

CONSUMER PROCESSING OF INTERACTIVE ONLINE ADVERTISEMENTS

BY

LACHLAN MCLAREN

A thesis

submitted to the Victoria University of Wellington

in fulfilment of the requirements for the degree of

Doctor of Philosophy

Victoria University of Wellington

(2014)

## **Abstract**

The internet is a computer mediated environment that facilitates the interaction between firms and consumers. This inherent interactivity gives marketers the opportunity to provide consumers with more engaging advertisements. Instead of a largely passive audience characteristic of broadcast and print media, advertising on the internet involves interaction between marketer and consumer, resulting in a consumer that is more active in the communication and persuasion process. In an interactive medium, the consumer can also interact with marketing messages in real time. This was not possible with print and broadcast advertising, therefore, understanding how this interaction influences advertising persuasiveness is important. The key research question for this study is what effect does interactivity within an online advertisement have on consumers' attention to, processing of and attitude towards the ad?

This research applies established information processing theory in an online context to develop a conceptual model of the effects of interactivity on consumer processing of advertisements. Using an online experiment to collect data this study manipulates interactivity within an online banner advertisement and tests the conceptual model using structural equation modelling. The results indicate that consumers pay more attention to online advertisements that are interactive and that the increased attention leads to an increase in processing of the advertisement and a more favourable attitude towards the ad. In addition those who interacted with the advertisement had more favourable thoughts about the advertisement. Previous effects of interactivity on processing and attitude towards the advertisements were not observed. A possible explanation is the assumption of attention to the advertisement made in previous studies. Instead this study suggests that interactivity cannot influence consumer processing of advertisements without the consumer first paying attention to the advertisement.

The findings of this study contribute to the domains of interactivity and information processing theory through clarifying questions about the ability of interactive advertising to engage consumers and demonstrating the effectiveness of information processing theory to explain how consumers process interactive messages. Future research directions are outlined that include investigating what interactive features in advertisements are most engaging for consumers and combining self-report measures with more objective methods to provide a more comprehensive understanding of how consumers process interactive messages.

## **Acknowledgements**

This thesis could not have been completed without the support of many people. I'll take a moment to acknowledge some of them who are top of mind as I near submission.

Peter Thirkell and Aaron Gazley, my supervisory dream team, thank you for your enduring support and guidance over the course of my PhD. Our conversations over lunch, coffee and even breakfasts have kept me on track and moving forward with a healthy attitude towards life, academia and the process of learning through research.

To my partner Sarah, thanks for putting up with so many late nights, early mornings and head-clearing fishing trips. Without your support and understanding I could not have got this far. Now I'm able to move on to other things and not spend our weekends in the office.

Thank you to the School of Marketing and International Business (SMIB) for partly funding my studies and giving me opportunities to develop my teaching alongside my research. An additional thank you to Professor Dan Laufer, now head of school, for arranging an invitation for SMIB to the 2013 AMA Sheth Foundation Doctoral Consortium that I was fortunate enough to attend. The conversations I had there helped crystallise my research ideas and sow seeds for new projects.

To my officemates over the years Stephan, Mao, Madnoor, Vu, Lin, Richa, Ardy, Farhanna and Fabio thanks for your kind advice and generally making the PhD easier knowing I wasn't the only one working so hard!

Also to my colleagues at SMIB, Janine, Micael, Michelle, Helen, Jim, Kim, Revti, Hongzhi the list goes on. Thanks for the many conversations about life, issues with research and puzzles to do with the PhD.

To my workmates at the Centre for Academic Development, especially Liz, thanks for your understanding giving me the time I've needed to finish this PhD while working.

Thank you to my examiners Nick Ashill, Michelle Renton and Ken Hyde for your thoughtful and constructive comments that shaped this final version of the thesis.

Finally to my family who for years have been asking how my PhD has been going and when I'm going to finish. After countless "oh good, still a bit more to go" replies, at last, I have finished.

## Table of contents

|           |  |    |
|-----------|--|----|
| Chapter 1 | Introduction .....                               | 1  |
| 1.1       | Background.....                                  | 2  |
| 1.2       | Research problem, question and objectives .....  | 4  |
| 1.3       | Research contributions .....                     | 6  |
| 1.4       | Outline of thesis structure .....                | 7  |
| Chapter 2 | Literature review.....                           | 8  |
| 2.1       | Introduction .....                               | 8  |
| 2.2       | Hierarchy of effects.....                        | 8  |
| 2.3       | Information processing theory .....              | 10 |
| 2.3.1     | Elaboration Likelihood Model.....                | 10 |
| 2.3.2     | Broader dual processing approaches.....          | 13 |
| 2.3.3     | Integrated advertising processing models .....   | 14 |
| 2.4       | Information processing on the internet .....     | 16 |
| 2.5       | Perspectives on interactivity .....              | 17 |
| 2.5.1     | Interactivity defined as a process.....          | 17 |
| 2.5.2     | Interactivity defined as features.....           | 20 |
| 2.5.3     | Interactivity defined as perceptions .....       | 22 |
| 2.6       | Common aspects of interactivity definitions..... | 23 |
| 2.6.1     | Control.....                                     | 24 |
| 2.6.2     | Two-way communication.....                       | 24 |
| 2.6.3     | Synchronicity.....                               | 25 |
| 2.7       | Definition of interactivity for this study.....  | 26 |
| 2.8       | Online advertising processing models .....       | 26 |
| 2.9       | Effects of interactivity.....                    | 32 |
| 2.9.1     | Effects of interactivity on processing .....     | 32 |

|                  |   |           |
|------------------|---|-----------|
| 2.9.2            | Effects of interactivity on attitude towards the ad ..... | 33        |
| 2.10             | Operationalising interactivity.....                       | 34        |
| 2.11             | Definition of interactivity within an advertisement ..... | 35        |
| 2.12             | Chapter summary .....                                     | 35        |
| <b>Chapter 3</b> | <b>Model Development.....</b>                             | <b>37</b> |
| 3.1              | Introduction .....  | 37        |
| 3.2              | Model overview .....                                      | 37        |
| 3.3              | Attention.....  | 37        |
| 3.4              | Influences on attention .....                             | 39        |
| 3.4.1            | Interactivity within the advertisement .....              | 39        |
| 3.4.2            | Goals .....   | 41        |
| 3.4.3            | Attitude towards online advertising in general.....       | 42        |
| 3.5              | Amount of processing .....                                | 43        |
| 3.6              | Attitude towards the ad .....                             | 44        |
| 3.7              | Conceptual model .....                                    | 47        |
| 3.8              | Chapter summary .....                                     | 48        |
| <b>Chapter 4</b> | <b>Method .....</b>                                       | <b>49</b> |
| 4.1              | Introduction .....  | 49        |
| 4.2              | Data collection.....                                      | 50        |
| 4.2.1            | Experiment .....  | 50        |
| 4.2.2            | Manipulations .....                                       | 52        |
| 4.2.3            | Interactivity within the ad .....                         | 52        |
| 4.2.4            | Credit card interactive advertisement .....               | 52        |
| 4.2.5            | Automobile interactive advertisement .....                | 53        |
| 4.3              | Goal manipulations .....                                  | 54        |
| 4.3.1            | Browse goal .....   | 54        |

|        |   |    |
|--------|---|----|
| 4.3.2  | Search goal .....                                   | 54 |
| 4.3.3  | Credit card condition search goal .....             | 55 |
| 4.3.4  | Automobile condition search goal .....              | 55 |
| 4.4    | Interact goal .....                                 | 56 |
| 4.4.1  | Credit card interact goal .....                     | 57 |
| 4.4.2  | Automobile interact goal .....                      | 57 |
| 4.5    | Procedure.....                                      | 58 |
| 4.6    | Questionnaire design.....                           | 60 |
| 4.6.1  | Construct measures .....                            | 60 |
| 4.6.2  | Introductory questions.....                         | 61 |
| 4.6.3  | Processing.....                                     | 61 |
| 4.6.4  | Attention.....                                      | 62 |
| 4.6.5  | Perceived interactivity.....                        | 63 |
| 4.6.6  | Attitude towards the advertisement .....            | 64 |
| 4.6.7  | Attitude towards online advertising in general..... | 65 |
| 4.7    | Summary of construct measurement items .....        | 66 |
| 4.8    | Pre-testing.....                                    | 67 |
| 4.8.1  | Expert review.....                                  | 67 |
| 4.8.2  | Pre-test.....                                       | 68 |
| 4.8.3  | Pilot study.....                                    | 69 |
| 4.9    | Sampling frame.....                                 | 69 |
| 4.9.1  | Sample selection .....                              | 69 |
| 4.10   | Sample characteristics .....                        | 70 |
| 4.10.1 | Respondent age.....                                 | 70 |
| 4.10.2 | Respondent gender.....                              | 71 |
| 4.10.3 | Respondent household income .....                   | 72 |

|           |   |    |
|-----------|---|----|
| 4.10.4    | Occupations of the sample .....                                   | 73 |
| 4.11      | Chapter summary .....   | 74 |
| Chapter 5 | Results.....  | 75 |
| 5.1       | Response analysis .....   | 75 |
| 5.2       | Common method variance.....                                       | 75 |
| 5.3       | Assumptions of multivariate analysis .....                        | 76 |
| 5.3.1     | Normality .....   | 77 |
| 5.3.2     | Multicollinearity .....   | 77 |
| 5.4       | Measurement model.....  | 79 |
| 5.4.1     | Confirmatory Factor Analysis (CFA) .....                          | 79 |
| 5.4.2     | Construct reliability and validity .....                          | 80 |
| 5.4.3     | Face validity .....   | 80 |
| 5.4.4     | Convergent validity.....  | 80 |
| 5.4.5     | Discriminant validity .....                                       | 82 |
| 5.4.6     | Initial measurement model .....                                   | 82 |
| 5.4.7     | Fit statistics for measurement model as initially specified ..... | 82 |
| 5.4.8     | Removal of poor performing items.....                             | 83 |
| 5.4.9     | Modification indices .....  | 83 |
| 5.4.10    | Respecified measurement model.....                                | 84 |
| 5.4.11    | Validity summary .....  | 88 |
| 5.5       | Manipulation checks .....   | 89 |
| 5.5.1     | Interactivity manipulation .....                                  | 89 |
| 5.5.2     | Goal manipulation.....  | 89 |
| 5.6       | Structural model.....   | 90 |
| 5.6.1     | Structural model fit .....  | 92 |
| 5.6.2     | Hypothesis testing.....   | 94 |

|            |  |     |
|------------|--|-----|
| 5.6.3      | Additional investigation of interactivity and advertisement processing ..... | 95  |
| 5.7        | Chapter summary .....  | 96  |
| Chapter 6  | Discussion .....   | 98  |
| 6.1        | Interactivity and attention.....   | 98  |
| 6.2        | Goals, attitude towards online advertising and attention .....               | 101 |
| 6.3        | Summary of effects on attention.....   | 102 |
| 6.4        | Interactivity and processing.....  | 104 |
| 6.5        | Attention and processing.....  | 106 |
| 6.6        | Processing and attitude towards the ad .....                                 | 108 |
| 6.7        | Interactivity and attitude towards the ad .....                              | 109 |
| 6.8        | Chapter summary .....  | 111 |
| Chapter 7  | Conclusions, limitations and directions for future research .....            | 112 |
| 7.1        | Theoretical contributions.....   | 113 |
| 7.2        | Methodological contributions.....  | 115 |
| 7.3        | Managerial contributions.....  | 116 |
| 7.4        | Limitations.....   | 117 |
| 7.5        | Directions for future research .....   | 119 |
| 7.6        | Final reflections .....  | 121 |
| Appendices | .....  | 123 |
| References | .....  | 151 |



## **List of figures**

|   |     |
|---|-----|
| Figure 2-1 Behavioural dimensions of advertising hierarchy of effects .....                 | 9   |
| Figure 2-2 Elaboration Likelihood Model of persuasion .....                                 | 12  |
| Figure 2-3 MacInnis and Jaworski's (1989) integrated processing model .....                 | 14  |
| Figure 2-4 Rodgers and Thorson's (2000) interactive advertising model .....                 | 28  |
| Figure 2-5 Liu and Shrum's (2009) Dual-Process model of Interactivity Effects .....         | 30  |
| Figure 2-6 Ducoffe and Curlo's (2000) advertising processing model .....                    | 31  |
| Figure 3-1 Conceptual model .....   | 47  |
| Figure 4-1: Age of sample.....  | 71  |
| Figure 4-2: Gender of sample.....   | 72  |
| Figure 4-3: Income of sample.....   | 73  |
| Figure 4-4: Occupation of sample.....   | 74  |
| Figure 5-1 Respecified measurement model .....  | 85  |
| Figure 5-2 Structural model to be tested .....  | 90  |
| Figure 5-3 Structural model as drawn in AMOS.....   | 93  |
| Figure 5-4 Favourable thoughts by interaction type .....                                    | 96  |
| Figure 6-1 Relationship between interactivity and attention.....                            | 99  |
| Figure 6-2 Relationship between goals, attitude towards online advertising and attention .. | 101 |
| Figure 6-3 Relationship between interactivity and processing.....                           | 104 |
| Figure 6-4 Relationship between attention and processing.....                               | 107 |
| Figure 6-5 Relationship between processing and attitude towards the ad .....                | 108 |
| Figure 6-6 Direct effect of interactivity on attitude towards the ad.....                   | 109 |

## **List of tables**

|   |    |
|---|----|
| Table 2-1 Common aspects of interactivity definitions ..... | 23 |
| Table 4-1 Thought elicitation/processing measure .....      | 62 |
| Table 4-2 Attention measures .....                          | 63 |

|  |    |
|--|----|
| Table 4-3 Perceived interactivity measures.....  | 64 |
| Table 4-4 Attitude towards the ad measures .....   | 65 |
| Table 4-5 Attitude towards online advertising in general measures.....                   | 66 |
| Table 4-6 Summary of construct measures .....  | 67 |
| Table 4-7: Age of sample .....   | 70 |
| Table 4-8: Gender of sample .....  | 71 |
| Table 4-9: Total household income of sample .....  | 72 |
| Table 5-1: Harman's single factor test.....  | 76 |
| Table 5-2: Tolerance and VIF values for all constructs.....                              | 78 |
| Table 5-3 Criteria to establish validity.....  | 80 |
| Table 5-4 Suggested goodness of fit measures.....  | 83 |
| Table 5-5 Factor loadings, construct reliability and AVE values for each construct ..... | 86 |
| Table 5-6 AVE and squared correlations between constructs.....                           | 88 |
| Table 5-7 Summary of hypotheses .....  | 91 |
| Table 5-8 Goodness of fit criteria for structural models .....                           | 92 |
| Table 5-9 Hypothesis testing .....   | 94 |

# Chapter 1 Introduction

The internet facilitates synchronous interaction between marketers and their customers through a global network of computers and other devices. It allows the two-way flow of information and mass customisation enabling marketers to tailor messages to individuals on a scale that is not economically viable in traditional media (Rust & Chung, 2006). This reduces the traditional trade-off between richness and reach, providing a level of customisation previously only possible in personal selling (Simmons, Thomas, & Truong, 2010). As the internet develops, new technologies emerge that facilitate interaction between users. The result is a medium that is based on easy, rapid interaction (Coyle & Thorson, 2001; Ha & James, 1998; Ko, Cho, & Roberts, 2005; Simmons et al., 2010).

The interactive nature of the internet provides marketers with the opportunity to use different communication models online focussing on two-way synchronous communication that supports their offline communication to customers (Hoffman & Novak, 1996). Encouraging two-way communication between marketers and customers requires sharing some control over advertising messages with consumers so they can tailor the message to suit their needs (Ariely, 2000; McMillan & Hwang, 2002). This two-way interaction and shared control increases consumers' engagement with advertising content and gives customers the opportunity to be active participants in the persuasion process rather than passive recipients (McMillan & Hwang, 2002).

Considering the importance of interactivity to the communication between firms and their customers online, an important area of research from a marketing perspective is how consumers respond to and process interactive messages (Bezjian-Avery, Calder, & Iacobucci, 1998; Cho, 1999; Coyle & Thorson, 2001; Ha & James, 1998; Hoffman & Novak, 1996; Liu & Shrum, 2009; Macias, 2003; Sicilia, Ruiz, & Munuera, 2005; Stewart & Pavlou, 2002; Sundar & Kim, 2005; Weilbacher, 2003; Wu, 1999, 2005). Despite the contributions of these authors, understanding of what makes advertising effective on the internet is still developing (Ko et al., 2005).

Because scholars are still building a theory of interactivity, there are opportunities to contribute to this theory through research that furthers understanding about how consumers respond to interactive communications from marketers. The approach taken by this study is to apply an information processing framework to understand more clearly the effects of

interactivity on consumers' attention to, processing of, and attitude towards online advertisements.

With the advent of the internet, researchers were quick to investigate what interactivity meant on the internet (Liu & Shrum, 2002), how it is perceived by consumers (McMillan & Hwang, 2002), and how it influences processing of advertisements (Cho, 1999; Ducoffe & Curlo, 2000; Rodgers & Thorson, 2000). Early empirical studies began testing information processing models on the internet (Cho, 1999) and the effect of interactivity on attitude towards websites, but did not explore the process by which these attitudes were formed (Bezjian-Avery et al., 1998; Cho, 1999; Coyle & Thorson, 2001). Scholars are still settling on both an overarching definition of interactivity and generalisations about the effects of interactivity on consumers and continue to incorporate elements of information processing theory to explain how consumers respond to interactive advertisements as they contribute to an emerging theory of interactivity (Sicilia et al., 2005; Johnson et al., 2006; Liu & Shrum, 2009).

More recently, studies have called for a shift to considering attention in online advertising studies as attention is the vital first step to processing (Hsieh & Chen, 2011). Some studies have investigated this using eye tracking (Dreze & Hussherr, 2003) but understanding attention in isolation of processing leaves gaps in understanding about what happens once attention is allocated to stimuli and how attention influences processing. This study seeks to address this issue by drawing together theoretical perspectives from information processing and interactivity to illustrate the effects of interactivity on attention to, processing of, and attitude towards online advertising.

## **1.1 Background**

Understanding how consumers process information within advertisements is an established area of marketing research. Drawing on information processing theory from psychology, which suggested individuals have limited cognitive resources that they allocate selectively to stimuli to allow processing (Kahneman, 1973), early theory building studies (Lavidge & Steiner, 1961; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Petty, Cacioppo, & Schumann, 1983) laid the foundations for information processing theory in marketing.

The key principles of selectively allocating attention and processing capacity to stimuli, these resources facilitating processing, and the outcome of that processing being attitude formation, continue to inform information processing theory in psychology (Kahneman, 2011).

Marketing literature also continues to draw on these core relationships to understand processing in new media such as the internet and on mobile devices (Liu & Shrum, 2009; Mollen & Wilson, 2010; Pergelova, Prior, & Rialp, 2010; Shankar & Balasubramanian, 2009; Sicilia & Ruiz, 2010; Yang & Smith, 2009). When applying information processing theory to processing online, studies must consider the inherently interactive nature of the internet (Srirojanant & Thirkell, 1998), and how emerging theories of interactivity affect established information processing theory, providing a rich field for theoretical development.

Investment in online advertising continues to climb as marketers attempt to use the internet to reach their target customers. Figures from the Internet Advertising Bureau show US online advertising revenues experiencing explosive growth with an average of 17% year on year increase from \$26.04 billion dollars in 2010 to \$31.74 billion dollars in 2011 and \$36.57 billion dollars in 2012 (PricewaterhouseCoopers, 2011, 2013a). The first half of 2013 saw record revenues for online advertising totalling \$20.1 billion dollars, up 18% on the first half of 2012 (PricewaterhouseCoopers, 2013b). Despite continued increases in spending, there is still much to understand in relation to what makes advertising effective in this interactive medium (Ko et al., 2005).

Choosing the best approach to advertising on the internet is challenging. Marketers have many options to communicate with customers using the internet from traditional one-way push advertising strategies to two-way communication with individuals through customisable messages. While it is an interactive medium, it is also cluttered with advertising messages in addition to entertainment and editorial content (Kim, Haley, & Koo, 2009), leaving marketers seeking ways to get consumers to pay attention to their ads.

One way to potentially engage them is by using interactive advertisements (Liu & Shrum, 2009). However, because consumers have limited cognitive resources (Kahneman, 2011) that they must also use to navigate the internet (Ariely, 2000; Hoffman & Novak, 1996; Liu & Shrum, 2009), it is important for advertisers to understand if interactive advertisements will indeed engage consumers and make their messages stand out, or if they will add extra complexity to an already cluttered medium and contribute to consumers' sense of information overload (Sicilia & Ruiz, 2010).

Previous studies that have investigated the effects of interactive online advertisements on how consumers respond to the advertisements have done so using methods that assume consumers are paying attention to the advertisement. These studies achieve this by either

using websites as the stimulus for the study, where asking a respondent to browse a website assumes they are paying attention to it (Sicilia et al., 2005; Liu & Shrum, 2009). Or, if the stimulus is a banner advertisement, by explicitly directing respondents to view the advertisement (Liu & Shrum, 2002).

By excluding attention from their studies, these previous studies could simplify their models and achieve a more complete understanding of processing and attitude formation as a result of interactive online advertisements. However, a gap remains in our understanding of the relationship between interactivity, attention, processing and attitude towards an advertisement. What are the effects of interactivity on attention in a situation where attention is not assumed? And how does subsequent processing and attitude formation work in such a situation? As not all advertising on the internet is in the form of websites there are situations where it cannot be assumed that consumers are paying attention to advertisements. Therefore research is needed to add to our understanding of the effects of interactivity in such situations.

The purpose of this study is to address these issues by developing and testing a conceptual model of interactivity's effect on advertisement processing. Using an information processing framework, this study outlines the effects of interactivity within advertisements at each stage of a consumer's information processing. These stages are attention to the advertisement, processing of the advertisement, and formation of attitude towards the advertisement. The goal is to develop a better understanding of the role interactive advertisements play in consumers' processing of the advertisement. By achieving this goal, the research contributes to the emerging theory of interactivity and tests the applicability of information processing theory to explain consumer processing on the internet.

## **1.2 Research problem, question and objectives**

The research problem that prompted this study was lack of clarity concerning how interactivity influences advertising persuasiveness on the internet. In addition, to the best of the author's knowledge no studies have tested the effects of interactivity on consumers' attention to online ads and how this relates to their subsequent processing of the advertisement, and formation of attitude towards it. Because limited studies have examined the effects of interactive online advertisements on consumers from an information processing perspective, it is also unclear how appropriate the established relationships between attention,

processing, and attitude formation are in explaining processing of interactive advertisements in an online context.

The research question guiding this study is:

What effect does interactivity within an online advertisement have on consumers' attention to, processing of, and attitude towards the ad?

The objectives of this research are to understand more clearly the relationships between interactivity theories and information processing theory by applying an information processing framework to test the effects of interactive online advertisements on each step of consumers' information processing. Specifically:

- to test the effect of interactive online advertisements on consumers' attention to the advertisement.
- to test the effect of interactive online advertisements on consumers' processing of the advertisement.
- to test effect of interactive online advertisements on consumers' attitude towards the ad.

### **1.3 Research contributions**

As researchers grapple with what interactivity means on the internet and how it influences consumers' response to online advertisements, the intersection of interactivity and information processing theories remains an important topic in marketing literature. This study will make a number of contributions to this literature.

It will contribute to the emerging theory of interactivity by explaining the effects of interactive advertisements on consumers' processing of the advertisement. Approaching these effects from an information processing perspective that does not assume attention to the advertisement will trace the influence of interactivity from consumers paying attention to the advertisement, processing its contents, and forming an attitude towards the advertisement.

Through applying an information processing framework to understand interactivity effects, this research will also contribute to information processing theory. The foundations of information processing theory were laid in psychology and marketing before the arrival of the internet (Cacioppo & Petty, 1983; Kahneman, 1973; MacInnis & Jaworski, 1989; Petty et al., 1983). Limited research has suggested that aspects of information processing theory, such as the Elaboration Likelihood Model (ELM), can be applied to processing on the internet (Liu & Shrum, 2009). Yet by applying the established relationships between three key constructs in information processing theory (attention, facilitating processing, which leads to attitude formation) to the internet, the study will contribute to understanding how the founding concepts of information processing theory can be applied to online advertisements, thus extending the application of information processing theory in a new medium.

The results of this study will also provide advertising practitioners insights into how consumers respond to interactive advertisements on the internet. Currently, advertisers compete for the attention of consumers when they are online. The fundamental goals of advertising have not changed (Pavlou & Stewart, 2000); advertisers still need to attract consumers' attention, persuade them with advertising messages, and encourage them to purchase products. A better understanding of the role interactivity plays in this process will enable advertisers to make more informed choices about when to deploy interactive advertisements, increasing the effectiveness of their advertising decisions.



## **1.4 Outline of thesis structure**

This thesis contains seven chapters. This introductory chapter is followed by Chapter 2 which contains the literature review. Here existing literature in the areas of information processing theory and interactivity are reviewed to identify key constructs and to position the study. Chapter 3 draws the key constructs identified in the literature review together to form a conceptual model and details how the constructs are related, and develops the hypotheses to be tested in the study. Chapter 4 describes the method used for the study, including a discussion of measurement, pre-testing, and the sample and data collection. Chapter 5 details the results of data analysis and hypothesis testing. Chapter 6 then discusses the results and positions them in terms of existing knowledge and indicates the contributions of the study. Finally Chapter 7 brings the dissertation to a close with a summary of key findings, conclusions, further discussion of contributions, and identification of limitations and opportunities for future research in the area.

## **Chapter 2      Literature review**

### **2.1 Introduction**

How consumers process the information within advertisements is a core area of marketing research (Ducoffe & Curlo, 2000; Liu & Shrum, 2009; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000; Sundar & Kim, 2005). Most approaches apply information processing theory from psychology to a marketing context to help explain the process consumers follow when being persuaded by an advertisement. Early research presented consumer responses to advertisements as a series of stages that a consumer moved through, beginning with being exposed to the advertisement and finishing with purchasing the product (Lavidge & Steiner, 1961). Then in the 1980's models from psychology such as Petty and Cacioppo's (1986) ELM were popularised and integrated models of consumer processing began to appear (MacInnis & Jaworski, 1989). These integrated models discussed how consumers allocated attention and capacity to stimuli drawing on information processing theory (Kahneman, 1973) and the ELM to explain how this influenced how much they processed the content of the ad. More recently, broader approaches classifying how consumers think have been developed. These focus on two distinct ways of thinking - one is fast, automatic and quickly forming judgments, the other slow, deliberate, effortful, and consciously controlled by the consumer. The two work together often by the fast automatic system making judgments that are either confirmed or rejected by the deliberate, effortful system (Kahneman, 2011). With the exception of the hierarchy of effects model, these approaches attempt to understand how individuals process information. The following sections review the development of key constructs and relationships in information processing theory before discussing how aspects of this theory have been adapted to online advertising processing.

### **2.2 Hierarchy of effects**

Early theories of how advertising works are based around a series of steps that an advertisement must move a consumer through. Models like the Awareness, Interest, Desire, Action model which was developed in psychology (Strong Jr, 1925), then later modified by Lavidge and Steiner (1961), explain advertising effects based on a sequence or hierarchy that the advertisement must move a consumer through. Palda (1966) referred to Lavidge and Steiner's model as a hierarchy of effects and it represents one of the original advertising processing models. The six stages in the hierarchy are: 1) making consumers aware of a

product, 2) conveying information so the respondent knows what the product has to offer, 3) developing favourable attitudes within the consumer towards the product or service, 4) developing preference for the product or service over competitors', 5) coupling preference with the product or service with desire and conviction to purchase, and finally 6) purchase.

While this model is now dated, and not all advertising scholars agree with the stages or the order of the stages, the hierarchy of effects model is a valuable place to start in reviewing advertising processing. Lavidge and Steiner's model (and other hierarchy models) are beneficial in that they helped identify the variables that are key to understanding consumer response to advertising (Smith, Chen, & Yang, 2008). The key stages of these hierarchies were usually stated as cognition, affect, and conation (Yoo, Kim, & Stout, 2004).

Palda (1966) provides a useful illustration (Figure 2-1) that draws together the six stages of Lavidge and Steiner's hierarchy and aligns them with the three common behavioural dimensions of cognition, affect, and conation. As Figure 2-1 illustrates, at the start of the hierarchy the major behaviour is in the realm of thoughts related to cognitions, including allocating attention to the advertisement to be aware of it and processing the information in the advertisement to understand what the advertisement is about. Following this processing, a consumer develops some sort of attitudinal response to the advertisement in terms of liking and preference, before then acting on that (positive) attitude and preference by buying the advertised product.

**Figure 2-1 Behavioural dimensions of advertising hierarchy of effects**

| <b>Movement toward purchase</b> | <b>Behavioural dimension</b>      | <b>Related research</b>  |
|---------------------------------|-----------------------------------|--|
| Purchase                        | Conative – the realm of motives   | Split run tests<br>Intention to buy<br>Projective techniques         |
| Conviction                      |                                   |  |
| Preference                      | Affective – the realm of emotions | Brand preference measures<br>Image measures<br>Projective techniques |
| Liking                          |                                   |  |
| Knowledge                       | Cognitive – the realm of thoughts | Awareness surveys<br>Aided recall                                    |
| Awareness                       |                                   |  |

Adapted from Palda (1966) (p. 1)

Figure 2-1 is useful as it combines the marketer centric stages that an advertisement must move consumers through with the customer focused stages in response to the advertisement. How a consumer moves through these steps is the focus of information processing models in marketing.

## **2.3 Information processing theory**

Before exploring information processing theory in marketing it is necessary to review the foundations of information processing theory. Most approaches to explaining the hierarchy of effects from a consumer's perspective incorporate elements of information processing theory from psychology in the form of Kahneman's (1973) capacity model of attention. According to this model, the overall cognitive resources an individual possesses are limited. Because of this they selectively allocate these resources to stimuli by paying attention to them. Once attention is allocated, further processing resources become available to facilitate processing of the stimulus. The outcome of this processing is the formation of an attitude towards the stimulus.

Attention is allocated to stimuli through an allocation policy influenced by a consumer's enduring dispositions to stimuli, their goals at the time of exposure, level of arousal, and an individual's evaluation of the demands on their attention required to process stimuli (Kahneman, 1973). In Kahneman's model, attention is conceptualised as having a selective component related to *which* stimulus receives attention, and an intensive component related to *how much* attention is allocated to a stimulus. When discussing the intensive component of attention, Kahneman uses the term attention interchangeably with processing or cognitive capacity, representing the cognitive resources a consumer uses to process messages.

These theoretical underpinnings informed the development of models such as the ELM (Petty & Cacioppo, 1986) and MacInnis and Jaworski's (1989) integrated advertising processing model as well as online advertising processing models (Cho, 1999; Ducoffe & Curlo, 2000; Liu & Shrum, 2009; Rodgers & Thorson, 2000). The following discussion traces the development of these models and their incorporation of information processing theory.

### **2.3.1 Elaboration Likelihood Model**

While hierarchy of effects models focus on the series of steps an advertisement must move a consumer through to be effective, dual processing models focus on the knowledge, liking, and preference stages illustrated in Figure 2-1. A foundational dual processing model is the

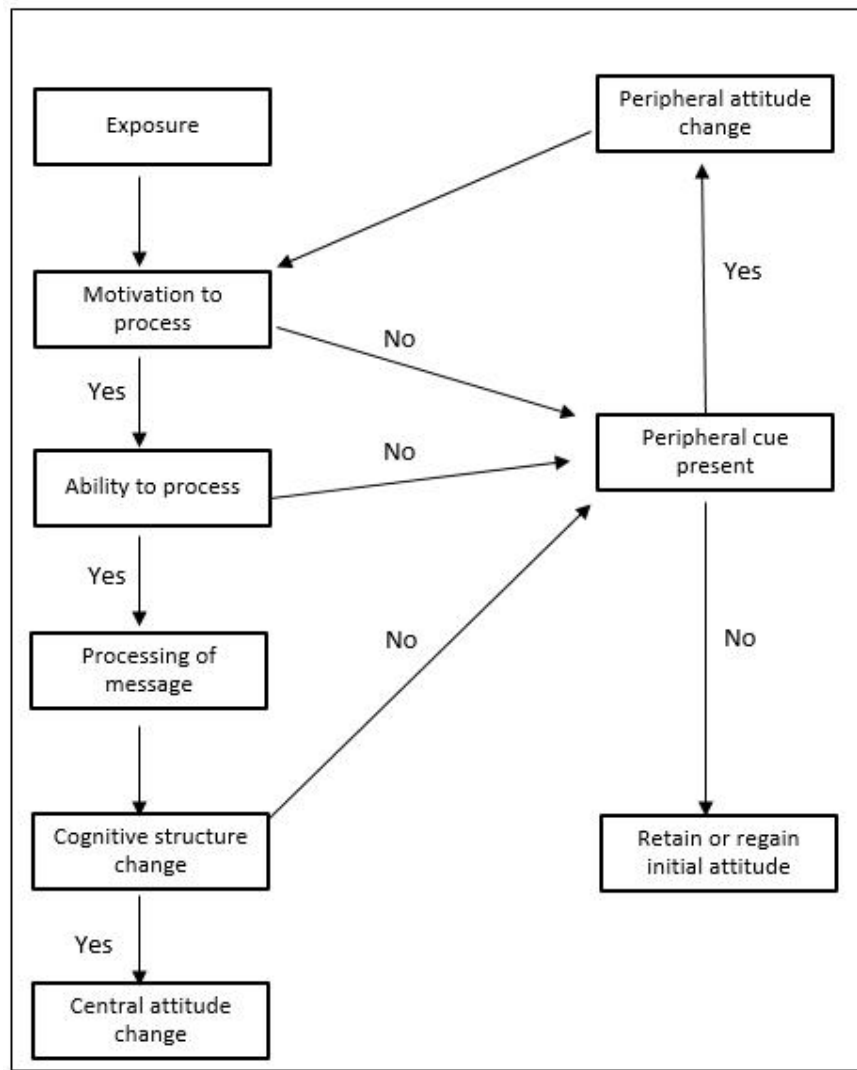
ELM which was developed before the internet but which has been successfully applied to explain processing in new media such as the internet and mobile (Liu & Shrum, 2009; Shankar & Balasubramanian, 2009).

The ELM suggests that when individuals process the information in an advertisement they have two distinct routes their processing can follow when forming attitudes: one that forms attitudes about the advertisement based on simple, fast heuristics and another that forms attitudes based on careful consideration of the message. Like the hierarchy of effects model of advertising processing, the ELM (Figure 2-2) was developed in psychology (Petty, Cacioppo, & Goldman, 1981) and then adapted to a marketing context (Cacioppo & Petty, 1983).

Petty and Cacioppo's (1986) ELM suggests that when an individual is exposed to a persuasive communication (for example, an advertisement), the route by which they form their attitude depends on their motivation to process the message, their ability to process the message, and the extent to which they generate new thoughts about the message based on this processing. If consumers are motivated to process the message and have the ability to process the message it is likely processing of the content of the message will occur. If the outcome of this processing is a change in cognitive structure (either positive or negative thoughts about the stimulus dominate processing and replace existing thoughts), the central route to persuasion has been followed and the attitude formed is proposed to be more enduring than an attitude formed via the peripheral route.

The peripheral route to persuasion is taken if the consumer either lacks the motivation or ability to process a stimulus, or if the result of their processing does not lead to a cognitive structure change. Then if a peripheral cue is present (some other feature of the advertisement besides the message content), attitude change will take a peripheral route. If no peripheral cue is present, the consumer will retain or regain their initial attitude.

**Figure 2-2 Elaboration Likelihood Model of persuasion**



Source: Petty and Cacioppo (1986) (p. 126)

The ELM is important for information processing theory in marketing as it represents a shift in focus from how advertisements act on consumers (marketer focus) towards trying to understand how consumers process advertising messages. In doing so, it introduces aspects of information processing theory such as goals, cognitive ability, amount of processing, and attitude formation (Kahneman, 1973) to a marketing communications context, and outlines how understanding these constructs from a consumer perspective is important to understanding how consumers process advertising information. The model also explains that consumers have limited cognitive resources so must allocate them to stimuli they are

motivated to process. Those that receive lots of attention and capacity are processed differently to those that receive less.

### **2.3.2 Broader dual processing approaches**

Dual processing models remain popular in psychology where they were developed. Rather than explaining differences in the amount of elaboration, the models in psychology focus on two different ways of thinking. Kahneman (2003) discusses the role of two different modes of thinking adopting Stanovich and West's (2000) labels of System 1 and System 2. System 1's style of thinking is characterised as being "fast, automatic, effortless, associative, implicit (not available to introspection) and often emotionally charged; governed by habit and are therefore difficult to control or modify" (p. 698) System 2 on the other hand is characterised as being "slower, serial, effortful, more likely to be consciously monitored and deliberately controlled" (P. 698). Another characteristic of System 2 thinking is that because consumers have limited processing capacity, activities that require System 2 thinking tend to clash with each other as the same amount of limited processing resources cannot be allocated to two stimuli to process them at the same time (Kahneman, 2003, 2011).

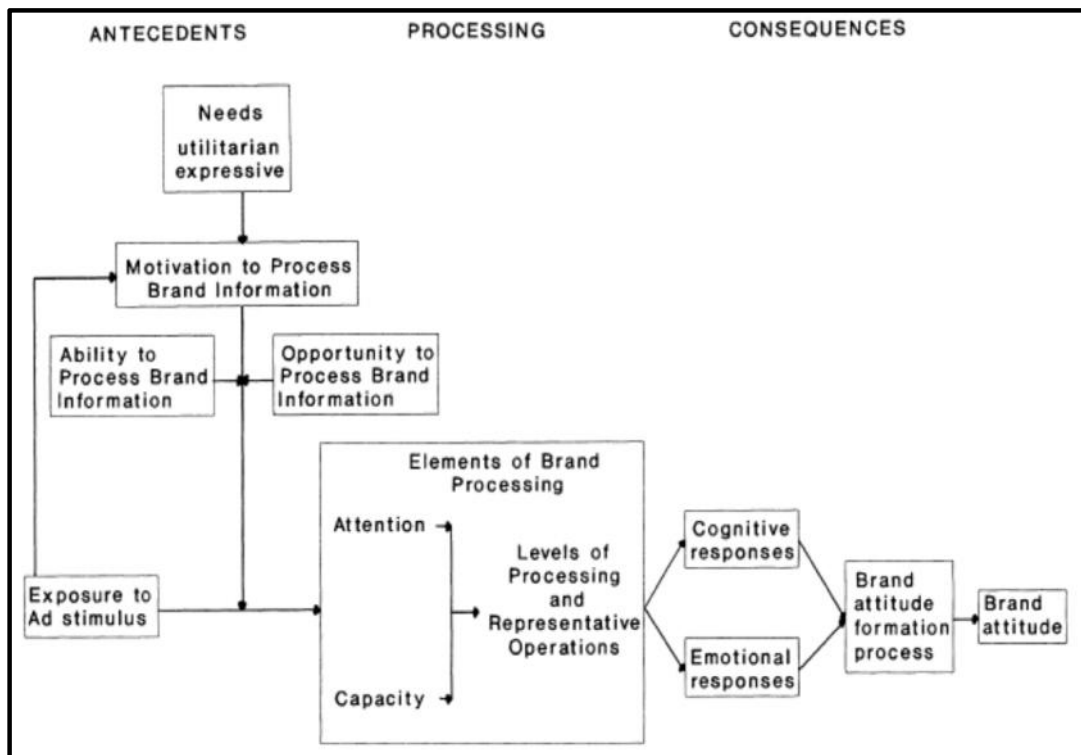
These broader ways to view thinking styles have also begun to be incorporated into marketing literature. Hoffman and Novak (2009) suggest consumers may use different thinking styles (experiential or rational) in different situations and that their choice may be influenced by the nature of the task or by the motives of the consumer. Experiential thinking style is described as being "low effort, rapid to implement, slow to change, outcome oriented, and experienced passively with the process opaque to the individual" (p. 57). On the other hand, rational thinking is "effortful, logical, rule based, experienced consciously by the individual and slower to implement but quicker to change" (p.57). These two methods of thinking, which are similar to Kahneman's System 1 and System 2, suggest that when processing advertisements consumers' different thinking styles may influence attitudinal outcomes depending on which style is used.

As mentioned in the introduction Kahneman (2011) suggests that the two systems work together whereby System 1 forms fast judgments that are either accepted or rejected by the slower more deliberate System 2. Therefore when processing advertisements consumers will likely be using systems 1 and 2, but may only be aware of the outcomes of System 2.

### 2.3.3 Integrated advertising processing models

The late 1980s saw the first major attempt at an integrated information processing model in marketing. MacInnis and Jaworski (1989) developed a conceptual model of advertisement processing, drawing on information processing theory (Kahneman, 1973), hierarchy of effects models (Lavidge & Steiner, 1961) and Petty and Cacioppo's (1986) ELM. Figure 2-3 illustrates the integrated model; the various components will be discussed below.

**Figure 2-3 MacInnis and Jaworski's (1989) integrated processing model**



Source: MacInnis and Jaworski (1989) (p. 3)

MacInnis and Jaworski's (1989) model focuses on the awareness, knowledge, liking and preference stages of the hierarchy of effects model. Their model incorporates themes from information processing theory such as consumers having limited processing resources (attention and capacity) (Kahneman, 1973), goals motivating consumers to allocate these processing resources towards stimuli relevant to their goals (Kahneman, 1973; Petty & Cacioppo, 1986), and that the amount of processing a stimulus receives being dependent on the amount of attention and processing resources allocated to the stimulus (Kahneman, 1973; Petty & Cacioppo, 1986). Finally, once the consumer has processed the advertisement their



attitude towards that stimuli is formed through cognitive and emotional responses (Kahneman, 1973; Lavidge & Steiner, 1961; Petty & Cacioppo, 1986).

The model expands the ELM into six different levels of processing based on motivation to process brand information. These levels range from the lowest level (Level one) where motivation to process brand information within the advertisement is very low, attention is primarily allocated to a secondary task, capacity allocated to the advertisement is extremely low and the consumer is only able to recognise salient features of the advertisement. At level one processing attitude is formed by non-argument content like the mood of the consumer when exposed to the advertisement (MacInnis & Jaworski, 1989). Alternatively, at the highest level of brand processing (Level six), motivation to process the brand information in the advertisement is at its highest, attention is focused on the advertisement, the highest amount of processing capacity available is allocated to the advertisement, and attitude is generated through constructing meaning from the advertisement and self-generating the persuasive messages (MacInnis & Jaworski, 1989).

The model finishes by acknowledging the common link between processing and attitude formation. Processing of the information in the advertisement leads to a positive or negative response which then influences the consumer's attitude towards the stimuli (Lavidge & Steiner, 1961; Petty & Cacioppo, 1986).

The model is also interesting in that conceptually it separates attention and processing capacity, and involvement and motivation. The ELM uses involvement as the construct that determines if a consumer takes the central or peripheral route to persuasion (Petty & Cacioppo, 1986). However, MacInnis and Jaworski (1989) argue that motivation is a broader construct than involvement and should be defined as goal directed arousal (p.4) whereas, they argue, involvement is better conceptualised as personal relevance. Motivation is related to the goals a consumer has and this motivation drives them to allocate processing resources to goal relevant stimuli.

MacInnis and Jaworski (1989) incorporate information processing theory through including attention and capacity as limited processing resources a consumer allocates to stimuli to facilitate processing, but argue that consumers' attention and capacity should be separate constructs. In a departure from information processing theory (Kahneman, 1973), MacInnis and Jaworski argue that consumers may pay attention to many stimuli in their environment at any given time, but do not have the processing capacity to investigate them all in the same

depth. Therefore, because attention does not always lead to increased processing capacity being allocated to stimuli, the two constructs should be separate. Kahneman (1973), however, argues that as attention increases, more processing resources become available to process that which is being attended upon, so the two are linked and can represent the same construct. Both approaches show that attention is linked to processing capacity, and that the outcome of attention and processing capacity allocation is cognitive and emotional responses to the advertisement, which influences the attitude formed by consumers.

## **2.4 Information processing on the internet**

The medium in which an advertisement is displayed influences how a consumer processes the information within the advertisement and responds to it (Chaiken & Eagly, 1983; Krugman, 1965). Therefore, with the rise of the internet scholars naturally began to explore the processing of advertisements in an online context. Many of these approaches involved testing models or parts of models developed offline to see how they applied on the internet. In adapting offline advertising processing models to an online setting researchers needed to adapt these models to acknowledge the internet is a worldwide network that consumers access through computers and that this network is built to facilitate interactivity, a key feature of the internet that separates it from other media (Cho, 1999; Hoffman & Novak, 1996; Pavlou & Stewart, 2000). The ability of consumers and firms being able to communicate with the internet and through the internet is due to the internet being a computer mediated environment. Hoffman and Novak (1996) define a computer mediated environment as:

A dynamic distributed network, potentially global in scope, together with associated hardware and software for accessing the network, which allows consumers and firms to 1) provide and interactively access hypermedia content (i.e. "machine interaction"), and 2) communicate through the medium (i.e. "person interaction") (p. 8).

The interactive, responsive nature of the internet means marketers can reach more customers than ever before with highly customised messages previously only possible through personal selling (Rust & Chung, 2006). It also means advertisements themselves can be interactive, allowing marketers to build in real time response mechanisms to advertisements with the potential for delivering more engaging advertisements to consumers (Liu & Shrum, 2002). Interactivity appears in models of online advertisement processing as a feature of the medium (Rodgers & Thorson, 2000), and as feature advertisers can include in individual

advertisements which has important implications for how consumers respond to interactive advertisements (Bezjian-Avery et al., 1998; Liu & Shrum, 2009; Sundar & Kim, 2005).

Because the internet can facilitate interaction between consumers and firms through the medium (e.g., email, chat) as well as interaction with the medium (e.g., navigating the internet through hyperlinks), definitions of interactivity on the internet focus not only on the process of interaction between communication parties but also on the features of the internet as a medium that facilitate interaction.

The next section reviews the concept of interactivity before discussing how researchers have incorporated it into models of advertisement processing on the internet.

## **2.5 Perspectives on interactivity**

Interactivity is a common word that can be applied to a range of different disciplines. Because of this, many definitions of interactivity exist and discussion is ongoing in the marketing literature about what interactivity is and what it means in different contexts (Johnson et al., 2006; Liu & Shrum, 2002; McMillan & Hwang, 2002; Song & Zinkhan, 2008). A review of definitions in the marketing literature reveals most attempts to define interactivity focus on one, or a combination of three, features: control, two-way communication, and speed of response. In addition, definitions are often also based on a view of interactivity as a process, interactivity as perceptions, or interactivity as features (McMillan & Hwang, 2002).

### **2.5.1 Interactivity defined as a process**

At the core of process based definitions is the *process* of interaction between two parties in a given communication exchange. These definitions tend to include terms such as two way communication and reciprocity.

Rafaeli (1988) is often cited as a seminal author in relation to interactivity and viewed interactivity as a process of interaction. He defined interactivity well before the advent of the internet but acknowledged systems could be interactive. Rafaeli defined interactivity as:

An expression of the extent that in a given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions. (p. 111)

This definition conceptualises interactivity as a reciprocal process where sender and receiver exchange messages that are related to previous messages; this conceptualisation has been referred to as interactivity theory (Song & Zinkhan, 2008). Using Rafaeli's definition, any exchange between communication parties where each party is responsive to the other and the messages exchanged are linked to other messages can be viewed as interactive.

Using this view, interactivity is inherent in the internet as it facilitates communication exchanges between firms and their customers, but rather than one-way delivery it allows two-way flow of information which can be used for reciprocal exchanges.

Process-based definitions of interactivity have also incorporated more marketing specific terminology. For example, Bezjian-Avery et al. (1998) define interactivity as:

The immediately iterative process by which customer needs and desires are uncovered, met, modified and satisfied by the providing firm. (p. 23)

The globally networked nature of the internet facilitates this process in a way not previously possible or economically viable. Therefore, the internet is interactive in the sense that it facilitates this process. This definition focuses more on the relationship between firms and their customers as communication parties. As with Rafaeli (1988), the underlying elements of two-way reciprocal communication are present and the interaction between firms and customers is framed as an ongoing process of interaction.

Ha and James (1998) provide a similar definition of interactivity in an online context. They propose:

Interactivity should be defined in terms of the extent to which the communicator and the audience respond to, or are willing to facilitate each other's communication needs. (p. 461)

Drawing on similar ideas to Rafaeli's (1988), Ha and James (1998) identify the importance of responsiveness and reciprocal communication between parties (communicator and their audience).

In the early to mid-2000s, process-based definitions of interactivity began to incorporate references to the internet as a medium, and how it facilitates interaction between communication parties. For example Macias, (2003) defines interactivity as:

The state or process of communicating, exchanging, obtaining and/or modifying content (e.g., ideas, entertainment, product information) and/or its form with or

through a medium (e.g., computer, modem, etc.) which responds to both the communicator's and the audience's communication needs by including hypertext links, reciprocal communication, etc. (pp.32-33)

This definition frames interactivity as a characteristic which is central to the internet as a responsive, dynamic medium where communication parties interact with/through the medium.

As Macias' (2003) definition highlights, interaction can be the process of altering product information through interacting with the medium. Another definition of interactivity that incorporates interaction both between users and between users and the medium is provided by Ko et al. (2005). They define interactivity as:

The degree to which people engage in advertising processing by actively interacting with advertising messages (Human-message) and advertisers/consumers (Human-human). (p. 59)

While focusing on the process of interaction, this definition begins to address the dual possibilities for interaction on the internet where communication parties can engage with each other as well as messages (Cho & Leckenby, 1997) and helps distinguish interactivity within mediated environments and traditional interpersonal interaction (Ko et al., 2005).

The interaction between people, as well as people and messages on the internet was also identified by Ha and James (1998) when discussing interactivity. They use the definitions of Rafaeli and Sudweeks (1997) and Steuer (1992) as anchors to classify conceptualisations of interactivity as having either an interpersonal or mechanical focus. In other words, understanding interactivity as face-to-face, interpersonal interaction or interactivity within mediated environments that involves interacting with machines, messages or systems.

Finally, Sundar and Kim (2005) provide a conceptualisation of, rather than a definition of, interactivity that links interpersonal interactivity to computer mediated interactivity claiming that most definitions of interactivity focus on the interaction between user and system. Like Ko et al. (2005), this conceptualisation still highlights the importance of the process of interacting, but the interaction occurs between users and a system, rather than users interacting with messages or other users.

Examining these various definitions of interactivity reveals that while they all view interactivity as a process of reciprocal two-way communication, the nature of the

communication parties involved in the interaction changes. Initially communication parties are referred to as communicator and audience, then firms and consumers when applied to marketing. Once definitions became more internet focused, the interaction mentioned was not only interaction between communication parties but also with messages and with the medium. Finally, Sundar and Kim (2005) do not mention interaction between multiple users, instead focusing on interaction between user and system.

### **2.5.2 Interactivity defined as features**

While process-based definitions focus on the process of interaction and view the internet as interactive in the sense that it facilitates this interaction through being responsive, another group of definitions focuses on features that enable interaction. These definitions are common when discussing interactivity in computer mediated environments such as the internet. Feature-based definitions tend to focus on the speed of response to user input and the degree to which the user can exert control over the medium to facilitate interaction.

Hoffman and Novak (1996) defined computer mediated environments and detailed their effect on marketing activities; however, the focus on features of computer mediated environments that allowed individuals to interact with these virtual environments was developed earlier by Steuer (1992). In a study about virtual reality, Steuer defined interactivity as:

The extent to which users can participate in modifying the form and content of a mediated environment in real time. (p. 84)

This definition of interactivity is similar to Sundar and Kim's (2005) conceptualisation in that it is focused on user-system interaction rather than interpersonal interaction. However, instead of focusing on the process of interaction, Steuer's definition implies the features that allow users to interact with and modify a system determine the extent to which they can interact with the mediated environment. Steuer's definition also introduces the concepts of user control and real-time interaction in his definition, which influence the responsiveness of the system to consumers' actions, a key component in interactivity definitions (Johnson et al., 2006; McMillan & Hwang, 2002; Rafaeli, 1988).

Control has been defined by Liu and Shrum (2002) as being "characterized by voluntary and instrumental action that directly influences the controller's experience" (p.54). Similarly Johnson et al. (2006) draw on Ariley (2000) when defining control as the 'ability to

manipulate the duration, timing, content and sequence of presented information” (p. 42). As well as control being a key feature that facilitates interactivity so too does the speed at which the medium or message responds to user’s actions. Ideally the speed of response should not inhibit the consumer’s experience as a faster response to users actions aids their perception of how interactive a communication exchange is (Johnson et al., 2006; McMillan & Hwang, 2002). Liu and Shrum (2002) referred to this as synchronous communication, defined as “the degree to which users’ input into a communication and the response they receive from the communication are simultaneous” (p. 55). While synchronicity is often included as a feature of interactivity applicable to both mediated and non-mediated contexts, it is often combined with control which has been argued as most applicable to computer mediated environments like the internet (Johnson et al., 2006)

The control and real-time response aspects of Steuer’s (1992) definition of interactivity are referred to by Hoffman and Novak (1996) as a machine-based view of interactivity applicable to computer mediated environments. Machine-based interactivity has been conceptualised as the extent to which computers replicate interpersonal communication (Ha & James, 1998). Because of this, the machine-based definitions still tend to focus on the process of interaction, but place more emphasis on the features of the mediated environment that facilitate interaction that resembles interpersonal interaction (Liu & Shrum, 2002).

Other marketing studies also adopted Steuer’s definition of interactivity (e.g., Coyle and Thorson, 2001, use the same definition). Sicilia, Ruiz, and Munuera (2005) share a similar view of interactivity highlighting the importance of user control over the system. Drawing on Steuer’s definition, they conceptualise interactivity in terms of “machine interactivity which allows consumers to control what information will be presented, in what order and for how long” (p.32).

User control also features in Fortin and Dholakia’s (2005) definition of interactivity. In a definition that focused of features of a system that allow interaction, they define interactivity as:

The degree to which a communication system can allow one or more end users to communicate alternatively as sender or receivers with one or many other users or communication devices, either in real time (as in video teleconferencing) or on a store-and-forward basis (as with electronic mail) or to seek and gain access to information on an on-

demand basis where the content timing and sequence of the communication is under control of the end user. (p. 388)

This definition focuses on the features of the system that allow interaction but also includes reference to the reciprocal, two-way communication common in process-based definitions of interactivity highlighting, the importance of the internet allowing communication between consumers through the medium.

The focus on features that allow interaction in mediated environments and interpersonal process perspective has led to a separation of interactivity conceptualised as the hard-wired opportunity to interact (Liu & Shrum, 2002) and interactivity in the mind of the consumer (McMillan & Hwang, 2002). An example of enabling interactivity through hard-wired features of computers is maintaining adequate server structure to facilitate reciprocal, synchronous communication whereas an example of interaction in the minds of consumers is how interactive a consumer perceives the communication to be (Liu & Shrum, 2002).

### **2.5.3 Interactivity defined as perceptions**

Viewing interactivity as a perceived construct acknowledges that interactivity is a process and may be facilitated by features of a medium, but ultimately interactivity is determined by the consumer and their choice to interact with a person or system (Pavlou & Stewart, 2000). Johnson et al. (2006) argue that defining interactivity in terms of perceptions provides a definition that applies to a range of media, not only the internet. The perception-based view of interactivity acknowledges that there may be features of a medium that facilitate interaction, and that interaction may occur but the extent to which this interactivity influences the consumer is down to how interactive they perceive a communication exchange to be (McMillan & Hwang, 2002). Johnson et al. (2006) define interactivity as:

The extent to which an actor involved in a communication episode perceives the communication to be reciprocal, responsive, speedy and characterized by the use of nonverbal information. (p.41)

While early interactivity articles mentioned this idea (Bezjian-Avery et al., 1998, for example), Johnson et al.'s (2006) approach provides an overarching definition anchoring interactivity to perceptions and allowing the definition to be applied across media.

While these perspectives on interactivity conceptualise it in different ways there are themes shared between perspectives. In an attempt to synthesise these definitions, three papers



(Johnson et al., 2006; Liu & Shrum, 2002; McMillan & Hwang, 2002) have compared interactivity definitions to identify common features of interactivity.

## 2.6 Common aspects of interactivity definitions

Liu and Shrum (2002), McMillan and Hwang (2002) and Johnson et al. (2006) sought to consolidate interactivity definitions to identify key themes and in the case of Liu and Shrum and Johnson et al. construct a definition of interactivity. Table 2-1 shows the common themes identified by these three papers.

**Table 2-1 Common aspects of interactivity definitions**

| <b>Authors</b>     | <b>Common aspects from definitions of interactivity</b>                        |
|--------------------|--|
| McMillan and Hwang | Direction of Communication<br>User Control<br>Time                             |
| Liu and Shrum      | Two way communication<br>Active Control<br>Synchronicity                       |
| Johnson et al.     | Reciprocity<br>Responsiveness<br>Non-verbal communication<br>Speed of response |

The aspects of Liu and Shrum's (2002) definition and McMillan and Hwang's (2002) conceptualisation are very similar. They were published at a similar time in the early developments of defining interactivity on the internet and both focus on how interactivity is applied to a computer mediated environment. Both identify the importance of two-way communication as a requirement for interactivity, both acknowledge the centrality of user control in the exchange and both synchronicity and time are similar in that they focus on the speed at which a communication exchange (sending and receiving of messages) takes place. Johnson et al. (2006) have slightly different key features as they proposed a definition that applied to online and offline interaction and argued that control is more important in mediated environments. The reciprocity, responsiveness, and speed facets of their definition are similar to the direction of two-way communication and time/synchronicity components

identified by McMillan and Hwang (2002) and Liu and Shrum (2002). However, they include non-verbal communication arguing that this represents a wider definition of interactivity whereas control is more suited to definitions focusing on mediated environments. Given the current focus on interactive online advertisements, this section will discuss control, two-way communication and synchronicity, the three common elements of interactivity definitions from Liu and Shrum (2002) and McMillan and Hwang (2002) which are suited to mediated environments.

### **2.6.1 Control**

Control is a cornerstone concept in interactivity definitions focusing on mediated environments (Johnson et al., 2006; Liu & Shrum, 2002; McMillan & Hwang, 2002) and some scholars distil the concept of interactivity to control (Bezjian-Avery et al., 1998). In a mediated environment, such as the internet, interaction takes place between consumers, firms, the medium and messages. All of this interaction is facilitated by consumers being able to control the mediated environment through interaction with computers, for example, navigating web pages, sending emails, or moving the mouse to interact with links. This control means consumers are engaged and making decisions that determine their experience online (Hoffman & Novak, 1996). Control also plays a part in consumers' interaction with marketing communications as consumers can make decisions to look at, or ignore, advertisements. Instead of using one-to-many push advertising models to passive audiences (Hoffman & Novak, 1996), marketers must share some control over advertising with consumers as they have the ability to be more active participants in the communication process with marketers (McMillan & Hwang, 2002).

### **2.6.2 Two-way communication**

Two-way communication and reciprocal communication are central to interactivity theory (Rafaeli, 1988). Rafaeli defined two-way communication as having three levels: Non-interactive two-way communication, which is present as soon as messages flow between parties; reactive two-way communication, which represents a flow of messages between parties where later messages refer to earlier messages; and responsive two-way communication, which characterises interactivity where the messages exchanged between parties incorporate reference to the content, nature, form or presence of earlier messages. In a mediated environment not only can two-way communication occur between individuals using computers to replicate an interpersonal responsive communication, but users can also interact

with the medium or messages in the medium which can be responsive to their actions as part of machine-based interactivity (Cho & Leckenby, 1997; Ha & James, 1998; Rafaeli, 1988).

The worldwide networked nature of the internet allows two-way communication and mass customisation on a scale not possible before the internet (Ko et al., 2005; Rafaeli & Sudweeks, 1997). Instead of using one-way, one-to-many push models of marketing communication, marketers can use two-way models where they can reach individuals and receive feedback allowing messages to be tailored to a known audience, rather than pushing generic messages to a large unknown audience. (Hoffman & Novak, 1996; Liu & Shrum, 2002).

Two-way communication is linked to control as it is the consumer's choice to communicate with advertisers. Initially consumers control whether they interact with or communicate with advertisers. If they choose to interact, two-way communication makes for advertisements that are more engaging to the recipient rather than passively being exposed to the advertisement (Liu & Shrum, 2002). While two-way communication was possible in offline settings such as personal selling and direct mail, the internet is a medium based on responsiveness to consumer actions. Rather than waiting hours, days or weeks to respond to mail or broadcast advertisements the internet allows two-way communication in real time, a feature not possible with print or broadcast. Speed of response is another critical factor in interactivity in a mediated context as will be discussed next.

### **2.6.3 Synchronicity**

Liu and Shrum (2002) refer to synchronicity as "the degree to which users' input into a communication and the response they receive from the communication are simultaneous," (p.55). In a computer mediated environment such as the internet, real time interaction is also related to control and two-way communication. A consumer can access a firm's website and browse an interactive store front in real time 24 hours a day, seven days a week from anywhere in the world. They have the control to navigate and manipulate the site, while the site is responsive to their actions. The responsiveness of a website represents a machine-based view of interactivity as consumers are interacting with a system, rather than another human. If a user exercises their control over the internet by clicking on a hyperlink, it is expected that the system will respond immediately with information related to the link the consumer clicked. A time delay in displaying this information would impede the interaction

between user and system (Liu & Shrum, 2002) and the interactivity of the medium (Steuer, 1992).

## **2.7 Definition of interactivity for this study**

The three common overlapping concepts shared by interactivity definitions are two-way communication, user control, and time/speed. Based on these three features, and using Liu and Shrum's (2002) definition, interactivity will be defined in the current study as:

A process in which two or more communication parties can act on each other, on a medium, or on messages within a medium in real time, where the communication is responsive to the actions of either party

Therefore, when thinking of the internet as an interactive medium, it means the internet has the ability to facilitate communication between parties, as well as allow those parties to act on the internet as a medium and messages within that medium, in real time. These characteristics of the internet classify it as an interactive medium, more so than traditional media such as broadcast and print where although they provide the opportunity for some interaction, for example, telephone numbers in print or television advertisements or control over what television channel to watch, they are not inherently as interactive as the internet (Ariely, 2000; Liu & Shrum, 2002; Wu, 1999, 2005).

## **2.8 Online advertising processing models**

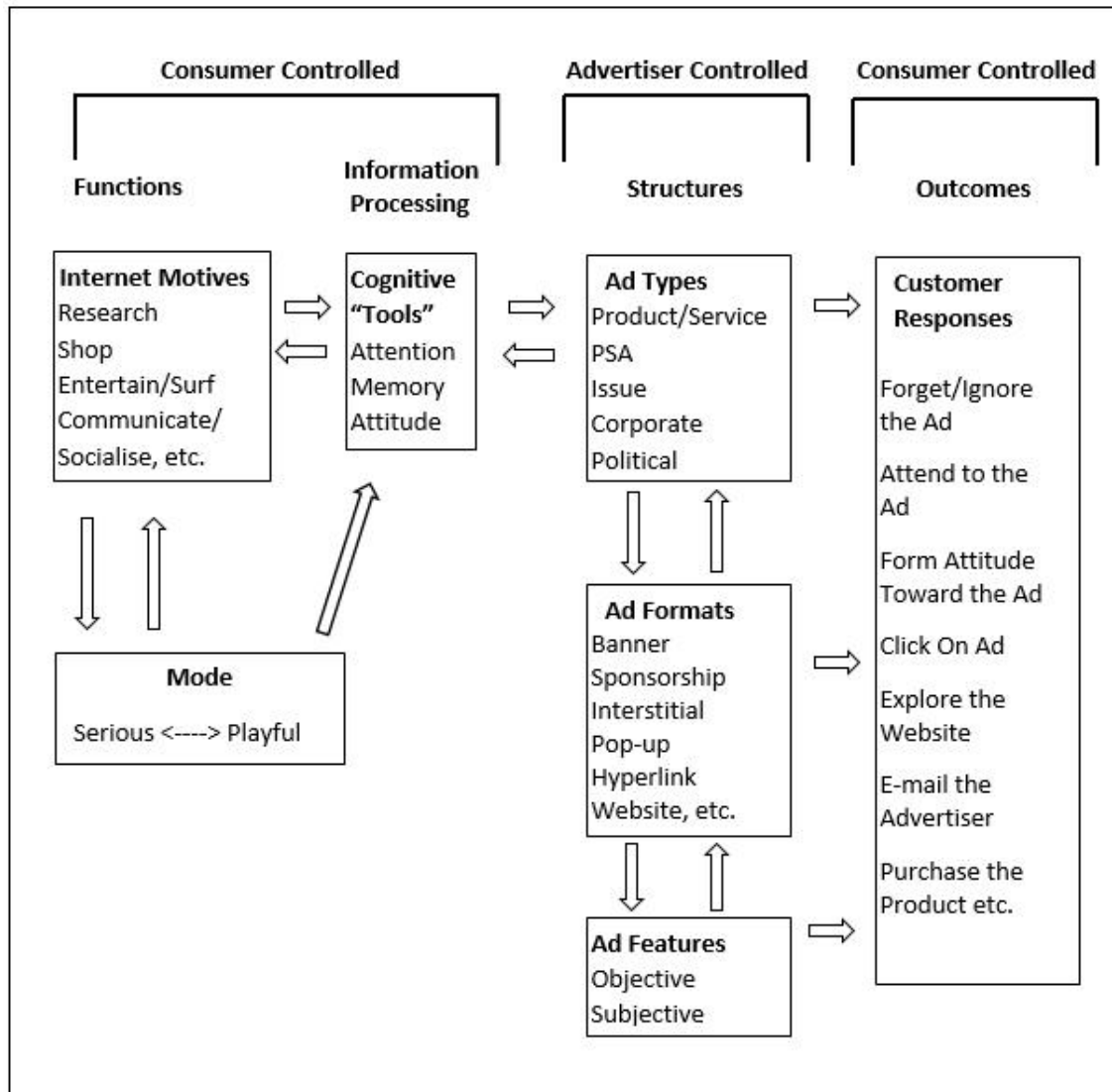
Rodgers and Thorson (2000) argue that while the general concepts of pre-internet integrated models (e.g., MacInnis & Jaworski, 1989) should work on the internet, they cannot be applied without modification as they were not designed with the internet in mind. Therefore they developed an information processing model specifically for the internet (Figure 2-4) with an emphasis on interactivity and virtual reality, two key features of the internet as a medium.

As can be seen in Figure 2-4 their model groups components by those that are consumer controlled and those that are advertiser controlled. The consumer controls their reasons for being online and their mode of browsing and they control their allocation of cognitive tools in the information processing stage. Then, depending on how the advertiser controlled, structural elements of ads (types, formats and structures), influence their processing of the advertisement, the consumer arrives at the outcomes of processing the message.

This model highlights the roles that advertisers and consumers play in advertisement processing. From a consumer's perspective their motives for being online determine their mode of navigating the internet, and how they deploy their cognitive tools (resources) to process and respond to advertisements they encounter (Rodgers & Thorson, 2000). This integrates the offline information processing theory concepts such as goals motivating individuals to allocate their processing resources towards stimuli that will achieve their goals (Kahneman, 1973; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986) and also acknowledges that goals are important in online advertisement processing because the internet is a goal-driven medium (Hoffman & Novak, 1996). The importance of motives was later tested and confirmed by testing the interactive advertising model (Rodgers, 2002).

From an advertiser's perspective, Rodgers and Thorson's model highlights how choices about the structure of advertisements deployed on the internet influence how consumers respond to those advertisements. The internet allows many different types, formats and features to be used in online advertisements and understanding the effects of these features is critical to understanding consumer response to advertising on the internet. Therefore, according to Rodgers and Thorson, to understand processing of internet advertisements requires understanding the relationships between consumer controlled elements and advertiser controlled elements.

**Figure 2-4 Rodgers and Thorson's (2000) interactive advertising model**



Source: Rodgers and Thorson (2000) (p. 45)

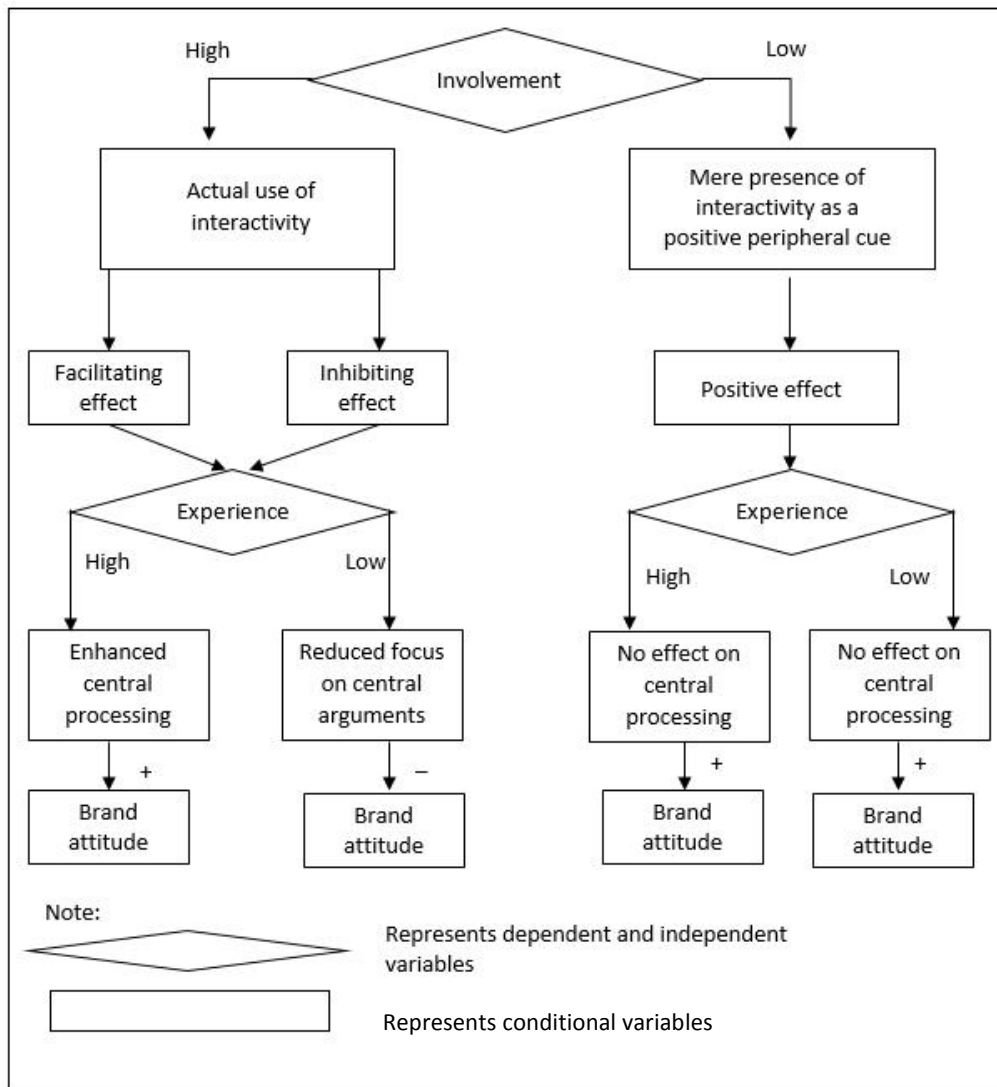
Other studies have modified offline information processing models to reflect unique features of the internet. Kumar and Bruner (2000) take the core components of the hierarchy of effects models identified by Brown and Stayman (1992), a proposed set of relationships suggesting that attitude towards the ad influences attitude towards the brand which ultimately determines purchase intention ( $A_{ad} - A_b - PI$ ), and sought to adapt this to an online context. Their study added attitude towards the site to reflect the likelihood that consumers would be exposed to advertisements on a website, and hypothesised consumers' attitude towards the website would influence their attitude towards the advertisement, brand, and intention to purchase the product.

Results from Kumar and Bruner (2000) showed that attitude towards the website had a strong positive correlation to hierarchy of effects components (attitude towards the advertisement, attitude towards the brand and purchase intention), although it was not clear how the effects flowed through these variables or the order in which they influenced each other. However, their results showed that the core components of hierarchy of effects models from offline information processing literature could be adapted to an online setting with the addition of medium specific constructs like attitude towards the site.

Similarly, Liu and Shrum (2009) tested a version of the ELM (Petty & Cacioppo, 1986) in an online context. They developed a model (Figure 2-5) to outline the effects of interactivity in websites on website processing and formation of attitude towards the advertised brand under conditions of high and low involvement. Unlike integrated advertising processing models which follow consumer processing from exposure to processing and attitude formation, Liu and Shrum's model focuses on the processing and attitude formation stages of information processing.

According to their model, when involvement is low, the presence of interactivity acts as a peripheral cue (does not influence central route processing) and has a positive impact on attitude towards the advertised brand. However, in situations of high involvement consumers are likely to actually use interactivity which could have a facilitating or inhibiting effect on information processing depending on how much experience the person has on the internet. If they are less experienced using the internet, interactivity will have an inhibiting effect on central processing as it becomes too overwhelming for consumers to make use of interactivity and apply the central route of processing resulting in less favourable attitudes. However, for experienced users interactivity will enhance their central route processing causing more positive brand attitudes. Results from their study largely supported these dual effects of interactivity providing evidence to support the application of dual processing models developed offline (Petty & Cacioppo, 1986) to help explain the effect of advertiser controlled features of online advertisements like interactivity on consumers' processing and attitude formation online.

**Figure 2-5 Liu and Shrum's (2009) Dual-Process model of Interactivity Effects**

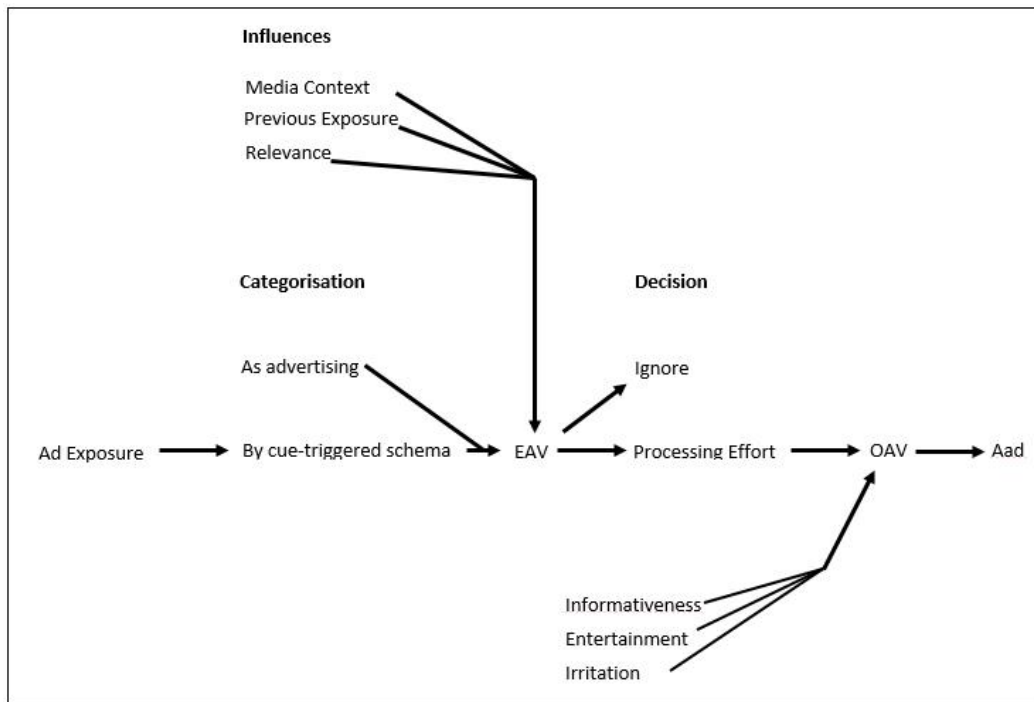


Source: Liu and Shrum (2009) (p. 55)

Another online advertising processing model was developed by Ducoffe and Curlo (2000). This model draws from Ducoffe's earlier work on advertising value (1995) and advertising value on the web (1996) by framing advertising processing in terms of expected and observed advertising value. As illustrated in Figure 2-6, once a consumer has paid attention to the ad (enough to be aware of it) consumers make a decision to invest further processing resources to the advertisement based on the expected value of the ad. This expected value is informed by how relevant the advertisement is to the consumer, the exposure context and their previous exposure to the stimulus.



**Figure 2-6 Ducoffe and Curlo's (2000) advertising processing model**



Source: Ducoffe and Curlo (2000) (p.249)

The constructs discussed in relation to expected advertising value are similar to other advertising processing models in that they are focused on relevance being important in determining the amount of processing undertaken (Kahneman, 1973; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986). The model also suggests categorising a stimulus as an advertisement brings previous experience with advertisements to mind that informs the expected value of the advertisement. This is similar to information processing theory where Kahneman's (1973) model suggests attention is allocated to stimuli as a function of enduring attitudes towards an attitude object as well as specific goals.

The outcome of consumers' expected advertising value judgment acts as a gateway; the consumer can choose to move through the gateway and invest more processing resources in the advertisement or they can choose not to invest any additional processing resources and ignore it. If consumers choose to allocate additional processing resources to making sense of the advertisement, their observed advertising value judgment is influenced by the perceived informativeness, entertainment and irritation of the advertisement and used to form their attitude towards the advertisement. This two-stage aspect of Ducoffe and Curlo's (2000) model has similarities to Petty and Cacioppo's (1986) ELM model, If a consumer does not choose to invest more processing to form their attitude about the ad, their attitude is formed

though a judgment of relevance and previous experience with advertisements, rather than an evaluation of the actual advertisement content.

Ducoffe and Curlo's approach is similar to MacInnis and Jaworski's (1989) in that they develop a model to explain information processing of advertisements from exposure to the advertisement, to processing of the advertisement, and finally forming an attitude towards the advertisement. It is also similar to Rodgers and Thorson's (2000) approach in that they identify the core information processing stages (exposure – processing attitude change) and discuss the role of both consumer controlled and advertiser controlled influences on this process.

All of these online advertising processing models include components from information processing theory to help explain advertising processing on the internet. In addition to using information processing theory to inform general models, studies have incorporated information processing perspectives to better understand the effects of interactivity in advertisements on advertising effectiveness.

## **2.9 Effects of interactivity**

Like the definitions of interactivity, the effects of interactivity on consumers' response to advertising varies. Rather than a uniformly positive or negative effect on advertisement processing, previous research has detailed a range of ways interactivity in websites and banner advertisements influences the effectiveness of online advertising.

### **2.9.1 Effects of interactivity on processing**

In terms of the effects of interactivity within a website, Sicilia et al. (2005) found that interactive websites elicited significantly more thoughts about the website, and that interactive websites had significantly more favourable valence of thoughts about the website and advertised product compared to the non-interactive website. Liu and Shrum (2009) also found when respondents were motivated to process their experimental webpage (high involvement), experienced internet users had significantly more inferential thoughts and brand related thoughts and overall had a more positive thought valence for an interactive site compared to a non-interactive website. For inexperienced internet users Liu and Shrum (2009) found the interactive websites elicited significantly fewer brand related thoughts compared to non-interactive websites. When consumers were not motivated to process the advertisement, Liu and Shrum (2009) found that interactivity in the website has little, if any,

influence on the extent of elaboration for experienced or inexperienced internet users. This suggests that while interactivity may elicit more favourable processing of a website when involvement is high, when consumers are not experienced on the internet or not motivated to process advertisements interactivity may not be as effective at increasing processing of the advertisement.

### **2.9.2 Effects of interactivity on attitude towards the ad**

Other studies have explored the effect of interactivity on consumers' attitude towards online advertisements. While Bezjian-Avery et al. (1998) found no direct effect of interactivity on attitude towards the ad, Macias (2003) found that consumers had a more favourable attitude towards websites that were interactive. Similarly, in terms of interactive banner advertisements Sundar and Kim (2005) found that as interactivity in banner advertisements increased, so too did consumers' attitudes towards the ad. Johnson et al. (2006) also found that consumers' perceived interactivity was positively related to attitude towards the website and involvement.

In addition, Liu and Shrum (2009) found under conditions of high involvement experienced internet users had more favourable attitudes towards the brand when the website was interactive vs. not interactive. Under low involvement conditions, attitudes towards the site were more positive for interactive web sites regardless of experience on the internet. Fortin and Dholakia (2005) found that while interactivity had a positive effect on involvement and arousal, the effect on attitude towards the ad and brand was not significantly different between medium and high levels of interactivity in a site. This suggests that consumers may experience information overload when exposed to too much interactivity, thus the effects of interactivity within the site plateau at the medium and high levels.

Studies have also found that interactivity within websites increases consumers' felt social presence within the site (Fortin & Dholakia, 2005) and sense of telepresence (Coyle & Thorson, 2001), both important features of a mediated environment and suggesting that interactivity may help make the consumer more engaged with a website. These studies suggest that for the most part interactivity in websites and banner advertisements increases the favourability of attitude towards the advertisement.

## **2.10 Operationalising interactivity**

The most common way previous studies have operationalised interactivity to test its effects on advertising effectiveness is through manipulating/recording interactive features of websites or banner advertisements. Usually this involves defining key interactive features of websites/advertisements based on literature and then creating high and low pairings for these features. The high interactivity half of the pair represents or enables interaction with the advertisement while the low interactivity half of the pair does not. For example, Bezjian-Avery et al. (1998) manipulated interactivity through giving respondents the freedom to choose the order of advertisements displayed to them, or presenting them in a linear fashion where the respondent had no choice over the order the advertisements were displayed, essentially manipulating the control and two-way communication aspects of interactivity.

Similarly, Macias (2003) and Liu and Shrum (2009) created websites that differed in terms of interactivity to act as experimental manipulations in their studies. Macias created websites that differed in terms of interactivity by creating high interactivity websites that had at least 10 possibilities for action at any time including animation with mouse rollover, hyperlinks and email, chat and comment forms. In contrast, the low interactivity conditions featured no opportunity for interaction at any time, no animation, no hyperlinks and no chat rooms, email or comment forms. Liu and Shrum (2009) also created websites that differed in interactivity by identifying eight features (a product catalogue, choice over product information, FAQ function, contact information, special announcement, navigation guide, fun stuff, and customer stories) and using high and low interactivity pairing for each feature to create websites with high or low interactivity.

Sicilia et al. (2005) also manipulated interactivity in their websites through offering consumers control of website content and incorporating more response mechanisms for greater potential of reciprocal communication. Based on criteria in Ha and James' (1998) and McMillan and Hwang's (2002) research, they designed interactive websites that featured interactive elements such as hyperlinks and response mechanisms (email link, phone number and link to fictitious site) whereas the low interactivity condition had fewer interactive features. Sundar and Kim (2005) also used control to manipulate interactivity but in banner advertisements rather than websites. They manipulated the interactivity in banner ads by the number of hierarchically hyperlinked layers or levels. These hyperlinked layers enabled the consumer to control the advertisement by selecting information they were most interested in.

The high interactivity conditions featured three or more linked layers in the ad, the medium layer featured two linked layers, while the low interactivity advertisement had all information on one layer with no hyperlink.

What is interesting when considering these operationalisations of interactivity is that scholars define interactivity in a range of ways, yet the methods used to operationalise interactivity at the advertisement level tend to focus on control over the advertisement. Therefore a definition for interactivity within the advertisement was developed to aid operationalising interactivity in this study.

### **2.11 Definition of interactivity within an advertisement**

After reviewing how interactivity has been operationalised this study will focus on control as the core feature identifying interactivity within an advertisement. Therefore the definition for interactivity within the advertisement, and the definition used to operationalise interactive advertisements in this study is a modified version of Steuer's (1992) definition:

The extent to which users can participate in modifying the form and content of an online advertisement in real time.

This definition highlights the importance of features of the advertisement that allow interaction between the consumer and the advertisement. While this definition focusses on control, it also incorporates the responsiveness of advertisements to this control and the speed of response as being important.

### **2.12 Chapter summary**

This chapter has reviewed theoretical perspectives on information processing and interactivity. Early hierarchy of effects models suggested a series of stages that advertisements must move consumers through to reach the desired outcome of purchasing the product. Framing these stages in terms of consumer behaviour, Palda (1966) termed the steps of hierarchy of effects models to be cognition, affect and conation. The cognitive stage represents where consumers become aware of the advertisement and process its contents. The affect stage represents forming an attitude towards the ad, and developing preference for the brand and advertised product. Finally, the conation stage is related to the action of purchasing the advertised product.

Other information processing models in marketing (Ducoffe & Curlo, 2000; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000) have a broadly similar focus on the cognition and affects stages of the hierarchy of effects. These models incorporate information processing theory (Kahneman, 1973) in relation to: how consumers allocate attention and processing capacity to process advertising messages (MacInnis & Jaworski, 1989; Rodgers & Thorson, 2000); how goals influence the allocation of attention and processing capacity (Ducoffe & Curlo, 2000; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000); and how enduring attitudes towards stimuli influence attention and processing allocation (Ducoffe & Curlo, 2000). Therefore the key components of advertising processing models that will be focused on in this research are how consumers allocate attention and processing capacity to advertisements, how they then process the advertising messages, and how this processing influences their attitude towards the ad.

Chapter 2 also reviewed the concept of interactivity, and how it has been defined and operationalised. Three characteristics of interactivity common across definitions are control, two-way communication, and synchronicity. However, studies of the effects of interactivity on consumers often operationalise interactivity by manipulating only the control element of interactivity. In computer mediated environments like the internet interactivity is often discussed in terms of the features of the medium that allow consumers to interact with one another and with the medium. This led to a separate definitions being developed for interactivity in general and interactivity within an advertisement.

## **Chapter 3     Model Development**

### **3.1 Introduction**

The literature review explored information processing models and identified a set of relationships between attention, processing and attitude formation that originated in psychology (Kahneman, 1973) and were incorporated into marketing models of advertising processing (Cacioppo & Petty, 1983; Ducoffe & Curlo, 2000; Liu & Shrum, 2009; MacInnis & Jaworski, 1989; Rodgers & Thorson, 2000). The foundations of interactivity theory were also reviewed, identifying conceptual and empirical suggestions concerning how interactivity may affect consumers' processing of advertisements. Using this as a base, this chapter develops the conceptual model to be tested in this study, details each construct and associated hypotheses and culminates in the presentation of a conceptual model of interactivity's effects on advertising processing.

### **3.2 Model overview**

The conceptual model includes the three key constructs from information processing theory: attention, processing, and attitude towards the ad. The start of this processing chain (attention) is proposed to be influenced by three additional constructs: interactivity within the ad, the consumer's attitude towards web advertising in general, and their goals at the time of exposure. The more attention that is allocated to an advertisement the more processing resources are available to process the message, meaning it is likely the amount of processing the advertisement receives will increase. An increase in the amount of processing an advertisement receives is proposed to lead to a more favourable attitude towards the ad. Based on previous findings, interactivity is also expected to have a direct effect on how much a consumer processes an advertisement and a direct effect on their attitude towards the ad.

### **3.3 Attention**

Advertising processing models feature attention as an antecedent to further processing, since a consumer must be able to perceive the advertisement in order to process it (Ducoffe & Curlo, 2000; Kahneman, 1973; Lavidge & Steiner, 1961; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986). Information processing theory and advertising processing models place attention as the first of three stages in information processing. The front end of the model focuses on attention and the constructs proposed to influence it. Next the relationships

between attention, interactivity, and processing will be discussed before finishing with a discussion of the proposed relationship between processing, attitude towards the ad, and interactivity.

Attention is defined using MacInnis and Jaworski's (1989) model as "the general application of mental activity to the tasks being performed by the individual" (p. 5). It is conceptualised as a limited cognitive resource, one that has both focus and intensity (Kahneman, 1973). Consumers must be selective with their allocation of attention as they cannot consciously pay the same amount of attention to all of the incoming information from their environment (Kahneman, 1973; MacInnis & Jaworski, 1989). Information processing models suggest attention is allocated to stimuli through a gateway, controlled partly by specific goals and enduring attitudes towards the stimuli (Ducoffe & Curlo, 2000; Kahneman, 1973; MacInnis & Jaworski, 1989). An increase in attention paid to a stimulus has been suggested to have a positive effect on the amount of processing the stimulus receives and formation of more positive attitudes towards the focus of attention (Petty & Cacioppo, 1986; Petty et al., 1983).

Kahneman (1973) referred to attention as the amount of mental effort or cognitive capacity that a person allocates to a task, a view that incorporates both the focus of attention and the amount of processing resources allocated to the stimuli. In his conceptualisation, Kahneman also provided for variations in the allocation of attention and capacity depending on the nature of the task, suggesting that more processing capacity becomes available when consumers are paying more attention to a task, or completing a task that requires more attention. MacInnis and Jaworski (1989), however, separated the two components of Kahneman's (1973) definition (attention and processing capacity) arguing that the attention construct describes the focus of a consumer's processing resources whereas the processing capacity construct describes the amount of "working memory" (p.5) allocated to the stimuli. They further argued that attention may or may not affect the amount of processing capacity a consumer allocates to a task/stimulus.

MacInnis and Jaworski's (1989) conceptual separation of attention and processing capacity is useful as it acknowledges that consumers can be aware of many stimuli at a given time, but do not have the processing capacity to investigate them all in the same depth, and suggests that what consumers pay attention to may, or may not, affect the extent of processing capacity they allocate to a task/stimulus.



In the case of this research however, Kahneman's (1973) conceptualisation is favoured. This study uses the terms attention and processing capacity in the conceptual model as they are commonly used in the literature (e.g., Pavlou & Stewart, 2000; Rogers & Thorson, 2000; Macias, 2003; Yoo, Kim & Stout, 2004). They are also used by MacInnis and Jaworski to refer to what Kahneman called the selective (attention) and intensive (processing capacity) aspects of attention. The conceptual difference is that MacInnis and Jaworski suggest that the selective and intensive aspects of attention can operate in isolation of one another, whereas Kahneman argues that they are linked and cannot operate independently of one another. This is the view held in this study; therefore Kahneman's conceptualisation of attention is adopted.

### **3.4 Influences on attention**

#### **3.4.1 Interactivity within the advertisement**

Interactivity is one of the features that differentiates the internet from traditional media like print and broadcast (Hoffman & Novak, 1996). Not only is interactivity a feature of the medium, technology like Flash and Java allow interaction with messages bringing the potential of interactivity to individual advertisements. The current study focusses specifically on interactivity within banner advertisements. Previous studies have used websites as the stimulus but there has been less research conducted using banner advertisements (Sundar & Kim, 2005). Banners are placed within websites where they compete for attention with other elements of the site, therefore, understanding how interactivity in these banners influences attention to the banner, compared to the page it is embedded in, is important to understanding the effectiveness of interactive online advertisements.

In the current study interactivity within the ad is operationalised as the extent to which a user can participate in modifying the form and content of an advertisement in real time. This is a modification of Steuer's (1992) definition of interactivity and focuses on users being able to control elements of the advertisement, a common operationalisation in interactive advertising literature (Bezjian-Avery et al., 1998; Macias, 2003; Sicilia et al., 2005; Sundar & Kim, 2005).

Traditionally, advertisers have used one-way push models of advertising utilising a one-to-many approach (Hoffman & Novak, 1996). This allowed them to maintain control over advertising messages (McMillan & Hwang, 2002). However, implementing interactive

advertisements requires marketers to share some control over the content and appearance of advertisements with consumers (McMillan & Hwang, 2002). This shared control has been proposed to engage consumers in the persuasion process as they are actively making decisions and expending cognitive resources by interacting with the advertisement (Ariely, 2000; Liu & Shrum, 2002; Mollen & Wilson, 2010). Based on this discussion consumers are expected to pay more attention to an interactive advertisement than a non-interactive advertisement, leading to the following hypothesis:

**H1: An increase in interactivity within the advertisement will result in consumers paying more attention to the advertisement.**

### 3.4.2 Goals

On the internet the goals a consumer has influence how they interact with the medium (Hoffman & Novak, 1996), and advertisements within that medium (Ducoffe & Curlo, 2000; Rodgers & Thorson, 2000). From an information processing perspective goals are important as they serve to motivate consumers to allocate their attention and processing capacity to stimuli that will help achieve their goals (Kahneman, 1973; Petty & Cacioppo, 1986). This section explains the importance of goals and their expected influence on attention.

Grunert (1996) proposes that consumers will process advertisements with regards to their relevance (the extent to which a stimulus facilitates achieving a consumer's goals) and the higher the relevance, the higher the probability of conscious processing. Relevance is particularly important in online information processing as the internet is a goal-directed medium (Edwards, Li, & Lee, 2002; Rappaport, 2007; Rodgers & Thorson, 2000). Rodgers and Thorson argue that because consumers begin a session on the internet with specific goals in mind, interactive advertising processing models must acknowledge these goals as they are an antecedent to any further processing that takes place once the goal is pursued.

Models of consumer processing of advertising, developed both offline (MacInnis & Jaworski, 1989; Mitchell & Olson, 1981; Petty et al., 1983; Rodgers & Thorson, 2000), and online (Ducoffe & Curlo, 2000; Rodgers & Thorson, 2000), refer to goals as being important to consumers' behaviour because they motivate them to allocate their limited cognitive resources towards stimuli that will achieve their goals.

The link between a consumer's goals and motivation to expend effort to achieve these goals is best illustrated through definitions of motivation. Paraphrasing Park and Mittal's (1985) definition of motivation, MacInnis and Jaworski (1989) define motivation as "goal directed arousal" (p. 4). This definition identifies the goal as the driver of a consumer's effort. Similarly, in an online context Rodgers and Thorson (2000) define an internet motive as "an inner drive to carry out any online activity" (p. 45). Here the term inner drive represents the consumer's effort and the online activity represents the consumer's goal they wish to achieve by being online.

Offline advertising processing models (MacInnis & Jaworski, 1989; Mitchell & Olson, 1981; Petty & Cacioppo, 1986) have proposed that motivation affects the direction of consumers' attention and intensity of processing towards stimuli that will help achieve their goal(s).

Similarly, online advertising processing models propose that motives should affect consumers' attention, memory and attitude towards online ads (Rodgers & Thorson, 2000).

Rodgers (2002) found that motivation interacts with the information within an advertisement to determine intent to click on the advertisement, providing evidence that motives direct behaviour online. Further, Liu and Shrum (2009) found consumers produced more inferential and brand related thoughts about an interactive website if they were motivated to process the advertisement, and that those who were motivated also produced more positive thoughts overall about the advertisement. As mentioned earlier, when a consumer arrives at a webpage, the goal they are pursuing is proposed to motivate them to focus their processing resources to stimuli on that page that will help achieve their goal (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000). Therefore, the current study hypothesises:

**H2: Advertisements that are more (less) relevant to a consumer's goals will receive more (less) attention.**

### **3.4.3 Attitude towards online advertising in general**

According to information processing theory, the amount of attention an individual allocates to a particular stimulus is influenced by their enduring attitude towards that stimulus (Kahneman, 1973). In this study the stimulus under investigation is an online advertisement. Therefore, consumers' attitudes towards online advertising in general are likely to influence the amount of attention they pay to any particular online advertisement.

Attitude towards advertising in general is defined as a consumer's "learned predisposition to respond in the consistently favourable or unfavourable manner to advertising in general" (Lutz, 1985, cited in Metha, 2000, p. 68). In an offline context consumers' attitude towards advertising in general has been found to affect their attention to individual advertisements (Metha, 2000). Given this study focuses on online advertisements, a slight modification of Lutz's definition is appropriate. In the current research, attitude towards online advertising is defined as a consumer's predisposition to respond in a consistently favourable or unfavourable manner to online advertising in general.

Schlosser and Shavitt (2009) proposed that attitude towards online advertising in general is likely to affect exposure, attention and reaction to individual advertisements. Additionally, studies have found that attitude towards online advertising in general affects consumers'

clicking of individual online advertisements (Wang & Sun, 2010; Wolin, Korgaonkar, & Lund, 2002). To click on an advertisement consumers must pay attention to it and attention is influenced by enduring attitudes towards the stimuli; therefore, these studies provide empirical support for the importance of attitude towards online advertising in general in how consumers allocate attention to online advertisements. Because of this, attitude towards online advertisements in general is considered to influence how much attention an individual pays to an advertisement and the following hypothesis is put forward:

**H3: The more (less) favourable a consumer's attitude towards advertising on the internet in general, the more (less) attention they pay to a particular banner advertisement.**

### **3.5 Amount of processing**

After consumers pay attention to an advertisement, the next step is processing the content of the message using the cognitive resources given to the task by paying attention. Kahneman (1973) discusses how cognitive resources become available to allow more processing as individuals undertake tasks that require high levels of attention. Similarly, according to MacInnis and Jaworski (1989), the more attention and capacity a consumer allocates to an advertisement the higher the level of information processing that is possible. In addition, Petty and Cacioppo (1986) propose that given a high elaboration likelihood (likelihood to think about and process the content of a message), there should also be evidence of considerable allocation of cognitive resources to the content of the message (Petty & Cacioppo, 1986). Therefore measuring the amount of processing an advertisement receives should provide a proxy measure to capture the amount of processing the advertisement received. The measure used was the thought listing procedure (Cacioppo & Petty, 1981) and will be detailed in Chapter 4. This method has been used by previous studies as a measure of cognitive processing (Liu & Shrum, 2009; Sicilia & Ruiz, 2010) and can capture the number and nature of the thoughts a respondent has about an advertisement.

Based on these propositions, as attention increases, so should the amount of processing. Therefore, the following hypothesis is put forward:

**H4: An increase in the amount of attention paid to the advertisement results in an increase in the amount of processing the advertisement receives.**

In addition to information processing theory suggesting more attention will result in more processing, studies that have tested the effects of interactivity in advertisements on consumer processing have suggested that consumers process interactive advertisements more than non-interactive advertisements.

Studies that have not included attention in their conceptual or empirical models, but explored the relationship between interactivity and amount of processing (Liu & Shrum, 2009; Sicilia et al., 2005) have drawn on ELM theory (Petty & Cacioppo, 1986) to suggest that processing of an advertising message is related to elaboration of the information during exposure. These studies argue that the presence of interactivity in an advertisement provides consumers with control over the information they receive (Coyle & Thorson, 2001; Sicilia et al., 2005; Liu & Shrum, 2009). Controlling this information flow requires more processing resources from the consumer to actively navigate the information (Ariely, 2000). In addition, once the information is selected it is more likely to be processed as the consumer was actively involved in choosing the information (Sicilia et al., 2005) compared to a message where they had no control over the content. Therefore they should process the advertisement and the message more, resulting in a higher amount of processing compared to an ad that is not interactive.

Liu and Shrum (2009) found that consumers had significantly more brand related thoughts for interactive websites than non-interactive websites; similarly, Sicilia et al. (2005) found that consumers listed more thoughts about websites when viewing interactive websites compared to non-interactive websites and the valence of thoughts was more positive for interactive websites compared to non-interactive websites. Therefore, it is expected that interactivity in an advertisement will result in the consumer processing the advertisement more leading to the following hypothesis:

**H5: An increase in interactivity in the advertisement will result in an increase of the amount of processing the advertisement receives.**

### **3.6 Attitude towards the ad**

Following processing of the advertisement, the third and final step the consumer completes, according to information processing theory and advertising response models, is forming an attitude towards the advertisement. Attitude towards the ad will be used as a measure of consumers' affective response to the advertisement (Shimp, 1981). As mentioned earlier, advertising response models (e.g., hierarchy of effects), information processing models, and

advertising processing models all suggest that forming an attitude towards an ad (or stimulus) follows, and is influenced by, processing of the information within the ad (Ducoffe & Curlo, 2000; Kahneman, 1973, 2011; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000). These models also place attitude formation as an antecedent to consumer behaviour so attitude towards the ad is often used as a measure of advertising effectiveness (Dreze & Hussherr, 2003; Pavlou & Stewart, 2000).

The amount of processing a stimulus receives influences the formation of attitudes towards that stimulus (Liu & Shrum, 2009; MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Sicilia et al., 2005). Both information processing and attitude response models link processing with attitude formation, as the nature of processing of the message influences the nature of the attitude towards the object being processed. Higher allocation of processing resources to the advertisement may also mean that the consumer did not see the advertisement as an interruption, therefore felt less irritated about the advertisement (Edwards et al., 2002) resulting in a more positive attitude towards the ad. Finally, Cacioppo and Petty (1983) suggest that messages in an advertisement that highlight positive consequences for the recipient (or significant other) tend to elicit primarily favourable thoughts. The more these desirable consequences are elaborated on, the more positive the attitude towards the ad and the more persuasion will result. Therefore, more processing may result in a more favourable attitude towards the ad, (Petty & Cacioppo, 1986). This informs the following hypothesis:

**H6: An increase in the amount of processing an advertisement receives will result in a more favourable attitude towards the advertisement.**

As well as being influenced by the outcomes of conscious processing of an advertisement, previous the ELM suggests that a consumer's attitude towards an advertisement can be influenced by peripheral cues, in other words features of the advertisement that may generate affective response without detailed processing (Petty & Cacioppo, 1984). Previous studies testing the effects of interactivity on consumer attitudes towards advertisements have suggested that interactivity may be one such positive peripheral cue that may increase favourable attitudes towards an advertisement. This occurs through the mere presence of interactive features compared to an advertisement without these features and is in line with ELM that suggests under the peripheral route to persuasion, attitudes can be influenced by mere number of arguments rather than argument strength (Liu and Shrum, 2009). Therefore the presence of interactive features in an advertisement may lead to more favourable attitudes

towards the ad even when the consumer is not motivated to carefully process the content of the advertisement.

Some empirical support exists for these theoretical suggestions. Previous studies (Liu & Shrum, 2009; Macias, 2003; Sundar & Kim, 2005) have found that interactivity within advertisements also results in more favourable attitudes towards the ad. Liu and Shrum (2009) explored interactivity as a peripheral cue and found that when respondents were not motivated to process the message carefully, attitudes were still more favourable for websites that featured a larger number of interactive features. Although Macias (2003) and Sundar and Kim (2005) did not include a measure of processing in their studies, they found that attitudes of respondents were more favourable to websites that had more interactive features. Therefore the current study proposes that attitude towards the advertisement will be influenced by two factors - one is the nature of the processing that the advertisement receives (H6); the other is the mere presence of interactivity within the advertisement which could lead to a more favourable affective response compared to an advertisement that did not have interactive features. This leads to the following hypothesis:

**H7: An increase in interactivity within the ad will result in consumers having more favourable attitudes towards the advertisement.**

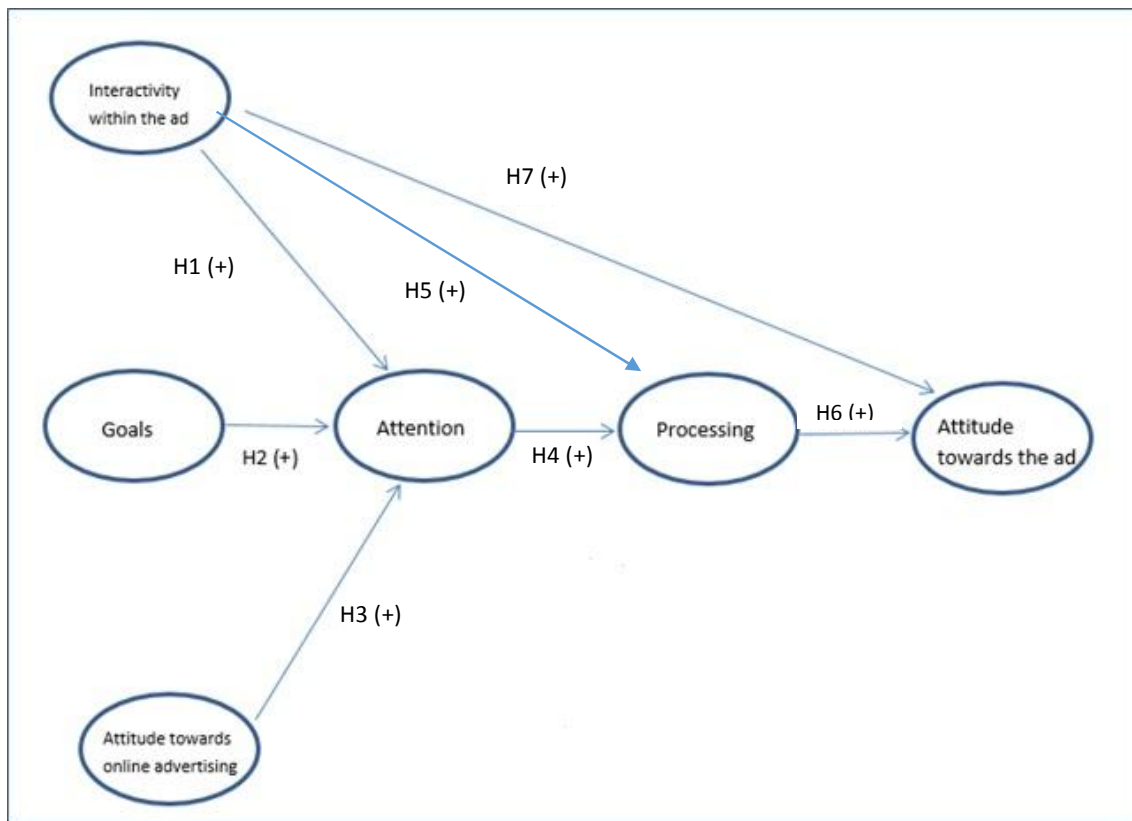
Those studies that have measured cognitive response to interactive advertisements and related attitude formation have suggested that interactivity results in more favourable cognitions of the brand, the advertisement, and the advertised product (Liu & Shrum, 2009; Sicilia et al., 2005). However, other studies that did not measure cognitions also suggested a direct positive impact of interactivity on attitude towards the ad. These dual routes interactivity can take when influencing attitude towards the ad are reminiscent of central and peripheral routes to persuasion (Petty & Cacioppo, 1986). Interactivity may influence attitude toward the ad through an increase in positive thoughts about the advertisement, or if the consumer does not process the advertisement interactivity may act as a peripheral cue resulting in a more favourable attitude towards the advertisement by merely being present.



### 3.7 Conceptual model

Figure 3-1 presents the conceptual model guiding this study. To summarise the main relationships under investigation, attention is the start of the information processing chain. It is proposed that it is influenced by the goals a consumer has, their attitude towards online advertising in general, and interactivity within the advertisement. An increase in attention towards an advertisement is expected to result in more processing of that advertisement, measured as the number of thoughts. Consumers are also expected to process interactive advertisements more than non-interactive advertisements. An increase in processing of the advertisement is hypothesised to result in a more favourable attitude towards the advertisement. Finally, consumers are expected to have more favourable attitudes towards interactive advertisements than non-interactive advertisements.

**Figure 3-1 Conceptual model**



### **3.8 Chapter summary**

This chapter has identified the key constructs of attention, processing, and attitude formation, explaining how consumers process advertisements on the internet. It has also illustrated the proposed impact that interactivity of online advertisements has on each of these stages. In addition, the model detailed the expected influence of goals and attitude towards online advertising in general on the attention stage of advertisement processing. The hypothesised relationships between the consumer controlled information processing stages and the advertiser controlled feature of interactivity within the ad formed the conceptual model to be tested in this study. The next chapter will outline the method used to collect data to test the conceptual model including the research approach, sampling procedure, pretesting, data collection, and sample characteristics.

## **Chapter 4      Method**

Having established the conceptual model guiding this research, this chapter details the method used in the study. The study was conducted under a post-positivist paradigm and this chapter justifies this paradigm and discusses the development of the questionnaire, experimental conditions, pre-testing, data collection, and the sample.

### **4.1 Introduction**

The choice of research method is influenced by a number of factors. These include the worldview of the researcher, the nature of the problem being researched, the intended audience, and the researcher's past experience (Creswell, 2009). Past empirical studies in the area of interactivity and advertising processing have used quantitative methods such as surveys and experiments (Bezjian-Avery et al., 1998; Coyle & Thorson, 2001; Fortin & Dholakia, 2005; Johnson et al., 2006; Kumar & Bruner II, 2000; Liu & Shrum, 2009; McMillan & Hwang, 2002; Rodgers, 2002; Sicilia et al., 2005; Sundar & Kim, 2005; Wu, 1999, 2005). Quantitative methods stem from a positivist world view or research paradigm (Creswell, 2009). The central belief of positivism is only that which can be observed can be studied (Colton & Covert, 2007) and that there is a universal truth that exists which can be measured, understood, and manipulated (Trochim & Donnelly, 2008). However, in social sciences such as marketing, the phenomena under investigation are often situational or not directly observable (Colton & Covert, 2007). This realisation led to a departure from positivism in the 1960s and the formation of a research approach termed post-positivism (Creswell, 2009; Kuper & Kuper, 2004).

Post-positivism recognises that with research involving human subjects it is difficult to be positive about claims of knowledge (Creswell, 2009) and that often social phenomena cannot be directly observed (Colton & Covert, 2007). The post-positivist research paradigm seeks to apply scientific method to social science research through rigorous and systematic research design but accepts that some measurement instruments may not be able to capture unobserved states but can instead record manifestations of unobserved states or phenomena (Creswell, 2009).

Key features of the post-positivist research paradigm are an alignment more with quantitative methods than qualitative methods, a focus on theory testing and verification, the researcher

remaining objective, and the research often taking an inductive approach (Creswell, 2009; Deshpande, 1983).

The current study adopts a post-positivist research paradigm. It seeks to test interactivity and information processing theories in an online context through the use of an online experiment. The experiment manipulated the goal of the consumer and the interactivity of an online advertisement. Quantitative techniques were used to analyse the data through structural equation modelling (SEM) and multivariate statistical analysis. Given the theory testing nature of this research and the number of studies in the area that use quantitative techniques such as questionnaires and experiments (Bezjian-Avery et al., 1998; Coyle & Thorson, 2001; Johnson et al., 2006; Ko et al., 2005; Liu & Shrum, 2009; Macias, 2003; McMillan & Hwang, 2002; Rodgers, 2002; Sicilia et al., 2005; Sundar & Kim, 2005; Voorveld, Neijens, & Smit, 2011), this method is appropriate for the current study.

## **4.2 Data collection**

Data were collected for this study through an experiment conducted online. Respondents were sent a link to an online survey through a panel company. The experiment consisted of an experimental webpage into which target advertisements were embedded. Respondents answered introductory questions before viewing the experimental conditions then answering questions related to their processing of the advertisements. This section will outline the manipulations used in the experiment, the experimental procedure, and measures used in the associated questionnaire.

### **4.2.1 Experiment**

Experiments are one of the most effective ways to test the effects of online advertisements on consumers and are commonly used in marketing (Ha, 2008). An experiment is a research technique that seeks to investigate a cause and effect relationship among variables. The researcher manipulates an independent variable and subsequently measures a dependent variable. If there are differences in the dependent variable, they are due to the manipulation of the independent variable (Khan, 2011). The research question under investigation in the current study suits an experiment. By manipulating the level of interactivity within an online advertisement an experiment will reveal the effect of interactivity on attention to, processing of,

and attitude towards the ad. Experiments can be conducted in laboratories, in the field, and increasingly over the internet (Mutz, 2011). Given the research question under investigation in this research concerns online advertisements, an online experiment was appropriate.

By conducting an experiment online some of the control associated with a laboratory experiment is lost (Reips, 2002), especially on the internet where different web browser, computer or bandwidth settings alter how the experiment could be displayed (Birnbaum, 2004; Couper, 2008). However, some have argued that experiments conducted outside laboratory settings have advantages such as better generalisability of findings, higher external validity, reduced experimenter effects, and ease of access for participants (Mutz, 2011; Reips, 2002). Further, the results of experiments conducted online and in a laboratory are often very similar (Krantz & Dalal, 2000). While the majority of studies on the effects of interactivity use laboratory settings (Bezjian-Avery et al., 1998; Coyle & Thorson, 2001; Fortin & Dholakia, 2005; Hoffman & Novak, 1996; Johnson et al., 2006; Liu & Shrum, 2009; Macias, 2003; Sicilia et al., 2005; Sundar & Kim, 2005; Wu, 1999, 2005), online experiments are also used in the literature (Fortin & Dholakia, 2005; Hoffman & Novak, 2009; Macias, 2003), and this design allows further testing of findings from previous studies that used laboratory experiments (Reips, 2002).

The experiment used in this study was a true experiment where respondents were randomly allocated to conditions as opposed to a quasi-experiment (Creswell, 2009). Twelve conditions were tested derived from a 2 (brand) x 3 (goal) x 2 (interactivity) orthogonal, full factorial design (Kuhfeld, Tobias, & Garratt, 1994). A post-test only control group design was used because any questioning of respondents about attitude towards the target advertisement or brand before seeing the advertisement would confound the effect of the manipulation on the dependent variable (Creswell, 2009; Zikmund, 2010).

Two advertisements were selected as the stimuli for the experiment. One advertised a new car model from a common automobile brand in New Zealand. The other was from a prominent bank in New Zealand and advertised a service for reducing interest on credit card debt when transferring credit card debt to the bank from another provider. These advertisements were chosen as they represent commonly advertised products and services online and would be of interest to a general population of internet users (Ko et al., 2005).

#### **4.2.2 Manipulations**

Two variables were manipulated in the experiment: goals and interactivity within the advertisement. These manipulations were informed by information processing theory and conceptual relationships in interactivity theory. Goals were manipulated as according to information processing theory a consumer's goals influence what stimuli they allocate attention to. Interactivity within the advertisement was manipulated as it has been proposed that interactive advertisements are more engaging to consumers, requiring increased attention and cognitive resources to process.

Interactivity was manipulated in terms of the extent that respondents could manipulate the form and content of the target advertisement. Goals were manipulated by instructions at the start of the survey that primed respondents to either browse the website, search for specific information, or find and interact with an advertisement. The following sections explain the manipulations in more detail.

#### **4.2.3 Interactivity within the ad**

Interactivity within the ad was manipulated by the presence or absence of interactive features within the banner ad. This was informed by previous studies that manipulated interactivity in terms of the level of control that respondents had over websites, or advertisements, and the presence or absence of interactive features (Bezjian-Avery et al., 1998; Macias, 2003; Sicilia et al., 2005; Sundar & Kim, 2005).

The two advertisements were real advertisements for real brands, an approach used in previous studies (Cho, 1999; Ko et al., 2005; Sundar & Kim, 2005; Wu, 1999) which were selected after a pre-testing process (outlined in the next section) and represented a product and service that were commonly advertised on the internet and relevant to a general sample of New Zealand internet users.

#### **4.2.4 Credit card interactive advertisement**

The credit card advertisement was produced by a prominent bank in New Zealand. It advertised a temporary reduction in fees for customers who transferred their existing credit card debt to the bank and chose the bank as their credit card provider. The advertisement displayed an image of a

shrinking credit card, then displayed the interest rate available for transferred balances and also featured a calculator that allowed consumers to enter their current credit card debt, interest rate, and repayments. Then the advertisement would calculate their savings and display the information to consumers. Consumers could also roll their mouse over a fine print area of the ad which then displayed terms and conditions. The non-interactive condition was a modified version of the interactive advertisement with the interactive features removed (Macias, 2003; Sicilia & Ruiz, 2010). It featured an image taken from the interactive version of the advertisement that included text with the advertised offer and interest rate. There was no opportunity to interact with the advertisement or control the form or content of the advertisement.

#### **4.2.5 Automobile interactive advertisement**

The automobile advertisement was for a common automobile brand available in New Zealand. The advertisement was for one of their products, a new family sedan. In the interactive condition for the automobile advertisement the consumers were presented with a view replicating being in the driver's seat of a car. The consumers were able to click and drag a steering wheel left and right to simulate driving. As they dragged the steering wheel left and right, the image behind the steering wheel changed to different views of roads, and text outlining a key feature of the car was superimposed over the view of the road. After they had explored the features by moving the steering wheel they also had the opportunity to click a button to replay the simulation. The non-interactive version of the advertisement was a modified version of the interactive condition where all features allowing interaction were removed. The ad featured an image of the car taken from the interactive version with text outlining the core advertisement message. There was no option to move the steering wheel and no other opportunities for the consumer to interact with the advertisement.

By using an image of the interactive advertisement for the non-interactive advertisements the original presentation, appearance, and quality of the advertisement for both conditions were preserved. This is important as professional advertisements have been shown to elicit more natural responses from consumers (Mitchell 1986, as cited in Ko et al., 2005).

### **4.3 Goal manipulations**

According to information processing theory, a consumer's goal influences their allocation of attention and processing capacity. At the time of exposure to a stimulus, those judged more relevant to achieving a consumer's goals will receive more attention and processing than those that are deemed not relevant (Kahneman, 1973; MacInnis & Jaworski, 1989). This aspect of information processing theory has also been applied to processing on the internet (Ducoffe & Curlo, 2000; Liu & Shrum, 2009; Rodgers, 2002). This study manipulated goals of respondents by setting them tasks to either browse the web page, search for specific information on the experimental page, or specifically search for an advertisement and interact with it. Each goal manipulation is explained below.

#### **4.3.1 Browse goal**

The browse goal was intended not to prime respondents towards any specific feature on the experimental website and simulate their normal browsing behaviour on a website. The manipulation was informed by Schlosser (2003) who originally used the instructions to prime respondents in her experiments to view a page with the goal of general browsing, or searching for specific information. The original wording of the instructions was "have fun looking at whatever you consider interesting and/or entertaining" (p.188). In the current study those randomly assigned to a browse condition were given the following instructions:

*On the next page you will see a website. Feel free to look at whatever you consider interesting and/or entertaining.*

This allowed the respondents to view the information on the page relevant to them and either read the article featured on the page, click links, or look at the advertisements on the page. This way attention and processing would be based on personal preference and may or may not include the target advertisement.

#### **4.3.2 Search goal**

The search condition featured two parts to the manipulation. First, respondents were given a scenario in which they had to list two key things they thought were important when choosing either a car or credit card. Like the browse goal manipulation, this technique was adapted from



Schlosser (2003). The original instructions informed respondents to go to a site with “the goal of efficiently finding something specific within Kodak’s site. Begin by writing two questions you have for Kodak in the space below” (p.188). Making respondents list questions was designed to get them thinking about specific features related to the product category and direct their browsing behaviour to answering these questions.

The next step in the manipulation presented respondents with instructions that told them they would see a webpage on the next screen and to search for importation related to the two items they had listed. There were subtle differences in scenario wording between conditions based on pre-testing the scenarios. The scenarios for each advertisement are detailed below.

#### **4.3.3 Credit card condition search goal**

In the credit card condition respondents were given the following instructions:

*For the purposes of this research I want you to imagine you are currently considering options for a credit card. This could involve looking for information about credit cards, wanting to transfer your balance to another provider or simply looking for a good deal.*

*To begin, please write down two pieces of information that would be important for you to know if you were looking to get a credit card.*

Once they had entered these two pieces of information they were directed to the next page in the questionnaire that delivered the instructions for the second part of the manipulation. Respondents were told:

*On the next page you will see a website. When you look at the website remember that you are considering options for a credit card and that the two pieces of information that you listed above are important to your decision.*

#### **4.3.4 Automobile condition search goal**

In the automobile search condition respondents were presented with a scenario that was framed in terms of a friend asking for advice. This was the result of refinement in the scenario based on pre-testing that indicated a new car was not a realistic purchase for pre-test or pilot respondents.

The first part of the search condition instruction, where respondents listed two important features of cars, read:

*For the purposes of this research I want you to imagine that a friend of yours is in the process of buying a new family car. They've asked you for your opinion on what type of car they should get and if you know of any cars to look for or ones to avoid.*

*You gave them some tips off the top of your head to help them decide what type of car to buy.*

*What would you say are the two most important features when buying a new car?*

Once they had listed these two important features they moved to the next page of the questionnaire where the instructions for the next stage of the manipulation were presented. The instruction read:

*On the next page you will see a website.*

*When you look at the website remember that your friend has asked your opinion about what type of car they should buy for their new family vehicle.*

*Also remember the two features that you listed as being important when buying a new car.*

*Your goal when you view the page is to search for any information related to new cars.*

These two stages were designed to prime respondents to look for information on the page that was contained in the target advertisements and direct their browsing to the advertisements with the expectation that they would pay more attention to the advertisement compared to the rest of the page.

#### **4.4 Interact goal**

The final goal manipulation was designed to make respondents interact with the advertisements on the page. Given the self-administered nature of the experiment and the target advertisement being a banner advertisement rather than a whole website, this goal was to maximise the chance that respondents would in fact interact with the target advertisement. The wording of the scenarios differed slightly from the search scenarios to reflect the change in goal and also tailor the instructions to the nature of interaction allowed by the advertisements. Details for both the credit card and automobile conditions are outlined below.

#### **4.4.1 Credit card interact goal**

Those respondents randomly allocated to the interact condition for the credit card advertisement were given instructions to use the interactive features of the advertisement. The scenario read:

*Imagine a friend recently told you that they had switched credit cards because they got a better deal...and so you have been thinking about the same idea yourself.*

*You've got about \$2000 on your card and you're wondering if you can get a better deal too.*

*Currently you're paying 20% interest and making monthly repayments of \$50.*

*When you go to the next page you will see a typical news-based website. On the site there will be an advertisement for BNZ bank.*

Then, depending on whether they were in an interactive or non-interactive condition they received different instructions on how to interact with the advertisement. Those in an interactive condition received the instructions:

*Please make sure that you use the calculator in the ad to work out how much you could save by switching to BNZ.*

Those in a non-interactive condition were told:

*Please make sure that you read the contents of the BNZ ad.*

#### **4.4.2 Automobile interact goal**

Like the credit card interact manipulation, respondents randomly allocated to the automobile interact condition read a scenario that encouraged them to interact with the automobile advertisement.

The scenario read:

*For the purposes of this research I want you to imagine that a friend of yours is in the process of buying a new family car. They've asked you for your opinion on what type of car they should get and if you know anything about the Hyundai i40.*

*Since then you have been keeping an eye out for information about the Hyundai i40.*

*On the next page you will see a typical news-based website. Also on the site there is an advertisement for a Hyundai i40.*

Then, depending on whether the advertisement was interactive or non-interactive, respondents were given the final part of the scenario reflecting the nature of the interaction allowed by the advertisement. Those who were in an interactive condition were given the instructions:

*Please make sure you click and drag the steering wheel to learn more about the features of the Hyundai i40.*

Those in a non-interactive condition were given the instructions:

*Please make sure you read the contents of the Hyundai ad.*

These manipulations were designed to encourage interaction with the advertisement and allow a comparison between those respondents who browsed the website, those who searched for content related to the advertisements, and those who did interact with the advertisement.

## **4.5 Procedure**

The online experiment was distributed to respondents via a web link sent by a market research company to their panel members. Respondents were randomly allocated to one of 12 experimental conditions upon clicking the link to the experiment. Once they began, respondents were asked a question to determine they had the appropriate browser settings to complete the questionnaire, questions about how often they used the internet for various activities, if they had bought products or services online before, and if they already owned either of the brands used in the target advertisements. Next they were given one of the three different goal manipulations.

Respondents were then shown the website that contained the experimental advertisement. The website was embedded in the questionnaire using an html coded iframe so that when it was displayed all reference to the survey was hidden so that it looked like a normal webpage and occupied the full area of the browser window. The webpage was a version of a live news page with an article about the university at which the study was being undertaken. For the purposes of the study, all live links were disabled and redirected to a page that informed respondents that the link had been disabled but the researchers were still interested in what they clicked and they should feel free to click on other links.

The experimental web page featured one non-interactive dummy advertisement to replicate the appearance of the real webpage and the target advertisement that was either interactive or non-interactive. The target advertisements appeared in the same location on the page and were the same size in each condition. If the respondents clicked on the advertisements as they would normally to navigate to the advertiser's home page, they received the same message as when they clicked on any of the hyperlinks on the page informing them that the external link had been disabled. Although this could have made the browsing experience less natural, it prevented respondents from navigating away from the experimental web page that was displayed within the questionnaire. Though previous studies have restricted navigation away from experimental web pages through instructions to return to the page if they navigated away (Sundar & Kim, 2005), the current study was not conducted in a controlled laboratory environment making it necessary to ensure respondents did not navigate out of the survey through clicking links in the web page. Given the self-administered nature of the experiment in the current study, restricting navigation was the best option to keep respondents within the questionnaire. Respondents were given a total of five minutes to view the web page and informed that they would be automatically moved to the next stage of the questionnaire after this time.

Once they had viewed the experimental web page, a simple recall and recognition test was conducted. Respondents were asked to enter the names of brands that they had seen advertised on the webpage in a text entry box, as well as identify the advertisements that they had seen on the page by clicking thumbnail icons. They had to select the two advertisements they saw on the page from a total of six advertisements (the two target advertisements and four filler advertisements). If respondents correctly identified the target advertisement from the group, they moved to the next section of the questionnaire. Those who did not correctly identify the target advertisement were asked to return to the webpage and look specifically for the advertisements on the page, then repeat the process. This re-visit activity was recorded and only 15% of respondents revisited the site due to incorrectly identifying the target advertisement.

Once they had successfully identified the target advertisement, respondents entered the next section of the questionnaire which was a thought elicitation question (Cacioppo & Petty, 1981), as has been used by previous studies to measure the amount and nature of cognitive response to advertisements (Liu & Shrum, 2009; Sicilia et al., 2005) where respondents were asked to list

their thoughts about the advertisement. Twelve text entry boxes were provided to record these thoughts.

Once they had listed their thoughts, respondents were asked a series of questions about how much attention they had paid to the advertisement, how interactive they thought the advertisement was, how involved they were with the advertisement, their attitude towards the advertisement and their attitude towards online advertisements in general. Following these questions, demographic information was collected before the respondents were thanked for their participation and exited the survey.

## **4.6 Questionnaire design**

Data were collected via an online questionnaire containing the experiment website. The design of the online questionnaire used in this study was informed by previous studies investigating the effects of interactivity that also used online questionnaires (Bezjian-Avery et al., 1998; Coyle & Thorson, 2001; Fortin & Dholakia, 2005; Ko et al., 2005; Liu & Shrum, 2009; Macias, 2003; Sicilia et al., 2005; Sundar & Kim, 2005) and best practice in survey design (Couper, 2008; Dillman, Smyth, & Christian, 2009). Online surveys differ from paper-based or phone surveys in that the respondent's browser or computer settings may alter the display of the questionnaire (Couper, 2008) and low bandwidth prevent files downloading quickly (Zikmund, 2010), both of which are beyond the control of the researcher. Therefore, careful consideration was given to the file size of embedded advertisements and the appearance of the questionnaire. Testing the questionnaire using different browsers and mobile devices resulted in a stable questionnaire that displayed well across many common browsers whilst not detracting from the appearance or quality of either the target advertisements or the website in which they were embedded.

### **4.6.1 Construct measures**

The questionnaire adapted items from previously validated scales where possible and all measures were reflective. This section outlines and explains the measurement items used in the questionnaire. A full copy of the questionnaire can be found in Appendix 1.

#### **4.6.2 Introductory questions**

On reading a participant information page and accepting to participate in the research respondents were asked introductory questions about their internet use based on five different motives: surfing, researching, socialising, shopping and entertainment (Rodgers & Thorson, 2000). Next they answered questions to identify if they had bought items online and if they currently owned a car or used a credit card and if so who what brand they had.

#### **4.6.3 Processing**

Following exposure to the experimental web page respondents answered a thought elicitation question (Cacioppo & Petty, 1981). This question was used as a proxy measure for the amount of processing capacity allocated to the target banner advertisement. The procedure was based on information processing theory that suggests the more attention and processing allocated to a stimulus, the greater the amount of processing possible (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986). The measure was originally developed for laboratory experiments in psychology, and versions have been used in marketing studies to measure the extent of processing of interactive advertisements (Liu & Shrum, 2009; Sicilia et al., 2005). Typically the question asks respondents to list all thoughts they have about the advertisement at the time of exposure. Respondents are instructed to list one thought per box and text boxes are provided for respondents to write their thoughts. The wording used in the current study was adapted from Cacioppo and Petty (Cacioppo & Petty, 1981) and read as follows:

**Table 4-1 Thought elicitation/processing measure**

| <b>Question text</b>   | <b>Scale Type</b>                       |
|--|---|
| <p>On the next page there is a question that asks you to list the thoughts you had about the [Brand] advertisement on the page you just viewed.</p> <p>You may have had all favourable thoughts about the ad, all negative thoughts, all irrelevant thoughts or a mixture of the three. Any case is fine, simply list what you were thinking about the advertisement after you saw it.</p> <p>Do not worry about spelling, punctuation, grammar or length of the response you enter.</p> <p>There are lots of boxes to list thoughts to ensure everyone has lots of space, so don't worry if you don't fill every box.</p> | 12 individual text entry boxes provided |

#### **4.6.4 Attention**

The amount of attention respondents paid to the target advertisement was a critical component of this research as it is the antecedent of all further processing. A self-report measure of attention was adapted from Stevenson, Bruner II and Kumar (2000). The original items were used to measure respondents' attention to an online advertisement compared to the webpage the advertisement was displayed in. The original scale had a reported Cronbach alpha of 0.76. The original measurement items consisted of 7 point likert-type questions anchored with None/Not at all and Very much. The items used to measure attention to the advertisement in the current study are presented below:



**Table 4-2 Attention measures**

| <b>Item text</b>  | <b>Scale type</b> | <b>Anchor points</b> |
|---|-------------------|----------------------|
| How involved were you with the (Brand) advertisement?   | 7 point likert    | Not at all/Very Much |
| How much thought did you put into evaluating the (Brand) advertisement?                       | 7 point likert    | Not at all/Very Much |
| How much attention did you pay to the (Brand) advertisement rather than the rest of the page? | 7 point likert    | None/Very Much       |
| How much did you concentrate on the (Brand) advertisement compared to the rest of the page?   | 7 point likert    | None/Very Much       |
| How much did you notice the (Brand) advertisement rather than the rest of the page?           | 7 point likert    | None/Very Much       |

#### **4.6.5 Perceived interactivity**

A self-report measure of perceived interactivity was also included as a manipulation check for the manipulation of interactivity within the ad. Two approaches were used to measure perceived interactivity. One was a simple 10-point scale originally used as a manipulation check for interactivity within a banner advertisement by Sundar and Kim (2005). The second approach was a five item measure using the key components of McMillan and Hwang's (2002) conceptualisation of perceived interactivity and components of the definition of interactivity within the ad used in this study. These measures of perceived interactivity are presented in the table below:

**Table 4-3 Perceived interactivity measures**

| <b>Item text</b>  | <b>Scale type</b>  | <b>Anchor points</b>                          |
|---|--------------------|---|
| On a scale of 1-10 with 1 being not interactive at all and 10 being highly interactive, how interactive did you think the (Brand) ad was? | 10 point continuum | Not at all interactive/<br>Highly interactive |
| My actions controlled the content in the advertisement  | 7 point likert     | Strongly Disagree/<br>Strongly Agree          |
| The advertisement responded to my actions quickly   | 7 point likert     | Strongly Disagree/<br>Strongly Agree          |
| The advertisement allowed two-way communication between myself and the advertisement  | 7 point likert     | Strongly Disagree/<br>Strongly Agree          |
| My actions controlled the look of the advertisement   | 7 point likert     | Strongly Disagree/<br>Strongly Agree          |

#### **4.6.6 Attitude towards the advertisement**

Attitude towards the advertisement represents a respondent's affective response to the advertisement and is the outcome of their processing of the advertisement. To measure attitude towards the ad a five item 7 point self-report likert scale was used as adapted from Kumar and Bruner II (2000). The measure was originally developed to measure attitude towards an online advertisement and had a reported Cronbach alpha of 0.87. The items used in the current study are in the table below:

**Table 4-4 Attitude towards the ad measures**

| <b>Item</b>  | <b>Scale type</b> | <b>Anchor points</b>                    |
|--|-------------------|---|
| How would you evaluate the (Brand) ad that appeared on the website | 5 Point Likert    | Very bad/ Very good                     |
| How much did you like the (Brand) ad that appeared on the website? | 5 point Likert    | Disliked extremely/Liked extremely      |
| How irritating did you think the (Brand) ad was?                   | 5 point Likert    | Very irritating/Not at all irritating   |
| How interesting did you think the (Brand) ad was?                  | 5 point Likert    | Not at all interesting/Very interesting |

#### **4.6.7 Attitude towards online advertising in general**

Attitude towards online advertising in general is an independent variable in the current study. It has been suggested that it influences consumers' attention and response to online advertisements (Schlosser & Shavitt, 2009). According to information processing theory, enduring predispositions to attitude objects influence how consumers allocate attention to those objects (Kahneman, 1973). The current study adapted a measure from Shamdasani, Stanaland and Tan (2001) that was used to measure attitude towards online advertising in general.

The reported Cronbach alpha in Shamdasani et al.'s study was 0.82. The measure was originally used by Cho (1999) who based it on Ducoffe's (1996) components of advertising value. The items used in the current study are presented in the table below.

**Table 4-5 Attitude towards online advertising in general measures**

| <b>Item text</b>   | <b>Scale type</b> | <b>Anchor points</b>                 |
|--|-------------------|--------------------------------------|
| Web advertising supplies valuable information in general | 7 point likert    | Strongly Disagree/<br>Strongly Agree |
| Web advertising is irritating in general(r)*             | 7 point likert    | Strongly Disagree/<br>Strongly Agree |
| Web advertising is entertaining in general               | 7 point likert    | Strongly Disagree/<br>Strongly Agree |
| Web advertising is valuable in general                   | 7 point likert    | Strongly Disagree/<br>Strongly Agree |
| Web advertising is necessary on the web                  | 7 point likert    | Strongly Disagree/<br>Strongly Agree |

\*r indicates reverse scaled item.

#### **4.7 Summary of construct measurement items**

Table 4-6 provides a summary of the measures used in this study detailing the construct the measure is used for, the source of the measure, original Cronbach alphas, and how the scale was adapted for the current study.

**Table 4-6 Summary of construct measures**

| <b>Construct</b>                | <b>Source of measure</b> | <b>Cronbach alpha of original scale</b> | <b>Adaptations made to original items</b>   |
|---------------------------------|--------------------------|---|---|
| Processing                      | Cacioppo & Petty, 1981   | Not available                           | Altered wording to reflect brands used in the current study. Shortened instructions by removing reference to time limits and signalling experimenter to suit self-administered context. |
| Attention                       | Stevenson et al., 2000   | 0.76                                    | Inserted reference to specific brands in the current study  |
| Interactivity                   | Sundar & Kim, 2005       | Not available                           | None  |
| Interactivity                   | McMillan & Hwang, 2002   | Not available                           | Items adapted from McMillan and Hwang's components of perceived interactivity and definition of interactivity in the current study  |
| Attitude towards the ad         | Kumar & Bruner II, 2000  | 0.87                                    | Reference included to target advertisements for the current study   |
| Attitude towards ads in general | Shamdasani et al., 2001  | 0.82                                    | None  |

## **4.8 Pre-testing**

Pre-testing is the final stage in questionnaire development and involves testing the questionnaire on a small sample of people (Hunt, Sparkman, & Wilcox, 1982). Its purpose is to make sure the questionnaire is functioning correctly and to identify any issues before final deployment (Zikmund, 2010). Pre-testing the questionnaire consisted of three main stages. First an expert panel was used to determine the target advertisements for the study and again to review the initial questionnaire in its entirety. Then pre-testing of specific questions was conducted before a pre-test of the final questionnaire and pilot were conducted.

### **4.8.1 Expert review**

An expert review is part of the pre-testing procedure designed to collect feedback from experts in the discipline skilled in questionnaire design (Campanelli, 2008). The initial expert review panel

was used to select the target advertisements for the study. The panel comprised five academic staff members and one advertising industry professional. The panel was asked to review nine interactive advertisements that were candidates for inclusion in the final study. The panel was asked to rate how interactive they thought each advertisement was and provide comments on each advertisement. Feedback was collected via an online survey which also served as a test of how the advertisements would be embedded in the questionnaire. Based on these results and the judgment of the researcher as to which advertisements best fit the definition of interactivity within the advertisement used in this study, the nine advertisements were reduced to the two advertisements discussed earlier.

The second round of comments from a panel of experts was collected after the full version of the questionnaire had been designed. This panel comprised three academic staff members. They were asked to read over the questionnaire and check for face validity (Hair, Black, Babin, Anderson, & Tatham, 2006) as well as check for flow and clarity. Feedback was collected in person and minor changes were made in preparation for a pre-test with a larger sample.

#### **4.8.2 Pre-test**

Following the expert review of the questionnaire a pre-test was conducted using a convenience sample of undergraduate students. The pre-test was designed to test the entire questionnaire on a group of people who were not experts as the views of experts and the target population may be different (Campanelli, 2008). In addition, the pre-test was necessary to test the experimental manipulations and to test how the thought listing procedure translated to a self-administered setting. A total of 140 usable responses over five experimental conditions were collected. Results were also used as a test of the planned data analysis techniques (Hunt et al., 1982). Based on the pre-test refinements were made to the experimental conditions. These included adding specified figures for balance, interest rate, and repayments for the credit card advertisement as respondents stated they could not remember their current details, and framing the purchase of a car as being for a friend as some respondents indicated they were not actively considering a replacement vehicle.

### **4.8.3 Pilot study**

The final step in the pre-testing procedure was a pilot study using a sample of NZ internet users (the target population) provided by the same panel company that would conduct the final data collection. When pre-testing a questionnaire it is desirable to test the questionnaire on respondents who are similar to the target population (Campanelli, 2008; Zikmund, 2010). Fifty-five usable responses were collected. Due to budget constraints, only one experimental condition was tested in the pilot study. As with the pre-test, the goal of the pilot was to provide a final check of the data collection instrument and data analysis procedure (Hunt et al., 1982). Based on the responses to the final pilot, minor modifications were made to the questionnaire in preparation for final data collection.

## **4.9 Sampling frame**

The population from which the sample was drawn was internet users in New Zealand. The number of individuals with internet access was estimated in 2012 as 3,454,000 people (Bascand, 2012). Data for the current study were collected during February 2013 so it is likely this is a close estimate of the size of the New Zealand internet using population at the time of data collection. Because the research question under investigation focusses on the effects of interactivity within an online advertisement on consumers' attention to, processing of, and attitude towards that advertisement the population from which the sample would be drawn had to have access to the internet.

### **4.9.1 Sample selection**

The sample was provided by an external panel company and was requested to be a generally representative sample of the New Zealand internet using population. This method has been used in previous studies (e.g., Hoffman and Novak, 2009) and although using a panel company to provide a sample has the possibility of self-selection error (Zikmund, 2010), it is an effective way of collecting a sample on the internet because of the lack of a general directory of internet users and email addresses (Roster, Rogers, Hozier, Baker, & Albaum, 2007). The size of the sample to be collected was determined as a combination of numbers needed for experimental conditions and numbers needed for SEM analysis (Fortin & Dholakia, 2005; Hair et al., 2006; Ko et al., 2005). Thirty respondents were desired per cell (Hair et al., 2006), meaning a required

sample size of 360 respondents. The panel company distributed a link to the online experiment and 363 complete responses were collected.

## 4.10 Sample characteristics

This section compares demographic information of the sample to characteristics of the New Zealand population that has internet access. Information on New Zealand internet users was sourced from a 2012 survey by Statistics New Zealand on household use of information and communication technology (Bascand, 2012).

### 4.10.1 Respondent age

Table 4-7 and Figure 5-1 show that the sample in the current study had a higher percentage of respondents in the 65-74 age bracket than the New Zealand internet using population (14.7% compared to 7.3%) and a lower percentage of respondents in the 15-24 age bracket (8.2% compared to 20.5%). However, due to the survey requiring people to be 18 years and over, effectively reducing the sample age range to 18-24 helps explain the lower proportion of respondents in this age range in the sample compared to the internet using population.

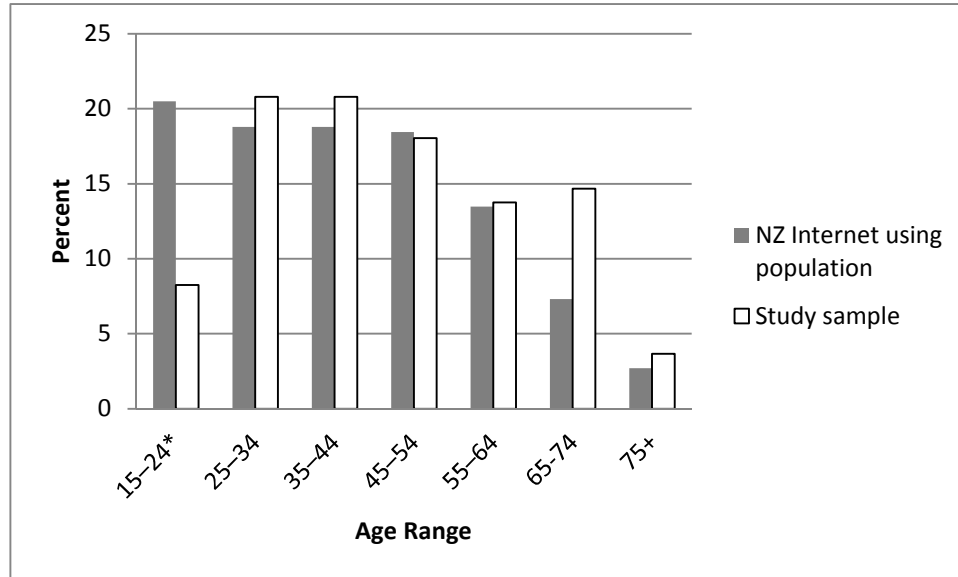
**Table 4-7: Age of sample**

| Age    | Number who have used internet in past 12 months (000) | Percentage of those who used internet in past 12 months | Number in Sample | Percentage of sample |
|--------|---|---|------------------|----------------------|
| 15–24* | 578   | 20.5  | 27               | 8.2                  |
| 25–34  | 530   | 18.8  | 68               | 20.8                 |
| 35–44  | 530   | 18.8  | 68               | 20.8                 |
| 45–54  | 520   | 18.4  | 59               | 18.0                 |
| 55–64  | 380   | 13.5  | 45               | 13.8                 |
| 65–74  | 206   | 7.3   | 48               | 14.7                 |
| 75+    | 76  | 2.7   | 12               | 3.7                  |
| Total  | 2,820   | 100   | 327              | 100                  |

\*Age range for sample was 18-24



**Figure 4-1: Age of sample**



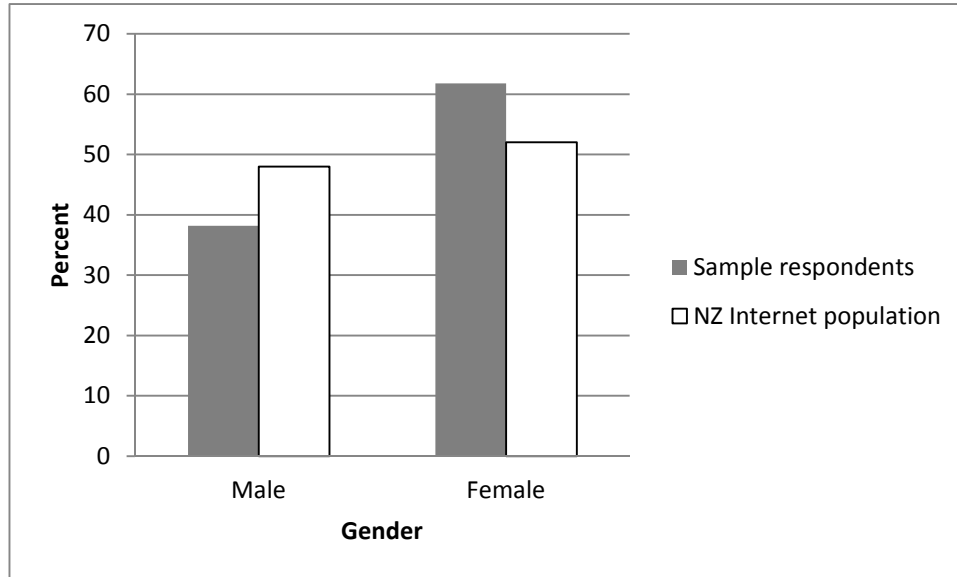
#### **4.10.2 Respondent gender**

Thirty-one percent of the sample was male and 62 percent of the sample was female. Compared to New Zealand internet user statistics there is a higher percentage of females in the study sample as illustrated in Table 4-8 and Figure 4-2.

**Table 4-8: Gender of sample**

| Gender | Sample Frequency | Sample Percent | NZ Internet Population Percent |
|--------|------------------|----------------|--------------------------------|
| Male   | 125              | 38.2           | 48                             |
| Female | 202              | 61.8           | 52                             |
| Total  | 327              | 100            | 100                            |

**Figure 4-2: Gender of sample**



#### **4.10.3 Respondent household income**

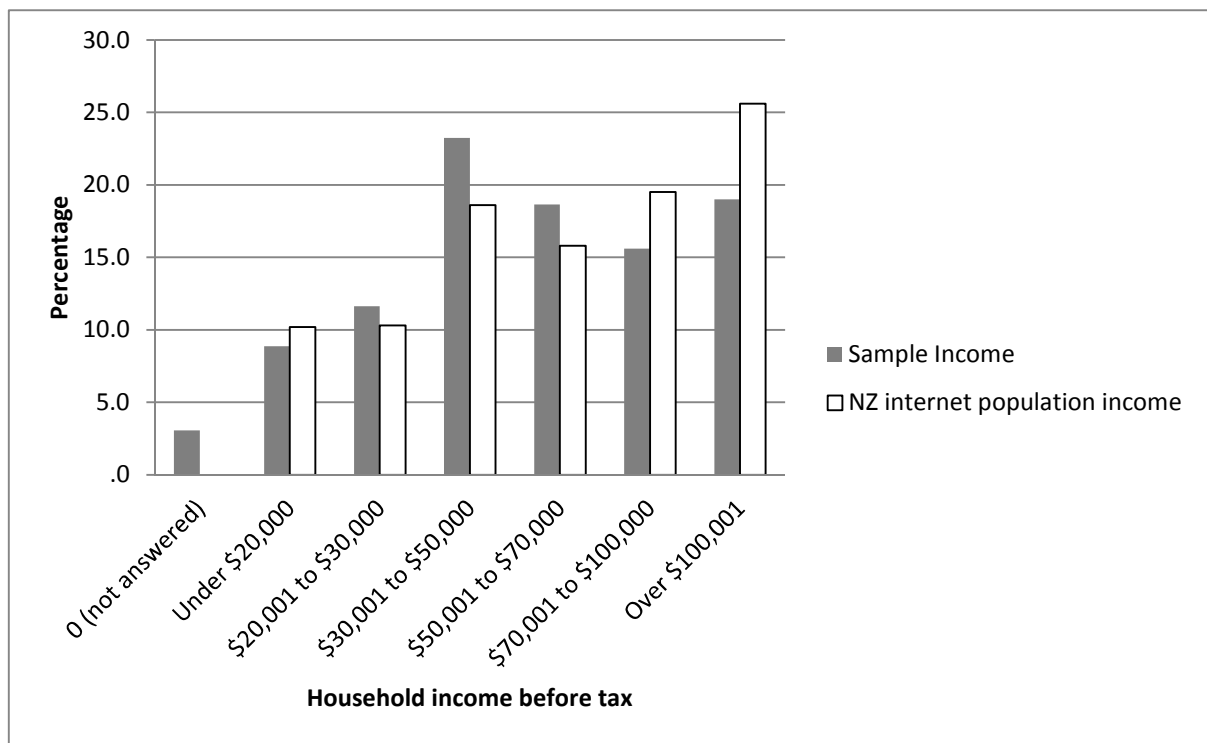
Household income approximately matched the distribution of the NZ internet using population. There was a higher percentage of households in the \$30,001 to \$50,000 range in the sample compared to the population (23.2% compared to 18.6%) and the sample had a lower percentage of household income in the Over \$100,001 range compared to the population (19% compared to 25.6%). Table 4-9 and Figure 4-3 illustrate the annual household income of respondents.

**Table 4-9: Total household income of sample**

| Income               | Frequency in Sample | Percent of Sample | Percent of New Zealand internet Population |
|----------------------|---------------------|-------------------|--|
| 0 (not answered)     | 10                  | 3.0               | .0   |
| Under \$20,000       | 29                  | 8.9               | 10.2                                       |
| \$20,001 to \$30,000 | 38                  | 11.6              | 10.3                                       |
| \$30,001 to \$50,000 | 76                  | 23.2              | 18.6                                       |
| \$50,001 to \$70,000 | 61                  | 18.7              | 15.8                                       |

| <b>Income</b>         | <b>Frequency in Sample</b> | <b>Percent of Sample</b> | <b>Percent of New Zealand internet Population</b> |
|-----------------------|----------------------------|--------------------------|---|
| \$70,001 to \$100,000 | 51                         | 15.6                     | 19.5  |
| Over \$100,001        | 62                         | 19.0                     | 25.6  |
|                       |                            |                          |   |
| Total                 | 327                        | 100.0                    | 100.0   |

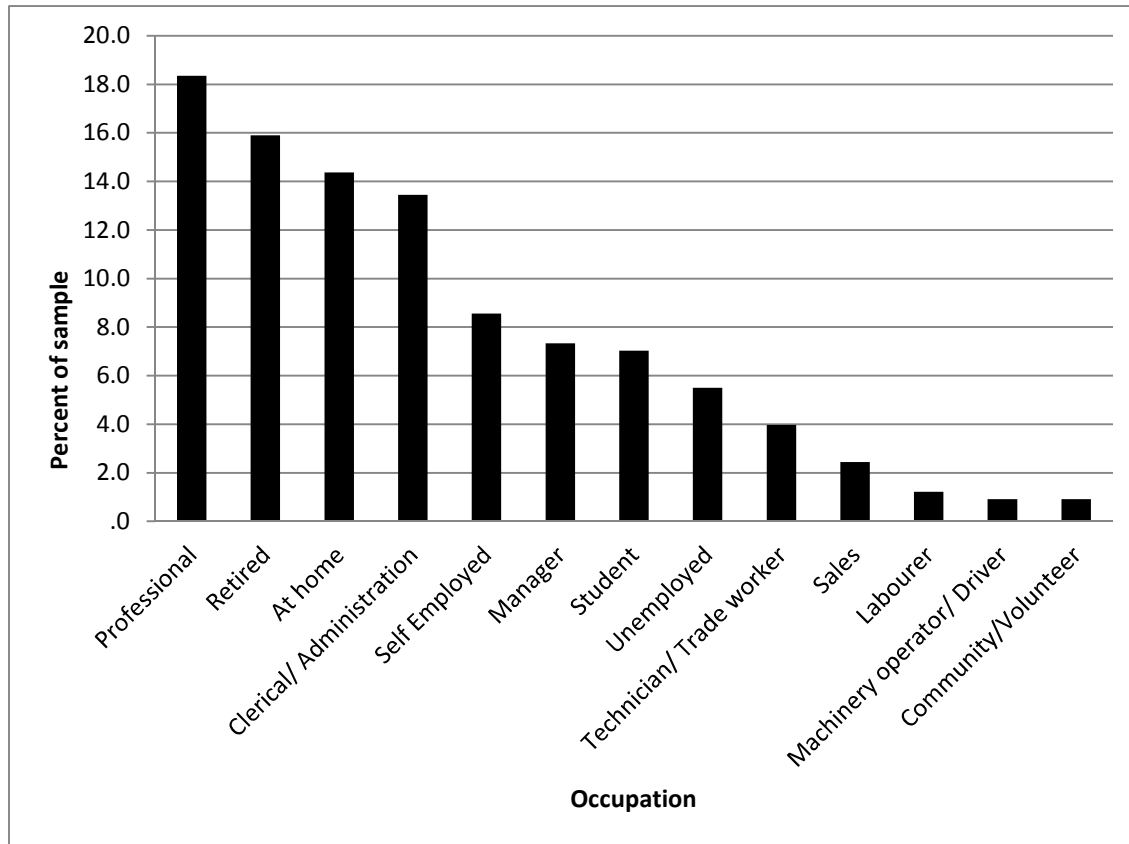
**Figure 4-3: Income of sample**



#### **4.10.4 Occupations of the sample**

One third (30.3%) of the sample listed their occupation as being either retired (15.9%) or at home (14.4%). Those in professional occupations made up 18.3% of the sample, 7% were students and 5.5% were unemployed. Figure 4-4 provides a more detailed illustration of the occupations reported by the sample.

**Figure 4-4: Occupation of sample**



#### **4.11 Chapter summary**

This chapter reviewed the method used to collect the data for the current study. The research paradigm guiding the design of the research was discussed as was the justification for using an experiment to collect the data. The manipulations, procedure, and measures used in the study were discussed and justified before outlining the data collection procedure and characteristics of the sample. The next chapter will discuss the analysis of the data collected from the experiment.

## **Chapter 5      Results**

This chapter details the procedures used to prepare the data for analysis and the analysis procedure itself using SEM. The first section addresses the assumptions of multivariate statistics and once these assumptions have been met, validity is discussed before detailing the results of hypothesis testing.

### **5.1 Response analysis**

Data collection was conducted over a five-day period between the 4th of February 2013 and the 9th of February 2013. Data were collected using an online survey distributed by a research panel company. Of the 546 respondents who attempted the survey, 363 provided full responses. The data were cleaned by removing those who did not complete the survey and those whose responses written in text entry fields indicated that the respondent was not taking the research or survey seriously, for example, a random combination of letters entered into the question asking what brand names they saw on the page, or thoughts listed that indicated the respondent was not engaged with the research such as “next” or “you obviously work for a bank and this survey is just about banks”. This left a total of 327 complete responses.

### **5.2 Common method variance**

Common method variance is variance resulting from the method of measurement rather than the constructs the measures represent (P. M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). It can be problematic as it means the actual phenomenon under investigation becomes hard to distinguish from features of the measures used (Avolio & Bass, 1991; Hufnagel & Conca, 1994). While Cote and Buckley (1987) found common method variance in measured items was lower in the marketing discipline (15.8%) compared to 28.9% in psychology and sociology (Malhotra, Kim, & Patil, 2006), because the current study involved collecting responses from one individual using one questionnaire it could be influenced by common method variance (Kemery & Dunlap, 1986; Lindell & Whitney, 2001; Malhotra et al., 2006).

Harman's (1967) single factor test is commonly used as a simple method to check for common method variance (Malhotra et al., 2006; N. P. Podsakoff & Organ, 1986; P. M. Podsakoff et al., 2003). Using this test, all items in a study are entered into an exploratory factor analysis. Common method variance is assumed to exist if a single factor emerges from

un-rotated factor solutions or, a first factor explains most (50% used by Mattila and Enz, 2002) of the variance in the variables (N. P. Podsakoff & Organ, 1986).

Table 5-1 below shows the un-rotated factor solution for all items used in the study. Five factors with Eigenvalues greater than 1 were extracted that account for 71.75% of the total variance. Factor 1 had the highest single factor percent of variance explained which was 37.17%. Given that more than one factor was extracted, and no single factor accounted for a majority (>50%) of the variance, the Harman's single factor test suggests common method variance does not have a large influence on the results of this study.

**Table 5-1: Harman's single factor test**

| <b>Component</b> | <b>Extraction Sums of Squared Loadings</b> |                      |                     |
|------------------|--|----------------------|---------------------|
|                  | <b>Total</b>                               | <b>% of Variance</b> | <b>Cumulative %</b> |
| 1                | 7.805                                      | 37.17                | 37.17               |
| 2                | 2.484                                      | 11.83                | 49.53               |
| 3                | 2.135                                      | 10.17                | 59.70               |
| 4                | 1.595                                      | 7.59                 | 67.29               |
| 5                | 1.049                                      | 4.99                 | 72.28               |

### **5.3 Assumptions of multivariate analysis**

Before hypothesis testing the data must be assessed for outliers, normality, and multicollinearity. These are three key assumptions underlying multivariate statistics. If these assumptions are not met the results of can be distorted (Hair et al., 2006).

The data were screened for outliers by converting the values for each observed item to be used in analysis into standard scores with a mean of zero and a standard deviation of 1 (Hair et al., 2006). Because the scores are standardised, this allows easy comparison across variables. To identify outliers Hair et al. (2006) suggest a standard score of above 4 for sample sizes over 80 (current study N=327). Appendix 2 illustrates there is only one variable with a standard score greater than 4 - Thought Number. The Thought Number values were ordered to identify the outlier(s) and this found four cases where the standard score was greater than 4.

Hair et al. (2006) suggest leaving outliers in a data set unless there is strong justification to remove them. It is possible that these respondents misunderstood the instructions and thought

they were required to list 12 thoughts, or they may legitimately have generated 12 or more thoughts about the advertisement when they were exposed to it. The decision was made to leave the outliers in the dataset as there was no strong justification to remove them as they could represent legitimate responses to the thought listing question,

### **5.3.1 Normality**

Normal distribution of data is a fundamental assumption of multivariate analysis. If the variables in the study are not normally distributed, the calculated estimates can invalidate the conclusions drawn from statistical analysis (Tabachnick & Fidell, 2007). In order to check any deviation from normality, a number of methods can be used. The most common and widely accepted test is an examination of skewness and kurtosis that indicates how much a distribution varies from the normal distribution (Hair et al., 2006).

Skewness refers to the symmetry of the distribution, whereas kurtosis refers to the peakedness of the distribution. Both skewness and kurtosis should be within the -2 to 2 range where data are normally distributed (Lewis-Beck, Bryman, & Liao, 2004). Though some scholars suggest kurtosis scores less than 7 are also appropriate for use in structural equation modelling (Mueller & Hancock, 2010). Appendix 3 shows that the skewness of the items range from -.761 to 1.941 and the kurtosis range from -1.278 to 5.210.

The skewness values for all items met the criteria for normality. And the values for all but one item met acceptable levels of kurtosis with values between the range of -2 and 2 (Hair et al., 2006; Lewis-Beck et al., 2004). Thought Number, which recorded the number of thoughts a respondent had about the advertisement had a kurtosis value of 5.210 which is over the threshold of 2 but less than 7, the more generous criteria suggested by Mueller and Hancock (2010) as acceptable for use with structural equation modelling. The skewness value (1.941) for Thought Number was within acceptable limits (Lewis-Beck et al., 2004; Mueller & Hancock, 2010).

### **5.3.2 Multicollinearity**

Another assumption for multivariate data analysis is that there is no multicollinearity between constructs in the data that are being analysed. Multicollinearity is the extent to which one construct can be explained by other constructs in the analysis. The presence of multicollinearity in the data makes it difficult to separate the effect of an individual construct, due to its interrelationship with other constructs in the analysis (Hair et al., 2006). Examining

the correlation matrix for the independent variables in the analysis is one simple way to identify multicollinearity. The presence of high correlations, for example .90 or higher, is an indication of multicollinearity (Hair et al., 2006). Appendix 4 shows the correlation matrix for the independent variables in the study. The table shows no correlation coefficients greater than 0.9. Correlation values range from 0.044 to 0.558. Therefore, the early indication is that multicollinearity is not present in the variables. However, Hair et al. (2006) also recommend calculating and interpreting the Tolerance and Variance Inflation Factor (VIF) values for each independent variable as a further test to identify multicollinearity.

Calculating the Tolerance of each independent variable in the analysis provides a measure of the amount of variability of a selected independent variable that is not explained by the other independent variables (Hair et al., 2006). The VIF value is the inverse of the Tolerance value. Therefore, multicollinearity can be identified by low Tolerance values and high VIF values (Hair et al., 2006). The Tolerance value is calculated by calculating the  $R^2$  - the amount of that independent variable that is explained by all the other independent variables in the study, then subtracting the  $R^2$  value from 1 ( $1-R^2$ ) to give the Tolerance of the specific independent variable. This involves an iterative process where one independent variable is selected from all independent variables in the study and used as a dependent variable in a multiple regression, with the remaining independent variables used as independent variables in the regression model.

Table 5-2 shows the Tolerance and VIF for each independent variable. Hair et al. (2006) suggest using a low Tolerance threshold of .10 and a high VIF value (more than 10) to indicate serious multicollinearity. As can be seen in Table 5, all tolerance values are high (.587 to .819) and VIF values are low (1.22 to 3.48), which further indicates that multicollinearity is not a problem in the data.

**Table 5-2: Tolerance and VIF values for all constructs**

| <b>Construct</b>         | <b>Construct <math>R^2</math></b> | <b>Tolerance<br/>(<math>1-R^2</math>)</b> | <b>VIF<br/>(<math>1/\text{Tolerance}</math>)</b> |
|--------------------------|-----------------------------------|---|--|
| Involvement              | 0.373                             | 0.627                                     | 1.59   |
| Attention                | 0.413                             | 0.587                                     | 3.48   |
| Attitude towards web ads | 0.181                             | 0.819                                     | 1.22   |
| Interactivity            | 0.198                             | 0.802                                     | 1.24   |
| Attitude towards the ad  | 0.336                             | 0.664                                     | 1.5  |



Given the assumptions underlying multivariate data analysis are met the data are deemed appropriate for use in SEM. Analysis using SEM involves confirmatory factor analysis to validate the measurement theory used in the study before testing the structural model to validate the hypothesised relationships between constructs from the conceptual model. The following sections detail this two-step approach as recommended by Anderson and Gerbing (1988).

## **5.4 Measurement model**

In SEM latent constructs are represented by observed or measured variables (Hair et al., 2006). The purpose of testing the measurement model is to establish how well the observed variables/items used in data collection represent the underlying latent constructs they are intended to measure (Byrne, 2010). SEM is a confirmatory technique and theory drives the specification of relationships between these observed and unobserved variables (Hair et al., 2006). The items used in the current study were adapted from previous research in the advertising and information processing field. These established relationships between items and the underlying constructs they measure were informed by previous studies and formed the measurement theory that guided the specification of the number of constructs and corresponding observed variables in the measurement model. Given both advertisements were perceived as highly interactive in pre-testing and no differences were expected between interactive features, the data were combined and analysed as one dataset in AMOS.

### **5.4.1 Confirmatory Factor Analysis (CFA)**

CFA is a technique used to test how well the measured variables/items in the data represent the underlying constructs they are supposed to measure (Hair et al., 2006). Because the measurement model specifies these relationships, the testing of the measurement model is representative of CFA in SEM analysis (Byrne, 2010; Hair et al., 2006). Testing the measurement model in SEM involves comparing the observed sample covariance matrix to the estimated population covariance matrix, providing overall model fit statistics to determine how well the measurement model fits the observed data (Hair et al., 2006). Individual factor loadings for each item are also produced representing how much variation in each item is caused by the underlying factor it is intended to measure.

#### **5.4.2 Construct reliability and validity**

By providing standardised factor loadings the measurement model allows testing of construct reliability, convergent, and discriminant validity which, when combined with face validity, validates the measurement theory used to specify the measurement model (Hair et al., 2006). This process is required as it ensures the measures used in the study accurately reflect the latent constructs they were intended to measure before making an attempt to evaluate hypothesised relationships between constructs in the structural model (Kline, 2010).

#### **5.4.3 Face validity**

Face validity represents the appropriateness of the content of the items to measure in relation to the construct they are intended to measure (Hair et al., 2006). Face validity was determined before data collection using the researcher's judgment and by having a group of experts review the content of the survey. Though the items to measure constructs were adapted from previous studies, it was important to establish face validity of the items in the context of the current study.

#### **5.4.4 Convergent validity**

When evaluating construct validity Hair et al. (2006) provide the guidelines listed in Table 5-3. Establishing validity includes calculating construct reliability and Average Variance Extracted (AVE) statistics in addition to considering standardised factor loadings. The construct reliability scores, AVE values and standardised factor loadings for each item based on the measurement model as initially specified are displayed in Appendix 5.

**Table 5-3 Criteria to establish validity**

| <b>Statistic</b>                 | <b>Criteria</b>  |
|----------------------------------|--|
| Construct Reliability            | 0.7 or higher indicates adequate convergence or internal consistency |
| Average Variance Extracted (AVE) | 0.5 or greater suggests adequate convergent validity                 |
| Standardised factor loading      | 0.5 or higher, ideally 0.7 or higher                                 |

The reliability of a construct measures the degree to which the different items used to measure each latent variable in the study are internally consistent in their measurements (Hair et al., 2006). Reliability scores for each construct/latent variable were calculated from the

standardised factor loadings in the measurement model using the formula provided in Fornell and Larcker (1981, p. 45) shown in Equation 5-1.

**Equation 5-1: Construct reliability equation**

$$\text{Construct reliability} = \frac{(\text{Sum of standardised factor loadings})^2}{(\text{Sum of standardised factor loadings})^2 + (\text{Sum of error variance for items})}$$

For each construct the sum of factor loadings squared is divided by the sum of factor loadings squared plus the sum of the error variance terms for each item (1- squared factor loading for the item). Appendix 5 shows that these were all above the 0.7 threshold suggested by Hair et al. (2006).

AVE is the average percentage of variation explained among the items (Hair et al., 2006). Calculating the AVE details the amount of variance in the items that is captured by the construct in relation to the amount of variance that is captured by measurement error. AVE was also calculated for each construct using the formula provided by Fornell and Larcker (1981, p. 46) shown in Equation 5-2:

**Equation 5-2 Average Variance Extracted equation**

$$\text{AVE} = \frac{\text{Sum of squared standardised factor loadings}}{(\text{Sum of squared standardised factor loadings}) + (\text{Sum of error variance for items})}$$

For each construct the sum of squared standardised factor loadings was divided by the sum of squared standardised factor loadings plus the sum of error variance terms for each item that makes up the construct. These AVE scores for each construct are shown in Appendix 5. Two constructs, Involvement (0.513) and Attitude towards web advertising (0.536) had scores towards the lower end of acceptability according to Hair et al.'s (2006) criteria.

Lastly, the standardised factor loadings are considered. Appendix 8 contains a diagram listing the standardised factor loadings from the measurement model as initially specified. This information is also presented in table form in Appendix 5. Examining the factor loadings revealed that two items were candidates for deletion given Hair et al.'s (2006) criteria. The item INV2 – “the advertisement had nothing to do with me or my needs” was reverse coded

and had a factor loading of 0.2, less than the minimum 0.5 suggested by Hair et al. (2006) and the item Atwads5 – “web advertising is necessary on the web” had a loading of 0.55, just above the minimum threshold suggested by Hair et al (2006).

The factor loadings, AVE and construct reliability measures all measure convergent validity but it is important to also test discriminant validity.

#### **5.4.5 Discriminant validity**

To test discriminant validity, the AVE value for any two constructs were compared to the squared correlation estimate between the two constructs (Fornell & Larcker, 1981). If the AVE value was higher than the squared correlation between the constructs it would provide evidence that the construct explains its item measures better than it explains another construct and supply good evidence of discriminant validity (Hair et al., 2006). Appendix 6 shows that the AVE scores for each construct were higher than the squared correlation estimate between it and another construct, supporting discriminant validity.

#### **5.4.6 Initial measurement model**

Appendix 7 shows the measurement model as initially specified according to measurement theory. Full text versions of items are included in this version of the model as well as abbreviated item titles to be used in later diagrams. The measurement model consists of five latent variables and twenty two observed variables. The latent variables are: Attention to ad [Attn]; Perceived Interactivity [PInt] – used as a manipulation check; Attitude towards the advertisement [Attad]; Attitude towards web advertising [Atwads]; and Involvement [Inv] – used as a manipulation check. The measurement model was analysed to assess absolute and incremental fit indices and factor loadings (standardised regression weights in AMOS) to determine how well the measurement model drawn from measurement theory fits the actual data from the sample (Hair et al., 2006).

#### **5.4.7 Fit statistics for measurement model as initially specified**

When assessing model fit, Hair et al. (2006) suggest reporting one absolute fit measure (RMSEA is favoured) and one incremental fit measure (CFI is favoured) in addition to the  $\chi^2$  statistic and degrees of freedom. Table 5-4 is an adaptation from Hair et al. (2006) that details the criteria and cut-off values used to indicate goodness of fit for a model with  $N > 250$  (current study  $N = 327$ ) and a total number of observed variables between 12 and 30 (current study has 22 observed variables). While not an absolute guide these criteria are similar to

other suggestions by scholars (Mueller & Hancock, 2010; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2007) and helpful in comparing goodness of fit between models.

**Table 5-4 Suggested goodness of fit measures**

| Statistic      | Criteria                                |
|----------------|---|
| X <sup>2</sup> | Significant p-values can be expected    |
| CFI            | Above .92                               |
| RMSEA          | Values <0.07 with CFI of 0.92 or higher |

The model fit criteria for the initial measurement model (see Appendix 7) ( $X^2(197)=508.367$   $p=0.000$  CFI =.925 RMSEA =0.075) shows that while CFI was at the threshold suggested by Hair et al. (2006), RMSEA was slightly higher than the desired 0.07 suggesting the model does not fit the data as well as it could. Options for improving model fit include removing poor performing items based on standardised factor loadings, and examining modification indices to alter the specification of the model.

#### **5.4.8 Removal of poor performing items**

Factor loadings less than 0.7 are problematic as they mean that the latent variable the item is intended to measure is explaining less than half the variance in the item, indicating cause to remove the item from the measurement model (Hair et al., 2006). As identified previously, the item INV2 – “the advertisement had nothing to do with me or my needs” had a factor loading of 0.2, and the item Atwads5 – “web advertising is necessary on the web” had a loading of 0.55. Given the poor performance of these two items they were removed from later analysis.

#### **5.4.9 Modification indices**

There are four basic ways to respecify items that have not performed as planned to improve model fit. These include relating an item to a different factor, deleting an item from the model, relating an item to multiple factors, or using correlated measurement errors (Anderson & Gerbing, 1988). The first two options are preferred as they preserve the potential to have unidimensional measurement. In SEM the modification indices (MI) indicate the extent to which the  $X^2$  statistic will decrease given respecification of either error covariance or regression paths between items and latent variables. The criteria used to consider

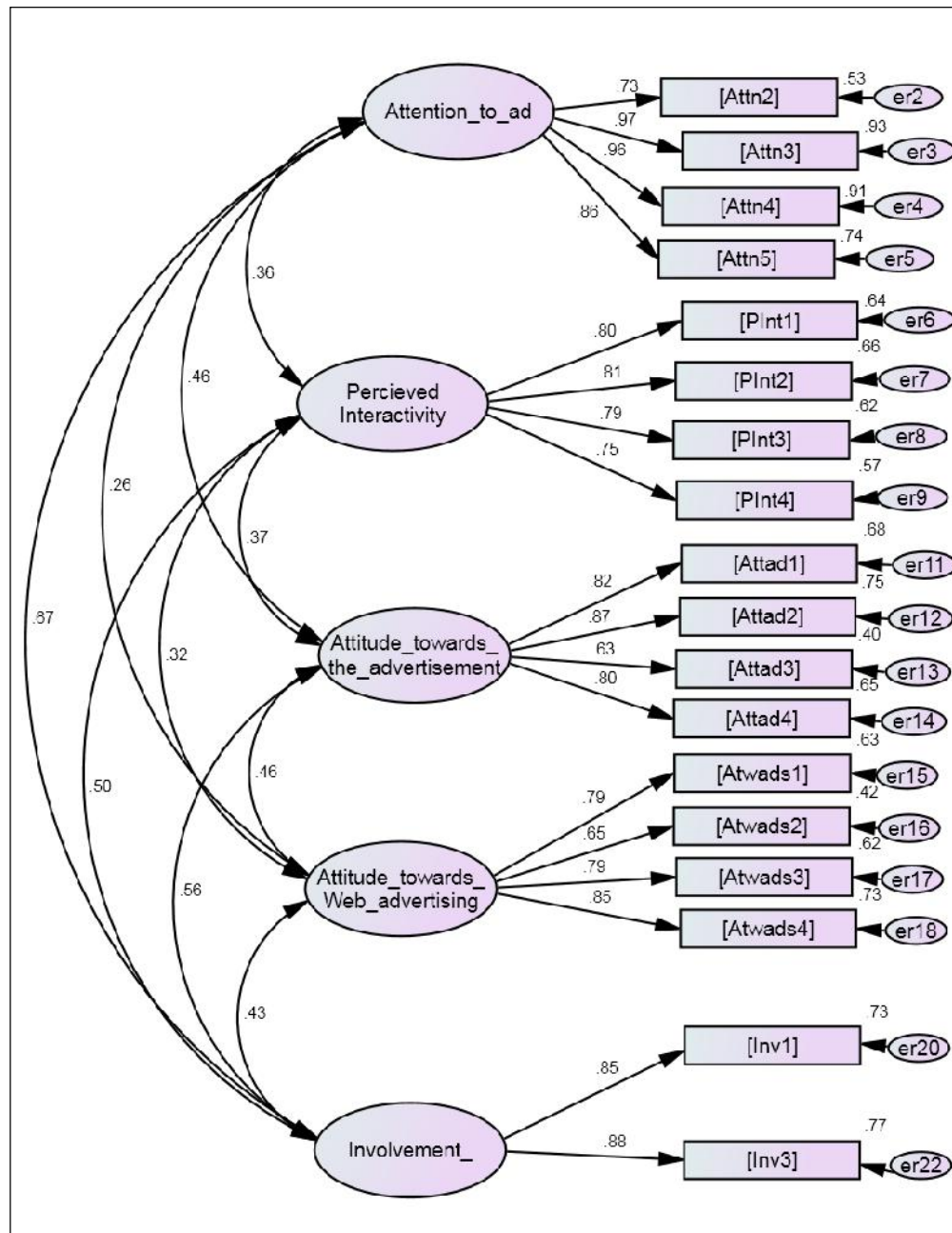
respecification based on MI remains a choice left to the researcher. For example Cabrera, Nora, and Castaneda (1993) suggest MI values over 20 as a rule of thumb and Hair et al. (2006) suggest a MI of 4 indicates fit could be improved. Byrne (2010) does not specify a threshold but uses an example of a MI of 13-14 being of little concern, while MIs in the 70s and 80s suggest clear misspecification.

The modification indices for the measurement model as initially specified were examined for values over 20. This identified regression paths between the item Attn1 – “how involved were you with the advertisement” and the involvement construct (Involvement → Attention\_1 MI=34.416); the Attitude towards the advertisement construct (Attitude towards the advertisement → Attention\_1 MI=38.013) and the item Invovlement\_1 “the message in the ad was important to me” (Involvement1 → Attenion\_1 MI= 43.663). Modification indices greater than 20 suggest Attn1 could load onto multiple constructs and is a candidate for removal from the model. Therefore, the item Attn1 was removed from the initial measurement model and not included in subsequent analysis.

#### **5.4.10 Respecified measurement model**

Having previously identified the items Inv2 and Atwads5 as having factor loadings below the criteria outlined by Hair et al. (2006) and identifying the item Attn1 was cross-loading, these three items were removed from the initial measurement model and a respecified measurement model tested. Removing the items is preferred by Anderson and Gerbing (1988) as it maintains the unidimensionality of the measures as each item loads on one construct only. Figure 5-1 shows the respecified measurement model and factor loadings.

**Figure 5-1 Respecified measurement model**



Model fit for the respecified model was improved compared to the initial measurement model ( $X^2$  (125)=300.461 CFI=.955 RMSEA=0.066) and is within Hair et al.'s (2006) guidelines suggesting the model fits the data well and is an improvement over the initial measurement model.

Table 5-5 contains the factor loadings for each item, reliability scores for each construct, and the AVE value for each construct from the respecified measurement model. As detailed in Table 5-5 all standardised factor loadings are above 0.5 and only two are below 0.7.

Reliabilities for each of the constructs are above 0.7, and the AVE values are all above 0.7 indicating adequate convergent validity (Hair et al., 2006). Table 5-6 also illustrates that the AVE scores for each construct are higher than the squared correlations between constructs support discriminant validity of the respecified model.

**Table 5-5 Factor loadings, construct reliability and AVE values for each construct**

| <b>Construct</b>               |   | <b>Factor loadings</b> | <b>Construct Reliability</b> | <b>AVE</b> |
|--------------------------------|---|------------------------|------------------------------|------------|
| <b>Attention</b>               |   |                        |                              |            |
| Att2                           | How much thought did you put into evaluating the [Brand] advertisement?                       | .725                   | 0.868                        | .778       |
| Att3                           | How much attention did you pay to the [Brand] advertisement rather than the rest of the page? | .967                   |                              |            |
| Att4                           | How much did you concentrate on the [Brand] advertisement compared to the rest of the page?   | .955                   |                              |            |
| Att5                           | How much did you notice the [Brand] advertisement rather than the rest of the page?           | .859                   |                              |            |
| <b>Perceived Interactivity</b> |   |                        |                              |            |
| Int1                           | My actions controlled the content in the advertisement  | .798                   | 0.868                        | 0.621      |
| Int2                           | The advertisement responded to my actions quickly   | .813                   |                              |            |
| Int3                           | The advertisement allowed two-way communication between myself and the advertisement          | .788                   |                              |            |
| Int4                           | My actions controlled the look of the advertisement   | .752                   |                              |            |
| <b>Involvement</b>             |   |                        |                              |            |
| Inv1                           | The message in the ad was important to me   | .852                   | 0.857                        | 0.750      |
| Inv3                           | It was important to me to carefully evaluate the ad   | .88                    |                              |            |



| <b>Construct</b>                        |   | <b>Factor loadings</b> | <b>Construct Reliability</b> | <b>AVE</b> |
|---|---|------------------------|------------------------------|------------|
| <b>Attitude towards the Ad</b>          |   |                        |                              |            |
| Aad1                                    | How would you evaluate the [Brand] ad that appeared on the website? | .822                   | 0.864                        | 0.618      |
| Aad2                                    | How much did you like the [Brand] ad that appeared on the website?  | .867                   |                              |            |
| Aad3                                    | How irritating did you think the [Brand] ad was?                    | .63                    |                              |            |
| Aad4                                    | How interesting did you think the [Brand] ad was?                   | .84                    |                              |            |
| <b>Attitude towards web advertising</b> |   |                        |                              |            |
| AWads1                                  | Web advertising supplies valuable information in general            | .791                   | 0.855                        | 0.598      |
| Awads2                                  | Web advertising is irritating in general (r)                        | .649                   |                              |            |
| Awads3                                  | Web advertising is entertaining in general                          | .786                   |                              |            |
| Awads4                                  | Web advertising is valuable in general                              | .854                   |                              |            |
| (r) Reverse scaled                      |   |                        |                              |            |

**Table 5-6 AVE and squared correlations between constructs**

|                                 | <b>AVE</b> | <b>Attention to ad</b> | <b>Attitude towards web ads</b> | <b>Attitude towards the ad</b> | <b>Involvement</b> | <b>Perceived interactivity</b> |
|---------------------------------|------------|------------------------|---------------------------------|--------------------------------|--------------------|--------------------------------|
| <b>Attention to ad</b>          | .778       | 0.882                  |                                 |                                |                    |                                |
| <b>Attitude towards web ads</b> | .598       | .264                   | 0.774                           |                                |                    |                                |
| <b>Attitude towards ad</b>      | 0.618      | 0.464                  | 0.463                           | 0.786                          |                    |                                |
| <b>Involvement</b>              | 0.750      | 0.666                  | 0.432                           | 0.562                          | 0.866              |                                |
| <b>Perceived Interactivity</b>  | 0.621      | 0.365                  | 0.318                           | 0.368                          | 0.503              | 0.788                          |

#### **5.4.11 Validity summary**

Face validity was established prior to testing the measurement model and testing the measurement model as initially specified identified two items (Inv2 and Atwads5) with poor factor loadings and reviewing the modification indices also identified the item Attn1 as potentially cross-loading on multiple factors. The fit statistics for the model did not indicate good fit ( $X^2(197) = 508.367$   $p=0.000$  CFI =.925 RMSEA =0.075). The items Inv2, Atwads5 and Attn1 were removed from the model and the respecified model showed improved fit and met criteria for a good fitting model ( $X^2(125)=300.461$  CFI=.955 RMSEA=0.066).

The remaining items demonstrated acceptable factor loadings and the construct reliability and AVE score were all within Hair et al.'s (2006) criteria for establishing convergent validity and Table 5-6 illustrates that discriminant validity is achieved.

## **5.5 Manipulation checks**

With content validity and reliability established summated scales were created for variables to conduct manipulation checks before testing the structural model.

### **5.5.1 Interactivity manipulation**

To check if the interactivity manipulation was successful an independent sample t-test was conducted using a summated scale of the perceived interactivity measure grouped by interactive and static advertisements to represent conditions where respondents saw either an interactive advertisement (N=151) or non-interactive advertisement (N=176). Results confirmed the manipulation had been successful with the mean score for perceived interactivity being significantly higher for interactive advertisements than non-interactive  $M(\text{Interactive}) = 4.10 > M(\text{Non-interactive}) = 3.32$ . ( $T = -5.559$   $p = 0.000$ ).

### **5.5.2 Goal manipulation**

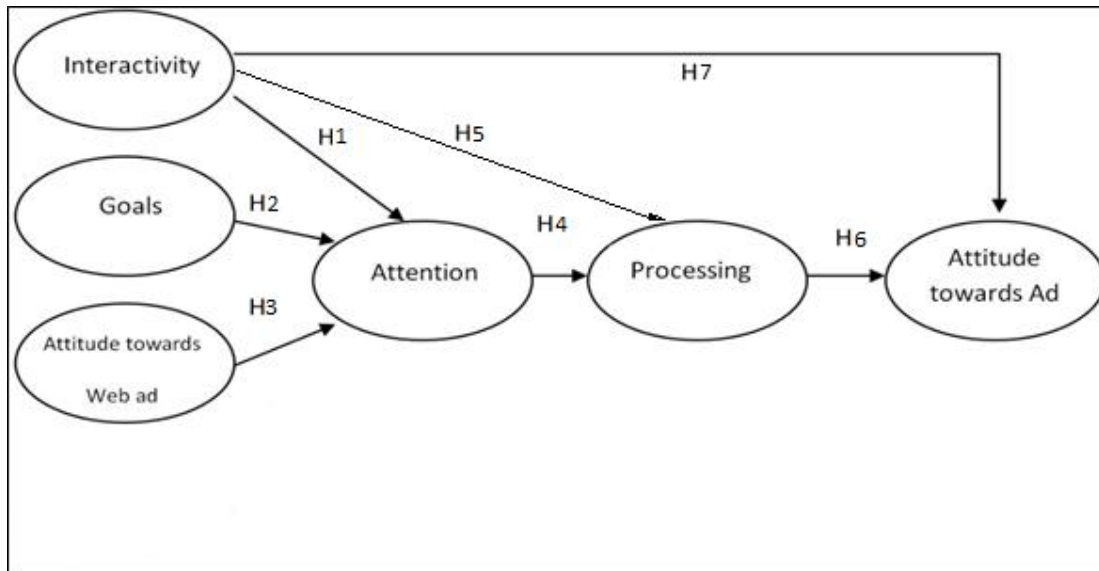
To check if the manipulation of browse, search, and force goals was successful an ANOVA was conducted using the summated scale of the Involvement construct. The Involvement construct measured involvement with the advertisement in terms of how important it was for the consumer to evaluate the target advertisement they were exposed to (Fortin & Dholakia, 2005; Zaichkowsky, 1994) Those respondents in the browse condition were instructed to look at anything they found interesting on the experimental web page. In the search condition respondents were given a scenario that related to the advertisement on the experimental web page and in the force condition respondents were instructed to view the advertisement and interact with it where possible. It was expected that those in the browse condition would report lower involvement with the advertisement compared to the search and force conditions as the advertisement was not as relevant to their goals as it was in the search and force conditions.

The summated scale for involvement was compared for the browse, search, and force goals. Results showed a successful manipulation as respondents in the browse condition ( $N = 122$   $M = 3.156$ ) had significantly lower involvement than those in the search and force condition ( $M(\text{Browse}) = 3.155 < M(\text{Search}) = 3.656$   $F(2) = 14.094$   $P = 0.02$ ; ( $M(\text{Browse}) = 3.155 < M(\text{Force}) = 3.893$   $F(2) = 14.094$   $P = 0.00$ ).

## 5.6 Structural model

The structural model is used to test the hypotheses in the study. The structural model specifies theoretical links between the latent constructs (Attention, Attitude towards the ad, Attitude towards web ads, Processing) as well as links between the latent constructs and experimental manipulations (Goals, Interactivity). The structural model showing the hypotheses is presented in Figure 5-2 below, followed by Table 5-7 which provides a summary of the hypotheses in the current study.

**Figure 5-2 Structural model to be tested**



**Table 5-7 Summary of hypotheses**

|    |   |
|----|---|
| H1 | An increase in interactivity within the advertisement will result in consumers paying more attention to the advertisement.  |
| H2 | Advertisements that are more (less) relevant to a consumer's goals will receive more (less) attention.  |
| H3 | The more (less) favourable a consumer's attitude towards advertising on the internet in general, the more (less) attention they pay to a particular banner advertisement. |
| H4 | An increase in the amount of attention paid to the advertisement results in an increase in the amount of processing the advertisement receives.                           |
| H5 | An increase in interactivity within the advertisement will result in an increase of processing of the advertisement   |
| H6 | An increase in the amount of processing an advertisement receives will result in a more favourable attitude towards the advertisement.                                    |
| H7 | An increase in interactivity within the advertisement will result in consumers having more favourable attitudes towards the advertisement.                                |

The structural model in Figure 5-2 was constructed in AMOS and the resulting model is shown below in Figure 5-3. The structural model for AMOS includes three multi-item constructs: Attention; Attitude towards web ads (Att\_Web\_Ads); and Attitude towards the advertisement (Attitude\_to\_Ad) as well as one single item construct measuring processing (Amount of processing) measured by number of thoughts listed (Thought\_Count) and three constructs using dummy variables representing experimental manipulations (Interactivity, Goals (Search and Force)). Dummy variables were incorporated into the model using the indicator coding approach. (Hair et al., 2006). To measure the experimental manipulation for interactivity those conditions where the respondents viewed a non-interactive advertisement were coded as a zero and the conditions where a respondent viewed an interactive advertisement were coded as a 1. Similarly, for the goal manipulation those respondents who were in a browse condition were coded as a zero (base case) and those respondents who experienced a search goal or force goal were coded as 1 and compared to the base. Using dummy variables this way in SEM is similar to dummy variables in regression (Edwards, Wirth, Houts & Xi, 2012). The results from including categorical dummy variables have been shown to approximate those of continuous variables or result in more statistically conservative estimates (Iacobucci, 2010).

### 5.6.1 Structural model fit

The fit of a structural model was assessed in the same way as the measurement model after reviewing a range of criteria (Mueller & Hancock, 2010; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2007). Table 5-8 reintroduces Hair et al.'s (2006) criteria for goodness of fit for a model with fit for a model with a sample size greater than  $N > 250$  (current study  $N = 327$ ) and a total number of observed variables between 12 and 30 (current study has 13 observed variables in structural model).

**Table 5-8 Goodness of fit criteria for structural models**

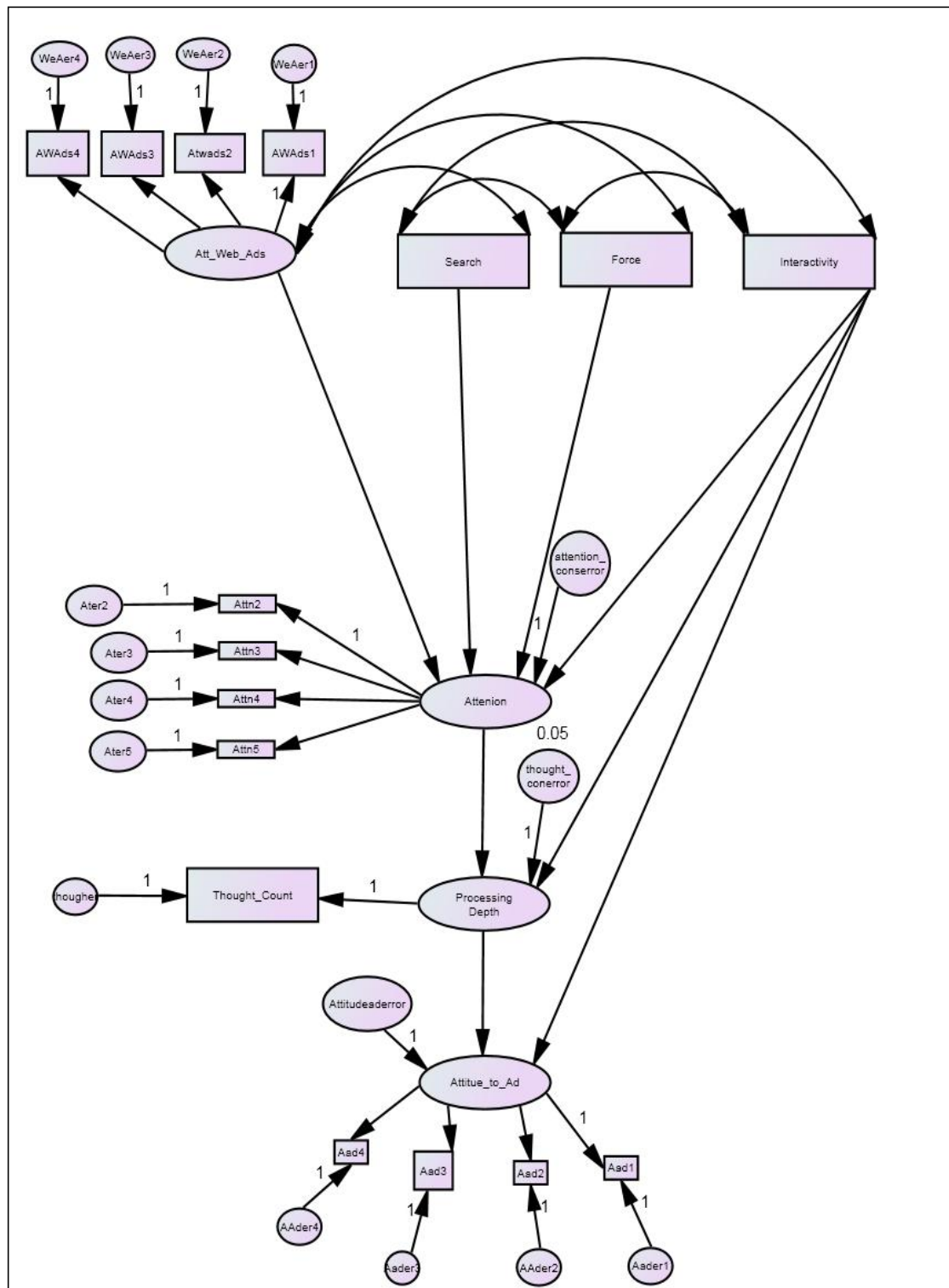
| Statistic | Criteria                                   |
|-----------|--|
| $\chi^2$  | Significant p-values can be expected       |
| CFI       | Above .92                                  |
| RMSEA     | Values $< 0.07$ with CFI of 0.92 or higher |

Model fit indicators for the structural model suggested the model fit the data well<sup>1</sup> ( $\chi^2 (94) = 200.426$   $p = 0.000$  CFI=.962 RMSEA= 0.059). With a CFI value above .95 (the cut-off suggested by Bentler, 1992, and referred to by Byrne, 2010) for a good fitting model and a RMSEA value of .059, approaching the 0.05 level generally accepted as indicating good fit (Mueller & Hancock, 2010; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2007), the structural model can be said to fit the data well. With the model fitting the data well the path estimates can be examined to begin testing the hypotheses.

---

<sup>1</sup> On the initial test of the model a negative variance error message was encountered for thought\_conerror, the error term associated with the thought listing measure. This indicates a Heywood case and was handled by fixing the error to a very low value (Dillon, Kumar, & Mulani, 1987) though it should be noted this could decrease model fit as the fixed value of 0.05 is not likely to be the true value (Hair et al., 2006).

Figure 5-3 Structural model as drawn in AMOS



### 5.6.2 Hypothesis testing

Table 5-9 outlines the hypotheses that were tested in the model, their paths as illustrated in the structural model, and the associated estimates for each path. This information highlights which hypotheses were supported according to the structural model.

**Table 5-9 Hypothesis testing**

| Hypothesis | Path   | Estimate | Standard error | Direction | Significance | Hypotheses Supported |
|------------|--|----------|----------------|-----------|--------------|----------------------|
| H1         | Interactivity - Attention                      | .336     | .114           | Positive  | P=0.003      | Supported            |
| H2         | Search - Attention                             | 1.005    | .148           | Positive  | P=0.000      | Supported            |
| H2         | Force - Attention                              | 1.287    | .152           | Positive  | P=0.000      | Supported            |
| H3         | Attd <sub>online</sub> advertising - Attention | .280     | 0.67           | Positive  | P=0.000      | Supported            |
| H4         | Attention - Amount of processing               | .514     | 0.99           | Positive  | P=.0.000     | Supported            |
| H5         | Interactivity -Amount of processing            | -0.044   | .224           | Positive  | P=0.843      | Not Supported        |
| H6         | Processing - Attd <sub>ad</sub>                | .501     | .111           | Positive  | P=0.000      | Supported            |
| H7         | Interactivity - Attd <sub>ad</sub>             | 0.075    | .132           | Positive  | P=.571       | Not Supported        |

Analysis of the estimates in the structural model shows that H1 is supported. Interactivity has a significant positive relationship with attention. Advertisements that were interactive received more attention than advertisements that were not interactive. H2, which stated advertisements related to consumers' goals would receive more attention than advertisements not related to consumers' goals, was also supported. The relationship between both the Search and the Force items and attention is positive and significant. This shows that respondents in the search and force conditions paid significantly more attention to advertisements than in the browse condition. H3 was also supported demonstrating respondents with a more favourable attitude towards online advertising paid more attention to



the advertisements in the study. H4 was also supported; the more attention respondents paid to the advertisement the greater their processing of the advertisement. However, H5 was not supported; consumers did not have an increased number of thoughts about interactive advertisements compared to non-interactive environments. H6 was supported; greater processing of the advertisement resulted in more positive attitude towards the advertisement. Finally, H7 was not supported; interactivity within the ad had no direct effect on attitude towards the ad.

### **5.6.3 Additional investigation of interactivity and advertisement processing**

Given H5 was not supported, the results suggest that interactivity has no direct effect on how much consumers process the advertisement, yet has a direct effect on attention. This suggests that in order for processing of the advertisement to be affected by interactivity, consumers must first notice the interactivity by paying attention to the ad. Once they notice the interactivity in the advertisement they have the opportunity to experience the interactive features of the ad through interacting, so the effects of interactivity could be observed through differences in processing between those who interacted and those who did not. To investigate this possibility and help answer the research question about the effect of interactivity on consumers' processing of the ad, the thoughts that the consumer listed were counted to indicate the amount of processing and were coded as either favourable towards the advertisement, neutral/irrelevant to the advertisement, or unfavourable towards the advertisement (Cacioppo & Petty, 1981). Next, an ANOVA was conducted on the total number, favourable, unfavourable, and irrelevant thoughts by those respondents who interacted with the advertisements and those who did not.

Figure 5-4 shows the mean number of favourable thoughts based on extent to which the respondent interacted with the advertisement. The results from the ANOVA revealed that those who interacted with the advertisement a small amount (N= 69), a moderate amount (N= 70), or a lot (N=19) had significantly more favourable thoughts about the advertisement than those who did not interact at all (N=83) and those who interacted very little (N=86). There were no significant differences between the groups in terms of total thoughts, negative thoughts, or neutral/irrelevant thoughts. This means that interacting with the advertisement generated more positive thoughts about the advertisement.

**Figure 5-4 Favourable thoughts by interaction type**

|            |                | Sum of Squares | df  | Mean Square | F     | Sig. |
|------------|----------------|----------------|-----|-------------|-------|------|
| Favourable | Between Groups | 43.379         | 4   | 10.845      | 9.687 | .000 |
|            | Within Groups  | 360.480        | 322 | 1.120       |       |      |
|            | Total          | 403.859        | 326 |             |       |      |

| Dependent Variable  | (I) How much did you interact with the BNZ advertisement you saw on the page? |  | Sig.  |
|---------------------|---|--|-------|
| Favourable Thoughts | Did not interact with the ad at all   | I interacted with the ad very little       | 1.000 |
|                     |   | I interacted with the ad a small amount    | .002  |
|                     |   | I interacted with the ad a moderate amount | .005  |
|                     |   | I interacted with the ad a lot             | .000  |
|                     | I interacted with the ad very little  | Did not interact with the ad at all        | 1.000 |
|                     |   | I interacted with the ad a small amount    | .002  |
|                     |   | I interacted with the ad a moderate amount | .005  |
|                     |   | I interacted with the ad a lot             | .000  |

## 5.7 Chapter summary

SEM was used to test the fit of both a theoretical measurement model and a structural model to the data collected in the research. Analysis was completed in two stages: a measurement model was developed from measurement theory, and CFA was used to test construct validity. Construct reliabilities were also calculated as were AVE values for each construct. With minor modification, including the deletion of one cross-loading item and two items that loaded poorly onto the latent variables they were intended to measure, the measurement model was shown to have a good fit for the data. Next a structural model was developed to test the hypothesised links between key constructs from information processing and interactivity theories used in the study. The structural model also fit the data well. Estimates

were examined and five out of seven hypotheses were supported. Only the hypotheses relating to interactivity having a direct effect on processing (H5) and attitude towards the ad (H7) were not supported (see Table 5-9). However, H1 was supported suggesting that respondents had to first pay attention to the advertisement to realise it was interactive before the interactivity could influence their processing of or attitude towards the ad. Further investigation of those who did interact with the advertisement revealed that they had significantly more favourable thoughts about the advertisement compared to those who did not interact.

It appears that by using the underlying information processing framework of attention, processing, and attitude, the findings of this study provide a different view of the effects of interactivity on consumers compared to studies that have assumed attention to the advertisement. By not presupposing attention and instead including attention in the model, the current study has highlighted that any influence of interactivity must happen after a consumer has paid attention to the advertisement. Because previous research has not tested the effects of interactivity on attention this dynamic has remained hidden in previous studies.

## **Chapter 6      Discussion**

The results of SEM analysis provided a different perspective on the relationship between interactivity and advertising persuasiveness by including attention as the first of three core information processing stages. The expected effects of interactivity on processing and attitude towards the advertisement from previous studies (Fortin & Dholakia, 2005; Liu & Shrum, 2009; Macias, 2003; Sundar & Kim, 2005) were not observed in the current study. Rather, interactivity influenced allocation of attention to the advertisement which then influenced processing of, and attitude towards, the advertisement. Consumers paid more attention to interactive advertisements than non-interactive advertisements. This increase in attention led to an increase in processing and a more favourable attitude towards the advertisement. By including attention in the conceptual and structural models this study not only shows a different dimension of the effect on interactivity in advertisements on processing, but it also supports expected relationships between attention, processing, and attitude towards the ad from information processing theory. It demonstrates that these fundamental relationships developed before the internet are still applicable to explaining information processing in an interactive medium such as the internet.

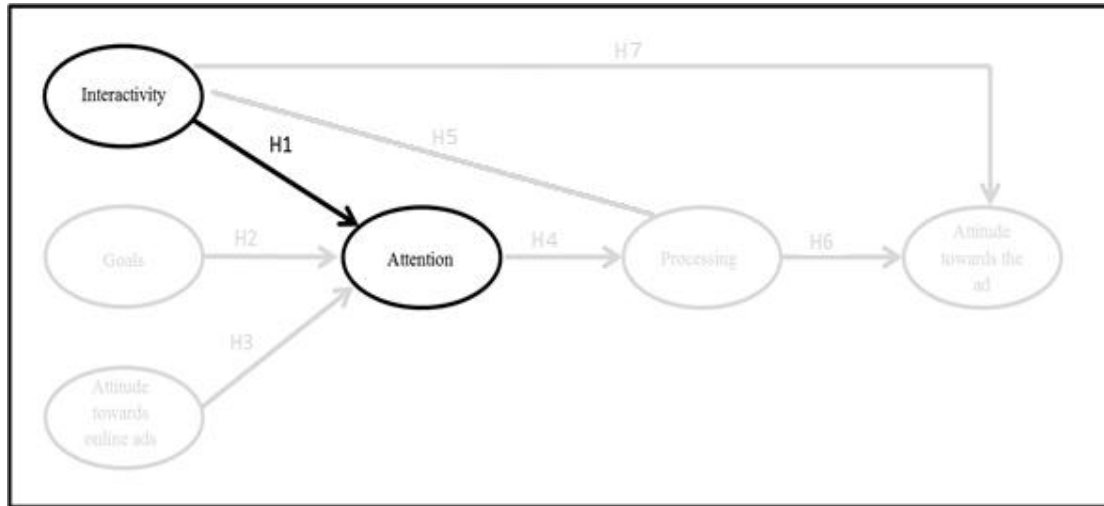
This has implications for emerging theories of interactivity as it suggests that attention to the advertisement is vital for further processing; therefore, before being processed, interactive advertisements must attract consumers' attention before they can influence their processing and attitude towards the ad. As attention to the advertisement increases, so does processing of the advertisement which ultimately leads to more persuasive advertising through more favourable attitudes towards the ad. In addition, those who experienced the interactivity of the advertisement through interacting with the message had more favourable thoughts about the ad. These findings provide empirical support for claims that interactivity is more engaging for consumers as interactivity attracts consumers' attention and those who interacted had a more favourable attitude towards the ad.

### **6.1 Interactivity and attention**

An interesting finding of this study was that consumers paid more attention to advertisements that were interactive than those that were not (Figure 6-1). Previous studies into the effects of interactivity on consumers' processing of advertisements have tended to focus on changes in attitude based on exposure to interactive vs. non-interactive stimuli (Macias, 2003; Sundar &

Kim, 2005) or differences in elaboration based on exposure to interactive vs. non interactive stimuli (Liu & Shrum, 2009; Sicilia et al., 2005). These studies assumed attention to the stimuli or used a website as the stimulus where navigating the website required attention.

**Figure 6-1 Relationship between interactivity and attention**



The current study used banner advertisements as the target stimuli, which were embedded in a webpage, so navigation of the webpage itself did not assume attention to the target advertisement. Therefore, it was necessary to test the attention consumers paid to the advertisement compared to other features on the page in which it was embedded. By including attention in the model to explain processing of interactive advertisements more clearly this study clarifies the relationship between interactivity, attention, processing and attitude formation that had only partially been explained by previous studies.

Advertising studies are beginning to shift from focusing on processing models to focusing on attention to understand more clearly what influences the allocation of attention to advertisements as this is important to understanding advertising effectiveness online (Hsieh & Chen, 2011). Information processing theory suggests attention is a limited cognitive resource and is the precursor to further processing (Kahneman, 1973; Lavidge & Steiner, 1961; MacInnis & Jaworski, 1989). By testing the effects of interactivity within an advertisement on attention the results of this study not only add to our understanding of how interactivity influences advertising persuasiveness, but also help to understand the effectiveness of classical information processing theory in explaining processing on the internet.

This study has shown that interactive advertisements are more engaging to consumers as they attract more attention which leads to increased processing. This finding supports conceptual claims that interactive advertising may be more engaging to consumers (Liu & Shrum, 2002) if engaging is taken to mean expenditure of cognitive resources such as attention and capacity (Mollen & Wilson, 2010). In addition, this finding contributes to our understanding of the effects of interactivity on the first stage of information processing: attention. Without paying attention to the advertisement the presence of interactivity has no direct influence on the extent to which consumers process an advertisement, or their attitude towards that advertisement. Essentially, without attention, the interactive features of an advertisement have no effect on consumers' processing of, or attitude towards the advertisement. However, once attention is paid to the advertisement it leads to an increase in processing and a more favourable attitude towards the ad, suggesting interactivity influences processing and attitude indirectly through attention.

Before consumers can perceive an advertisement as being interactive, or experience the interactivity of an advertisement, they must first pay enough attention to the advertisement to notice it. This study has shown that consumers pay more attention to advertisements that are interactive. This complements other research that has identified ways to attract attention in advertisements such as using animation (Yoo et al., 2004), and suggests that features of stimuli may increase arousal and attract attention (Berlyne, 1960). Once interactive features of an advertisement have played a role in attracting attention consumers may take the opportunity to experience the interactivity within the ad (enabled by the interactive features) and be influenced by the experience of interacting with the advertisement.

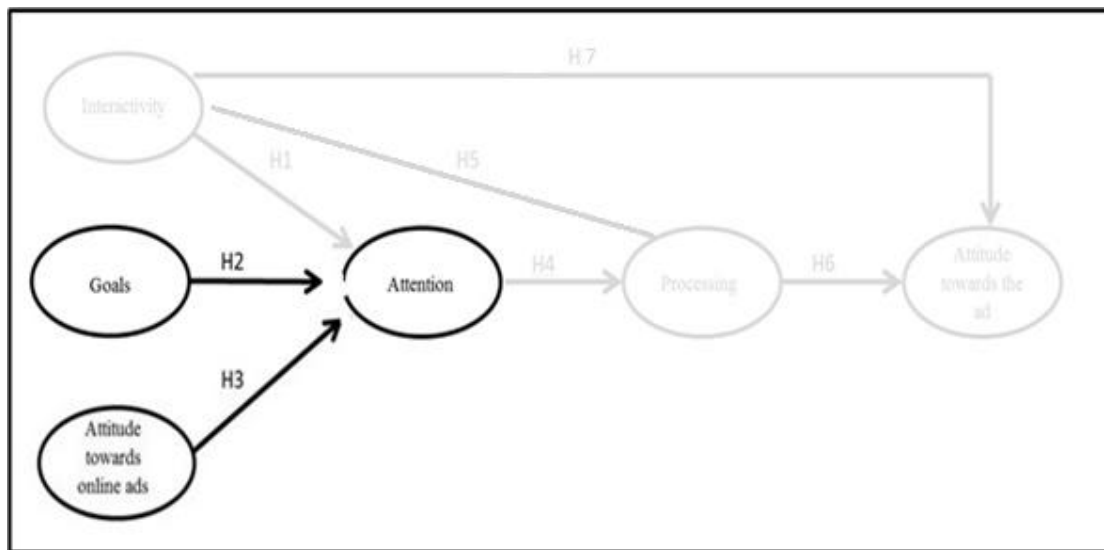
The current study set out to determine the effects of interactivity on attention to, processing of, and attitude towards the ad. From the influence of interactivity on attention it appears consumers pay more attention to advertisements with interactive features compared to a similar advertisement without these interactive features. Once attention is allocated to the advertisement consumers may take the opportunity to interact with the advertisement, enabled by the interactive features. Once attention has been given to the advertisement, the effect on attitude change is a result of processing the advertisement. This is where most previous research has focused and reported that consumers process interactive advertisements significantly more than non-interactive advertisements and have more favourable attitudes towards interactive advertisements compared to non-interactive advertisements (Liu & Shrum, 2002; Macias, 2003; Sundar & Kim, 2005). Between paying attention and forming an

attitude comes processing of the advertisement and the influence of interactivity on processing will be discussed in section 6.4. However, to draw discussion on attention to a close, the effect of relevance and attitude towards online advertising on attention will be discussed.

## 6.2 Goals, attitude towards online advertising and attention

Information processing theory suggests the goals of the consumer at the time of exposure and their attitude towards online advertising in general will influence the amount of attention they pay to advertisements as illustrated in Figure 6-2. The results confirmed expectations that the relevance of the advertisement to consumers' goals as well as their attitude towards online advertising in general influenced how much attention they allocated to the advertisement.

**Figure 6-2 Relationship between goals, attitude towards online advertising and attention**



According to information processing theory, the goals that a consumer has at the time of exposure to a stimulus are used to judge the relevance of that stimulus to achieving their goals. As consumers are motivated to achieve these goals they allocate more of their limited processing resources toward stimuli that will help achieve their goals compared to other stimuli in their environment (MacInnis & Jaworski, 1989).

In the current study, those respondents whose goal was to browse the experimental website looking for anything they found interesting paid significantly less attention to the target advertisement than those consumers who were instructed to search the website for

information related to the content of the advertisement. This was the expected effect as the advertisement would be more relevant to consumers who were asked to search for it to find information related to the advertisement than those who were browsing for whatever was interesting to them. This supports information processing theory that suggests attention is allocated to stimuli as a function of relevance to temporal goals (Kahneman, 2011) and provides additional empirical support for conceptual propositions that the reasons consumers go online influence what they pay attention to during a session on the internet (Hoffman & Novak, 1996; Rodgers, 2002; Rodgers & Thorson, 2000) and that motivation to achieve a goal influences attention allocation as has been suggested in online and offline information processing models (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rodgers & Thorson, 2000). In addition this finding supports the importance of relevance in increasing online advertising effectiveness (Rappaport, 2007) as consumers will pay more attention to relevant advertisements

A consumer's attitude towards online advertising in general also influences the amount of attention they pay to the target advertisement. Those consumers who had a more favourable attitude towards online advertising in general also paid more attention to the target advertisement in the study. As with goals, this effect was expected as early studies on consumer processing online indicated that the attitude towards advertising in general contributes to consumers' intention to click on an advertisement (Cho, 1999) and recent discussion suggesting that attitude towards advertising in general will influence how consumers respond to individual advertisements (Schlosser & Shavitt, 2009). In terms of advertising persuasiveness, this is an interesting finding as it suggests that if advertisers strive to increase consumers' attitude towards individual advertisements, this could eventually increase the favourability of attitudes towards advertising in general on the internet which would in turn contribute to consumers paying more attention to advertisements as they perceive them as being useful and relevant.

### **6.3 Summary of effects on attention**

Before moving on, this section will provide a summary of the discussion so far in terms of information processing theory. The foundations of information processing theory (Kahneman, 1973) outline how voluntary attention allocation is governed by temporary intentions (goals) as well as permanent predispositions towards an attention object. In addition, foundational information processing models in marketing also suggest that



consumers will allocate more processing resources to stimuli when they are motivated to process those stimuli (i.e., the stimuli are relevant to their goals). The direct relationship between interactivity within the ad and increased attention suggests consumers do pay more attention to advertisements with interactive elements. In addition, the results show an increase in attention paid to the target advertisement if it is relevant to consumers' goals, supporting the theory that a consumer's goals motivate them to pay attention to advertisements that are relevant to achieving their goals (MacInnis & Jaworski, 1989). These two findings provide support for the continued relevance of foundational information processing theory to explain consumer processing on the internet.

In addition, consumers' more permanent predisposition towards online advertising in general was shown to have a direct effect on attention paid to the individual advertisement. Those respondents who viewed online advertising more favourably paid more attention to the target advertisements in this research. This supports Kahneman's early (1973) assertion that permanent predispositions as well as temporary intentions control voluntary attention allocation and supports results of early studies that applied information processing theory to an online context (Cho, 1999). It also supports more recent research that suggested attitudes towards online advertising in general would influence advertisement processing (Schlosser & Shavitt, 2009).

According to information processing theory, the intensity of attention paid to stimuli is related to an individual's state of arousal (Kahneman, 1973; MacInnis & Jaworski, 1989), and features of a stimulus may influence a viewer's state of arousal (Berlyne, 1960). Kahneman (1973) also suggested that novel and surprising stimuli may spontaneously attract attention. In the current study respondents paid more attention to the advertisements that were interactive compared to advertisements that were not. As has been discussed earlier, interactivity was operationalised using a structural view of interactivity based on features of the advertisement that allowed interactivity. These interactive features could act as features of the advertisement that increase the arousal of viewers which leads them to pay more attention to the interactive advertisement, or interactivity could make the advertisements novel which spontaneously attracts attention and requires more capacity to process. The relationship between interactivity and attention provides empirical support for claims made in the development of interactivity theory that interactivity allows advertisers to make advertisements more engaging (Liu & Shrum, 2002). Engagement has been referred to as

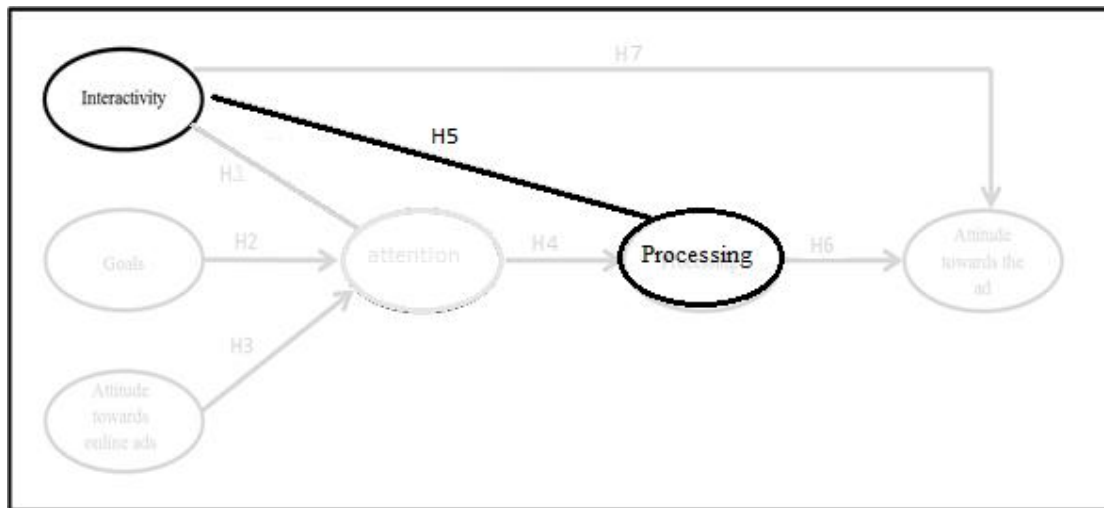
expending cognitive resources (Mollen & Wilson, 2010), of which attracting attention is a vital first step.

The expenditure of processing resources to interpret the information in an advertisement is also key to engagement and an established stage in consumer information processing theory which will be discussed in the next section.

## 6.4 Interactivity and processing

Previous studies investigating the effects of interactivity tested its influence on how much consumers processed an interactive advertisement compared to a non-interactive advertisement (Liu & Shrum, 2009; Sicilia et al., 2005). Therefore, the expected effect based on these previous studies was that consumers would process the interactive advertisement more than the non-interactive advertisement (Figure 6-3). However, this effect was not observed. Instead, it appears that interactivity has no effect on processing until the consumer pays attention to the advertisement, in which case the results demonstrate that the more attention they allocate to the advertisement the more they process the advertisement and the more favourable their attitude towards it.

**Figure 6-3 Relationship between interactivity and processing**



The lack of a difference in the amount of processing between interactive and non-interactive conditions was further investigated in the results section by comparing the nature of processing between those who reported to have interacted with the advertisement and therefore could have been influenced by their experience of interaction, and those who did

not. The results of this testing revealed that those consumers who interacted with the advertisements had more favourable thoughts about the advertisement than those who did not interact. This suggests that taking the opportunity to interact with the advertisement altered their experience with the advertisement resulting in more favourable cognitions about the advertisement.

A potential explanation for the expected effect of interactivity on processing not being observed is the relationship between interactivity that exists in an advertisement regardless of a consumer paying attention to the advertisement, and interactivity that is only experienced by the consumers once they pay attention to and interact with the advertisement.

Early interactivity studies discussed the idea that interactivity can be conceptualised from the advertiser's perspective, as features built into an advertisement that give consumers the opportunity to interact with the ad, and from the consumer's perspective, using their judgment of how interactive they perceive a communication exchange to be (Liu & Shrum, 2002; McMillan & Hwang, 2002). Recently there has been renewed interest in the interaction between customer and message as the source of interactivity, rather than the features of the medium or advertisement that allow interaction (Johnson et al., 2006; Song & Zinkhan, 2008).

When describing the difference between interactivity conceptualised as the built-in features of an advertisement and interactivity defined as the consumer's experience of interaction, Liu and Shrum (2002) use the terms structural and experiential interactivity.

Structural interactivity is interactivity that the marketer adds to their advertisements that allows the opportunity for consumers to interact with the advertisement. This type of interactivity exists in an advertisement without/prior to consumers allocating any attention to the advertisement. Experiential interactivity, however, can only be determined by the consumer once they have paid attention to an advertisement. An advertisement that features many interactive features could be high on structural interactivity from an advertiser's perspective, but without a consumer paying attention to the ad experiential interactivity will be non-existent.

Once consumers pay attention to an advertisement they can be made aware of, or even experience, the interactivity enabled through the interactive structural features of the advertisement. Conceptually these approaches to interactivity have been separated but the results of this study suggest that in practise they are closely related. It is this difference in

conceptualisation, and the presence of attention in the model that may explain the unexpected result of interactivity not directly influencing processing or attitude towards the advertisement.

The presence of attention in the model for final data collection created a precursor of noticing the interactivity of the advertisement or interacting with it before processing could occur. This left the expected influence of interactivity on processing operating in isolation of attention, which could explain why the expected relationship between interactivity and processing (H5) was not supported. Without paying attention to the advertisement consumers could not experience the interactivity in the ad, so it could have no effect on processing, or attitude formation.

However, consumers were shown to pay more attention to interactive advertisements which suggests that the bells and whistles built-in features of interactive advertisements associated with structural interactivity do serve to attract attention to advertisements. Once attention has been attracted by interactive features, consumers have the opportunity to experience the interactivity within the advertisement. This suggests that although interactivity does not presuppose attention, the interactive features of advertisements can attract more attention to interactive advertisements than advertisements with no interactive features. When advertisers are competing for attention online, one way to make their advertising more effective is by including interactive features. The results of the study show that as attention to the ad increases, consumers can notice the interactivity within the advertisement and if they take the opportunity to interact the result will be more favourable thoughts about the advertisement.

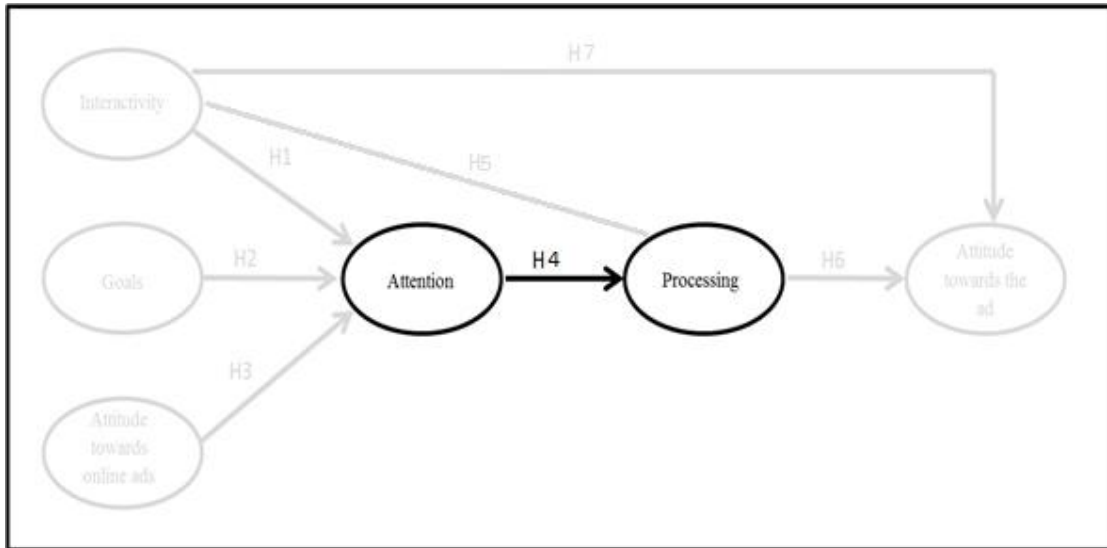
In addition to those who interacted with the advertisement having more favourable thoughts towards the ad, the more attention consumers paid to the advertisement the more thoughts they listed about the ad and the more favourable their attitude towards the advertisement which will be discussed in the next sections.

## **6.5 Attention and processing**

A central component of information processing theory is that attention and processing are linked (Kahneman, 2011; MacInnis & Jaworski, 1989). The current study used a self-report thought listing measure to capture the outcome of consumers' processing of the advertisement and used it as a proxy for the amount of processing resources allocated to interpreting the advertisement content. The results show that an increase in attention paid to an advertisement leads to an increase in cognitive processing of the advertisement as shown

in Figure 6-4. This section of the discussion will focus on this relationship and discuss its importance for information processing theory and advertising persuasiveness.

**Figure 6-4 Relationship between attention and processing**



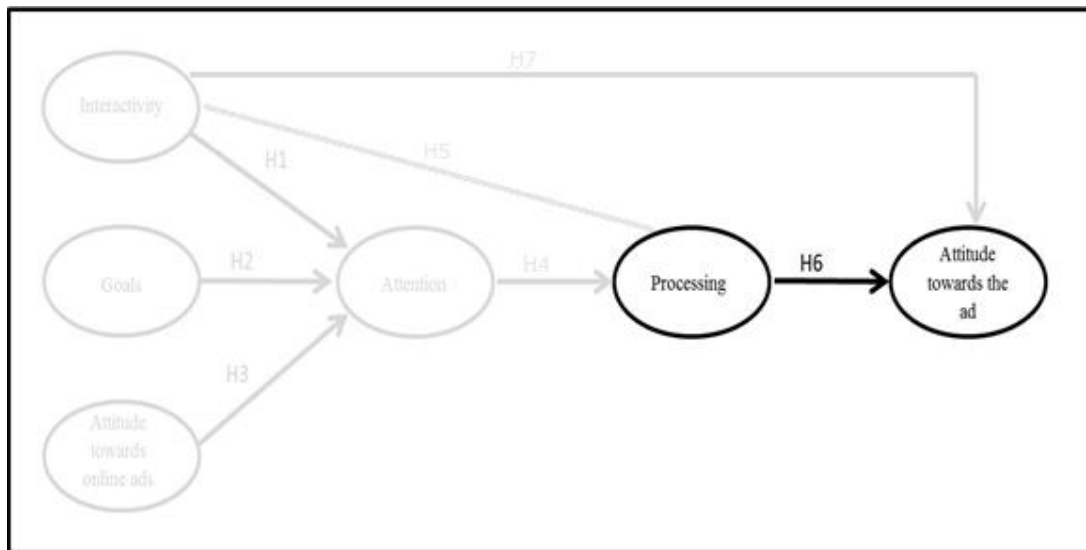
The finding that as consumers allocate more attention to the advertisement they process the advertisement more (measured using the thought listing technique (Cacioppo & Petty, 1981) is consistent with the theoretical underpinnings of information processing theory developed in Marketing (Celsi & Olson, 1988; MacInnis & Jaworski, 1989) and Psychology (Kahneman, 1973). The terms attention and processing capacity or working memory have been used synonymously in the literature by some scholars (Kahneman, 1973) while others have endeavoured to separate the terms conceptually (MacInnis & Jaworski, 1989). However, there is agreement that attention and processing capacity are limited cognitive resources that are allocated to stimuli in the environment (Kahneman, 2011) and as attention to a stimulus increases, so too does processing of that stimulus.

In terms of advertising persuasiveness this highlights the importance of relevance and interactivity in attracting consumers' attention to advertisements. As more attention is paid to an advertisement consumers process the advertisement more, giving advertisers a greater opportunity to persuade consumers with advertising content and engage them in the communication and persuasion process.

## 6.6 Processing and attitude towards the ad

Figure 6-5 outlines the hypothesised relationship between processing and attitude towards the advertisement. Results show that more processing leads to a more favourable attitude towards the ad.

**Figure 6-5 Relationship between processing and attitude towards the ad**



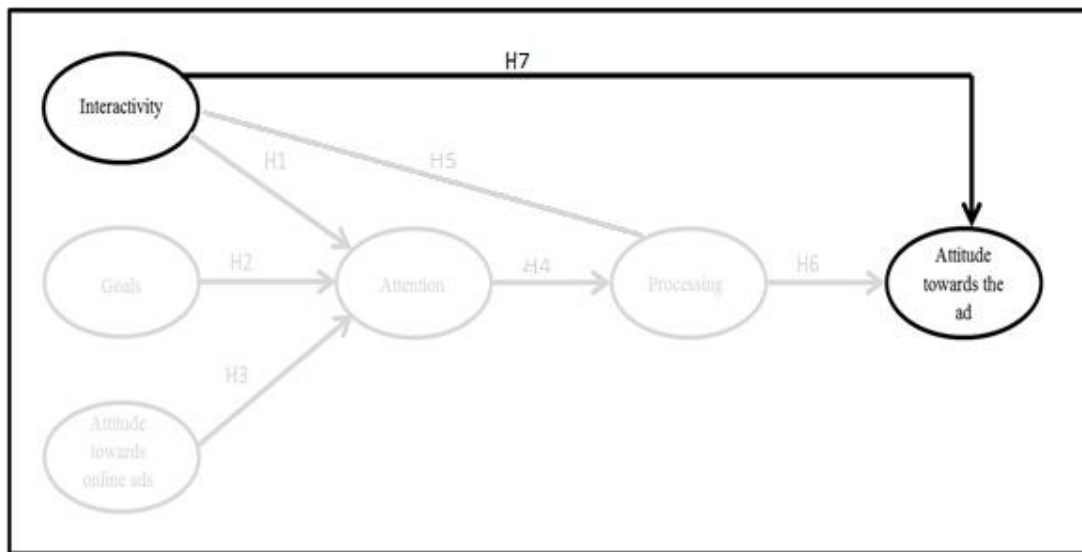
As noted earlier, interactivity did not directly affect attitude towards the ad. As processing of the advertisement increased, so did consumers' attitude towards the advertisement. In general, this is consistent with information processing theory as it suggests that consumers' processing of the advertisement informs their attitude towards the ad and that if a message is positively framed more processing results in a more favourable attitude towards the ad (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Petty et al., 1983).

In terms of advertising persuasiveness the results of the study suggest is that interactivity affects a consumer's processing of the advertisement and attitude towards the advertisement indirectly through attention. Interactivity can help attract consumers' attention to advertisements and the more attention they pay, the more they process the advertisement. Those consumers who take the opportunity to interact with the advertisement also experience the interactivity of the advertisement which increases their favourable thoughts about the advertisement. Overall this increased processing results in more favourable attitude towards the ad the ultimate dependent variable in this study.

## 6.7 Interactivity and attitude towards the ad

In order to include previous empirical findings in the conceptual model, the relationship between interactivity within the ad and attitude towards the ad was tested in this study (Figure 6-6). The expected effect of interactivity resulting in a more favourable attitude towards the ad was not observed (H7). The effect of interactivity on attitude towards the ad was not significant which was not consistent with previous findings (Sundar & Kim, 2005).

**Figure 6-6 Direct effect of interactivity on attitude towards the ad**



Interactivity within the advertisement represented the ability of a consumer to manipulate the format and content of an online advertisement in real time. This definition was modified from Steuer's (1992) definition of Virtual Reality. Interactivity within the advertisement was expected to have a direct effect on attitude towards the advertisement; however, the results did not support this. The expected effect (H7) was informed by previous studies that found a direct effect between interactivity in an advertisement and a more favourable attitude towards that advertisement (Sundar & Kim, 2005) and also by advertising processing models that argued even if cognitive processing was negligible, salient features of the advertisement may still influence attitude towards the advertisement, for example, MacInnis and Jaworski's (1989) level one processing and Petty et al.'s (Petty et al., 1983) peripheral route to persuasion. The peripheral route to persuasion claims that attitudes can be changed through the attitude object being associated with positive or negative cues in the persuasion context. The consumer then uses these cues to draw inferences about the attitude object. The presence of interactivity was expected to operate as a peripheral cue where the interactivity within the

ad would be a simple positive cue that could influence attitude towards the ad even when the respondent did not process the message in the advertisement.

Interactivity was expected to be a positive cue as previous research had found interactivity in advertisements had a positive effect on attitudes towards an ad (Sundar & Kim, 2005) and there was some evidence that interactive features in websites resulted in more favourable attitudes towards the site (McMillan, Hwang, & Lee, 2003). However, in the current study there was no direct relationship between interactivity within the ad and a more favourable attitude towards the ad. Although this was unexpected, the presence of attention in the conceptual and structural models provides some explanation.

Previous studies that have tested the effects of interactivity within advertisements focused on the effect of interactivity on elaboration, social, and telepresence and attitude towards the ad but did not test the effects of interactivity on attention, therefore did not include attention as a variable in their operationalised models (Fortin & Dholakia, 2005; Liu & Shrum, 2009; Macias, 2003; Sicilia et al., 2005; Sundar & Kim, 2005). When interpreting the results of these studies a change in attitude towards the site or advertisement is reported to occur due to the presence of interactivity in the advertisement/website. By adding attention to the conceptual model in the current study, and testing the effects of interactivity within the ad on attention, the results suggest that for any change in attitude to occur the consumer must first pay attention to the advertisement. Paying attention gives them the opportunity to notice the interactive features of the advertisement. This highlights the importance of attention in any further processing as has been established in information processing literature (Kahneman, 2011; Lavidge & Steiner, 1961; MacInnis & Jaworski, 1989). Despite processing being negligible, some attention has to be given to notice salient cues of the advertisement. Without attention there can be no direct effect on attitude towards the advertisement which helps clarify why there was no direct effect of interactivity within the advertisement on attitude towards the ad.

The effect of interactivity within the ad on attitude towards the ad is likely to be seen once the consumer has paid attention to the advertisement. This provides the opportunity to notice the interactive features, either taking the opportunity to interact or not and processing the information in the advertisement. The finding of no direct relationship between interactivity within the advertisement and attitude towards the advertisement suggests that directly influencing attitude towards an advertisement is not as simple as including interactive features. Rather, the effect works through respondents paying attention to the advertisement



and noticing these interactive features. Put simply, interactivity does not presuppose attention.

The results of the current study help to understand more clearly how interactivity within advertisements influences attitude towards the ad. By applying information processing theory to help explain the effects of interactivity on attitude towards the ad, the current study extends the findings of those studies that assume automatic attention. It provides empirical evidence that in a more realistic setting where attention is not assumed, the presence of interactivity itself does not have a direct influence on attitude towards the ad.

## **6.8 Chapter summary**

This chapter has discussed the key findings of this study in terms of how interactivity affects attention to, processing of and attitude towards online advertisements. Overall, the theoretical relationships between goals and enduring attitudes towards advertising and attention, attention and processing, and processing and attitude formation established in foundational information processing theory articles were consistent with consumers' processing of advertisements on the internet. The effects of interactivity on this established series of processing stages is something that few previous studies have tested, and those that have assume attention to the advertisement. The findings of this study suggest that interactive features within an advertisement that make it interactive can also draw consumers' attention to the ad. This increased attention leads to more processing of the message which provides empirical evidence of interactive advertisements being more engaging than non-interactive advertisements.

By testing the effects of interactivity on attention, processing, and attitude towards the advertisement the study revealed no direct relationship between interactivity within the advertisement and attitude towards the advertisement, or extent of processing, highlighting that interactivity does not presuppose attention. Rather, the effects of interactivity on advertising persuasiveness work through attention and processing of the advertisement, consistent with information processing theory. Ultimately, increased attention as a result of advertisements being relevant and interactive led to increased processing of the advertisement. The more consumers processed the advertisement the more favourable their attitude towards the ad.

## **Chapter 7      Conclusions, limitations and directions for future research**

This research set out to test the effects of interactive advertising on three key stages of information processing: attention, processing, and attitude towards the ad. While there has been extensive discussion about what interactivity means and how it affects consumers, researchers are still forming generalisations that contribute to an emerging theory of interactivity. One method scholar's use is to apply information processing theory to consumer processing of interactive advertisements (Cho, 1999; Liu & Shrum, 2009; Sicilia et al., 2005). Typically, these studies compare the amount of processing received by advertisements that are interactive with those that are not.

However, previous applications of information processing theory have not addressed the effect of interactivity on attention to the advertisement, despite attention being the antecedent to all further processing (Kahneman, 2011; Lavidge & Steiner, 1961; MacInnis & Jaworski, 1989). Without understanding how interactivity influences attention, understanding of the effects of interactivity on consumer processing remains incomplete (Ha, 2008).

This study addressed this gap by applying an information processing framework consisting of the established relationship between attention, processing, and attitude formation to understand how consumers process interactive advertisements. Testing attention to the advertisement required a different approach to previous studies that either used websites as the advertising stimulus (Liu & Shrum, 2009; Macias, 2003; Sicilia et al., 2005) or directed attention to banner advertisements (Sundar & Kim, 2005). Because banner advertisements share space on a webpage with other content, they compete for attention with other aspects of the page (Dreze & Hussherr, 2003), meaning that assumed attention is not realistic.

By not directing all consumers to pay attention to the target banner advertisements, this study was able to test the influence of interactive features within an advertisement on attention. The findings revealed that consumers paid more attention to advertisements that were interactive compared to those that were not interactive. With attention included in the model, the findings from previous studies suggesting interactive advertisements were processed more by consumers and resulted in more favourable attitudes were not as clear (Liu & Shrum, 2009; Macias, 2003; Sicilia & Ruiz, 2010; Sundar & Kim, 2005).

Although no direct relationships were observed between interactivity and extent of processing or attitude towards the advertisement, there were overall relationships that suggested interactivity led to an increase in attention to the ad which resulted in an increase in processing and a more favourable attitude towards the ad. Further investigation into the effects of interactivity on processing revealed that those consumers who interacted with the advertisement had more favourable thoughts about the advertisement. This suggests that before interactivity can influence consumers' processing of an advertisement they must first pay enough attention to the advertisement to be aware that it is interactive. Therefore, interactivity does not presuppose attention.

By applying an information processing framework that included attention, rather than a processing model such as the ELM, this study makes a number of contributions to theory and practise.

## **7.1 Theoretical contributions**

The reciprocal exchange of messages between communication parties has been described as the most important determinant of interactivity (Song & Zinkhan, 2008). This reciprocity is at the heart of how interactivity is conceptualised, whether it be in terms of the responsive process of exchanging messages between parties (Ha & James, 1998; Macias, 2003; Rafaeli, 1988), the features of a message or medium that allow this reciprocal message exchange (Coyle & Thorson, 2001; Fortin & Dholakia, 2005; Steuer, 1992), or the perceptions of consumers about how reciprocal a communication exchange is (Johnson et al., 2006; McMillan & Hwang, 2002; Song & Zinkhan, 2008).

From a marketing communications perspective this reciprocal message exchange has been suggested as a way to engage with consumers as exchanging messages with marketers involves consumers in the communication and persuasion process. If consumers choose to be involved, they become active participants in the communication process (McMillan & Hwang, 2002). The internet, as a medium, is built on technologies that facilitate rapid, easy interaction between users (Ha & James, 1998; Ko et al., 2005; Simmons et al., 2010). Therefore, it provides the potential for two-way communication between advertisers and their customers compared to one-way communication associated with traditional print and broadcast media (Hoffman & Novak, 1996).

These same technologies can be used to make individual advertisements interactive, but this raises new questions in the field of emerging interactivity theory about the extent to which

established information processing theory can be used to explain how interactivity influences advertising persuasiveness. Current understanding in this area presupposes that consumers are paying attention to advertisements, and evaluates how interactive features influence processing and attitude towards the advertisement compared to advertisements that are not interactive.

By approaching the effects of interactivity using an information processing framework that included attention, this study contributes to interactivity theory by assessing the effects of interactivity in situations where attention is not automatically assumed.

Considering the effects of interactivity in banner advertisements without presupposing attention has resulted in a more complete picture of how the interactive features of online advertisements are understood, processed and used by consumers. The findings showed that consumers pay more attention to advertisements with interactive features, leading in turn to increased processing, and a more favourable attitude towards the advertisement. This highlights that without consumers paying attention to an advertisement, interactive features are likely to have little or no influence on the extent of processing, and therefore on attitude towards the advertisement.

Through specifically testing the effects of interactivity on attention, this study has verified theoretical conjecture that interactivity makes advertisements more engaging and more effective. This study shows, at the advertisement level, that interactive advertisements attract more attention leading in turn to more processing. Consumers who take the opportunity to interact with advertisements that incorporate interactive features are more likely to exhibit favourable thoughts about the advertisement than those who do not interact. Sharing control over advertising content with consumers through interactive features provides the opportunity for interaction, which, if taken, results in more favourable thoughts about the advertisement and more favourable attitude formation.

This study makes an additional contribution to interactivity theory by clarifying the role that attention plays in realising the proposed benefits of interactivity. Attention for the most part is assumed when conceptualising interactivity and detailing its effects. Process-based, feature-based, and perception-based perspectives on interactivity presuppose that the communication parties are paying attention to, and interacting with, each other. Early studies conceptualised interactivity in terms of personal communications or interactions with a

system, both of which assume attention. This presumption of attention persisted as interactivity studies shifted their focus to the internet.

Yet there are situations where attention to interactive features of a message should not be assumed. Banner advertisements have to compete for attention with other content on a website. By testing the effects of interactivity in a banner advertisement this study contributes a richer perspective on emerging interactivity theory by highlighting the role that interactivity plays in influencing attention to a message. This study has demonstrated that without first securing consumer attention to the advertisement, interactivity within the ad itself is unlikely to influence processing or attitude towards the advertisements.

As well as being the precursor to realising interactivity, attention is the precursor to a consumer processing the content of advertisements, according to information processing theory (Kahneman, 2011; MacInnis & Jaworski, 1989). This study adopted an information processing framework consisting of established relationships between attention, processing, and attitude formation to understand more clearly the effects of interactivity in online advertisements.

The results showed evidence that the more attention that was allocated to the advertisement the more processing that took place and the more favourable the resulting attitude towards the advertisement. This suggests that the underlying theoretical explanation of how consumers allocate their processing resources, and the result of this allocation, are valid when explaining processing on the internet.

By understanding the stability of these relationships in an online context, this contributes to information processing theory, not only through providing empirical support for conceptual models based on this framework, but also by providing a foundation to test how other features of online communication influence processing to gain a better understanding of what makes online advertising effective. While the influences on each of these processing steps may be different online, the underlying relationships between each step are the same as proposed in models of offline processing.

## **7.2 Methodological contributions**

This study tested the effects of interactivity on consumer processing of interactive banner advertisements: a scenario that did not assume attention to the advertisement. To test the effect of interactivity on attention, this study required a setting that was as realistic as

possible to replicate normal browsing experience. While previous studies have used laboratory settings and directed attention to advertisements, the current study used a self-administered online experiment. With the technology available to administer experiments in this way, it makes a methodological contribution by demonstrating the ability of online experiments to produce valid and reliable measurement of consumer processing comparable to previous studies that have used laboratory settings (Liu & Shrum, 2009; Macias, 2003; Sundar & Kim, 2005).

This study also demonstrates the ability of online data collection tools to faithfully replicate the appearance of websites as a consumer would experience them on their own computer. By delivering the experiment to consumers on their own computers, researchers will be able to collect more representative data from a broader sample in a timelier manner compared to running experiments in laboratories.

By demonstrating the applicability of online experiments to research related to advertisement processing on the internet, this study provides a methodological approach that could be used to compare the results of lab studies with online experiments, or combine online experiments with more objective physiological measures to develop a more complete understanding of automatic and conscious processing of online advertisements.

### **7.3 Managerial contributions.**

Online advertising is experiencing explosive growth in revenues. The technologies that have built the internet allow a range of online advertising formats and provide practitioners with the ability to reach and engage individual consumers with tailored messages. However, due to a lack of clarity over advertising effectiveness online (Burns & Lutz, 2006) some advertisers resort to traditional models of advertising designed to place advertisements in strategic locations to attract attention (Sundar & Kim, 2005), unsure how to take advantage of the interactivity of the internet to increase their advertising effectiveness. These banner advertisements compete for viewers' attention with other advertisements, and editorial and entertainment content (Ha & McCann, 2008). Given the importance of attention to the advertisement to both measuring advertising effectiveness (Lee & Ahn, 2012), and facilitating subsequent processing, of advertisements techniques to improve attention to and engagement with advertisements are important for managers to consider.

A more complete understanding of the effectiveness of interactive advertising will allow for more informed choices of advertising techniques and increase return on growing online

investment. This study contributes to managers understanding in this area by detailing the effects that interactive features in banner advertisements and their relevance to consumers' goals have on the persuasiveness of the advertisement. The study also provided insights to the ability of interactive features of a banner advertisement to engage consumers and facilitate more favourable attitudes towards the advertisement.

This study showed that consumers paid more attention to advertisements that were interactive, and more attention to advertisement that were relevant to their goals. This suggests that relevant, interactive advertisements can cut through internet clutter and draw attention to advertisements making them more effective. While the importance of relevance to determining further processing is not a radically new idea in information processing or advertising processing models (MacInnis & Jaworski, 1989; Petty & Cacioppo, 1986; Rappaport, 2007), when combined with interactivity, it provides an opportunity for advertisers to create more engaging, tailored, personal advertisements through sharing control with consumers.

However, attention may not be enough on its own. Despite eye fixations on advertisements, most are forgotten almost immediately (Kuisma, Simola, Uusitalo, & Öörni, 2010). The current research also shows that with interactive advertisements, once consumers have paid attention they not only process the advertisement more, but by sharing control over the advertisement with the consumer, those who actually used this control and interacted with the advertisement had more favourable thoughts about the advertisement suggesting online advertisements can engage consumers beyond initially attracting attention.

The study also found that consumers' overall attitude towards online advertising influences their attention to individual advertisements. Those with a more favourable attitude towards online advertising in general were more likely to pay attention to advertisements. This provides an additional incentive for advertisers to increase consumers' attitude towards their advertisements through making the advertisements relevant and interactive to attract attention and increase processing as if overall attitudes to online advertising become more positive it is likely consumers will pay more attention to online advertisements.

## **7.4 Limitations**

Though every attempt was made to conduct the research in a robust manner, there are several limitations and potential improvements to highlight.

The advertisements in the interactive conditions featured animation as participants moved between frames. Previous studies have found animation in advertisements can attract consumers' attention (e.g., (Sundar & Kalyanaraman, 2004), so interactivity is difficult to separate from animation, and there is the potential that the effects of interactivity are confounded by animation. Pre-tests revealed no difference in the amount of processing or attention between animated and interactive advertisements and, as a result, interactive advertisements were compared to non-interactive advertisements rather than with animated advertisements.

However, consistent with (Rosenkrans, 2009), animation can be viewed as a feature of interactive advertising that is designed to attract consumers' attention and encourage engagement with the other interactive features of the advertisement. The results of this study show that for interactivity to influence processing or attitude formation, attention must be paid to the advertisement. So animation can be viewed as one way to increase the likelihood interactive features of the advertisement are realised, as without paying attention consumers will not notice the opportunity to interact with the ad (Yun Yoo & Kim, 2005). In addition, most rich media advertising, including interactive advertisements, incorporate some type of Flash or Java enabled animation/movement to make them responsive to consumer control over the advertisement.

The presence of animation in the interactive advertisements also meant that the interactive advertisements were able to display more information to consumers than the non-interactive advertisements. Though the information presented in each ad was the same (images and text in non-interactive versions were taken from interactive versions), the ability of the advertisements to allow customised content to those who interacted with them meant that richer information was provided to those who interacted compared to those who did not. Other studies have kept the information the same in interactive and non-interactive conditions using a website as the target advertisement. However, using a banner advertisement, which was considerably smaller than a website, did not allow the same amount of information to be present in each advertisement. Though this is a limitation, it also reflects the nature of interactive advertisements. Because interactivity allows control over advertising content, it must be responsive to consumers' actions and provide customised responses when a consumer interacts. This means providing more information in the same limited banner size where that information only becomes available once consumers interact with the advertisement. It is this feature of control over the advertisement that can allow for better



matching of consumers' dynamic need for information and the information supplied in banner advertisements (Ariely, 2000).

The range of interactive features tested was also a limitation in this study. The advertisements only featured mouse-over, click-based and text entry interactivity. The results showed that those consumers who used these features to interact with the ad generated more favourable thoughts about the ad. Therefore, there is the potential for more complete understanding of how interactivity affects processing by testing other interactive features such as email, live chat, hyperlinks within advertisements, search functions etc. as used in previous studies (Macias, 2003; Sicilia et al., 2005).

Some online banner advertisements also take the form of interactive games that advertise the brand called Advergames (Cauberghe & De Pelsmacker, 2010). These games allow interaction via keyboard and mouse to control characters within the ad. Unfortunately the current study did not have time or resources to investigate the wide range of interactive features used in previous studies, but it remains a potential area for future research.

In terms of data collection, using a panel company has the potential for self-selection bias (Zikmund, 2010), and while the sample provided a reasonable representation of the internet using population of New Zealand, there was a slightly higher proportion of females and retired/at home respondents than estimations of the New Zealand internet using population. Further, although 80% of New Zealand households have the internet (Bascand, 2012), the behaviour of the New Zealand sample may be different to that of other samples around the world, limiting the generalisability of the results of the research. Replicating the study using other samples is encouraged to establish generalisability of results amongst different countries.

## **7.5 Directions for future research**

The results of this study have shown that consumers paid more attention to interactive advertisements and that those who interacted with the advertisements had more favourable cognitions about the advertisement. Areas for future research include combining objective and subjective measures of attention and processing, testing the effects of different interactive features on processing, and testing the effects of interactivity on enduring attitudes.

The self-report nature of the measures used in this study limits the measurement of attention to conscious attention, as consumers needed to be aware of paying attention in order to report

how much attention they gave the advertisement. Future research could combine objective measures of attention with self-report measures to gain a more complete understanding of the effect of interactivity on both fast, automatic processing (System 1) and slower, conscious, effortful processing (System 2). This would allow a greater understanding of the proposed relationship between these styles of thinking, and what this means in relation to the persuasiveness of online advertising.

The results of this study also reveal that through interacting with an online advertisement consumers generated more favourable thoughts about the ad. However, it is not clear which interactive features were responsible for this increase in favourable thoughts. It may be that different types of interaction, enabled through different interactive features, have more or less influence on interaction and the resulting cognitions about the advertisements. Future research could consider which interactive features are most important to increasing favourable thoughts about the advertisement. Does any type of interactive feature generate more favourable thoughts, or are some more effective than others?

In addition to identifying what interactive features result in more favourable thoughts, future research could investigate differences in the amount of processing received by advertisements with different interactive features. Are there some features that encourage greater processing, or synergies between features that lead to greater processing of advertisement content? To achieve this, objective measures of effort such as pupil dilation could be combined with self-report measures to understand how specific interactive features influence engagement with advertising, advertisement processing, and persuasiveness.

Finally, this study captured the attitudes of consumers towards the advertisement immediately after exposure. Future research could investigate the enduring influence of interactivity on attitudes towards the ad and recall of the advertisement. If consumers pay more attention to interactive advertisements and have more favourable thoughts after interacting with them, this could be manifest through their recall of the advertisement and enduring attitude towards the advertisement or brand. By conducting a longitudinal evaluation of interactivity effects, future research could gain a better understanding as to whether increased engagement with advertising through interactivity has effects beyond immediate influence on processing and attitude.

## **7.6 Final reflections**

This study set out to develop a more comprehensive understanding of how the inherent interactivity of the internet can be used to improve advertising persuasiveness. In doing so it dealt with terms and ideas that are already familiar to both researchers and advertisers. Interactivity is seen generally as being a positive feature of the internet, and one that allows marketers to engage with audiences and foster relationships through involving consumers in the communication and persuasion process. Advertisers bring the same objectives to online advertising as any other form of advertising, to effectively inform and persuade consumers to purchase their products/services. Advertising persuasiveness is generally understood to initially require capturing consumers' attention so they can process the advertisement and ultimately be persuaded to purchase that which is advertised. However, the techniques required to take advantage of the interactivity of the internet and increase advertising effectiveness remains a topic of debate for both scholars and practitioners

This study drew together theoretical perspectives from the domains of interactivity and information processing and tested the effects of interactivity in a situation that did not presuppose attention to the message. Doing so provided new insights and clarified the role of interactivity in capturing attention which facilitates processing and forming a favourable attitude towards the ad. Like many studies of consumer processing online, this research uncovered some insights that were unique, and reaffirmed others. The established relationships between attention, processing and attitude towards the advertisement remain valid in explaining consumer processing and advertising persuasiveness online. Therefore, this study provides insights to the role interactivity plays in influencing this processing that may be helpful to advertisers as they navigate the challenges of using interactivity effectively on the internet.

By not presupposing attention to the advertisement this study suggests considerations of the effects of interactivity that may have previously been overlooked by managers and researchers. This broader understanding of the effects of interactivity from an information processing perspective will help managers make more informed advertising decisions. From a research perspective this study demonstrates that occasionally it is useful to step back and consider how apparently simple relationships can illuminate the persuasiveness of advertising in new media. The suggested avenues for future research include addressing what makes consumers engage with interactive advertisements and how can objective and subjective

measures of this engagement be combined to provide a more complete picture of the persuasiveness of interactive advertising which is rich ground for future research.

# Appendices

## Appendix 1 Questionnaire



### Consumer processing of web pages

Research Survey

2013

---

This study is being undertaken as part of the assessment towards the PhD degree in Marketing at Victoria University of Wellington. Ethics approval has been obtained for this research from the Victoria University Human Ethics Committee.

The responses to this survey will help me a lot with finishing my studies. Results will be compiled into a written report. Summary results from this survey may appear in academic or professional journals and be presented at academic or professional conferences.

The following questionnaire is completely voluntary. It is not possible for any respondent to be identified personally in conjunction with this survey. By filling in this survey you consent to taking part in this research.

The questionnaire will take 10-15 minutes to complete.

This is a secure website and all responses collected will remain anonymous. All of the material related to this survey will only be viewed by the research team listed below. All printed information will be kept in a locked file with access restricted to the research team. All electronic data will be kept in a password protected file only accessible to the research team. Data collected in this survey will be destroyed within 5 years.

A summary of the results from this research will be published on the School of Marketing and International Business website ( <http://www.victoria.ac.nz/smib/>) after the data has been collected and analysed.

If you have any concerns, questions or require any further information feel free to contact:

Lachlan McLaren  
PhD Candidate  
Email: [lachlan.mclaren@vuw.ac.nz](mailto:lachlan.mclaren@vuw.ac.nz)

Dr Aaron Gazley  
Supervisor  
Email: [aaron.gazley@vuw.ac.nz](mailto:aaron.gazley@vuw.ac.nz)

Professor Peter Thirkell  
Supervisor  
Email: [peter.thirkell@vuw.ac.nz](mailto:peter.thirkell@vuw.ac.nz)

#### Questionnaire Instructions

Thank you for your participation in this research.

- 1) This questionnaire will measure how you process a web page.
- 2) There are also questions relating to your experiences on the Internet, what you think of a website and what you think of a brand.
- 3) There are no right or wrong answers in this questionnaire. This questionnaire is all about what you think, so please feel free to answer as honestly as you can.

Should you have any further inquiries or if you have any questions related to this survey please contact:

Lachlan McLaren  
PhD Candidate  
Email: lachlan.mclaren@vuw.ac.nz

Before we continue you will need to have flash player installed.

Can you see the rolling ball animation on the page below? (it may take a few seconds to load)

- 
- ☐ Yes, I can see the page and the rolling ball animation
  - ☐ No, I cannot see the page
  - ☐ No, I cannot see the rolling ball animation

How long do you spend on the Internet per week doing the following activities.

|               | 0 hours               | 1-2 hours             | 3-5 hours             | 6-7 hours             | 8-9 hours             | 10-11 hours           | 12-13 hours           | 14-15 hours           | 16+ hours             |
|---------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Surfing       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Researching   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Socialising   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Shopping      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Entertainment | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Have you ever purchased a product/service on-line?

- ☐ Yes  
☐ No

Which bank do you use for day-to-day banking services?

- ☐ Kiwibank  
☐ TSB Bank  
☐ ASB Bank  
☐ BNZ Bank  
☐ ANZ Bank  
☐ Westpac Bank  
☐ Other (please specify)

Do you have a credit card?

- ☐ Yes  
☐ No  
☐ I prefer not to answer

On the next page you will see a website.

Feel free to look at whatever you consider interesting and/or entertaining.

---

[Website with advertisements was displayed to respondents]

While completing the task (viewing the web-page) did you recall seeing any advertisements?

---

- ☐ Yes
- ☐ No

If yes, please enter the brand or brands you recall being advertised.

---



Which of the following banner ads do you recall seeing during the task?

Select your answer by clicking on the banner ad(s). A tick will appear in the small box to the left of the ad.

☐☐☐



C-Class.

Dynamic performance.  
Aggressively styled.  
New Zealand new.



Mercedes-Benz

SHRINK YOUR DEBT

**4.95%\***  
P.A.

ON THE BALANCE TRANSFERRED UNTIL IT'S PAID OFF.



TRANSFER YOUR OTHER  
CREDIT OR STORE CARD  
BALANCE TO BNZ.

Find out more



You selected an advertisement that wasn't the focus of this study.

Please re-visit the page and this time make sure you look at the BNZ advertisement before you continue.

---

On the next page there is a question that asks you to list the thoughts you had about the BNZ advertisement on the page you just viewed.

You may have had all favourable thoughts about the ad, all negative thoughts, all irrelevant thoughts or a mixture of the three. Any case if fine, simply list what you were thinking about the advertisement after you saw it.

Do not worry about spelling, punctuation, grammar or length of the response you enter.

There are lots of boxes to list thoughts to ensure everyone has lots of space, so don't worry if you don't fill every box.

---

Please list the thoughts you had about the BNZ advertisement you saw on the web page.

|                  |                      |
|------------------|----------------------|
| First thought    | <input type="text"/> |
| Second thought   | <input type="text"/> |
| Third thought    | <input type="text"/> |
| Fourth thought   | <input type="text"/> |
| Fifth thought    | <input type="text"/> |
| Sixth thought    | <input type="text"/> |
| Seventh thought  | <input type="text"/> |
| Eighth thought   | <input type="text"/> |
| Ninth thought    | <input type="text"/> |
| Tenth thought    | <input type="text"/> |
| Eleventh thought | <input type="text"/> |
| Twelfth thought  | <input type="text"/> |

The following questions help determine the amount of attention that you paid to the BNZ advertisement on the web-page that you just viewed.

Please indicate your response to the following questions.

|   | None/not at<br>all<br>1 | 2                     | 3                     | Moderate<br>4         | 5                     | 6                     | Very Much<br>7        |
|---|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| How involved were you with the BNZ advertisement?   | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How much thought did you put into evaluating the BNZ advertisement?                       | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How much attention did you pay to the BNZ advertisement rather than the rest of the page? | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How much did you concentrate on the BNZ advertisement compared to the rest of the page?   | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| How much did you notice the BNZ advertisement rather than the rest of the page?           | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

How much did you interact with the BNZ advertisement you saw on the page?

|  |   |  |   |                                       |
|--|---|--|---|---------------------------------------|
| Did not interact<br>with the ad at all | I interacted with the ad<br>very little | I interacted with the ad<br>a small amount | I interacted with the ad<br>a moderate amount | I interacted with the BNZ<br>ad a lot |
| <input type="radio"/>                  | <input type="radio"/>                   | <input type="radio"/>                      | <input type="radio"/>                         | <input type="radio"/>                 |

When you were viewing the web-page did you click on the BNZ advertisement?

☐ Yes

☐ No

While you were looking at the page would you describe your behavior as searching or browsing?

☐ Searching

☐ Browsing

If searching, what were you searching for?

Please indicate your level of agreement with the following statements in relation to the BNZ advertisement you saw on the page.

|   | Strongly<br>Disagree  | Disagree              | Somewhat<br>Disagree  | Neither<br>Agree nor<br>Disagree | Somewhat<br>Agree     | Agree                 | Strongly<br>Agree     |
|---|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| The message in the ad was important to me               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The ad didn't have anything to do with me or my needs   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| It was important to me to carefully evaluate the BNZ ad | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

On a scale of 1-10, with 1 being not interactive at all and 10 being highly interactive, how interactive did you think the BNZ ad was?

| Not<br>interactive at<br>all |                       |                       |                       | Slightly<br>interactive |                       |                       | Moderately<br>interactive |                       |                       | Highly<br>interactive |
|------------------------------|-----------------------|-----------------------|-----------------------|-------------------------|-----------------------|-----------------------|---------------------------|-----------------------|-----------------------|-----------------------|
| 1                            | 2                     | 3                     | 4                     | 5                       | 6                     | 7                     | 8                         | 9                     | 10                    |                       |
| <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> |                       |

These statements relate to the BNZ advertisement you saw on the web-page.

Please indicate your agreement with the following statements.

|  | Strongly<br>Disagree  | Disagree              | Somewhat<br>Disagree  | Neither<br>Agree nor<br>Disagree | Somewhat<br>Agree     | Agree                 | Strongly<br>Agree     |
|--|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| My actions controlled the content in the advertisement                               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The advertisement responded to my actions quickly                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The advertisement allowed two-way communication between myself and the advertisement | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| My actions controlled the look of the advertisement                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

During this questionnaire you had the task of viewing a web-page.

Please select the point on the continuum between each pair of statements to best reflect the way you were thinking while you viewed the web-page.

---

|  |                       |                       |                       |                       |                       |                       |                                    |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------------|
| I did not reason<br>things out carefully |                       |                       |                       |                       |                       |                       | I reasoned things<br>out carefully |
| 1  | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     |                                    |
| <input type="radio"/>                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                                    |

---

|  |                       |                       |                       |                       |                       |                       |                                       |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------------------|
| I did not tackle this<br>task systematically |                       |                       |                       |                       |                       |                       | I tackled this task<br>systematically |
| 1  | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     |                                       |
| <input type="radio"/>                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                                       |

---

|  |                       |                       |                       |                       |                       |                       |                                   |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------|
| I did not figure<br>things out logically |                       |                       |                       |                       |                       |                       | I figured things out<br>logically |
| 1  | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     |                                   |
| <input type="radio"/>                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |                                   |

---

|   |                       |                       |                       |                       |                       |                       |  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
| I did not approach<br>this task<br>analytically |                       |                       |                       |                       |                       |                       | I approached this<br>task analytically |
| 1   | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     |  |
| <input type="radio"/>                           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |  |



The following question relates to your attitude towards the BNZ advertisement you saw on the website.

Based on what you can remember, how would you evaluate the BNZ ad that appeared on the website?

Very bad      Bad      Neither good nor bad      Good      Very good

☐      ☐      ☐      ☐      ☐

Based on what you can remember, how much did you like the BNZ ad that appeared on the website?

Disliked extremely      Disliked      Neither liked nor disliked      Liked      Liked extremely

☐      ☐      ☐      ☐      ☐

Based on what you can remember, how irritating did you think the BNZ ad was?

Very irritating      Irritating      Neither irritating nor not irritating      Not irritating      Not at all irritating

☐      ☐      ☐      ☐      ☐

Based on what you can remember, how interesting did you think the BNZ ad was?

Not at all interesting      Not interesting      Neither interesting nor not interesting      Interesting      Very interesting

☐      ☐      ☐      ☐      ☐

Overall how would you describe your attitude towards the brand BNZ?

Very Good      Good      Neither Good nor Bad      Bad      Very Bad

☐      ☐      ☐      ☐      ☐

Very Positive      Positive      Neither Positive or Negative      Negative      Very Negative

☐      ☐      ☐      ☐      ☐

Very Favourable      Favourable      Neither Favourable nor Unfavourable      Unfavourable      Very Unfavourable

☐      ☐      ☐      ☐      ☐

The following statements relate to your attitude towards on-line advertising specifically.

Please indicate your level of agreement with the following statements.

|   | Strongly<br>Disagree  | Disagree              | Somewhat<br>Disagree  | Neither<br>Agree nor<br>Disagree | Somewhat<br>Agree     | Agree                 | Strongly<br>Agree     |
|---|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| Web advertising supplies valuable information in general. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Web advertising is irritating in general.                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Web advertising is entertaining in general.               | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Web advertising is valuable in general.                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Web advertising is necessary on the web.                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In relation to the BNZ advertisement you saw on the page please indicate your agreement with the following statements.

|   | Strongly<br>Disagree  | Disagree              | Somewhat<br>Disagree  | Neither<br>Agree nor<br>Disagree | Somewhat<br>Agree     | Agree                 | Strongly<br>Agree     |
|---|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| The BNZ advertisement was a good source of product information.       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement supplied relevant product information           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement made product information immediately accessible | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was a convenient source of product information  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement supplied complete product information           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In relation to the BNZ advertisement you saw on the page please indicate your agreement with the following statements.

|  | Strongly Disagree     | Disagree              | Somewhat Disagree     | Neither Agree nor Disagree | Somewhat Agree        | Agree                 | Strongly Agree        |
|--|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| The BNZ advertisement was entertaining | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was enjoyable    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was pleasing     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was fun to use   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was exciting     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

In relation to the BNZ advertisement you saw on the page please indicate your agreement with the following statements.

|  | Strongly Disagree     | Disagree              | Somewhat Disagree     | Neither Agree nor Disagree | Somewhat Agree        | Agree                 | Strongly Agree        |
|--|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| The BNZ advertisement insulted my intelligence | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was annoying             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was irritating           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was deceptive            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| The BNZ advertisement was confusing            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The following statements relate to your attitude towards advertising in general.

Please indicate your level of agreement with the statements.

|  | Strongly<br>Disagree  | Disagree              | Somewhat<br>Disagree  | Neither<br>Agree nor<br>Disagree | Somewhat<br>Agree     | Agree                 | Strongly<br>Agree     |
|--|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|
| Most advertising provides consumers with essential information       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Most advertising is very annoying                                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Most advertising makes false claims                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| If most advertising was eliminated consumers would be better off     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| I enjoy ads  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Advertising should be more closely regulated                         | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Most advertising is intended to deceive rather than inform consumers | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

The final section of this questionnaire collects brief demographic information about you.

---

**How old are you?**

---

- ☐ 18-24
- ☐ 25-29
- ☐ 30-34
- ☐ 35-39
- ☐ 40-44
- ☐ 45-49
- ☐ 50-54
- ☐ 55-59
- ☐ 60-64
- ☐ 65-69
- ☐ 70-74
- ☐ 75-79
- ☐ 80-84
- ☐ 85+

**What is your gender?**

---

- ☐ Male
- ☐ Female

**Which of the following best describes your ethnicity?**

---

- ☐ NZ European
- ☐ Maori
- ☐ Other European
- ☐ Asian
- ☐ Pacific Peoples
- ☐ Middle Eastern
- ☐ Latin American
- ☐ African
- ☐ Other: (Please Specify)

**What is the total annual income for your household before tax?**

---

- ☐ Under \$20,000
- ☐ \$20,001 to \$30,000
- ☐ \$30,001 to \$50,000
- ☐ \$50,001 to \$70,000
- ☐ \$70,001 to \$100,000
- ☐ \$100,001 to \$150,000
- ☐ Over \$150,000

**Which of the following best describes your main occupation?**

---

- ☐ Manager
- ☐ Technician/ Trade worker
- ☐ Clerical/ Administration
- ☐ Machinery operator/ Driver
- ☐ Student
- ☐ At home
- ☐ Unemployed
- ☐ Professional
- ☐ Community/Volunteer
- ☐ Sales
- ☐ Labourer
- ☐ Self Employed (if self employed what industry do you work in?)

- ☐ Retired

You have now reached the end of the questionnaire. Thank you for your participation.

A reminder that it is not possible for you to be personally linked to any of the answers you have given.

If you have any questions about this questionnaire please contact:

Lachlan McLaren  
PhD Candidate  
Victoria University of Wellington  
Lachlan.McLaren@vuw.ac.nz

---

## Appendix 2 Identification of outliers

| Minimum and Maximum Z scores (standardised scores) |   |     |          |         |
|--|---|-----|----------|---------|
| Items  |   | N   | Minimum  | Maximum |
| Atten1   | How involved were you with the BNZ advertisement?   | 327 | -1.28594 | 2.32353 |
| Atten2   | How much thought did you put into evaluating the BNZ advertisement?                       | 327 | -1.40220 | 2.22724 |
| Atten3   | How much attention did you pay to the BNZ advertisement rather than the rest of the page? | 327 | -1.33284 | 1.69381 |
| Atten4   | How much did you concentrate on the BNZ advertisement compared to the rest of the page?   | 327 | -1.28382 | 1.66912 |
| Atten5   | How much did you notice the BNZ advertisement rather than the rest of the page?           | 327 | -1.33299 | 1.70456 |
| Involv1  | The message in the ad was important to me   | 327 | -1.36305 | 2.29537 |
| Involv2  | It was important to me to carefully evaluate the BNZ ad                                   | 327 | -1.30164 | 2.14946 |
| Interact1  | How interactive did you think the advertisement was?                                      | 327 | -1.42751 | 2.07055 |
| Interact2  | My actions controlled the content in the advertisement                                    | 327 | -1.77656 | 2.08775 |
| Interact3  | My actions controlled the content in the advertisement                                    | 327 | -1.82910 | 2.04220 |
| Interact4  | The advertisement allowed two-way communication between myself and the advertisement      | 327 | -1.64795 | 2.23820 |
| Interact5  | My actions controlled the look of the advertisement                                       | 327 | -1.64427 | 2.16004 |
| Att_ad1  | How would you evaluate the BNZ ad that appeared on the                                    | 327 | -2.97448 | 1.91323 |



| Minimum and Maximum Z scores (standardised scores) |  |     |          |         |
|--|--|-----|----------|---------|
| Items  |  | N   | Minimum  | Maximum |
|  | website?   |     |          |         |
| Att_Ad2  | How much did you like the BNZ ad that appeared on the website? | 327 | -2.84885 | 2.22094 |
| Att_Ad3  | How irritating did you think the BNZ ad was?                   | 327 | -2.74341 | 1.53867 |
| Att_Ad4  | How interesting did you think the BNZ ad was?                  | 327 | -2.17540 | 2.00290 |
| Att_webAds1  | Web advertising supplies valuable information in general.      | 327 | -2.78007 | 2.22405 |
| Att_webAds2  | Web advertising is irritating in general (R)                   | 327 | -1.87756 | 2.45119 |
| Att_webAds3  | Web advertising is entertaining in general.                    | 327 | -2.17597 | 1.96090 |
| Att_webAds4  | Web advertising in valuable in general                         | 327 | -2.56915 | 2.47152 |
| Att_WebAds5  | Web advertising is necessary on the web.                       | 327 | -2.64941 | 1.85115 |
| Thought Number                                     | Thought Number   | 327 | -1.53218 | 4.20399 |

### Appendix 3 Skewness and kurtosis of items

| Items          |   | Mean      | Std. Deviation | Skewness  |            | Kurtosis  |            |
|----------------|---|-----------|----------------|-----------|------------|-----------|------------|
|                |   | Statistic | Statistic      | Statistic | Std. Error | Statistic | Std. Error |
| Atten1         | How involved were you with the BNZ advertisement?   | 3.14      | 1.662          | .260      | .135       | -.944     | .269       |
| Atten2         | How much thought did you put into evaluating the BNZ advertisement?                       | 3.32      | 1.653          | .094      | .135       | -1.110    | .269       |
| Atten3         | How much attention did you pay to the BNZ advertisement rather than the rest of the page? | 3.64      | 1.982          | .200      | .135       | -1.231    | .269       |
| Atten4         | How much did you concentrate on the BNZ advertisement compared to the rest of the page?   | 3.61      | 2.032          | .186      | .135       | -1.278    | .269       |
| Atten5         | How much did you notice the BNZ advertisement rather than the rest of the page?           | 3.63      | 1.975          | .195      | .135       | -1.250    | .269       |
| Involv1        | The message in the ad was important to me   | 3.24      | 1.640          | .155      | .135       | -.971     | .269       |
| Involv2        | It was important to me to carefully evaluate the BNZ ad                                   | 3.26      | 1.739          | .225      | .135       | -1.057    | .269       |
| Interact1      | How interactive did you think the advertisement was?                                      | 4.67      | 2.573          | .151      | .135       | -1.096    | .269       |
| Interact2      | My actions controlled the content in the advertisement                                    | 3.76      | 1.553          | -.190     | .135       | -.664     | .269       |
| Interact3      | The advertisement responded to my actions quickly   | 3.83      | 1.550          | -.279     | .135       | -.645     | .269       |
| Interact4      | The advertisement allowed two-way communication between myself and the advertisement      | 3.54      | 1.544          | -.164     | .135       | -.964     | .269       |
| Interact5      | My actions controlled the look of the advertisement                                       | 3.59      | 1.577          | -.107     | .135       | -.792     | .269       |
| Att_Ad1        | How would you evaluate the BNZ ad that appeared on the website?                           | 3.43      | .818           | -.176     | .135       | .257      | .269       |
| Att_Ad2        | How much did you like the BNZ ad that appeared on the website?                            | 3.25      | .789           | -.319     | .135       | .305      | .269       |
| Att-Ad3        | How irritating did you think the BNZ ad was?  | 3.56      | .934           | -.502     | .135       | .439      | .269       |
| Att_Ad4        | How interesting did you think the BNZ ad was?   | 3.08      | .957           | -.272     | .135       | -.386     | .269       |
| Att_webAds1    | Web advertising supplies valuable information in general.                                 | 4.33      | 1.199          | -.601     | .135       | .038      | .269       |
| Att_webAds2    | Web advertising is irritating in general (R)  | 3.60      | 1.386          | .162      | .135       | -.389     | .269       |
| Att_webAds3    | Web advertising is entertaining in general.   | 3.63      | 1.209          | -.118     | .135       | -.464     | .269       |
| Att_webAds4    | Web advertising is valuable in general.   | 4.06      | 1.190          | -.431     | .135       | -.201     | .269       |
| Att_webAds5    | Web advertising is necessary on the web.  | 4.53      | 1.333          | -.761     | .135       | .431      | .269       |
| Thought Number | Thought Number  | 3.2783    | 2.07503        | 1.941     | .135       | 5.210     | .269       |

## Appendix 4 Inter-construct correlations

|                                  |                     | Attitude towards web advertising | Thought Number | Attitude towards the Ad | Involvement | Interactivity | Attention |
|----------------------------------|---------------------|----------------------------------|----------------|-------------------------|-------------|---------------|-----------|
| Attitude towards web advertising | Pearson Correlation | 1                                |                |                         |             |               |           |
| Thought Number                   | Pearson Correlation | .136*                            | 1              |                         |             |               |           |
| Attitude towards the ad          | Pearson Correlation | .392*                            | .046           | 1                       |             |               |           |
| Involvement                      | Pearson Correlation | .313*                            | .141*          | .419*                   | 1           |               |           |
| Interactivity                    | Pearson Correlation | .227*                            | .055           | .313*                   | .376*       | 1             |           |
| Attention                        | Pearson Correlation | .290*                            | .298*          | .498*                   | .558*       | .368*         | 1         |

**Appendix 5 Initial measurement construct reliabilities, standardised loadings and AVE scores**

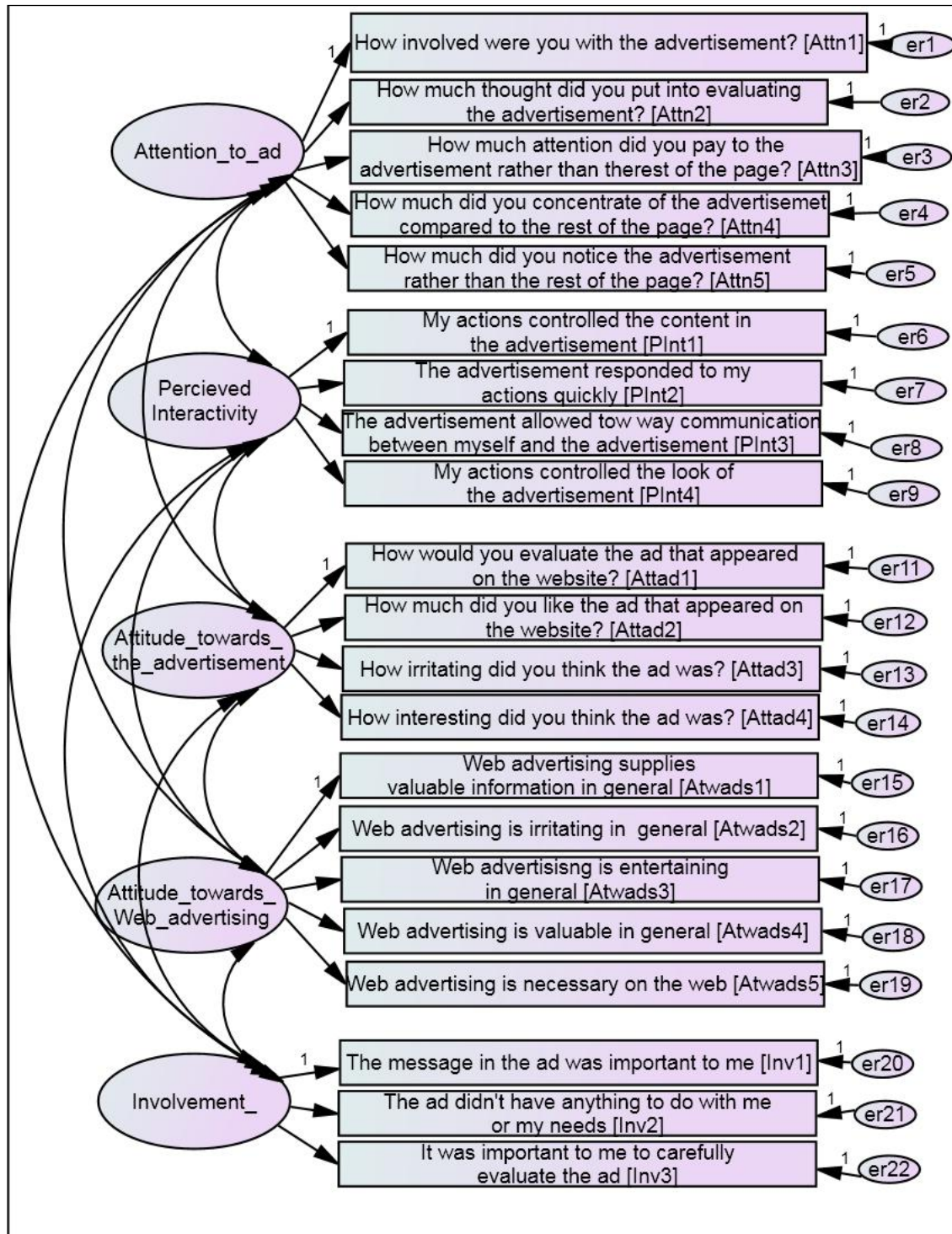
| <b>Construct</b>               |   | <b>Factor loadings</b> | <b>Construct Reliability</b> | <b>AVE</b> |
|--------------------------------|---|------------------------|------------------------------|------------|
| <b>Attention</b>               |   |                        |                              |            |
| Attn1                          | How involved were you with the [Brand] advertisement?   | 0.732                  | 0.931                        | .731       |
| Attn2                          | How much thought did you put into evaluating the [Brand] advertisement?                       | .739                   |                              |            |
| Attn3                          | How much attention did you pay to the [Brand] advertisement rather than the rest of the page? | .962                   |                              |            |
| Attn4                          | How much did you concentrate on the [Brand] advertisement compared to the rest of the page?   | .952                   |                              |            |
| Attn5                          | How much did you notice the [Brand] advertisement rather than the rest of the page?           | .861                   |                              |            |
| <b>Perceived Interactivity</b> |   |                        |                              |            |
| Int1                           | My actions controlled the content in the advertisement  | .798                   | 0.868                        | 0.621      |
| Int2                           | The advertisement responded to my actions quickly   | .813                   |                              |            |
| Int3                           | The advertisement allowed two-way communication between myself and the advertisement          | .788                   |                              |            |
| Int4                           | My actions controlled the look of the advertisement   | .752                   |                              |            |
| <b>Involvement</b>             |   |                        |                              |            |
| In1                            | The message in the ad was important to me   | .854                   | 0.719                        | 0.513      |

| Construct                               |   | Factor loadings | Construct Reliability | AVE   |
|---|---|-----------------|-----------------------|-------|
| Inv2 (r)                                | The ad didn't have anything to do with me or my needs               | .199            |                       |       |
| In3                                     | It was important to me to carefully evaluate the ad                 | .878            |                       |       |
| <b>Attitude towards the Ad</b>          |   |                 |                       |       |
| Aad1                                    | How would you evaluate the [Brand] ad that appeared on the website? | .822            | 0.864                 | 0.618 |
| Aad2                                    | How much did you like the [Brand] ad that appeared on the website?  | .867            |                       |       |
| Aad3                                    | How irritating did you think the [Brand] ad was?                    | .630            |                       |       |
| Aad4                                    | How interesting did you think the [Brand] ad was?                   | .804            |                       |       |
| <b>Attitude towards web advertising</b> |   |                 |                       |       |
| AWads1                                  | Web advertising supplies valuable information in general            | .785            | 0.850                 | 0.538 |
| Awads2                                  | Web advertising is irritating in general (r)                        | .648            |                       |       |
| Awads3                                  | Web advertising is entertaining in general                          | .774            |                       |       |
| Awads4                                  | Web advertising is valuable in general                              | .869            |                       |       |
| Awads5                                  | Web advertising is necessary on the web                             | 0.548           |                       |       |
| (r) Reverse scaled                      |   |                 |                       |       |

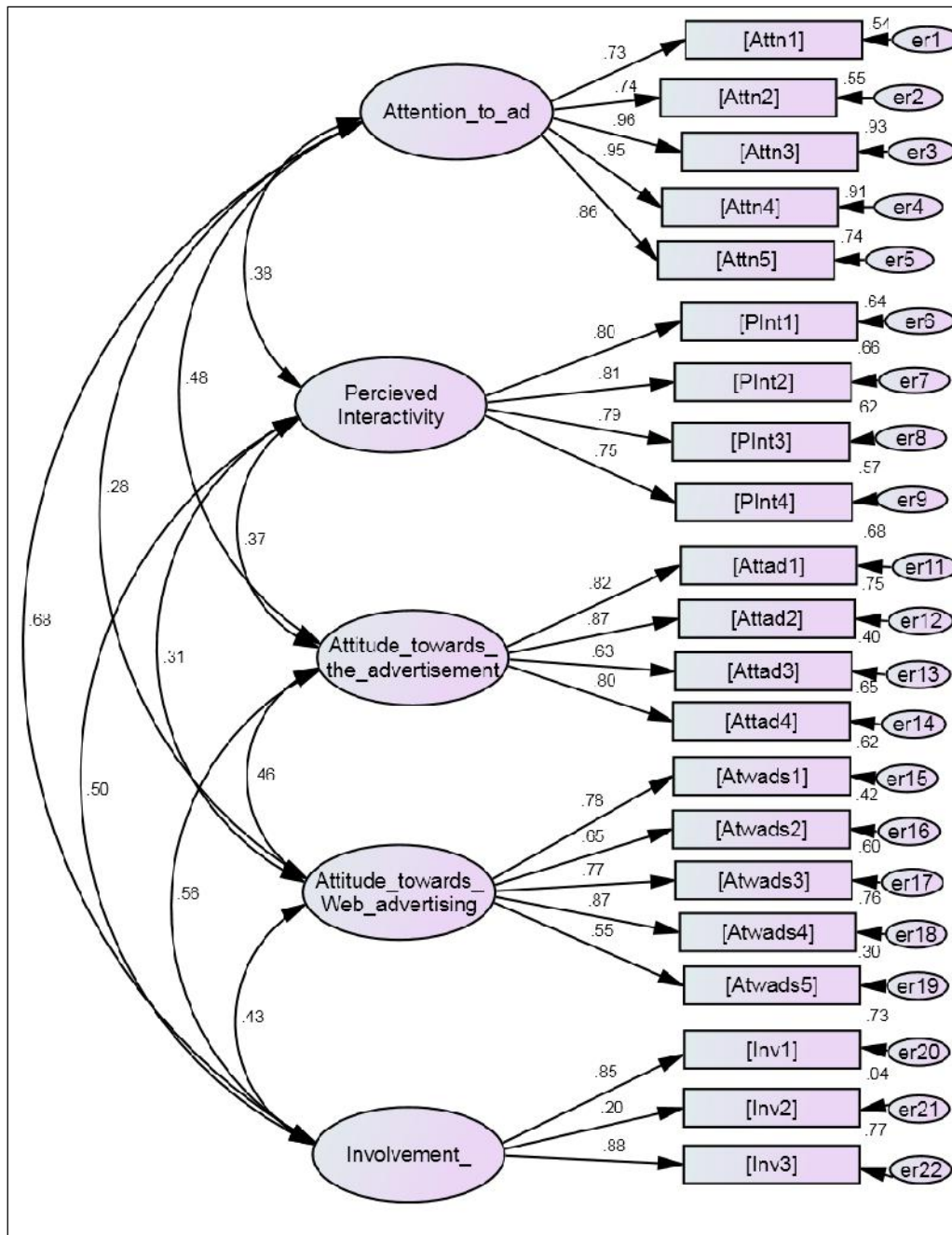
## Appendix 6 AVE and correlations

|   | <b>AVE</b> | <b>Attention<br/>to ad</b> | <b>Attitude<br/>towards<br/>web ads</b> | <b>Attitude<br/>towards<br/>the ad</b> | <b>Involvement</b> | <b>Perceived<br/>interactivity</b> |
|---|------------|----------------------------|---|--|--------------------|------------------------------------|
| <b>Attention to<br/>ad</b>              | 0.731      | 0.855                      |   |  |                    |                                    |
| <b>Attitude<br/>towards web<br/>ads</b> | 0.538      | 0.278                      | 0.734                                   |  |                    |                                    |
| <b>Attitude<br/>towards ad</b>          | 0.618      | 0.481                      | 0.457                                   | 0.786                                  |                    |                                    |
| <b>Involvement</b>                      | 0.513      | 0.683                      | 0.429                                   | 0.562                                  | 0.716              |                                    |
| <b>Perceived<br/>Interactivity</b>      | 0.621      | 0.378                      | 0.310                                   | 0.368                                  | 0.502              | 0.788                              |

## Appendix 7 Measurement model as initially specified



## Appendix 8 Initial measurement model standardised factor loadings





## References

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423.
- Ariely, D. (2000). Controlling the information flow: Effects on consumers' decision making and preferences. *Journal of Consumer Research*, 27(2), 233-248.
- Avolio, B. J., & Bass, B. M. (1991). Identifying common methods variance with data collection from a single source: An unresolved sticky issue. *Journal of Management*, 17(3), 571-587.
- Bascand, G. (2012). Household use of Information and Communication Technology. Retrieved September, 2013, from [http://www.stats.govt.nz/browse\\_for\\_stats/industry\\_sectors/information\\_technology\\_and\\_communications/HouseholdUseofICT\\_HOTP2012.aspx](http://www.stats.govt.nz/browse_for_stats/industry_sectors/information_technology_and_communications/HouseholdUseofICT_HOTP2012.aspx)
- Berlyne, D. E. (1960). *Conflict, arousal and curiosity*. New York: McGraw-Hill.
- Bezjian-Avery, A., Calder, B., & Iacobucci, D. (1998). New media interactive advertising vs. traditional advertising. *Journal of Advertising Research*, 38, 23-32.
- Birnbaum, M. H. (2004). Human research and data collection via the internet. *Annual Review of Psychology*, 55(1), 803-832.
- Brown, S. P., & Stayman, D. M. (1992). ANTECEDENTS AND CONSEQUENCES OF ATTITUDE TOWARD THE AD - A METAANALYSIS. *JOURNAL OF CONSUMER RESEARCH*, 19(1), 34-51.
- Burns, K. S., & Lutz, R. J. (2006). The Function of Format: Consumer Responses to Six On-Line Advertising Formats. *Journal of Advertising*, 35(1), 53-63. doi: 10.2307/20460712
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications and programming* (2nd ed.). New York: Taylor and Francis Group, LLC.
- Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *Journal of Higher Education*, 123-139.
- Cacioppo, J. T., & Petty, R. E. (1981). Social-psychological procedures for cognitive response assessment: The thought listing technique. In T. Merluzzi, C. Glass & M. Genest (Eds.), *Cognitive Assessment* (pp. 309-342). New York: Guilford.
- Cacioppo, J. T., & Petty, R. E. (1983). Central and peripheral routes to persuasion: Application to advertising. *Advertising and consumer psychology*, 3-23.
- Campanelli, P. (2008). Testing survey questions. In E. D. d. Leeuw (Ed.), *International handbook of survey methodology*: L. Erlbaum Associates.
- Cauberghe, V., & De Pelsmacker, P. (2010). Advergaming. *Journal of Advertising*, 39(1), 5-18.
- Celsi, R. L., & Olson, J. C. (1988). The role of involvement in attention and comprehension processes. *Journal of Consumer Research*, 15(2), 210-224.

- Chaiken, S., & Eagly, A. H. (1983). Communication modality as a determinant of persuasion: The role of communicator salience. *Journal of personality and social psychology*, 45(2), 241.
- Cho, C. (1999). How advertising works on the WWW: Modified elaboration likelihood model. *Journal of Current Issues & Research in Advertising*, 21(1), 34-50.
- Cho, C., & Leckenby, J. (1997). *Internet-related programming technology and advertising*. Paper presented at the Conference of the American Academy of Advertising, St. Louis, Missouri.
- Colton, D., & Covert, R. W. (2007). *Designing and constructing instruments for social research and evaluation* (1st ed.). San Francisco, CA: Jossey Bass Ltd.
- Cote, J. A., & Buckley, M. R. (1987). Estimating trait, method, and error variance: Generalising across 70 constrcut validation studies. *Journal of Marketing Research*, 24(3), 579-582.
- Couper, M. (2008). *Designing effective web surveys*. Cambridge, New York: Cambridge University Press.
- Coyle, J. R., & Thorson, E. (2001). The effects of progressive levels of interactivity and vividness in web marketing sites. *Journal of Advertising*, 30(3), 65-77.
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*: Sage.
- Deshpande, R. (1983). "Paradigms Lost": On Theory and Method in Research in Marketing. *Journal of Marketing*, 47(4), 101-110.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail, and mixed-mode surveys: the tailored design method*: Wiley & Sons.
- Dillon, W. R., Kumar, A., & Mulani, N. (1987). Offending estimates in covariance structure analysis: Comments on the causes of and solutions to Heywood cases. *Psychological Bulletin*, 101(1), 126.
- Dreze, X., & Hussherr, F. (2003). Internet advertising: Is anybody watching? *Journal of Interactive Marketing*, 17(4), 8-23.
- Ducoffe, R. H. (1995). How consumers assess the value of advertising. *Journal of Current Issues and Research in Advertising*, 17(1), 1-17.
- Ducoffe, R. H. (1996). Advertising value and advertising on the web. *Journal of Advertising Research*, 36(5), 21-35.
- Ducoffe, R. H., & Curlo, E. (2000). Advertising value and advertising processing. *Journal of Marketing Communications*, 6(4), 247-262.
- Edwards, M. C., Wirth, R. J., Houts, C. R., & Xi, N. (2012). Categorical data in the structural equation modeling framework. *Handbook of structural equation modeling*, 195-208.
- Edwards, S. M., Li, H., & Lee, J. H. (2002). Forced exposure and psychological reactance: Antecedents and consequences of the perceived intrusiveness of pop-up ads. *Journal of Advertising*, 31(3), 83-95.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 39-50.

- Fortin, D. R., & Dholakia, R. R. (2005). Interactivity and vividness effects on social presence and involvement with a web-based advertisement. *Journal of Business Research*, 58(3), 387-396.
- Grunert, K. G. (1996). Automatic and strategic processes in advertising effects. *Journal of Marketing*, 60(4), 88-101.
- Ha, L. (2008). Online advertising research in advertising journals: a review. *Journal of Current Issues & Research in Advertising*, 30(1), 31-48.
- Ha, L., & James, E. (1998). Interactivity reexamined: A baseline analysis of early business web sites. *Journal of Broadcasting and Electronic Media*, 42(2), 457-474.
- Ha, L., & McCann, K. (2008). An integrated model of advertising clutter in offline and online media. *International Journal of Advertising*, 27(4), 569-592.
- Hair, J. F. J., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis*. New Jersey: Pearson Education Inc.
- Harman, H. H. (1967). *Modern Factor Analysis*. Chicago: University of Chicago Press.
- Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing* 60(3), 50-68.
- Hoffman, D. L., & Novak, T. P. (2009). The fit of thinking style and situation: New measures of situation-specific experiential and rational cognition. *Journal of Consumer Research*, 36(1), 56-72.
- Hsieh, Y.-C., & Chen, K.-H. (2011). How different information types affect viewer's attention on internet advertising. *Computers in Human Behavior*, 27(2), 935-945.
- Hufnagel, E. M., & Conca, C. (1994). User response data: The potential for errors and biases. *Information Systems Research*, 5(1), 48-73.
- Hunt, S. D., Sparkman, R. D., & Wilcox, J. B. (1982). The Pretest in Survey Research: Issues and Preliminary Findings. *Journal of Marketing Research*, 19(2), 269-273.
- Iacobucci, D. (2010). Structural equations modeling: Fit indices, sample size, and advanced topics. *Journal of Consumer Psychology*, 20(1), 90-98.
- Johnson, G. J., Bruner II, G. C., & Kumar, A. (2006). Interactivity and its facets revisited. *Journal of Advertising*, 35(4), 35-52.
- Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, N.J: Prentice-Hall.
- Kahneman, D. (2003). A perspective on judgment and choice: mapping bounded rationality. *American Psychologist*, 58(9), 697.
- Kahneman, D. (2011). *Thinking, fast and slow*: Farrar Straus & Giroux.
- Kemery, E. R., & Dunlap, W. P. (1986). Partialling factor scores does not control method variance: A reply to Podsakoff and Todor. *Journal of Management*, 12(4), 525-544.
- Khan, J. (2011). Validation in marketing experiments revisited. *Journal of Business Research*, 64(7), 687-692.
- Kim, S., Haley, E., & Koo, G.-Y. (2009). Comparison of the paths from consumer involvement types to ad responses between corporate advertising and product advertising. *Journal of Advertising*, 38(3), 67-80.

- Kline, R. B. (2010). *Principles and practice of structural equation modeling* (3rd Ed.). New York: Guilford Press.
- Ko, H., Cho, C., & Roberts, M. S. (2005). Internet uses and gratifications: A structural equation model of interactive advertising. *Journal of Advertising*, 34(2), 57-70.
- Krantz, J. H., & Dalal, R. (2000). Validity of Web-based psychological research. In M. H. Brinbaum (Ed.), *Psychological experiments on the Internet* (pp. 35-60). San Diego, CA: Academic Press.
- Krugman, H. E. (1965). The impact of television advertising: Learning without involvement. *Public opinion quarterly*, 29(3), 349-356.
- Kuhfeld, W. F., Tobias, R. D., & Garratt, M. (1994). Efficient Experimental Design with Marketing Research Applications. *Journal of Marketing Research*, 31(4), 545-557.
- Kuisma, J., Simola, J., Uusitalo, L., & Öörni, A. (2010). The effects of animation and format on the perception and memory of online advertising. *Journal of Interactive Marketing*, 24(4), 269-282.
- Kumar, A., & Bruner II, G. C. (2000). Web commercials and advertising hierarchy-of-effects. *Journal of Advertising Research*, 40(1/2), 35-42.
- Kuper, A., & Kuper, J. (2004). *The social science encyclopedia*: Routledge.
- Lavidge, R. J., & Steiner, G. A. (1961). A model for predictive measurement of advertising effectiveness. *Journal of Marketing*, 25(6), 59-62.
- Lee, J., & Ahn, J.-H. (2012). Attention to Banner Ads and Their Effectiveness: An Eye-Tracking Approach. *International Journal of Electronic Commerce*, 17(1), 119-137.
- Lewis-Beck, M., Bryman, A. E., & Liao, T. F. (2004). *The Sage Encyclopedia of Social Science Research Methods* (Vol. 1): Sage.
- Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86(1), 114-121.
- Liu, Y., & Shrum, L. J. (2002). What is interactivity and is it always such a good thing? Implications of definition, person and situation for the influence of interactivity on advertising effectiveness. *Journal of Advertising*, 31(4), 53-64.
- Liu, Y., & Shrum, L. J. (2009). A dual-process model of interactivity effects. *Journal of Advertising*, 38(2), 53-68.
- Macias, W. (2003). A beginning look at the effects of interactivity, product involvement and web experience on comprehension: Brand web sites as interactive advertising. *Journal of Current Issues and Research in Advertising*, 25(2), 31-44.
- MacInnis, D. J., & Jaworski, B. J. (1989). Information processing from advertisements: Towards an integrative framework. *Journal of Marketing*, 53(4), 1-23.
- Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common method variance in Is Research: A comparison of alternative approaches and reanalysis of past research. *Management Science*, 52(12), 1865-1883.
- Mattila, A. S., & Enz, C. A. (2002). The role of emotions in service encounters. *Journal of Services Marketing*, 4(4), 268-277.

- McMillan, S. J., & Hwang, J. (2002). Measures of perceived interactivity: An exploration of the role of direction of communication, user control, and time in shaping perceptions of interactivity. *Journal of Advertising*, 32(3), 29-42.
- McMillan, S. J., Hwang, J., & Lee, G. (2003). Effects of structural and perceptual factors on attitudes towards the website. *Journal of Advertising Research*, 43(4), 400-409.
- Metha, A. (2000). Advertising attitudes and advertising effectiveness. *Journal of Advertising Research*, 40(3), 67-72.
- Mitchell, A. A., & Olson, J. C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitude? *Journal of Marketing Research*, 18(3), 318-332.
- Mollen, A., & Wilson, H. (2010). Engagement, telepresence and interactivity in online consumer experience: reconciling scholastic and managerial perspectives. *Journal of Business Research*, 63(9), 919-925.
- Mueller, R. O., & Hancock, G. R. (2010). Structural Equation modelling. In G. R. Hancock & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (pp. 371-385). New York: Routledge.
- Mutz, D. C. (2011). *Population-based survey experiments*: Princeton University Press.
- Palda, K. S. (1966). The hypothesis of a hierarchy of effects: A partial evaluation. *Journal of Marketing Research*, 3(1), 13-24.
- Park, C. W., & Mittal, B. (1985). A theory of involvement in consumer behavior: problems and issues. In J. Sheth (Ed.), *Research in Consumer Behavior* (pp. 210-231). Greenwich, CT: JAI.
- Pavlou, P. A., & Stewart, D. W. (2000). Measuring the effects and effectiveness of interactive advertising: A research agenda. *Journal of Interactive Advertising*, 1(1).
- Pergelova, A., Prior, D., & Rialp, J. (2010). Assessing advertising efficiency. *Journal of Advertising*, 39(3), 39-54.
- Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123-205). New York: Academic Press.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of personality and Social Psychology*, 41(5), 847.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10(2), 135-146.
- Podsakoff, N. P., & Organ, D. W. (1986). Self-reports in organisational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- PricewaterhouseCoopers. (2011). IAB internet advertising revenue report. [http://www.iab.net/media/file/IAB\\_Full\\_year\\_2010\\_0413\\_Final.pdf](http://www.iab.net/media/file/IAB_Full_year_2010_0413_Final.pdf)

- PricewaterhouseCoopers. (2013a). IAB Internet Advertising revenue report. <http://www.iab.net/media/file/IABInternetAdvertisingRevenueReportFY2012POSTED.pdf>
- PricewaterhouseCoopers. (2013b). Internet Ad Revenues At \$20.1 Billion Hit Historic High For Half-Year 2013, Up 18% Over Same Time In 2012, According to IAB. Retrieved 13/11/13, from [http://www.iab.net/about\\_the\\_iab/recent\\_press\\_releases/press\\_release\\_archive/press\\_release/pr-100913](http://www.iab.net/about_the_iab/recent_press_releases/press_release_archive/press_release/pr-100913)
- Rafaeli, S. (1988). Interactivity: From new media to communication. *Sage annual review of communication research: Advancing communication science*, 16, 110-134.
- Rafaeli, S., & Sudweeks, F. (1997). Networked interactivity. *Journal of Computer-Mediated Communication*, 2(4), 0-0.
- Rappaport, S. (2007). Lessons from online practice: New advertising models. *Journal of Advertising Research*, 47(2), 135-141.
- Raykov, T., & Marcoulides, G. A. (2006). *A first course in structural equation modeling*: Lawrence Erlbaum Associates.
- Reips, U.-D. (2002). Standards for Internet-based experimenting. *Experimental psychology*, 49(4), 243-256.
- Rodgers, S. (2002). The interactive advertising model tested: The role of internet motives in ad processing. *Journal of Interactive Advertising*, 2(2), 22-33.
- Rodgers, S., & Thorson, E. (2000). The interactive advertising model: How users perceive and process online ads. *Journal of Interactive Advertising*, 1(1), 15-22.
- Rosenkrans, G. (2009). The creativeness and effectiveness of online interactive rich media advertising. *Journal of Interactive Advertising*, 9(2), 18-31.
- Roster, C. A., Rogers, R. A., Hozier, G. C., Jr., Baker, K. G., & Albaum, G. (2007). Management of marketing research projects: Does delivery method matter anymore in survey research? *Journal of Marketing Theory and Practice*, 15(2), 127-144.
- Rust, R. T., & Chung, T. S. (2006). Marketing models of service and relationships. *Marketing Science*, 25(6), 560-580.
- Schlosser, A. E. (2003). Experiencing Products in the Virtual World: The Role of Goal and Imagery in Influencing Attitudes versus Purchase Intentions. *The Journal of Consumer Research*, 30(2), 184-198.
- Schlosser, A. E., & Shavitt, S. (2009). The effect of perceived message choice on persuasion. *Journal of Consumer Psychology*, 19(3), 290-310.
- Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling*. New York: Routledge.
- Shamdasani, P. N., Stanaland, A. J. S., & Tan, J. (2001). Location, location, location: Insights for advertising placement on the web. *Journal of Advertising Research*, 41(4), 7-21.
- Shankar, V., & Balasubramanian, S. (2009). Mobile marketing: a synthesis and prognosis. *Journal of Interactive Marketing*, 23(2), 118-129.
- Shimp, T. A. (1981). Attitude toward the ad as a mediator of consumer brand choice. *Journal of Advertising*, 10(2), 9-15.

- Sicilia, M., & Ruiz, S. (2010). The effects of the amount of information on cognitive responses in online purchasing tasks. *Electronic Commerce Research and Applications*, 9(2), 183-191. doi: <http://dx.doi.org/10.1016/j.elerap.2009.03.004>
- Sicilia, M., Ruiz, S., & Munuera, J. L. (2005). Effects of interactivity in a web site: The moderating effect of need for cognition. *Journal of Advertising*, 34(3), 31-45.
- Simmons, G., Thomas, B., & Truong, Y. (2010). Managing i-branding to create brand equity. *European Journal of Marketing*, 44(9/10), 1260-1285.
- Smith, R. E., Chen, J., & Yang, X. (2008). The impact of advertising creativity on the hierarchy of effects. *Journal of Advertising*, 37(4), 47-62.
- Song, J. H., & Zinkhan, G. M. (2008). Determinants of perceived web site interactivity. *Journal of Marketing*, 72(2), 99-113.
- Srirojanant, S., & Thirkell, P. C. (1998). Relationship marketing and its synergy with web-based technologies. *Journal of Market-Focused Management*, 3(1), 23-46.
- Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: implications for the rationality debate? *The Behavioral and brain sciences*, 23(5), 645-665.
- Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication*, 42(4), 73-93.
- Stevenson, J. S., Bruner II, G. C., & Kumar, A. (2000). Webpage background and viewer attitudes. *Journal of Advertising Research*, 40(1/2), 29-34.
- Stewart, D. W., & Pavlou, P. A. (2002). From consumer response to active consumer: Measuring the effectiveness of interactive media. *Journal of the Academy of Marketing Science*, 30(4), 376-396.
- Strong Jr, E. K. (1925). Theories of selling. *Journal of applied psychology*, 9(1), 75.
- Sundar, S. S., & Kalyanaraman, S. (2004). Arousal, Memory, and Impression-Formation Effects of Animation Speed in Web Advertising. *Journal of Advertising*, 33(1), 7-17. doi: 10.2307/4189242
- Sundar, S. S., & Kim, J. (2005). Interactivity and persuasion: Influencing attitudes with information and involvement. *Journal of Interactive Advertising*, 5(2), 5-18.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). Boston: Pearson Education, Inc.
- Trochim, W. M. K., & Donnelly, J. P. (2008). *Research methods knowledge base*.
- Voorveld, H. A., Neijens, P. C., & Smit, E. G. (2011). The Relation Between Actual and Perceived Interactivity. *Journal of Advertising*, 40(2), 77-92.
- Wang, Y., & Sun, S. (2010). Examining the role of beliefs and attitudes in online advertising: A comparison between the USA and Romania. *International Marketing Review*, 27(1), 87-107.
- Weilbacher, W. M. (2003). How advertising affects consumers. *Journal of Advertising Research*, 43(2), 230-234.
- Wolin, L. D., Korgaonkar, P., & Lund, D. (2002). Beliefs, attitudes and behaviour towards web advertising. *International Journal of Advertising*, 21(1), 87-113.
- Wu, G. (1999). *Perceived interactivity and attitude toward web sites*. Paper presented at the Proceedings of the conference-american academy of advertising.

- Wu, G. (2005). The mediating role of perceived interactivity in the effect of actual interactivity on attitude toward the website. *Journal of Interactive Advertising*, 5(2), 29-39.
- Yang, X., & Smith, R. E. (2009). Beyond attention effects: Modeling the persuasive and emotional effects of advertising creativity. *Marketing Science*, 28(5), 935-949.
- Yoo, C. Y., Kim, K., & Stout, P. A. (2004). Assessing the effects of animation in online banner advertising: Hierarch of effects model. *Journal of Interactive Advertising*, 4(2), 49-60.
- Yun Yoo, C., & Kim, K. (2005). Processing of animation in online banner advertising: The roles of cognitive and emotional responses. *Journal of Interactive Marketing*, 19(4), 18-34.
- Zaichkowsky, J. L. (1994). The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising. *Journal of Advertising*, 23(4), 59-70.
- Zikmund, W. G. (2010). *Business research methods*(8<sup>th</sup> ed.). mason, OH: South-Western Cengage Learning.