

**Consumer responses to advertising:
The interplay between ad content and ad spending**

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Abstract

This paper provides a model of the effects of radio advertising and present empirical evidence of the model. The model links buying intention to ad investment and ad attitude, which is in turn linked to ad content, ad emotions and ad attention. The model is specified as a structural equation model, and PLS is used to estimate and test the model. The paper presents results from 441 radio advertising campaigns, and the analysis indicates strong support for the proposed model. The results clearly indicate that ad content is more influential on purchase intention than ad investment, and emotions (positive as well as negative) are mediating the advertising processing. The findings and implications are discussed.

Keywords: Advertising effectiveness, ad content; ad spending, emotions, structural equation modelling

Introduction

Published research on the effectiveness of radio advertising is accumulating rapidly. In 2002, the Radio Ad Effectiveness Lab (RAEL) reviewed 47 studies published since 1948 on this topic. The bulk of the material covered by the studies was created in 1990 or later. Peacock (2004) further supplemented this effort by reviewing material published after the original RAEL project. White (2005) took things a step further by summarizing results from research published based on this wealth of material. The studies he reviewed covered five main subject areas: audience research, level of attention, categorization of content, and behavioral related effects in terms of purchase intention or actual sales. In addition to this seminal work, other recent contributions in the audience research area are Uyenco et al. (2004), North and van Meurs (2004) and Webb and Patchen (2004). Most of the previous research has studied the effects of radio advertising in terms of attention toward the advertisement and sometimes affective responses toward the advertisement.

Recently, Hansen et al. (2008a, 2008b) study the effectiveness of radio advertising as a function of attention (recall and recognition) and resonance (ad liking, ad emotions and ad attitude). They also look at the impact of campaign budgets by measuring Gross Rating Points (GRP) and advertising spending. The relationships between these variables are studied in a set of multiple regression models. However, the variables are not studied simultaneously and it is not possible to test the influence of mediation. Hansen et al. (2008a, 2008b) call for further research and suggest a structural equation model approach.

On this background, the current paper builds on and integrates previous research to examine the effect of radio advertising. We simultaneously examine the influence of advertising campaign spending (ad spending), evaluation of the content of the advertisement (ad content) on purchase intention, and affective responses toward the advertisement are included in the advertising processing. A structural equation model is proposed, empirically estimated and tested. The quality of the model is good, and interesting findings and implications are discussed.

Theoretical framework

The theoretical framework is based on the widely acknowledged communication model proposed by Holbrook and Batra (1987), who suggest that ad content leads to individuals' emotional ad responses which, in turn, may influence ad attitude. Here, ad emotions have a partially mediating role in advertising processing. This is a credible model which emphasizes the importance and relevance of including emotional responses in advertising communication models. This is also underlined in recent years' research (Hamelin et al., 2017; Hansen, 2005; Hansen and Christensen, 2007; Poels and Dewitte, 2006; Vakratsas and Ambler, 1999).

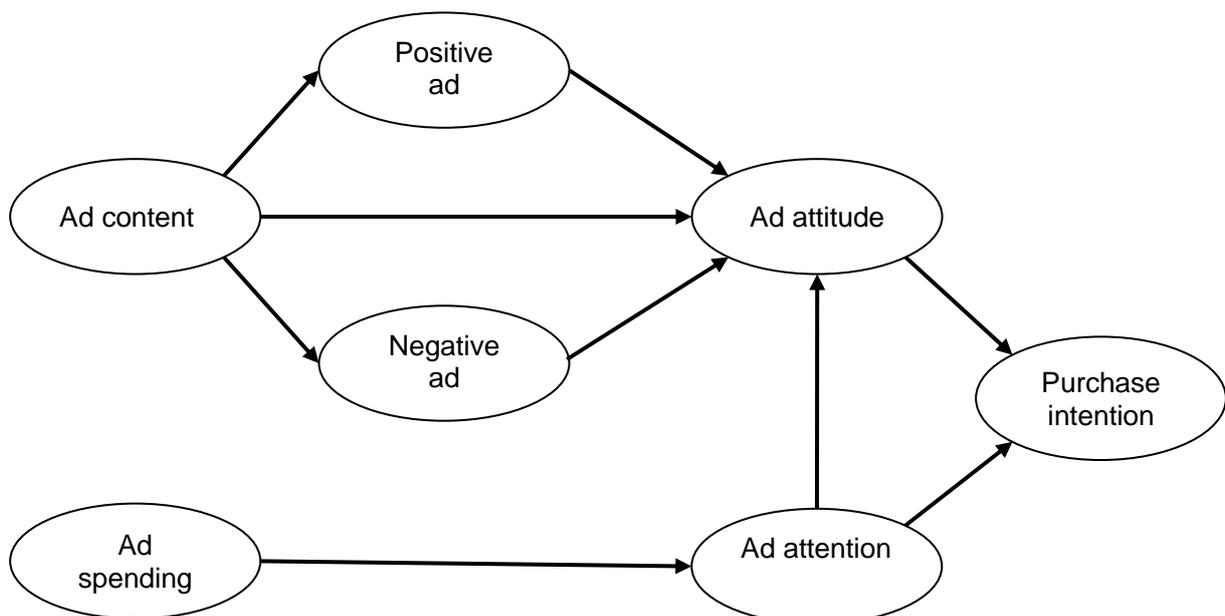
We suggest broadening Holbrook and Batra's model in two ways. First, we include purchase intention and moves closer to the ultimate goal of advertising, which is generally to influence behavior.

Second, Holbrook and Batra's model is limited to the effect of ad content, i.e., the quality of the advertisement. Besides, consumers are affected by the radio advertising spending (e.g., advertising spending and exposures). Therefore, we include advertising investment in the proposed model.

Furthermore, we divide emotions into a positive and negative dimension. This is supported by Dubé-Rioux (1990), Hansen (2005), Laros and Steenkamp (2005), Lazarus (1991), Liljander and Strandvik (1997), Mano and Oliver (1993), Phillips and Baumgartner (2002), and Westbrook (1987). This is partly in harmony with Holbrook and Batra (1987), who divide emotional ad response into three dimensions: Pleasure (e.g., pride, affection, gratitude, joy) and arousal (e.g., interest, activation, surprise, involvement) that may be perceived as positive dimensions, and domination (e.g., helplessness, sadness, fear, disgust) that reflects a negative dimension.

If we add these issues to Holbrook and Batra's original model we get the proposed model depicted in Figure 1. Previous research has investigated all of the hypothesized relationships between the variables (for an excellent review, see Vakratsas and Ambler, 1999). However, it is the first time that the influence of both ad content and ad investment on purchase intention has been examined simultaneously in a framework as proposed in Figure 1, which also include ad emotions, ad attitude and ad attention as mediating variables.

Figure 1. The conceptual model



Data

The present study is based upon campaign effect measurements collected from 441 radio advertising campaigns run on important Danish commercial radio stations over four years.

For each campaign we have information on ad investment, measured by ad spending, Gross Rating Points, spot length, number of radio stations and number of weeks. In addition, for each campaign we have information from consumer surveys on ad attention (radio recall and spot recognition), evaluation of ad content, ad emotions, ad attitude and purchase intention, all measured in the last campaign week (purchase intention is also measured one week after the campaign).

Data was collected electronically using TNS Gallup Denmark's online panel of persons aged 15-59 years, with a gross sample per campaign of 1000.

Radio recall is measured by asking: "Do you remember hearing radio advertisements for [brand] in the last month?" Spot recognition is measured by playing one or more of spots from the campaign and asking respondents if they recognized them from the radio.

Ad content is measured by four items regarding the listener's perceived quality of the ad, rated on a 5-point scale. Emotions are measured by asking the respondent which of 10 positive and negative feeling words they felt best applied to the spot they had just heard. The feeling words are adopted from the emotional responses studies by Hansen (2005) and Hansen and Christensen (2007).

Ad attitude is measured by using five well documented scale items (Bruner II, 2009, pp. 89-101): overall liking, informative, believable, enjoyable and persuasive (rated on a 5-point scale).

Purchase intention is measured by the question: "How likely would you say you are to purchase [brand] next time you shop for [category]?" (rated on a 5-point scale).

Methodology

The conceptual model in Figure 1 is specified as a structural equation model with seven latent variables. Each of the latent variables in the model is operationalized by a set of 2-5 indicators.

The structural equation model is estimated by using partial least squares (PLS) due to this methods' advantages: PLS is distribution-free, it is robust (against skew distributions for indicators, multicollinearity and misspecification) (Cassel et al., 1999; Chin, 1998; Fornell and Bookstein, 1982; Hulland, 1999; Tenenhaus et al., 2005). Furthermore, PLS is a powerful method for predictive applications, as PLS aims at explaining variances (Fornell and Bookstein, 1982).

For the estimation and test of the model the software SmartPLS is used (Ringle et al., 2015). SmartPLS is originally developed by Professor Christian M. Ringle, University of Hamburg, Germany, at the beginning of this century and since improved with newer versions.

The latent variable ad spending is measured by formative indicators, and the six other latent variables are measured by reflective indicators, i.e., the indicators are a reflection of an underlying latent variable (Fornell and Cha, 1994).

Analyses and results

The model is analyzed and interpreted in three stages; first, the measurement model is evaluated, second, the relationships in the structural model are tested and the estimated model is provided, and third, the final structural model is evaluated. This sequence allows researchers to ensure that latent variables have adequate reliability and validity before drawing conclusions on hypothesized relationships (Bollen, 1989; Fornell and Larcker, 1981; Hair et al., 2006; Hulland, 1999).

Evaluation of the measurement model

When assessing the measurement model, one must demonstrate satisfactory level of reliability and validity (Fornell and Larcker, 1981; Hulland, 1999).

In the measurement model evaluation process the items that did not significantly contribute to the reliability were eliminated for parsimony purpose, and the following results are based on the retained 20 indicators. All factor loadings for the 16 reflective indicators exceed the 0.7 threshold (Carmines and Zeller, 1979; Hulland, 1999) indicating item reliability.

A composite reliability measure (Fornell and Larcker, 1981) of 0.7 is a threshold for 'modest' composite reliability (Hulland, 1999; Nunally, 1978), and all latent variables met this criterion. Another measure to assess composite reliability that has been recommended (Chin, 1998; Baumgartner and Homburg, 1996) is the average variance extracted (AVE), developed by Fornell and Larcker (1981). For a latent variable, the AVE measures the amount of variance captured by the associated indicators relative to the amount due to measurement error. To use a latent variable, the AVE should be greater than 0.50, which meets the criterion that a latent variable's AVE should be at least 50% to guarantee more valid variance explained than error in its measurement (Chin, 1998; Fornell and Cha, 1994; Fornell and Larcker, 1981). All the AVE values in the model are 0.54 or above, which are greater than the threshold of 0.50. That is, also the AVE values demonstrate composite reliability for all latent variables indicating that all the items of each latent variable form a single, strongly cohesive and conceptual construct.

Discriminant validity concerns the degree to which measures of conceptually distinct latent variables differ. To evaluate discriminant validity, the square root of AVE can be compared with the correlation coefficients among the latent variables. It is recommended, that the square root of AVE of a latent variable should be greater than the correlations between it and any other latent variable in the model (Chin, 1998; Fornell and Larcker, 1981; Hulland, 1999). The model results show that the square root of AVE is greater than the correlation between it and all other latent variables, which indicates that all the latent variables in this study both conceptually and empirically distinct from each other. Thus, discriminant validity is evidenced.

These initial results provide clear evidence of item reliability and composite reliability as well as discriminant validity.

Estimation, testing and evaluation of the structural model

The PLS estimation is carried out by including all hypothesized relationships in Figure 1, and the relationships are tested using t-values obtained from the bootstrap re-sampling

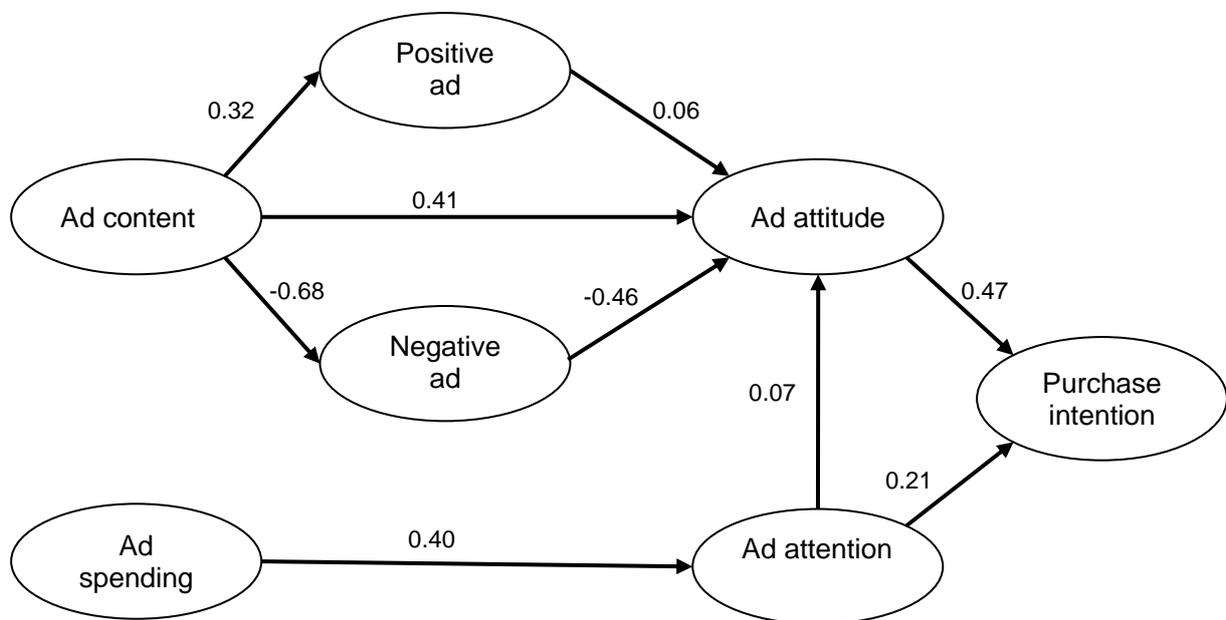
procedure. The final estimated model with path coefficients (standardized impacts) are shown in Figure 2.

All nine relationships are tested and found significant (all $t > 1.760$, $p < 0.039$; one-tailed). All estimated relationships are in the expected direction; seven are positive and two are negative, namely the relationships to and from negative ad emotions.

To evaluate the final PLS model researchers typically examine the R^2 values for the dependent latent variables (Chin, 1998; Hulland, 1999). R^2 for ad attitude is 0.73 indicating very good explanatory power, and R^2 for ad attention and purchase intention are 0.16 and 0.33, respectively, indicating reasonable explanations. Overall, our empirical application provides strong support for the proposed model and the associated measurement system, and the quality of the model is good.

Several interesting findings can be derived from these results as will be discussed in the next section together with implications.

Figure 2. The estimated model



Discussion

The findings clearly indicate that it is relevant to use Holbrook and Batra's (2003) framework expanded by ad investment, ad attention and purchase intention.

The findings also indicate that both ad content and ad investment significantly influence ad attitude and purchase intention. Based on the path coefficients in Figure 2, we have calculated the total impacts, that is, the direct and indirect impacts. The total impacts of ad content and ad investment on purchase intention are 0.355 and 0.099, respectively. Based on these results, i.e., overall for the 441 analyzed radio advertising campaigns, the impact of ad content is approximately three and a half times greater than the impact of ad investment.

Ad attention is a mediating variable between ad investment and ad attitude, i.e., ad attitude is not only influenced by the ad content but also by the ad spending.

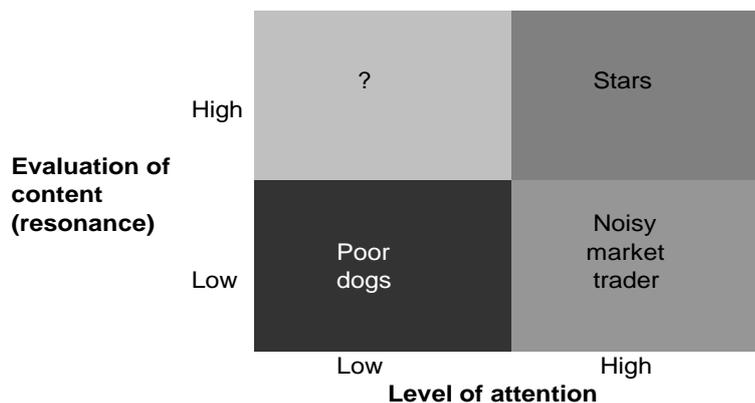
Moreover, ad attention is a mediating variable between ad investment and purchase intention, i.e., ad attitude is not only influenced by the ad content, but also by ad investment.

In a recent study, Domke and Wild (2005) concerned themselves with the relative importance of ad content (resonance) and the level of attention (impact). They classify radio advertisements according to these dimensions as illustrated in Figure 3, and this classification is used in assessment of radio advertisements. The resonance dimension is reflected in the upper part of the proposed model in Figure 1, and the attention dimension is reflected in the lower part of the model.

The evaluation of the model shows that the proposed division between positive and negative ad emotions is a good idea, since the impact from these two ad emotions is quite different, and it is possible to study the effect of ad content not only on ad attitude and the final purchase intention, but also on the mediating emotional responses.

Figure 3. Four categories of radio advertisements

(Source: Domke and Wild, 2005)



Conclusions

The findings from the present study are strongly aligned with prior studies. Ad content and ad investment are two factors of major importance for influencing purchase intention. From the 441 analyzed radio advertising campaigns, it is evident that ad content is more important than spending.

The lesson to learn for radio advertisers is that campaign quality, as reflected in listeners' perceived ad content, positive emotions and ad attitude, is more important than spending when it comes to influencing purchase intention. As a consequence, radio advertisers ought to use sufficient resources to development of creative messages and production of advertisements. Advertisers should take this into account in the advertising budgeting and the allocation of the budget on development/production and radio advertising space.

To our knowledge, no research has simultaneously compared the relative influence of radio ad content and spending on the listener's ad attitude and purchase intention. In this way, our study contributes to the advertising effectiveness literature. Also the role of emotions in advertising processing is demonstrated.

The empirical results are based on a structural equation modeling approach. The application of the model provides strong support for the conceptual model and the associated measurement system. This emphasizes the significance of each of the included variables and underscores the need to adopt more holistic view in advertising effectiveness measuring.

Data collection will have to continue over the next years and more cases will be accumulated, that will include coding of the commercials in relation to genre according to Andersen (2004): didactic, narrative and lyric commercials. Andersen (2004) and Andersen and Jensen (2015) presents and evaluate the usefulness of an advertising perception framework, composed of these three genre dimensions developed from advertising executive theory, genre theory and cognitive fil theory. It could be interesting to study how genre affects the advertising processing. Moreover, it could be interesting to study the following questions in a model-based context: Is there differences between product categories? Between new brands and well established brands? How will purchase intention and the other model variables develop in the campaign period and after the campaign? Hopefully, future research will pursue these and other important questions.

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