument that could raise brand awareness.

This research is for the purpose of producing better audio advertisements. Both manufacturers of the ads and the ad producers need this level of information to help them understand the minds of listeners so as to better suit their preferences. Incorporating the suggestions above would likely to improve the quality of ads and thus lead to more purchases, which is the ultimate goal of ads.

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APPENDIX

SURVEY QUESTIONNAIRE

Instructions:

Purpose: To investigate the characteristics of various TV advertisements. **Time required:** Approximately 10 minutes. **Procedures:** Your participation in this study is voluntary and you can withdraw at any time. You must be 18 years old to participate in this study. Participation will involve listening to audio advertisements . You will receive \$2.00 - upon completion of the study - for participating. **Risk to participants:** Minimal. Your survey responses are anonymous. **Benefit to Participants:** No direct benefits, but participants will have contributed to the advancement of scientific knowledge. **Contact for questions about the research:** Geoffrey Fisher (gwf25@cornell.edu) **Contact for questions about rights as a research participant:** Cornell University Institutional Review Board for Human Participants (irbhp@cornell.edu).

You may also report your concerns or complaints anonymously through Ethicspoint online at www.hotline.cornell.edu or by calling toll free at 1-866-293-3077. Ethicspoint is an independent organization that serves as a liaison between the University and the person bringing the complaint to that anonymity can be ensured. Completing and returning this survey constitutes your consent for your survey responses to be used in this research project.

In this survey, we will ask you to listen to 7 different audio ads and then answer several questions about each. You must ensure you have the ability to listen to audio through your computer, either through headphones or a computer speaker.

Each ad will first automatically play for you. After listening to the ad, you will be allowed to continue to a question page where you will answer a variety of questions about the ad. You will also have the option to replay each ad at that time.

To begin, click the button below.

Test Question:

1. Please play the audio clip and answer the question below:

- ☐ Play/Pause

2. Which type of fruit was in the audio?

- ☐ Blackberries
- ☐ Bananas
- ☐ Oranges
- ☐ Apples
- ☐ Strawberries

Audio Ad 1 ~ Audio Ad 7:

Question 1 to 8 are the same for each ad, Question 9 for all ads, Question 10 to 15 are demographic questions.

1. Please enter one to two words to indicate the topic of the advertisement (i.e., what is being sold): _____
2. Does the topic of the advertisement cover a field or product that is **relevant** for you? (Very irrelevant ~ Very relevant)
3. How much did you **enjoy** listening to the advertisement? (As little as possible ~As much as possible)
4. How likely would you be to **purchase** the product in the advertisement?(Very unlikely ~ Very likely)
5. How interested would you be in obtaining **more information** about the product? (Very uninterested ~Very interested)
6. How likely would you be to **recommend** this product or service to a friend? (Very unlikely ~ Very likely)
7. Please indicate by clicking on the relevant items below (more than one is allowed) why you **LIKED** this ad. Also feel free to add an open ended answer in the category other:
 - Clarity of the underlying message
 - Clarity of the sound
 - Trustworthiness of the narrator
 - Entertaining advertisement
 - Familiar brand
 - Music/soundtrack or sound effects
 - OTHER:
 - None
8. Please indicate by clicking on the relevant items below (more than one is allowed) why you **DISLIKED** this ad. Also feel free to add an open ended answer in the category other:
 - Lack of clarity of the underlying message
 - Lack of clarity of the sound
 - Lack of trustworthiness of the narrator
 - Lack of entertaining advertisement
 - Lack of familiar brand
 - Music/soundtrack or sound effects
 - OTHER:
 - None
9. In the space provided below, please recall as many ads as possible in their order of memorability (list the most memorable first). Additionally, please note whether the ad was memorable because you enjoyed it or because you disliked it and elaborate on the aspects that made the ad memorable.
 - Note: you must list at least 3 ads in order to continue.

| | Description of the ad | Opinion | | | Why is this ad memorable? |
|---------------------------|--------------------------|---------|---------|----------|---------------------------------|
| | Response | Liked | Neutral | Disliked | Response |
| Ad #1 (most memorable) | | | | | |
| Ad #2 | | | | | |
| Ad #3 | | | | | |
| Ad #4 | | | | | |
| Ad #5 | | | | | |
| Ad #6 | | | | | |
| Ad #7 | | | | | |

10. What is your gender?

- Male
- Female

11. What is your age (in years)? _____

12. Which ethnic group do you belong to?

- White / Caucasian
- Asian / Asian American
- African American / Black
- Hispanic / Latino
- Southeast Asian / Indian
- Native American
- Pacific Islander
- Other

13. Are you married?

- Yes
- No

14. What is your annual household income? _____

15. What is your 5-digit zip code? _____

Thank you for completing our survey.

Your response has been recorded.