Users' perceptions of control and mobile advertising effectiveness: Theoretical reflections and empirical evidence

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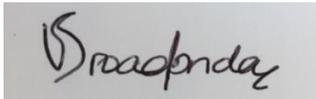
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Declaration

Whilst registered as a candidate for the above degree, I have not been registered for any other award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

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Disseminations

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Abstract

As mobile devices become more prolific and users become more accessible without the limits of time and space, mobile looks to be the ultimate channel on which to advertise. Currently academics debate the effectiveness of mobile advertising with some research suggesting users are not receptive and often irritated by adverts received via their mobile devices. The increased number of mobile ad blocker downloads supports the view that there is an underlying issue, which is limiting the effectiveness of mobile adverts. Researchers have indicated that the level of user control afforded within the advertising interaction, is at the heart of this issue. Through the use of an experimental design and a multiple regression analysis, this paper was able to empirically test the relationship between the antecedents of control (Choice, Information, and Predictability), and Mobile Advertising Effectiveness measures. Findings indicate that a two-way interaction effect exists between Information and Predictability which shows a positive relationship with Mobile Advertising Effectiveness, Ad Attitude and Ad Recall. All other relationships within the analysis were shown to be negative with the dependent variables, or entirely unsupported by the data. This indicates that control is a nuanced concept and it is not clear in what scenarios increased control will create positive outcomes. This research refutes the claims made by researchers and acknowledges the complexity of this issue, whilst also providing practitioners with an understanding of best practice in relation to mobile advertising,

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Glossary

MAE   Mobile Advertising Effectiveness

Ad Att   Ad Attitude

Brand Att   Brand Attitude

Purch Int   Purchase Intention

Control/Constant   Control group/baseline group within the experimental design

(C)   Choice Condition

(I)   Information Condition

(P)   Predictability Condition

(C*I)   Two-way interaction Condition between Choice and Information

(C*P)   Two-way interaction Condition between Choice and Predictability

(I*P)   Two-way interaction Condition between Information and Predictability

(C*I*P)   Three-way interaction Condition between Choice, Information and
                                Predictability

Chapter 1: Introduction

This thesis concerns itself with the study of user control and the subsequent relationship with mobile advertising effectiveness. This research is pertinent as significant amounts of marketing revenue is being invested into mobile advertising, despite users increasing usage in mobile ad blockers. The result of ad blocking usage has created a mobile advertising environment which is hostile and unstable, with researchers acknowledging that control is at the heart of the issue. Despite the proposition put forth by researchers, this has yet to be empirically tested and as such this research makes a theoretical contribution by addressing the propositions put forth by academics. In doing so, a practical contribution is also made by providing valuable insights in regards to best practice that is relevant to the advertising industry.

1.1 Background of the Research

1.1.1 Mobile Adoption

From the initial creation of the mobile phone over 40 years ago (The Guardian, 2013), mobile phones have become an integral part of individuals' daily lives. 93% of UK adults own a mobile phone (Ofcom, 2015), with around 76-78% of these being a smartphone (Deloitte, 2015; Ofcom, 2018). The demand for mobile devices has shown continued growth, with 344.3 million smartphones shipped around the world in the first quarter of 2017 (IDC, 2017); with key players such as Samsung and Apple dominating the market (IDC, 2017). As smartphones begin to out populate people within the UK (Ofcom, 2018), the question that needs to be asked is; what has driven this level of adoption?

1.1.2 Mobile Usage Behaviour

With the majority of the UK population owning or having access to a smartphone (Deloitte, 2015; Ofcom, 2018), it is no surprise that users are actively engaging with their devices on a regular basis. According to recent research, it was found that users check their mobile phones every 12 minutes on average (Ofcom, 2018), with UK users collectively checking their smartphones over a billion times each day (Deloitte, 2015). In relation to the amount of time spent on these devices, research has found that users spend 1.5/2 hours a day on their smartphones (Ofcom, 2015), with some studies identifying users spending greater than six hours per day on their smartphone (Anshari et al., 2016). This clearly demonstrates heavy usage behaviours in relation to users' mobile devices, which is likely due to the shift in attitudes regarding these devices. Mobile phones are becoming increasingly important to users (Walsh, White, & Young, 2008), which is in part due to the wide range of activities in which they facilitate, such as the ability to organise an individual's personal and work life, socialise with peers, and also provide entertainment (Belk, 2013; Fanjiang & Wang,

2016; Gökçearslan, Mumcu, Haşlaman, & Çevik, 2016; Grant & O'Donohoe, 2007; Harkin, 2003; Kolsaker & Drakatos, 2009; Verhoef et al., 2017; Vincent, 2005a; Walsh, White, Cox, & Young, 2011; Wang, 2017). As such the developments in mobile communications technology has meant that users are becoming reliant on the capabilities that mobile phones now provide, which previously users were not (Watson, McCarthy, & Rowley, 2013). Users no longer see their mobile phones as just a technological object but see it as a "…key 'social object'…" (Srivastava, 2005, p. 111), which is becoming an integral component of their daily lives (Gökçearslan et al., 2016; Srivastava, 2005; Walsh et al., 2008). As stated by Fanjiang & Wang (2016) after the inception of the iPhone in 2007, the meaning behind the mobile phone began to change as users were more focused on the interface and experience of these devices. With Google responding to the competition created by Apple, the Android operating system was released September 2007, all of which contributed to a fundamental shift in the mobile industry from feature phone to smartphone (Fanjiang & Wang, 2016). As highlighted by Scolari, Aguado, & Feijoo (2012) the creation of the iPhone in 2007 and the opening of the app store in 2008 resulted in a complete change to the way in which people thought about mobile communications. For example mobile phones have now become more than just a means of communication (Fanjiang & Wang, 2016; Gökçearslan et al., 2016); they have become tools in which people can create a new life. Users can utilise these devices to undertake activities such as banking, shopping, checking the weather forecast, and watching videos for entertainment (Fanjiang & Wang, 2016; Gökçearslan et al., 2016). As acknowledged by Goldfarb (2014) as users begin to spend more time consuming media online, the more online advertising will make up of the total advertising market. The same can be said of mobile, as users spend greater amounts of time on their mobile devices, the more money that will be allocated to this type of advertising.

1.1.3   Mobile Advertising Market

Between 2008 and 2016, digital ad spend saw a significant amount of growth, with an estimated 37% share of ad spend having been invested into digital in 2016 (Statista, 2018a). Within this ad spend, marketers are allocating more of the budget towards various types of mobile marketing, with UK mobile ad spend expected to match desktop ad spend by 2021 (Statista, 2018a). A recent report conducted by the Advertising Association indicated that within the UK, mobile advertising has seen a 36.2% year on year growth in Q1 of 2017 (Advertising Association, 2017). In 2018 this is further set to increase to 11,859 million GBP (Statista, 2018a), which evidences the continued growth of this advertising format. Researchers have gone on to state that given the proliferation of mobile devices, the growth identified in mobile marketing is set to continue (Hofacker, Ruyter, Lurie, Manchanda, & Donaldson, 2016). With an estimated reach of 27.91 million via mobile advertising in 2016, and an achieved 15.55 million mobile advertising conversions within the UK

in 2016 (Statista, 2018a), the possible opportunities afforded by mobile advertising are clear to advertisers.

Despite mobile looking to be a promising means of communicating with an audience from the perspective of an advertiser, many mobile advertisers are yet to reap the returns they originally expected (Feng, Fu, & Qin, 2016). According to recent data, there is evidence to suggest that there are obvious differences between mediums, with lower click through rates on mobile, than desktop and tablet advertisements (Irvine, 2018). Arguments could be made that the reason for the failure of mobile advertising, is due to the lack of understanding surrounding mobile (Leppäniemi, Sinisalo, & Karjaluoto, 2006). This lack of understanding is further supported by data collected by Statista (2018a) which highlights that consumers believe ads will be "better" or more "acceptable", if they were easier to avoid or it was easier to skip them. This highlights a fundamental mismatch in relation to users' expectations and needs, and the types of advertisements that advertisers are serving their audiences.

1.1.4 Advertiser Focus

From a marketer's perspective the proliferation of mobile phones has presented a lucrative opportunity, in which it is possible to reach a target audience without the limits of time or space (Barnes, 2002; Barutçu, 2007; Grant & O'Donohoe, 2007; Roach, 2009). This is one of the most interesting benefits of mobile as it has altered the paradigm of selling, whereby retailers can enter the customers personal environment as opposed to the customer having to come into the retailers space (Hofacker et al., 2016). In essence, marketers can now target their audience at any time during the day and at any location, such as at work or home. This is particularly useful as the dependence on mobile devices has meant that marketers can guarantee a connection with their audience, as it has been found that users are very rarely far in proximal distance from their mobile phones (Adams & Fitch, 2006; Adams & Millard, 2003; Andrews, Drennan, & Russell-Bennett, 2012; Harkin, 2003; Pew Research Centre, 2010; Srivastava, 2005). In addition to this, research has also acknowledged that users also regularly check them (Walsh et al., 2008), which provides advertisers with the confidence that advertising communications will be seen. As would be expected, alongside proximal dependence, users have demonstrated a significant dependence on mobile devices in their daily lives (Gökçearslan et al., 2016; Kolsaker & Drakatos, 2009; Srivastava, 2005; Walsh et al., 2008). Researchers claim that it is this level of usage within users' daily lives in which makes mobile the ideal medium for product promotion and also branding efforts (Scolari, Aguado, & Feijoo, 2012). Researchers have also acknowledged that the medium is an affordable and effective way of communicating on a one to one, one to many, and a mass communication basis (Watson et al., 2013), which again makes it such a lucrative channel for advertisers to utilise.

From a marketer's perspective, the high levels of proliferation matched with affordability, and a guaranteed audience has meant that mobile advertising has the potential to be one of the most effective channels for marketing communications. However, despite the initial excitement, users don't seem to share the same level of enthusiasm for mobile advertising. This section will therefore highlight how users feel in regards to mobile advertising.

1.1.5   User Focus

Research undertaken within the field of mobile marketing to date has been somewhat inconsistent with a lack of agreement between researchers as to how users feel about mobile advertising. The majority of researchers state that users hold negative views (Drossos, Giaglis, Vlachos, Zamani, & Lekakos, 2013; Grant & O'Donohoe, 2007; Izquierdo-Yusta, Olarte-Pascual, & Reinares-Lara, 2014; Kolsaker & Drakatos, 2009; Watson et al., 2013), whilst there is evidence from other academics who claim that users are more positive to brand messages pushed to mobile than other personal communication devices (Mcrae, Carrabis, Carrabis, & Hamel, 2013). Further research elaborates on this idea by indicating that when mobile marketing is permission based, users become more receptive (Tsang, Ho, & Liang, 2004; Ul Haq, 2012). According to a report conducted by Statista, 58% of consumers believed that what constituted more acceptable advertisements was to make them easier to skip and avoid (Statista, 2018a). This indicates that users want to be able to ignore or not receive advertisements, which provides a valuable insight into the ways in which users feel about mobile advertising. However, given there is some inconsistency across the academic literature, a useful way of gauging users' sentiment towards mobile advertising could be to consider users' behaviours.

In September 2015 the Apple released the IOS9 update in which actively began to support ad blockers (Johnson, 2015). Within just two days of the update, the top three paid apps within the US Apple app store were all ad blockers (Johnson, 2015). The general the trend of ad blocker downloads has shown continued growth between 2015 to 2017 (Statista, 2018a), with around a 162% increase within this period (Cortland, Ryan, & Shaw, 2017). As of December 2016, the number of mobile devices which use this type of ad block software rose to 380 million globally (Cortland et al., 2017). The continued growth in downloads for ad blocker software clearly highlights an issue relating to mobile advertisements, and this is felt by online publishers who rely on advertising income. When asked, 55% of publishers highlighted that ad blocking software is one of their biggest issues, resulting in an estimated loss of 3.9 billion dollars in the UK in 2017 alone (Statista, 2018a). This indicates that the online publishing industry are feeling the effect of mobile ad blockers, and are noticing the significant loss in revenue. The reason online publishers are feeling the pinch is because the business model in which many websites and mobile apps operate, is built around and dependent on advertising revenue (Fanjiang & Wang, 2016). The

effects of ad blockers will ultimately not just be felt by the publishers, if users continue to block advertisement the apps and online content that were typically free will likely require users to pay for in the future. As stated in an interview by Pophal (2016) who is a communications consultant and business journalist, it is vital that marketers are focused on what is relevant. This is because it is the users that are in control and whatever they don't like, they will turn off in their minds (Pophal, 2016). In the case of mobile marketing, users will find ways in which to block the content they do not wish to see (Pophal, 2016). This can have a detrimental impact upon the way in which content is delivered and consumed online, leading to the question; will users be willing to pay for content which used to be supplemented by advertising revenue?

A concern with ad block software is that once it is downloaded onto a mobile device it is very unlikely that users will remove it. Some exceptional circumstances in which users do remove ad block software is due to a new device purchase, not being able to access some content online, and also the ad blocker not working properly (Statista, 2018a). Of the individuals surveyed by Statista, only 2% of individuals in 2017 stated that they removed an ad blocker because they "missed" the adverts on their phones (Statista, 2018a), which supports the premise that users fundamentally dislike mobile advertisements. Research has shown that ad block software is most prevalent amongst those aged 25-34 years old (Cortland et al., 2017) and 18-24 years of age (Statista, 2018a). What is consistent here is that the age group most likely to download ad blockers are millennials, and therefore this will be important to consider when looking to outline the sample population within the methodology chapter of this thesis.

As highlighted, there is clearly a mismatch between what the user is expecting to see and what the mobile advertiser is delivering to the user. Looking towards the literature for an explanation, indicated that a potential way of alleviating this friction between user and advertiser was by providing the user with increased levels of control.

1.1.6   Control

Some researchers have highlighted that the lack of enthusiasm exhibited by users in regards to mobile advertising may be due to the fact that these devices are incredibly personal and users wish to retain control over them (Kolsaker & Drakatos, 2009). This is later supported by Gao, Rau, & Salvendy (2010) who claim that users will be annoyed and even furious if they feel as though they do not have full control over the marketing messages that have been sent to their cell phones. From a slightly more positive perspective, it has been claimed that consumers are more willing to engage with mobile marketing, if they are given some level of control over the interaction (Persaud & Azhar, 2012). This indicates that potentially one avenue to help improve the situation with mobile advertising, is to provide users with greater control over the advertising interaction. As research has stated, providing users with greater levels of control may help to create a more

participative audience, also helping to reduce the levels of stress and frustration which could cause users to download ad blockers. Mcrae et al. (2013) acknowledge that it is due to the small size and personal nature of mobile devices in which elicits a need for users to have greater control over these devices. As so eloquently highlighted by Adams & Millard (2003, p. 9) "...as with the diffusion of so many technologies, control is at the heart of the issue".

1.2   Rationale

The rationale for this study is twofold, there is the practical rationale for undertaking this study, alongside the theoretical rationale. In relation to the practical rationale, there is a significant amount of money being spent on mobile advertising as mentioned earlier within Section 1.1.3 (Statista, 2018a), and with such investment it would seem logical that a reasonable return on investment would be expected. Researchers however have noted that advertisers are not reaping the rewards of mobile (Feng et al., 2016), which is further evidenced by the significant amount of mobile ad blocker downloads (Cortland et al., 2017; Johnson, 2015). Ultimately the frustration felt by users is creating an unsustainable online environment, as publishers rely on advertising revenue in order to operate (Fanjiang & Wang, 2016). With no suggestion of a slowdown in mobile ad blockers (Statista, 2018a), it can be argued that this is an important area to research. This research will therefore aim to provide valuable insights which will help to understand the ways in which mobile advertisements can be improved through the use of user control. This will provide advertisers with a better understanding of how to communicate with their market, and may be the first step in creating a more sustainable online environment for all.

In relation to the theoretical rational, although researchers have eluded to the fact that control is at the heart of this issue, there is no research to date which empirically tests how increased levels of user control impacts upon Mobile Advertising Effectiveness. There are however some studies in which look to address some similar areas, as such in order to provide an understanding of the research gap these are briefly discussed next.

A study conducted in 2014 looked to understand the value of co-production of marketing communications, this was achieved by allowing users to customise elements of the mobile ad content (Bacile, Ye, & Swilley, 2014). The results of this study indicated that when users were allowed to customise aspects such as time, location, and frequency the higher levels of purchase intent and consumer response rate were achieved (Bacile et al., 2014). This study is useful as although it refers to customisation and co-production, these elements are often related to control with the researchers identifying the link between co-production and control (Bacile et al., 2014). Similarly, work conducted by Bright & Daugherty (2012) also looked at the customisation element, however this research looked at how customisation of the environment impacts upon consumers perceptions of advertising. The research gap is that these pieces of literature are not looking

specifically at the control construct, therefore although they are useful they do not help to address the proposition put forth by academics. Existing research also considers the effect of control in relation to personal data and privacy concerns in relation to mobile advertising (Eastin, Brinson, Doorey, & Wilcox, 2016). The researchers in this study found that concerns about control along with other variables were significant predictors of mobile commerce activity, this indicates that concerns about perceived control has a negative effect on mobile commerce activity (Eastin et al., 2016). Although interesting, this study looks at the perception of control over personal data and again does not help to address the research proposition.

Opposing to the research highlighted above, a study conducted by Merisavo et al. (2007) looked to assess the effect of five drivers on consumers acceptance of mobile advertising, one of which was control. This research found that control had no impact upon consumers acceptance of mobile advertising (Merisavo et al., 2007), and as such highlights some potential friction between academic opinions. In support of this finding, a study conducted in 2011 explored the impact of interruptive advertising on consumers' willingness to pay, results from the study indicated that control over the appearance of an advert did not mitigate the negative effects associated with ad interruption (Acquisti & Spiekermann, 2011).

It is important to note that many studies within the field of mobile marketing have been undertaken when the feature phone was the epitome of technological innovation (Persaud & Azhar, 2012). The release of the iPhone in 2007, along with the opening of the Apple app store in 2008 (Fanjiang & Wang, 2016; Scolari et al., 2012; Shargall, 2017), completely revolutionised the way in which individuals use their mobile phones. The old feature phone with its simplistic functionality soon became obsolete when the features of a modern day smartphone became an industry benchmark and user expectation (Fanjiang & Wang, 2016). The feature phone had limited to no internet capabilities and a few functional features such as a calendar, alarm clock, and basic games for example. The smartphone however allows for app usage, mobile web browsing, and even intelligent assistants such as Siri and Alexa. Ultimately this means that the literature which pre-dates 2007 cannot be so easily applied within the modern day context, given the innovative capabilities now available via smartphones (Watson et al., 2013). As such, there is the need for more studies which focus on smartphone usage, as this will ensure the relevancy of context within the modern day, but also improve the generalisability of the findings. This argument is further supported by research which looked to assess whether advertising theory still applied within the digital context (Kerr, Schultz, Kitchen, Mulhern, & Beede, 2015). The findings from this study found that when replicating old advertising studies, the effects were not as strong as they were originally and as such supports the concept that consumers think differently in the digital world (Kerr et al., 2015). In relation to this study, it can be argued that due to changes over time it is important that

studies on mobile advertising are reviewed regularly. This is supported by researchers who acknowledge the need to revaluate definitions, concepts, and taxonomies regularly, around every few months due to the effervescent nature of the market (Scolari et al., 2012). Given that the argument of control was eluded to some years ago, it is vital that this proposition is empirically tested rather than merely assumed and accepted.

Given the context of mobile is fairly new, there is also the opportunity to build new theories and understanding in relation to behaviours with specific focus on digital environments (Lamberton & Stephen, 2016). This is particularly valuable as mobile research will allow for researchers to consider not only the real life factors which influence behaviour, but also the virtual factors which are integral to the digital experience (Lamberton & Stephen, 2016). With the diffusion of mobile technology becoming even greater through elements such as the 'Internet of Things' (IoT) (Verhoef et al., 2017), it is important to consider new research avenues within the field.

To summarise, although research exists on the same topics that touch upon similar elements, there is no research to date which looks at empirically assessing the construct of control in relation to Mobile Advertising Effectiveness. Research which looks to understand more about the construct of control within the context of mobile advertising, will help to address the proposition put forward by researchers and help provide some clarity within the field.

1.3   Research Objectives

The aim of this study is to critically identify the nature of the relationship that exists between the user control and Mobile Advertising Effectiveness, in order to address the following research proposition,

Does the users' perception of control during the advertising interaction, influence Mobile Advertising Effectiveness?

In order to effectively address this research proposition, five objectives have been outlined;

1. To critically evaluate and clarify previous research on the concept of control and Mobile Advertising Effectiveness.
2. Conceptualise and develop suitable hypotheses on the basis of a thorough review of relevant literature.
3. Outline suitable experimental and survey methods in which the research proposition can be addressed.
4. To critically examine the limitations and generalisability of the research findings.
5. To make an original theoretical contribution to knowledge.

In order to satisfy the research aim and meet the overall research objectives, hypotheses were developed from an extensive review of the literature. The hypotheses for this study can be found in Chapter 3, alongside the conceptual models for this study.

1.4 Contributions to Knowledge

1.4.1 Theoretical Contribution

Although the importance of control in mobile advertising has been noted by a variety of scholars (Adams & Millard, 2003; Gao et al., 2010; Kolsaker & Drakatos, 2009; Mcrae et al., 2013; Persaud & Azhar, 2012), no studies looked explicitly at the concept of user control within the mobile advertising context. This research makes an empirical contribution to knowledge as this thesis begins to address the issue that has been posed by many academics in relation to control and mobile advertising. Despite the findings acknowledging that the construct of control is complex, the findings do highlight that information and predictability when combined in an advertising interaction result in increases in Mobile Advertising Effectiveness, Ad Attitude, and Ad Recall. This research also highlights that all other relationships were either unsupported or had a negative relationship with the dependent variables. What can be said of the research findings as a whole, is that control does not always lead to positive outcomes and this research provides empirical evidence to refute the research proposition put forth by academics.

This thesis also provides a valuable theoretical contribution by taking existing scales on perceived control (Skinner, 1996) and also Mobile Advertising Effectiveness (Drossos et al., 2013,), and extending their application into new contexts. The antecedents highlighted by Skinner (1996) has been cross applied into the realms of mobile advertising, whilst the scale created by Drossos et al. (2013) has been extended from the SMS context into that of pop up ads in socially shareable content. By extending the use of existing scales and models, it is possible to extend the understanding within the field, and the application of existing theory into different fields of inquiry.

This research also provides a solid basis for which future research can be undertaken in other fields by identifying future research gaps. As technology has developed there are more media channels for advertisers to undertake marketing communication activities. Therefore, future research can look to assess whether control has an impact in different types of adverts such as mobile app ads, or banner ads as an example. As further innovations are made within the industry, there is potential to build upon the understanding from this research by also looking into different technologies such as wearable technology like the Apple Watch, which are becoming increasingly popular as a supplementary device to a users' smartphone (Stern, 2015). Given the increase of devices within the IoT (Verhoef et al., 2017), control will become a greater issue, by providing

future avenues for research this allows researchers to develop theory and also improve generalisability by testing in different contexts.

1.4.2   Methodological Contribution

Although not the aim of this thesis to contribute to methodology, the process of this research did provide some valuable insights in relation to research methodology. The first is that this research highlights the applicability of experiments being conducted via smartphones within the context of mobile advertising. As highlighted in table 2.1, despite many existing studies utilising the experimental method, the use of smartphone technology to engage research participants is novel. This study utilised a representative experimental design which was conducted entirely on the participants own smartphone, and is undertaken entirely online. Highlighting new and innovative way of undertaking mobile advertising research allows for studies in this area to move towards highly realistic experimental environments. This results in the research findings relating more closely to real life, which is commonly one of the biggest critiques of experimental designs (Berkowitz & Donnerstein, 1982; Galliers & Land, 1987). This study also highlighted the usefulness of conducting research via smartphones as it allowed for individuals to have a greater level of anonymity, so long as the remainder of the research design also facilitated this. Similarly, this study highlighted the benefits of utilising URL codes as a way of sample recruitment, this is particularly novel for a variety of reasons. The first is that URL's provide the opportunity for participants to recruit themselves, which helps to reduce ambiguity related to informed consent. In addition to the above, URL codes helped to improve the overall participant experience by making the transition from offline, to online more efficient.

Another valuable insight provided by this research is the evaluation of the use of QR codes within consumer research studies as a way of sample recruitment. This evaluation highlighted that in order to be used successfully the researchers adopting this technique would need to pay for a QR code to be created and also ensure that all participants used the native functionality on their smartphone. Although acknowledged as a suitable method for participant recruitment in health studies (Gu, Skierkowski, Florin, Friend, & Yi, 2016), this research assesses the suitability within a consumer research and advertising context.

1.4.3   Managerial Contribution

Given the subject area being studied, the findings of this research will be relevant to scholars but also to practitioners, as the findings have implications on managerial practice. The findings and discussion generated from this research provides a managerial contribution in the form of identifying a best practice approach to mobile advertising.

The first element of best practice relates to the literature review, in which provides advertisers with a greater understanding of their audience by highlighting the complex relationships that users hold with their mobile devices. Through an understanding of this relationship, advertisers are better equipped to communicate with their audience in a way in which suits them, and as such provide a better advertising interaction for the user. This is particularly important as highlighted earlier, users will turn off in their minds anything that they deem not to be relevant (Pophal, 2016). With advertisers failing to reap the expected levels of return on investment (Feng et al., 2016), despite the level of growth and investment in the industry (Advertising Association, 2017), it is vital that the industry acquires a better understanding of how to create more effective mobile advertisements.

The second element of best practice relates to the findings of this research. As discussed throughout the discussion within Chapter 6, the research acknowledges elements in which advertisers need to implement within their own practice. Therefore, the managerial contribution to knowledge is that advertisers adhere to the suggestions made by the researcher based upon the findings of this study.

1.5   Definitional Parameters

Throughout this thesis the researcher will use specific terms and abbreviations such as mobile device, feature phone, smartphone, and mobile advertising/mobile marketing. This is due to studies typically using different terms in order to describe or explain the same object or concept. This section will therefore aim to clarify the definitional parameters of the key terminology used throughout this thesis, to help provide more clarity for the reader.

1.5.1   Advertising VS Marketing

According to research which surveyed leading academics and professionals, the following definition of advertising was outlined:

"…A paid, mediated form of communication from an identifiable source, designed to persuade the receiver to take some action, now or in the future" (Richards & Curran, 2002, p. 74).

This definition of advertising is particularly interesting as it allows for innovations in technology which has a significant impact on the advertising landscape, whilst also unlike many definitions is applicable across all forms of advertising (Richards & Curran, 2002). The definition is also highly aligned with the definition outlined by the Advertising Association (Bullmore, 2016). The common theme here is that both definitions highlight the focus of advertising is communicating a message which influences or persuades an audience. In comparison marketing is defined as:

"Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (American Marketing Association, 2013)*.*

This definition highlights the holistic nature of marketing activities, which is aligned with the Chartered Institute of Marketing's definition (The Chartered Institute of Marketing, 2015)*.* The definitions provided for marketing by the American Marketing Association (2013) and The Chartered Institute of Marketing (2015) clearly highlight the broad activities in which marketing covers. These activities include the identification of customers, processes for creating value, and satisfying consumers and other stakeholders. In comparison to the previous definitions provided by Bullmore (2016) and Richards and Curran (2002) for advertising, it is clear to see that advertising is a specific subset of marketing which focuses purely on the communication aspect of marketing activities which aims to persuade and influence an audience. Therefore, although often used interchangeably, these two terms are distinctly different. As such for the purpose of this thesis the researcher will be using the term 'advertising', as this aligns more closely to the aim of the research.

In the situation where multiple studies have been referred to, all of which use variations of similar terminology, the researcher will group those terms into one term. In the case of mobile advertising and mobile marketing, the researcher will refer to this as 'mobile marketing' as this is a broader term and avoids overtly misleading the reader.

1.5.2   Mobile Terminology

As highlighted above there are examples of when an array of terminology is used to discuss the same concept, however sometimes due to technological advances this is impossible to avoid. For example the terms mobile phone and smartphone can be used synonymously, but time has ultimately impacted upon this because the term 'smartphone' only became a widely used and understood term with the release of the first iPhone in 2007 (Shargall, 2017). As such any research pre 2007 will discuss the same object as a mobile or even 'PDA' (Tweedie, 2015), and some research post 2007 will use both mobile and smartphone. It is important however to provide clarity in relation to the terms used within this thesis, therefore the terms used throughout are defined below.

Mobile Phone - Refers more generically to any type of telecommunications device which is carried on a person, and is capable of making phone calls via a telecommunications provider (e.g. Vodafone). Therefore, the term mobile phone can refer to both the feature phone and smartphone, and generally is a more ambiguous term used within the literature.

Smartphone – Refers more specifically to devices which have the capabilities of performing many of the tasks that are capable of being undertaken on a computer. Smartphones will have access to the internet, have app functionality (Muhammad Anshari & Alas, 2015), typically these devices will have a touchscreen, and will work from an operating system such as Android. Some examples of smartphones would be, but are not limited to; the iPhone Xs, OnePlus 6, or the Samsung S9+.

Feature Phone – Feature phones or 'dumb phones' existed before the invention of the iPhone, therefore mobile phones prior to 2007 will be of this nature. Feature phones have limited and simplistic capabilities such as, calendars, alarm clocks, ringtones, and perhaps but not always; very limited access to the internet (Jones & Chin, 2015).

Mobile Device – An all-encompassing term which refers to any type of form of mobile technology which is on a person, this however is not limited to telecommunications technology. Examples of this may be tablets, phablets, smart-watches, smartphones, iPads, and iPods.

An important aspect to highlight is the consistency of terms used throughout this thesis. Although at face value it may seem that the researcher is using inconsistent terminology, given this thesis spans a variety of time frames the research does often refer to the same object but utilises different terminology. For example, one paper which was published after 2007 may refer to 'smartphones' whilst another which was published prior to 2007 may refer to 'cell phones' however they are both describing the same concept. In order to provide the greatest level of clarity the researcher will always use the same terminology used by the author of the paper, unless when multiple studies are being cited. Although this may come across as the researcher using inconsistent terminology, this is in fact in keeping with the literature. In the situation where multiple studies have been referred to, all of which use variations of similar terminology, the researcher will group those terms into one term. In the case of smartphone, feature phone, mobile phone, and mobile device, the researcher will use the collective term 'mobile device'. As highlighted by researchers, any research in the field of mobile technology must have an understanding of the developments within the field, as these developments have the ability to destabilize existing theoretical foundations (Scolari et al., 2012).

1.6   Organisation of Thesis

This thesis will be broken down into seven chapters; the chapter breakdown is outlined below, along with what will be covered in each chapter.

Chapter 1 – Introduction (current reading point within the thesis)

The introduction chapter provides the context in which this research will sit. It outlines the disagreement currently within the field relating to mobile advertising, and how effective mobile advertising is considered.

Chapter 1 also outlines the research objectives, alongside highlighting the empirical, methodological, theoretical, and managerial contributions that have been generated as part of this study.

Finally, this chapter introduces the definitional parameters of the concepts used throughout this thesis, such as smartphone vs feature phone.

Chapter 2 – Literature Review

The literature review will outline the most relevant literature and theories within the field, that have been used as part of the construction of this research idea. The literature is more specifically within the field of mobile advertising, human behaviour, and control, whilst also touching on subjects such as psychology, technology, and also advertising more generally. Through an extensive review of the literature, it was possible to identify a gap within the literature. The research gap that was identified is also highlighted within this chapter.

Chapter 3 – Conceptual Framework and Hypotheses Development

Chapter 3 depicts the conceptual models that have been created within the development of the research idea. It is from these conceptual models that the hypotheses were generated, these are also highlighted within this chapter alongside the conceptual models.

Chapter 4 – Research Methodology

The research methodology chapter will provide clear outline of how the researcher will investigate the research problem. This will be achieved by providing a thorough understanding of the research philosophy of the researcher, a discussion of the practical methodological implications, as well as the outlined procedures in which the researcher undertook as part of this research.

Chapter 5 – Data Analysis & Testing of Hypotheses

The data analysis chapter will be broken down into distinct parts to provide a systematic approach to understanding the data. The analysis will consist of descriptive statistics, which will assess areas such as dispersion for example, this will allow for a better understanding of the data prior to the main analysis. Inferential statistics will then be undertaken on the data, in order to answer the hypotheses that are set out in Chapter 3 of this thesis. Further analysis will also be undertaken on the dimension measures; Ad Attitude, Brand Attitude, and Purchase Intention along with an analysis of Ad Recall.

Chapter 6 – Discussion & Implications

Chapter 6 will interpret the findings of the study and discuss the significance of these in relation to the subject being investigated, and also the current literature within the field. This chapter will also highlight how the findings from this research has further developed the understanding of the subject of inquiry.

Chapter 7 – Conclusion

Finally, the conclusion chapter will tie everything together within this thesis to provide a holistic understanding. Most importantly the researcher will highlight the importance of the study, and what contributions have been made. It is within this chapter that the researcher will also make recommendations for future avenues of research and also discuss the limitations of the study.

After Chapter 7, this thesis will provide a reference list, which outlines the literature used within this thesis. A list of all the appendices cited throughout will then be displayed as the final part of this thesis.

Chapter 2: Literature Review

2.1 Introduction

This chapter of the thesis provides a holistic and comprehensive review of the literature, which helped to create and refine the conceptual models and research hypotheses for this study. Most importantly this chapter highlights the gap that currently exists within the field in relation to control and mobile advertising. This chapter will be broken down into four sections, each section will cover specific themes that were unearthed as part of this literature review.

The first part of this chapter will provide a background on the main literature within advertising. It will focus on the various types of advertising which are; traditional advertising, interactive, and mobile advertising. Comparisons will then be made between these types of advertising, which will provide an understanding of how they differ, and what elements are similar.

Section two will focus solely on the literature surrounding mobile advertising, this will include a focus on the perspective of mobile advertising from an advertisers' and users' perspective. The section will then finish by assessing users' reactions to mobile advertising efforts, with an explanation as to why this happens.

Section three will look to explore the literature on control. More specifically, how control impacts human behaviour, the impact control can have upon mobile advertising, and how control is defined within the realms of this and other studies.

The fourth section of this chapter will highlight how the measure for Mobile Advertising Effectiveness was constructed, utilising the literature as a way of gauging the best approach to measure the construct.

In order to understand the complex relationship between user and mobile device and how this ultimately impacts upon mobile advertising; it is important to first understand the context in which mobile advertising sits. In order to understand this, the following section will look to understand the background of advertising, which includes traditional, interactive, and mobile advertising formats.

2.2 Advertising

As a first step within this literature review it is important to explore the origins of advertising, as this is a good starting point in which to assess the way in which advertising has changed over time. This is particularly important to explore as researchers highlight that studying a subject without the knowledge of its history provides no depth (Brink & Kelley, 1963). This section will therefore

outline traditional advertising first, before moving on to more interactive forms of advertising such as mobile, which will be the main focus of this thesis.

2.2.1   What are the different types of advertising?

Typically when advertising is discussed there are two key themes which arise from the literature; traditional and interactive advertising (Bezjian-Avery, Calder, & Iacobucci, 1998).

2.2.1.1   *Traditional Advertising*

Traditional advertising typically refers to the forms of advertising that are undertaken on radio, print, and television for example (Bezjian-Avery et al., 1998). These broad forms of advertising are however also referred to synonymously with other terms, for example McQuail (2010) referred to the use of these media types as 'traditional mass communication'. In keeping with the concept of mass audiences, marketing which is conducted via mass media channels such as magazines or television has also been termed 'mass marketing' (Shankar & Balasubramanian, 2009, p. 119). Kotler (1989) takes the definition of mass marketing further by stating that this is when large groups such as the 'typical American' are marketed to. This is of particular interest as the typical family around the time of the publication by Kotler (1989) was going through a great transition. Researchers acknowledged at this time stereotypes used within advertising were being challenged and there was a move towards more representative advertisements (Sheehan, 2013).

The term mass media often refers to the period of television advertising which existed heavily between 1950 and 1980 (Kerr et al., 2015). This era often being noted as the 'golden age of advertising' (York, 2008), the types of advertisements pushed at this time were based heavily on the stereotypical American family (Sheehan, 2013), which ties back to the comments made by Kotler (1989) about how mass marketing targets the typical American family. As evidenced above it can be argued that even between the definitions of mass marketing and mass media, there is still a significant overlap.

The same media types as the ones identified above, such as radio and newspapers have been described by other researchers as 'traditional marketing' (Katz & Lazarsfeld, 1955). Some researchers loosely define traditional marketing as media and events (Trusov, Bucklin, & Pauwels, 2009), which is particularly broad and unspecific. Similarly, to the discussion surrounding advertising VS marketing highlighted in Section 1.5.1, it is clear to see that terminology discussing the same concept is often inconsistent and as such this has caused an ontological issue relating to the ease of comparability. For example, if two research studies define mobile advertising differently, then it is not easy to compare the findings from each study as the understanding of this concept and conceptualisation are different. Without some level of uniformity across research it is difficult to make claims about how research has developed. The reason for the different

definitions is likely due to the point in time in which the terminology was used, and also the perspective of the author. Authors that come from a media background will naturally be more inclined to refer to the theme as mass communications, whereas authors from a marketing and advertising background will alter their terminology to be more aligned with their field. Although there doesn't seem to be any clarity on the differing definitions used by researchers, there is a clear theme that can be seen in the above discussion. When referring to more traditional forms of advertising there is a clear identification that this is done usually through media types such as radio, television, and newspapers. There is also an acknowledgement of the 'mass' and that these forms of advertising are typically a scattergun approach which looks to target as many people as possible, as opposed to a more refined and specific approach to targeting.

A key feature of traditional advertising is that it focuses on pushing communications at consumers, where dialogue is not a possibility (Shankar & Malthouse, 2007). Researchers go onto note that audiences of traditional advertising formats are considered to be passive (Bezjian-Avery et al., 1998; Hoffman & Novak, 1996; Wind & Rangaswamy, 2001), due to the nature of one way communication. Therefore, within this literature review, when the term traditional advertising is used, it is referring to the use of older media types such as radio, print, and television advertisements aimed at a mass and passive audiences.

2.2.1.2   Interactive Advertising

Interactive advertising describes a group of new media types (Malthouse & Shankar, 2009), these new media are internet advertising, advergaming, social networking, and m-commerce (Winer, 2009). Typically used as an umbrella term as evidenced above, interactive advertising refers to many types of advertising, this is highlighted by the Interactive Advertising Bureau (IAB) an organisation responsible for industry standards and research for the online advertising industry. The IAB acknowledge that interactive advertising relates to a variety of different media including mobile, display, audio, and digital video advertising (Interactive Advertising Bureau, n.d.). The term interactive advertising is also used synonymously with the terms 'online' or 'internet' advertising (Interactive Advertising Bureau, n.d.; McCoy, Everard, Galletta, & Moody, 2017) and sometimes even 'digital' (Kerr et al., 2015), which again highlights continued inconsistencies of terms within the field. Again as mentioned previously, the reason for these inconsistencies is likely due to the perspectives of the researchers undertaking the studies and perhaps the time in which the research was undertaken.

The term 'interactive' and 'interactivity' is well documented within the literature with various perspectives having been assessed. As highlighted by Rafaeli (1988) there is little consensus as to what is meant by interactivity; what is clear is that interactivity can be applied within a variety of contexts such as face to face communication to mediated mass communication. A study

conducted by researchers identified that these inconsistencies are actually just lenses, whereby each researcher will view interactivity through a different lens with all lenses being equally valuable (Lowry, Romano, Jenkins, & Guthrie, 2009). The three lenses which have been outlined within the literature are; the focus on process, focus on features, and focus on perception (McMillan & Hwang, 2002). The key theme that can be highlighted from McMillan and Hwang's (2002) assessment of the relevant literature on all three lenses, is the importance of two-way communication whether that is achieved through features, the perception of two-way interaction, or actual two-way interaction. This idea is reiterated by Rafaeli (1988) who defines interactivity as a property of the communications process. Other researchers however highlight that despite the fact media cannot be defined as interactive based merely upon its type, media are often referred to as interactive or non-interactive (Burgoon et al., 2002). This is likely because there are certain types of media in which interactivity is more achievable, this is due to certain media types possessing features in which are more suited to providing interactivity (Drossos et al., 2013). An example would be online media where it is easier to create two-way communication with an audience as opposed to offline print media which assumes a passive audience with no opportunity for feedback.

2.2.2 What are the differences between traditional advertising and interactive advertising?

Advertising over time has evolved from a mass media market place to one which is driven by digital and mobile media (Kerr et al., 2015; Lamberton & Stephen, 2016). Given that the drivers behind this change have been due to changes in consumer media consumption habits (Kerr et al., 2015; Lamberton & Stephen, 2016) along with the transference of power from advertiser to consumer (Kerr et al., 2015), it would seem logical to assume that the form in which adverts take may have also changed.

Having already defined what is meant by traditional and interactive forms of advertising it is important to compare these two forms of advertising against each other, this will allow for an understanding of how they differ and identify whether these differences have reflected in any changes in practice. Within the literature there are two distinct areas of difference, these areas are; exposure conditions and passivity and functionality.

2.2.2.1 Exposure Conditions and Passivity

A key feature in which differentiates the two forms of advertising relates to exposure conditions. Researchers have noted that traditional media exposures are typically via forced or incidental exposure conditions (Cho, Lee, & Tharp, 2001). This essentially means that users have no choice or control over the advert, for example if they were to see a billboard advertisement whilst at a tube station. This type of traditional advertising gives the audience no control over whether they are exposed to, or in what sequence they may see information. As highlighted earlier in Section

2.2.2, traditional mass marketing focuses on pushing messages at consumers, rather than at creating a dialogue between advertiser and consumer (Shankar & Malthouse, 2007) with a propensity to view them as passive audience members (Bezjian-Avery et al., 1998; Hoffman & Novak, 1996; Wind & Rangaswamy, 2001).

Interactivity is considered the ability to control the advertisement information and that interactive environments differ from traditional methods due to their ability to provide this (Bezjian-Avery et al., 1998). The researchers went on to comment that traditional advertising follows a linear process whereby consumers are assumed to be passive, whereby with interactive advertising the consumer is able to explore the information in their own way (Bezjian-Avery et al., 1998). Researchers claim that one the key defining features that should exist between traditional and interactive media, which is temporal synchronicity (Hoffman & Novak, 1996). The researchers stated that this means that an interaction takes place in real time, and that it is only possible within interactive media environments and not with mass media (Hoffman & Novak, 1996).

Although newer forms of interactive environments allows for greater levels of interactivity, research conducted by Li, Edwards, and Lee (2002) highlight that some tactics being adopted in interactive environments such as pop-up ads are forcing users to become passive through the use of forced exposure much like traditional television commercials. Similarly as highlighted by researchers, the perspective of the consumer is changing due to the growth of the internet of things (IoT) (Verhoef et al., 2017). The IoT is a system of multiple connected devices such as smartphones, wearable technologies, and virtual assistants for example (Verhoef et al., 2017). The dependence and usage of these interconnected devices has essentially caused users to become more passive in their engagement with these networks through the IoT sensors (Verhoef et al., 2017).

2.2.2.2   Functionality

There is a clear difference between traditional and interactive advertisements in terms of the level of functionality and how that functionality can afford greater levels of consumer control. Traditional media such as television and print typically lacks consumer control due to the restrictive navigational options, and therefore consumers have no say over who targets them and when they are targeted (Hoffman & Novak, 1996). The researchers argue that the many-to-many model of communication that is traditional mass media, assumes a passive and captive consumer, and that consumer control is an impossibility within this context (Hoffman & Novak, 1996). Interactive environments however provide the user with greater levels of control over the interaction due to the greater levels of functionality available within these systems (Bezjian-Avery et al., 1998).

Another element of functionality which highlights the differences between interactive and traditional advertising, is that interactive advertising also allows advertisers to communicate with their audience in a manner in which reduces waste and increases the level of efficiency when compared to traditional advertising (Ducoffe, 1996). This is particularly important as the saturated marketplace makes it harder for advertisers to gain the attention of their target audience ([24]7/ai, 2017). According to research conducted by WARC (2016) the average adult is exposed to over 200 visual advertising messages, which highlights that every seven minutes, an individual sees a new advertisement. Therefore, it is important that advertisers utilise more effective techniques at accessing their audience due to the increase in ad clutter.

2.2.3   Justification for Focus on Mobile Advertising

As acknowledged above, there are a variety of differences between interactive and traditional advertising formats. There is also evidence to suggest that behaviours of users are different between desktop and mobile (Mariani, Borghi, & Gretzel, 2019). Although the study conducted by Mariani, Borghi, and Gretzel (2019) looks to assess the differences between devices within the context of online reviews, this research does indicate that within the modern context; differences in behaviours exist across devices and as such a greater focus on one device is important. Ultimately what can be said is that advertisers are demonstrating a clear difficulty with understanding how to best utilise interactive media as a way of communicating marketing messages. As will be shown throughout this literature review, an area of where this has been specifically evident, is within the mobile context. Therefore, this section will look to outline why mobile advertising is an important area to focus this research.

As acknowledged within Section 1.1.3, mobile advertising is an important area to research due to the significant amount of money that marketers across the world are allocating towards it. Between 2008 and 2016, there has been a significant level of growth within the digital ad market with 37% of all ad spend being allocated into digital formats in 2016 (Statista, 2018a). In Q1 of 2017, mobile advertising saw a 36.2% year on year increase within the UK alone (Advertising Association, 2017). This is further set to continue in 2018 with an estimated 11,859 million GBP being spent on mobile advertising (Statista, 2018a). Researchers acknowledge that social changes which impact marketing and media are clearly evident through the allocation of advertising expenditure (Kerr et al., 2015). The result of this is that UK mobile ad spend expected to match desktop ad spend by 2021 (Statista, 2018a); despite already having exceeded TV ad spend (Gwynn, 2018). Advertisers are enticed by this format due to the estimated reach of 27.91 million individuals in 2016, and an achieved 15.55 million mobile advertising conversions within the UK in 2016 (Statista, 2018a). Researchers acknowledge that due to the lucrative proliferation of mobile

devices, the mobile advertising industry is expected to continue growing (Hofacker et al., 2016). This is particularly pertinent as despite the change in user behaviours, changes are yet to translate in mobile advertising practice (Gupta, 2015). Looking at the history of advertising, it can be seen that with any new medium the same approach that worked well in the old medium will be utilised within the new medium (Berg, 2013; Gupta, 2013, 2015; Hoffman & Novak, 1996; Parsons, 2012), due to the unfamiliarity with the new technology. The idea that old tactics are being used in new media has been evidenced by Li et al. (2002) who state that forceful means such as pop-up ads used in interactive environments is the same technique utilised in traditional television commercials. This means that advertisers are spending significant amounts of their marketing budgets on irrelevant and annoying adverts for mobile which are essentially replicas of those available on desktop, prompting the question; what is the purpose of mobile advertising? (Fanjiang & Wang, 2016; Gupta, 2015). The problem with adopting this approach is that the advertisements do not take advantage of the advancements made available through technology, and therefore it could be argued that there are better ways of engaging an audience via interactive environments when compared to traditional advertising methods. This is supported by Fanjiang and Wang (2016) who note how insufficient this technique to mobile advertising really is, and that mobile advertising practices should be distinctly different from traditional advertising practices.

As mentioned in Chapter 1 of this thesis in Section 1.1.4 mobile is seemingly an ideal way of delivering marketing communications, however this has not translated into expected returns (Feng et al., 2016) perhaps due to the poorly understood medium. With the addition of ad blocker usage (Cortland et al., 2017; Johnson, 2015) and subsequent loss of revenue (Statista, 2018a), it can be argued that this is an important area to research because there is no evidence to suggest a slow down within the mobile advertising market.

2.3   Mobile Advertising

As noted in the previous section, interactive advertising such as mobile advertising is distinctly different from traditional advertising, in the sense that interactive media allows for greater interactivity and control. As with any subject within academia, it is often found that one operationalisation of a construct or key term differs from others within the same research field. Issues can also arise when academics fail to define terms within their research, and therefore the key terms are up for interpretation. In order to eradicate these ontological issues, this section will look to clearly distinguish what is meant by mobile advertising through an assessment of existing literature and practitioner sources.

2.3.1   Definitional Parameters

Much like the definitions highlighted within the introduction chapter of this thesis, mobile advertising is used synonymously with terms such as mobile marketing as identified in the research undertaken by (Leppäniemi et al., 2006). The researchers undertook a meta-analysis of published research which highlighted that terms such as 'mobile marketing', 'mobile advertising', 'wireless marketing', 'wireless advertising', 'text message marketing', and 'SMS marketing' were all used synonymously (Leppäniemi et al., 2006).

From the meta analysis, the researchers subsequently outlined the following definition:

"Mobile marketing is the use of the mobile medium as a means of marketing communication" (Leppäniemi et al., 2006, p. 10)*.*

The benefit of Leppäniemi's definition is that it provides a stable conceptualisation in which is no subject to changes in technology, as it separates the technology from the concept (Leppäniemi et al., 2006). Other researchers have attempted to achieve the same with the following definitions of mobile advertising:

"…Advertising using any mobile device such as mobile phones, tablets, Personal Digital Assistants (PDAs)" (Billore & Sadh, 2015, p. 161).

"…Any paid message which is sent to a mobile device with the aim of influencing consumer perceptions and behavioural intentions" (Hsiao & Chang, 2013, p. 731).

The common themes between all of the definitions identified above is that all of the definitions highlight mobile medium or mobile device which allows for some level of scope in terms of technological innovations as mentioned above. For example, mobile device can also include technologies such as wearable devices such as smart watches. The issue with the definition outlined by Hsiao and Chang (2013, p. 731), is that it specifies the need for the communication to be 'paid'. Given the features of smartphones such as data driven messaging, to limit mobile marketing only to that which is paid would not be an accurate summation of how marketers advertise today. An example would be advertising via WhatsApp which is a messaging app that only requires access to the internet, and therefore no 'payment' is needed to target consumers.

To the researcher's awareness, there is no practice based association which oversees the exact term 'mobile advertising' and as such given the synonymous use with marketing, the researcher sought out the definition provided by the professional body of mobile marketing. The Mobile Marketing Association defines mobile advertising as:

"…A set of practices that enables organizations to communicate and engage with their audience in an interactive and relevant manner through and with any mobile device or network" (Mobile Marketing Association, 2009).

This definition of mobile marketing is more aligned with the types of features that marketers are utilising on mobile, as it allows for aspects such as social media and even free messaging via WhatsApp to be considered as mobile marketing. An important aspect to note here is that the definition does not differ greatly to those for advertising, which further reinforces the synonymous use throughout not only the literature but also within practice.

Looking at all of the definitions on mobile 'advertising' and 'marketing', clear themes emerge from them. These themes are that the technology aspect must be noted, for example the activities must take place on a mobile device. The second theme is that the activity must relate to communication, although it does not distinguish between two-way and one-way communication. Some of the definitions highlighted also identify the need to influence or persuade, given advertising aims to change perceptions or behaviour it was deemed necessary to include this element in the final definition. There is however no clarity on whether the communication must be paid for, given that advances in technology has allowed advertisers to communicate with their audience without paying it was decided that this aspect was not a deciding factor when operationalising mobile advertising. Another aspect which is not clarified is who initiates the communication, under Hsiao and Chang's definition if a user pays for their text messages and sends a message to a friend persuading them to attend a party this would be classified as mobile advertising. The researcher therefore felt it necessary to highlight the requirement that the communication is initiated by the brand in order to reduce any potential confusion. Therefore, for the purpose of this thesis the researcher defines mobile advertising as:

Any form of brand initiated communication via a mobile device which aims to influence perceptions and behaviour.

This definition covers many different types of advertising such as email marketing (when accessed via mobile), app advertising, SMS, and many more. Therefore, this definition fits well within the modern context of mobile advertising. This definition also utilising device rather than phone allows for a greater scope in terms of technological advancements. This is particularly important to include within the working definition of mobile advertising because the IoT (Verhoef et al., 2017), has meant that devices are interconnected and there is a growing dependence on the network not just the mobile phone.

With the definition of mobile advertising clearly highlighted, it is important to consider the different forms in which mobile advertising can take. Therefore, the following section will look to

provide an overview of the types of mobile advertising formats that are available. This is important as this will allow for an understanding of which type or types of formats will be tested within this study. Ultimately this will also provide a basis in which to understand where this study fits within the greater context of mobile advertising literature.

2.3.2 Formats

Mobile advertising has been discussed in a variety of contexts within the literature, therefore this section will outline some of the research that has been covered on these specific areas.

2.3.2.1 SMS (short message service)

The topic of SMS is well covered within the literature given that it was one of the first advertising formats to take place within the mobile context and is one of the most popular (Tripathi & Siddiqui, 2008). SMS advertising is where a text message is sent to a user's phone, for example a brand sending a text message regarding a 50% off sale. SMS was originally discussed back in 2001 within the context of e-commerce, where Barwise (2001) was unclear as to what extent SMS would be able to support e-commerce. A year later the same researcher looked to assess how effective SMS advertising can be at targeting younger audiences (Barwise & Strong, 2002). Since this time the literature on SMS has significantly evolved with researchers looking at SMS advertising in a variety of contexts such as users' attitudes towards SMS advertising (Aslam, Batool, & Ul Haq, 2016; Tsang et al., 2004; Ul Haq, 2012), behavioural responses (Aslam et al., 2016; Shareef, Dwivedi, & Rana, 2013; Tsang et al., 2004; Wei, Xiaoming, & Pan, 2010), and SMS advertising effectiveness (Drossos et al., 2013; Drossos, Giaglis, Lekakos, Kokkinaki, & Stavraki, 2007; Scharl, Dickinger, & Murphy, 2005; Shareef, Dwivedi, Kumar, & Kumar, 2017). As technology has developed, SMS advertising has become more dated. This is in part due to the fact that text messaging has begun to evolve through the use of In-app messaging (Franklin, 2014), such as Facebook messenger, WhatsApp, and WeChat. Given that these platforms are free to use as they rely entirely on internet access, this now creates a free way for advertisers to target their audience.

2.3.2.2 Mobile Apps

Although not well discussed within the literature, there are some studies which look to assess the overall state of mobile apps (Mcdonald, Stephenson, Woodend, & Christie, 2011; Parsons, 2012), evaluating its adoption (Frey, Xu, & Ilic, 2017), in relation to gender (Aljomaa, Al.Qudah, Albursan, Bakhiet, & Abduljabbar, 2016), and even exploring the motivations to use smartphone applications, and how this ultimately impacts upon advertising (Kim & Lee, 2016). After reviewing the literature on mobile apps, it was clear to see that there are two distinct areas in which the research covers, branded applications (Bellman, Potter, Treleaven-Hassard, Robinson, & Varan, 2011), and In-app advertising through the use of banner and interstitial ads for example (Lin &

Kim, 2016)**.** This section will therefore break down the literature into these key themes, focusing first on branded applications.

2.3.2.3   Branded Apps

In relation to branded apps there are a variety of papers which touch upon a more holistic view assessing the usage of branded applications (Falconer, 2012; GfK Association, 2013). Other researchers highlight the importance of branded apps in providing added value to the user (Gupta, 2013), for example a branded mobile banking app would add value to the user by allowing them to conduct their banking at any time and in any place. This is further supported by researchers who note that companies must also offer branded apps that provide a good seamless user experience (Berg, 2013; Kim, Wang, & Malthouse, 2015), in which provides the user with convenience (Kim et al., 2015). A study conducted by Bellman and colleagues identified that branded apps which focus on the users' needs and are informational are better at influencing Purchase Intention (Bellman et al., 2011). This supports the arguments that app marketing must provide value for the user. Other researchers are more specific about how apps can provide value to the user, with Hsiao and Chang (2013) highlighting that mobile apps are useful for users when they are associated with other advertisements as this allows them to learn more about promotions or discounts. This has been discussed within the context of convenience store marketing, where it has been said that utilising mobile applications is effective as it allows users to access information and promotions of products for example (Covino, 2017). Interestingly other researchers highlight the value of branded apps in relation to the user base, by stating that it is a necessity (Berg, 2013; S. J. Kim et al., 2015) due to younger generations becoming more technologically advanced (Kim et al., 2015). As highlighted by (Kim et al., 2015) there is a lack of research on mobile apps, and as such it is difficult to assess its ability to become a communication tool which encourages loyalty and Purchase Intention.

2.3.2.4   In-app Advertisements

In-app advertising has not been as well discussed within the literature, it could be argued that given In-app advertisements are so similar to banner advertising on desktop that the desire to discuss it within the field is not as prominent as other forms of mobile advertising. As time has progressed it is becoming more apparent that banner advertising is becoming a common way of undertaking mobile advertising, with In-app advertising being one of the fastest growing areas in social commerce (Cheung & To, 2017). An example of an In-app mobile advert would be a video advert which pops up in between levels on a mobile game like Angry Birds. Mobile phone users spend a significant amount of time using apps on their mobile devices as opposed to using browsers, which has resulted in advertisers trying to target that audience by putting 'annoying' banner adverts throughout mobile apps (Gupta, 2015, p. 2). Other researchers acknowledge In-

app advertising as a supporting activity for other advertising efforts such as TV, whereby it has been highlighted that In-app adverts are effective at helping users to recall advertisements (Bhave, Jain, & Roy, 2013). Research undertaken by Cheung and To (2017) is one of the first studies which examines and understand users' attitudes towards In-app advertising specifically, which further reiterates the statement that the literature within this area is still very much under researched. Given that it is a growing area (Cheung & To, 2017), it is important that this format of advertising is assessed in greater depth.

2.3.2.5   QR Code Marketing

QR codes are an innovative development in mobile advertising due to them typically being accessed offline through print such as a magazine or a poster. An individual may then choose to scan the QR code with a camera enabled mobile device, and is then sent to a website or PDF for example (Okazaki & Barwise, 2011). Although hailed as a potential medium of the future (Okazaki & Barwise, 2011), QR codes failed to gain the traction expected (Keane, 2009) and subsequently practitioners began to speculate as to whether the QR code had died (Falconer, 2012; Strout, 2013). One of the speculated reasons for its failure was due to industry leaders such as Apple not actively supporting QR code readers, which meant that users needed to download a separate app to scan them which took up valuable space on their smartphones. It was only in 2017 when Apple began to support QR code scanning through the camera functionality (G.F., 2017), that speculation began to arise within the field as to whether this will revive the dead QR format (Russell, 2017). According to researchers one of the reasons adoption has been hindered is due to a lack of knowledge on how to scan, or not being aware of the benefits to scanning QR codes (Watson et al., 2013). Given that key players such as apple chose not to support QR codes for many years, it is no surprise that individuals are unsure as to why QR codes benefit them or how to use them properly.

An interesting finding to note is that QR codes are thriving in certain areas of the world such as, India (Bhave et al., 2013), South Korea (Gupta, 2013), Japan and China (G.F., 2017). Tesco for example utilised QR codes in South Korea as a way to encourage shoppers to purchase on their way home from work. They did this by placing QR codes and pictures of products which commuters could scan and order for home delivery (Gupta, 2013). As stated by Watson et al. (2013) the drivers for continued use of QR codes are utility, ease of use, and incentives, as shown by the Tesco campaign in South Korea there were high levels of utility and ease of use. It could therefore be argued that Tesco was successful for incorporating elements which encourage adoption of their QR code campaign. Within the context of academic research, a study looking at QR codes found that when used as a sole independent variable, QR codes had no effect on ad attitude, brand attitude, or purchase Intention (Narang, Jain, & Roy, 2012). The researchers

however do highlight the possible benefits of using QR codes within high involvement product categories as users often look to search for more information before making a purchase (Narang et al., 2012). Seeing users of QR codes as active searchers of information is also supported by Bhave et al. (2013) and Hsiao and Chang (2013) who state that QR codes when associated with adverts, are useful ways for consumers to learn about promotions or discounts. Industry experts emphasise the importance of using QR codes in tandem with advertisements by highlighting that QR codes are an effective extension between traditional and digital efforts, with QR codes making it possible to connect online to the physical world (Berg, 2013).

2.3.2.6   Summary of Formats

With a wide variety of different types of mobile advertising available, advertisers have a multitude of options for the ways in which they undertake advertising. This research therefore has a plethora of formats in which this academic study can be based upon, however given the time and financial constraints of this thesis it was important to narrow the focus. Therefore, this section will discuss the reasons as to why this research will focus on pop up adverts shown within socially shareable content.

With peer review journals often taken significant amounts of time to publish, it can be argued within the field of technology that by the time of publication they are often already outdated (Lamberton & Stephen, 2016). Given the fast pace in which the technological industry develops, it was decided by the researcher that the most effective way of ensuring that the study would be as timely and relevant as possible was to focus on what is being done within practice.

Social media platforms are an ideal place to engage with content and also share content online (Kaplan & Haenlein, 2010), therefore it should be of no surprise that socially shareable content is where advertising has begun to monetise. The use of advertisements in socially shareable content is prevalent on mobile apps such as Facebook, whereby content creators write short lists or blogs regarding a certain issue, and mid-way through reading the blog users are interrupted with a pop up or banner advert. Although not highlighted within the literature, this type of advertising is common within the modern context ("The secret life of a clickbait creator: lousy content, dodgy ads, demoralised staff", 2016). Given the lack of research on this specific form of mobile advertising context, this provides an opportunity to further the knowledge within this field whilst also being highly relevant to current mobile advertising practices. For the reasons stated above, the researcher believed that focusing the context of this research to that of socially shareable content advertisements was most suitable.

With the type of advertisement that this thesis will focus on having been outlined, it is valuable to acknowledge the different perspectives surrounding mobile advertising. The following section

therefore will look to further understand the advertiser's perspective, along with the users' perspectives and an understanding of why users hold their perceptions of mobile advertising.

2.3.3   Advertisers' Perspective

As identified in 1.1.4, the proliferation of mobile devices has presented marketers with a huge opportunity to reach their audience without the limits of time or space (Barnes, 2002; Barutçu, 2007; Grant & O'Donohoe, 2007; Liu, Sinkovics, Pezderka, & Haghirian, 2012; Roach, 2009). Matched with the rapid development in mobile innovations, marketers are now presented with an entirely new marketing channel (Liu et al., 2012) which is both easy to utilise and convenient (Anshari & Alas, 2015). With greater levels of penetration there is also evidence to show that mobile devices are becoming more important to users' daily lives (Gökçearslan et al., 2016; Kolsaker & Drakatos, 2009; Srivastava, 2005; Sultan & Rohm, 2005; Walsh et al., 2008). As such, marketers' believe that the mobile device is the ideal medium for product promotion and branding efforts (Scolari et al., 2012). Researchers go on to claim that it is not just the level of penetration and importance to users in which makes mobile an ideal marketing channel, but also the lucrative characteristics which distinguishes itself from other technological devices such as desktop (Barnes, 2002; Kannan, Chang, & Whinston, 2001). As highlighted within the literature these characteristics include; the ubiquitous accessibility to users via their mobile phones and their personal information, the ability to provide context aware advertising, and finally the responsiveness from users (Barnes, 2002; Barwise & Strong, 2002; Franklin, 2014; Kannan et al., 2001; Tsang et al., 2004). Barnes (2002) went on to name these three characteristics as; immediacy, interactivity, and mobility.

As stated by Curtis (2005) immediacy is a defining feature of our culture, and mobile devices allow individuals to be marketed to in real time. Advertisers can send time sensitive marketing communications to users, knowing that this channel of communication encourages an immediate response from the user (Barnes, 2002; Barwise & Strong, 2002; Kannan et al., 2001; Tsang et al., 2004). Knowing that users have a dependency on these devices, advertisers are able to ensure that users will respond much more quickly to mobile advertising than to more traditional methods of marketing communications (Franklin, 2014). Research has shown that when in situations where quick responses are required, users will prefer to be contacted via mobile or email (Danaher & Rossiter, 2011). This is further supported by a study which found that when a brand related message was sent to a mobile device it was acted upon in a recognizably shorter time frame when compared to the same message being received on another personal communication device (Mcrae et al., 2013). This supports the proposition put forth by researchers who state that due to the personal nature of hand held electronics such as mobile, a closer brand connection can be achieved (Sultan & Rohm, 2005). For an advertiser, it is alluring that there is some level of

immediacy in terms of response with mobile advertising. Salz, a Chief Analyst and Founder of Mobile Groove a research and consulting organisation, further supports this by stating that if the aim is to access a customer, its best to do this via mobile as people may choose not to answer their landline phones or respond to an email. Salz goes on to acknowledge that when it comes to mobile, people are more likely to be more responsive as it's a personal device, and as such it becomes a new way to gain access to customers (Franklin, 2014).

One of the fundamental reasons that immediacy is possible via smartphones is due to the around the clock connectivity to the internet (Anshari et al., 2016; Sultan & Rohm, 2005), which allows for the advert to be received with immediacy and also the potential to react with immediacy. This 'always on' and 'real time communication' has also however presented new challenges for marketers. Issues relating to relevance/privacy paradox and intrusion due to the increased levels of user attachment are now the obstacles that marketers are beginning to face (Kolsaker & Drakatos, 2009). The immediacy of mobile ties in closely with the fact that mobile devices have high levels of mobility (Barnes, 2002). The fact that users are able to take these devices with them easily means that they have easy access to any marketing communications sent to them.

As mentioned previously mobile phones allows for users to be accessible without the limits of time and space (Barnes, 2002; Barutçu, 2007; Feng et al., 2016; Grant & O'Donohoe, 2007; Roach, 2009; Shankar, Venkatesh, Hofacker, & Naik, 2010; Townsend, M, 2002). Users can be thousands of miles away and in different time zones, yet can still communicate in real time to others anywhere else in the world. Whilst this is a useful feature for users, it also makes it an alluring feature for advertisers, as they too can send marketing messages without the aforementioned limitations. Users typically always have their smartphone on their person (Andrews et al., 2012), these devices are also switched on, and connected to an internet source such as 4G or Wi-Fi (Statista, 2018b). This provides advertisers with the opportunity to target users wherever they are in the world, during anytime of the day, regardless of what the user is doing. For example, advertisers can still target users during their commute on the underground or even whilst they're on board a plane. Advertisers no longer have to rely on consumers being in store, in front of the television, or listening to the radio in order to be targeted by marketing messages. This level of Increased mobility and accessibility does however create an entirely new problem, are users going to be receptive to advertisements being pushed at them when in very personal spaces or situations? An individual could be at home in bed, celebrating at a restaurant with friends, or even visiting a loved one in hospital and are still accessible to advertisers (Sultan & Rohm, 2005). Research undertaken by Danaher and Rossiter (2011) found that users enjoy being relaxed and in control whilst in their own homes and that digital marketing communications is not a route to achieving this. The other benefit of mobility ties into context aware messages, whereby advertisers can provide more

location specific marketing campaigns (Sultan & Rohm, 2005). An example would be a supermarket setting up geo fences whereby if a user comes within this geo fence and has the supermarkets app downloaded on their phones, then a push notification can be sent to them. From the perspective of the advertiser, it can be understood why increased levels of mobility makes mobile such a lucrative opportunity. What does need to be considered is perhaps the issues that this level of mobility will create for advertisers moving forward.

The final feature of mobile as outlined by Barnes (2002) is interactivity, which according to researchers is what helps differentiate mobile from traditional channels of advertising (Drossos et al., 2013). Ultimately mobile provides an entirely different experience for its consumers which is important as consumers are now looking for greater levels of interactivity (Sultan & Rohm, 2005). This is particularly pertinent as research which looked to understand online video advertisements found that increased usage of ad blocker software is due to the lack of interactivity afforded within an advertisement (Hussain & Lasage, 2014). The result of this is that more aggressive mobile marketing strategies are required in order to continue reaching consumers (Sultan & Rohm, 2005), which highlights the effect this change may have upon advertisers' approaches. As found within a study conducted by Gao, Rau, and Salvendy (2009) feelings of perceived interactivity were found to be a strong predictor of attitude towards mobile advertisements. This is further supported by researchers who acknowledge that for digital natives, perceived interactivity lead to more positive attitudes and intention to adopt (Kirk, Chiagouris, & Thomas, 2015). This is particularly important as this demonstrates that through utilisation of interactive elements available through mobile such as providing users with the ability to customise the game advertisement, results in a much better attitude towards that mobile advertisement.

At face value, mobile seems like an ideal medium in which to target audiences, however it has been argued that the 'anytime, anywhere' capability is likely why users are less than willing to accept mobile advertising (Drossos et al., 2013). As such, mobile marketing has not come without its critics, with researchers stating that although mobile marketing is relatively easy and inexpensive there is a real fundamental issue which relates to customers' acceptance of being targeted via mobile devices (Persaud & Azhar, 2012). This is evidenced by the fact that many advertisers are failing to reap the expected returns (Feng et al., 2016). Other data has highlighted that there are noticeable differences in click through rates of mobile when compared to desktop and tablet advertisements, which again emphasises the inefficiencies of the medium (Irvine, 2018). Therefore, it is important to understand more about the users' perspective in regards to mobile advertising in order to ascertain why it isn't proving to be as effective as projected. The next section will therefore look to explore the literature which highlights the users' perspective towards mobile advertising.

2.3.4 Users' Perspective

As early as 2007 just before the iPhone hit the shelves researchers noted the negative attitudes that were held towards mobile marketing (Grant & O'Donohoe, 2007; Tsang et al., 2004). Later research has been supportive of this notion with researchers noting negative reactions from users towards mobile marketing (Drossos et al., 2013; Izquierdo-Yusta et al., 2014; Ul Haq, 2012; Watson et al., 2013). The work by Grant and O'Donohoe (2007, p. 223) found that users see "…commercial appropriation via this medium…" to be irritating, intrusive, and mistrustful because users do not see their mobiles as a way of received marketing messages, but as a conduit to building and maintaining social relationships. More recent research goes on to support the view that users hold negative attitudes towards mobile marketing by stating that users find mobile ads annoying whilst browsing the internet on mobile (Gupta, 2013). Not only has this premise stood the test of time, but the same findings can be found across different cultures. A study looking at the differences between Japanese and Austrian consumers found that although the Japanese participants showed higher levels of irritation, both of the groups actually found mobile marketing to be irritating (Liu et al., 2012), which identifies how the theme is consistent across cultures. Although there is significant support for the claim that users perceive mobile marketing negatively, some studies have explored the idea further and elaborated on the above findings. Researchers found for example that although users do not hold positive attitudes towards advertising on their smartphones, they did understand the importance of mobile marketing (Le & Nguyen, 2014). It could be argued in this case that the participants were aware that accessing free content, services, and entertainment on smartphones is not feasible without the support of advertising revenue (Fanjiang & Wang, 2016). Without the support of advertising, users would be required to pay for what they consume on their smartphones (Bhat, 2015), which users are not overly willing to pay for an ad free content experience (Smit, Van Noort, & Voorveld, 2014). This may explain why users opt to pay for ad blockers or download free versions of ad blocker software. This indicates that the receptiveness and acceptance of mobile marketing stems from a fear of having to pay for content, as opposed to actually finding the marketing communications engaging or effective. A study conducted in 2009 highlighted that although individuals generally found mobile advertising to be irritating, those who had higher emotional attachment to their devices were slightly more receptive to it (Kolsaker & Drakatos, 2009). Although the researchers note the higher levels of receptiveness, the researchers acknowledged that generally attitudes towards mobile advertising were still negative (Kolsaker & Drakatos, 2009).

In contrast to the evidence which suggests that users hold generally negative perceptions and attitudes towards mobile advertising, there has been a variety of studies which suggest that users prefer being targeted via their mobile phones (Barutçu, 2007; Mcrae et al., 2013). The study conducted by Barutçu (2007) found that in Turkish consumers attitudes towards mobile marketing

tools such as mobile advertising and mobile couponing were positive. These findings are consistent with Mcrae et al. (2013) who stated that one of their biggest findings was that their participants were found more often to have more positive responses to brand messages on mobile than they were on desktop. Despite this study having found more positive responses on mobile than desktop, this still does not mean that these responses were positive when considered holistically as opposed to being assessed comparatively. It is therefore important to consider these findings carefully, as just because users' responses are warmer, this does not necessarily quantify the level of enthusiasm to embrace mobile advertising (Kolsaker & Drakatos, 2009).

An interesting aspect to consider when assessing the user perceptions towards mobile advertising is permission based mobile marketing or 'Opt in' marketing. Permission based or 'Opt in' mobile marketing is where users give their consent to be targeted by mobile adverts, therefore if users have chosen to give their permission this may alter the way in which they perceive that type of advertising. Early research indicates that PBMA is a useful way of undertaking mobile advertising (Barwise & Strong, 2002; Chen & Hsieh, 2012), this is in part due to the increased trend of spamming (Barwise & Strong, 2002). The researchers go on to note that obtaining consumers explicit permission to receive text adverts leads to a much more favourable response, and as such PBMA is critical for a brand (Barwise & Strong, 2002). This was further supported by Tsang et al. (2004) who found that attitudes were more favourable when mobile advertisements were sent with permission, and as such the researchers hypothesised that PBMA would become in the future, an integral component in mobile advertising. Although interesting, these studies are dated and therefore it could be argued that their application is no longer relevant to today's mobile advertising environment. More recent research however supports these earlier studies with Ul Haq (2012) finding that attitudes towards mobile advertising in general were negative, but when the marketing communication was permission based the resulting attitudes were more positive. This is further supported by researchers who found that PBMM positively influences users' attitudes towards mobile marketing activities, which highlights the continued importance of permission in mobile marketing activities (Gao, Rohm, Sultan, & Pagani, 2013). This indicates that as time has progressed similar findings have still been found across studies, which further supports the argument that permission based advertising has a positive impact on users' attitudes. Given users find it easy to consider mobile advertising as intrusive to their personal life, researchers are aware of the integral role that permission has upon mobile advertising (Scolari et al., 2012).

Contrary to the findings above, other researchers have highlighted that permission based marketing may not fix the issues relating to user acceptance and perception. Grant and O'Donohoe (2007) for example, state that repeated attempts at mobile messages could still be frustrating despite whether this was permission based or not. This is further supported in 2009 by

researchers who outlined that even when the communication between the brand and user is permission based, that users still resent the adverts (Kolsaker & Drakatos, 2009). This is because users see the adverts as an invasion of their personal space (Kolsaker & Drakatos, 2009; Scolari et al., 2012), and as humans there is a natural desire to retain a sense of personal control (Kolsaker & Drakatos, 2009). As shown above, it is clear that there is still no agreement amongst researchers whether permission based marketing can improve users' perceptions of mobile advertisements.

When looking to academic literature to provide an insight as to how users feel about mobile advertising, there are some aspects in which make the assessment more difficult. As mentioned throughout this thesis, there are issues with the definitions used by researchers being inconsistent, along with the use of different scales to measure similar constructs. Some research focuses on measuring attitudes (Aslam et al., 2016; Barutçu, 2007; Izquierdo-Yusta et al., 2014; Le & Nguyen, 2014; Tsang et al., 2004; Ul Haq, 2012), or intent (Martins, Costa, Oliveira, Gonçalves, & Branco, 2018; Nysveen, Pedersen, & Thorbjørnsen, 2005; Richard & Meuli, 2013), whilst others measure behaviour through acceptance (Gao et al., 2013; Limpf & Voorveld, 2015; Merisavo et al., 2007; Ovčjak, Heričko, & Polančič, 2015; Sultan, Rohm, & Gao, 2009). This results in a plethora of literature in which can quickly become a minefield of contradictory findings as highlighted above at the beginning of Section 2.3.4. A logical way of ascertaining how users feel about mobile advertising would be to look at user behaviour in real life contexts, when considered from this perspective one particular behaviour in relation to mobile advertising becomes abundantly clear.

As acknowledged within Section 1.1.5 of this thesis, the Apple IOS9 update actively began to support ad blockers in September 2015 (Johnson, 2015; Thielman, 2015), which meant that anyone who owned an iPhone could avoid seeing adverts on their mobile web browsers. In a matter of days after the IOS9 update, the top three paid apps within the US Apple app store were all ad blockers (Johnson, 2015). In January 2015 which preceded Apple's support, other mobile phone operating systems such as Android began to support mobile ad blockers, which saw 145 million users utilise this globally in January 2015 (Cortland et al., 2017). In just one year ad blocker usage has shown continued growth (Statista, 2018a), which has resulted in the number of mobile devices which use ad block software rising to 380 million globally (Cortland et al., 2017). The proliferation of ad blockers has also caused issues for online publishers, causing an estimated loss of 3.9 billion dollars in the UK alone in 2017 (Statista, 2018a). This indicates a clear issue with mobile advertising; so much so that users are going out of their way to block such content.

In relation to the demographics of those who download ad blockers, a recent study indicates that ad blocking is more prevalent amongst the younger generations with the highest being found in those aged 25-34 (Cortland et al., 2017). A recent report conducted by Statista (2018a) however highlighted that ad blocking was more prevalent amongst 18-24 year old males. The consistencies

that exist between these two studies is the identification of the millennial generation, the reason for this finding could be because younger generations have higher levels of attachment to their mobile phones and therefore as stated within this section resent being marketed to via these devices. Downloading an ad blocker can provide users with the means to control whether they are targeted by marketers. According to the study conducted by Cortland, the motivations to download these ad blockers was for security against malware and viruses, to avoid interruption, to improve page speed, avoid seeing too many ads, to ensure the safeguarding of their privacy, and to mitigate the poor frequency capping of ads currently (Cortland et al., 2017). Motivations such as avoiding interruption, controlling the amount of ads seen, the frequency in which they are seen, along with maintaining privacy are all examples of where users are utilising ad blockers to control mobile marketing attempts. With users emphasising that more skippable or avoidable ads are more acceptable forms of advertisements (Statista, 2018a). Brands are becoming more aware of users' intentions and attempts to avoid the ad blockers, and as such brands have developed other means of contacting users. For example, brands have begun to utilise social media messaging apps such as Facebook Messenger and WhatsApp (Franklin, 2014) as a way of sending mobile marketing and avoiding the ad blockers (Hemsley, 2016a).

An important aspect to consider is that once an ad blocker is downloaded, it is very rarely removed from the device, with users stating that the main reasons for removing it was due to switching devices, the inability to view content or that the ad blocker was not functioning correctly (Statista, 2018a). Only 2% of those asked stated that they actually missed the advertisements (Statista, 2018a), which indicates that the majority of individuals did not miss the adverts once the ad blocker was downloaded. It could be argued that as highlighted by Statista (2018a) users do go back and remove ad blockers when they are unable to view the content they wish to see and therefore ad blockers are not entirely dependable. However, it is useful to consider in what circumstances users deem it worthwhile to remove an ad blocker to view content, what type of content is this and how often does this actually occur? The above evidence indicates that users show some level of acceptance that advertising is part of the revenue model for the mobile ecosystem, as they do sometimes remove the ad blocker to view certain content online. This is likely due to the fact that most online content is provided free of charge due to the ability to make money from advertising revenue, and as mentioned previously users do not want to pay for this content and will accept advertisements as compromise.

Ultimately the prevalence of mobile ad blockers, matched with low click through rates is a clear indication that users hold negative attitudes when it comes to mobile advertising. With advertisers finding more innovative ways of targeting users through online messaging apps such as WhatsApp, it could be argued this issue is likely set to continue. As described by researchers in 2003, mobile

phones in the future will also have the capabilities of becoming an 'intrusive agent' thanks to the ability to locate users, monitor activity, and also receive unsolicited communications, such as marketing messages (Adams & Millard, 2003). As predicted in 2018 this is now the status quo of mobile marketing, and as mobiles become more technologically advanced, the more opportunities for users to be advertised to will arise.

2.3.4.1   What Causes Negative Responses?

As highlighted in Section 2.3.3, although a seemingly lucrative opportunity for marketers, evidence suggests that users are not so fond of mobile advertising. In order to understand the sentiment towards mobile advertising, it is important to first understand the relationship that users hold with their smartphones, as this ultimately impacts upon their acceptance and perception of mobile advertising (Kolsaker & Drakatos, 2009; Sultan et al., 2009).

A review of the literature highlighted a recurring theme which was 'attachment' and was found to be discussed in a variety of studies in either an emotional or physical manner (Adams & Millard, 2003; Andrews et al., 2012; Balakrishnan & Raj, 2012; Bellman et al., 2011; Gao et al., 2013; Kolsaker & Drakatos, 2009; Srivastava, 2005; Sultan et al., 2009). The common theme across these studies is the concept that mobile is seen as a fundamental and integral part of the self, and no longer just a mere device in which allows users to make phones calls or send text messages. As stated by Kolsaker and Drakatos (2009) emotional attachment to mobile goes much further than simple communication, with users displaying a fundamental dependence on these devices.

The effects of a user's attachment to mobile is clearly evidenced throughout the literature and this evidence can be broken down into two key identifiers; behavioural and emotional effects. Behavioural effects can be evidenced in relation to the users' behaviours with their mobile phones, for example the proximal location of mobile phones in relation to their person and the usage patterns of mobile. Emotional effects on the other hand can evidence attachment through the ways in which users feel about these mobile devices, and the emotions in which mobile elicits within them. Although seemingly isolated themes, these two areas are not mutually exclusive and therefore some overlap in the following section is prevalent within the discussion.

2.3.4.2   Mobile Phone Attachment and the User

2.3.4.2.1   Behavioural Effects of Attachment

In relation to behavioural effects, work by Adams and Millard (2003) discusses the intimate relationship that users hold with their mobile phones by outlining that users carry these devices on them all day, usually in very intimate spaces such as pockets or even at night in their bed. One researcher noted that a participant within their study claimed they slept with their mobile phone under their pillow, with the researchers remarking on the peculiarity of the intimate relationships

that users hold with their mobile phones (Harkin, 2003). Pew Research Centre (2010), which aimed to explain the millennial generation in the US, also found similar findings. According to the study the majority of millennials place their cell phones right next to them whilst they are sleeping, with a large proportion of generation X doing the same (Pew Research Centre, 2010). Given the highly personal nature of an individual's bed, it can be argued that this indicates a very deep relationship with research highlighting that the mobile phone has become one of the most intimate objects that a user owns (Srivastava, 2005).

Other behaviours which indicate a high level of attachment is the fact that users take their mobile with them everywhere they go (Andrews et al., 2012), unable to leave home without it (Srivastava, 2005), or even return home to get their phone if they had forgotten it (Adams & Fitch, 2006). This is particularly interesting as the older studies are still supported by the more recent study conducted in 2012, that showed the dependence and attachment to these devices has remained over time (Andrews et al., 2012). The depth of this relationship between user and mobile phone is so strong that users went as far as stating that they were unable to live without their mobile phones (Anshari et al., 2016; Ofcom, 2018; Vincent, 2005a). Not only are users dependent on these devices being on their person, users are also unwilling to lend their devices to other individuals (Adams & Millard, 2003), which evidences the attachment that users have with their mobile devices.

Given that some of these studies are as early as 2003 and somewhat dated, it is important to note that when these earlier studies were conducted the feature phone was the height of technological innovation in the mobile phone industry. It could be argued that these findings are no longer relevant, however as stated by Vincent (2005b) as technology progresses over time it would be expected that attachment to mobile devices will become stronger. This is further supported by Watson et al. (2013) who state that users have become reliant on features that they once were not. Despite being dated, this literature is important as it provides an understanding of how attachment has developed overtime, and when compared with some of the more recent studies helps to emphasise that this is still a relevant issue.

Attachment to mobile goes much further than just reliance, with users even adapting their behaviours and social conventions as a way of substituting real life relationships (Vincent, 2005a; Wang, 2017), such as sending 'XOXO' via SMS as a way of expressing hugs and kisses (Vincent, 2005a). This is particularly concerning as this highlights how users are becoming detached from face to face social interactions and replacing these with technological interactions. It could be argued that this creates an unusual relationship with these devices, however this will be discussed in further detail within the emotional section, as this becomes more of an emotional element of mobile phone attachment than a behavioural element.

Attachment to mobile can also be evidenced through excessive usage, for example users excessively checking their phone to see who has tried to contact them. Walsh et al. (2008) referred to this type of behaviour as behavioural salience, whereby users check their phone on a constant basis for missed calls and messages. Salience is described as the when an activity becomes the most important element in an individual's life and as such it dominates their thinking, feeling, and behaviours (Brown, 1993). According to Griffiths (1996) the signs of addiction are part of what the author outlines as salience, this indicates that there is an overlap between what researchers call salience and what can be considered an addiction. An example of this would be where users think about their phones even when they are not using it (Balakrishnan & Raj, 2012; Walsh et al., 2008). Linking to salience, recent research for example identified that within two thirds of the study's sample were identified to have high usage patterns, with respondents claiming they spent more than 6 hours a day on their smartphones (Anshari et al., 2016). Comparing this to the average work day of a 9am-5pm job, the time spent on smartphone is only slightly behind that of a day in the office. This is particularly concerning as it shows the extent to which people will use their smartphones, with users spending up to 25% of their day on them. Arguably much of this behaviour has become habitual, with users potentially not realising that they are using their phones, and as such has become a subconscious behaviour like brushing their teeth (Anshari et al., 2016). Subconscious habitual behaviours could easily rack up significant time engaged with that activity because users are not conscious of their actions. It could be argued that habitually checking a mobile device is a sign of attachment, as habitual behaviours occur through repetitive action (Kurz, Gardner, Verplanken, & Abraham, 2015).

Mobile phone addiction is something that researchers have become considerably more aware of, and as such a scale has been created in order to measure it (Walsh et al., 2010). Despite being able to measure mobile phone addiction, extreme mobile phone usage and clear signs of attachment are yet to be classified as a pathological addiction, given that it is difficult to determine if the consequences of excessive cell phone use are debilitating (Sapacz, Rockman, & Clark, 2016). This has been an ongoing debate within the field of technology, with the same principle having been applied to computing with researchers stating that spending a significant amount of time using a certain piece of technology, does not constitute pathological addiction given the absence of negative life effects (Charlton & Danforth, 2004). It seems however that the distinction is not always clear, with one author stating that over attachment to a behaviour or object is considered a defining feature of addictive behaviour (Orford, 2001). A study conducted in 2007 aimed to identify pathological cell phone use in college students, the results of the study indicated that of the sample, 10.4% matched the diagnosis for pathological cell phone use (Jenaro, Flores, Gómez-Vela, González-Gil, & Caballo, 2007). The findings went on to also show that those in the sample which over-used their cell phones also experienced somatic complaints which include insomnia,

anxiety, depression, and social dysfunction (Jenaro et al., 2007). This study therefore highlights that over use of mobiles and negative effects such as depression are evident, therefore it could be argued that this constitutes pathological addiction. Interestingly, participants within a study looking to explore the relationships between Australian youth and their mobile phones indicate that some participants rationalised mobile phone addiction by stating that it wouldn't be as harmful as other addictions such as drugs or smoking (Walsh et al., 2008).

From the review of literature above it is clear to see that problematic smartphone usage is an issue, and as mentioned earlier the difficulty in classifying it as a pathological addiction is due to the fact it is challenging to understand how this behaviour can be debilitating. However, as highlighted in the discussion above, there is significant evidence which highlights the effects that attachment to mobile has upon an individual's behaviour.

2.3.4.2.2   Emotional Effects of Attachment

Given that researchers are attempting to measure mobile phone addiction (Walsh, White, & Young, 2010), it would indicate that there is a deeper effect of mobile phone attachment on a users' psychological well-being and as such their emotional state (Jenaro et al., 2007). An example of an emotional effect from over use of mobile is nomophobia which describes the discomfort and or anxiety experienced when there is non-availability of a mobile phone, personal computer, or any other virtual communication device (Anshari et al., 2016; King et al., 2013). This concept of nomophobia is well demonstrated within a recent study in which iPhone users displayed increased levels of anxiety when separated from their mobile devices (Clayton, Leshner, & Almond, 2015). Clayton et al. (2015) tested the physiological and psychological effects of users being separated from their smartphones. The findings suggested that negative outcomes are associated with smartphone separation, with users expressing feelings of anxiety, unpleasantness, increased blood pressure, and experiences of lessening of self (Clayton et al., 2015). This study also highlights the way in which smartphone separation affects their ability to complete cognitive tasks (Clayton et al., 2015), which clearly demonstrates the debilitating effect separation from these devices can have upon the user. This particular study clearly evidences some of the issues related to mobile phone attachment and the level of emotional discomfort that users feel when separated from these devices. These findings are supportive of those found by Jenaro et al. (2007) who looked at mobile phone addiction, therefore it is clear to see from these studies that some of the negative emotional effects displayed by individuals are a result of mobile phone attachment. Similar ideas has been well explored within the research, with many researchers identifying that users feel distressed (Balakrishnan & Raj, 2012; Konok, Gigler, Bereczky, & Miklósi, 2016) and anxious (Cheever, Rosen, Carrier, & Chavez, 2014) when they do not have their mobile phone on their person. Other researchers have explored this concept in relation to 'unplugging', which

highlighted that younger people reported negative feelings about 'unplugging' (Thomas, Azmitia, & Whittaker, 2016).

The effects of mobile phone attachment are not just limited to the emotional state of an individual but also impact the way in which users feel about their phones. A study which aimed to understand addiction and over attachment in young Australian's found that young people felt as though their phones were actually a part of them (Walsh et al., 2008). This has been reiterated by Salz who stated, "Your mobile phone has become your 'mini me'" (Franklin, 2014, p. 12). The idea that users see their smartphones as part of themselves is something which is referred to as 'extension of self' (Bellman et al., 2011; Clayton et al., 2015); whereby users believe their mobile phones are an extension of their emotional and physical self. There is a range of literature which supports the concept of 'extension of self' with Harkin (2003) noting this phenomenon as early as 2003, whereby the researcher claimed that mobile technologies are capable of becoming an extension of a users' physical self. This was then supported a decade later by the extended self-theory, in which it is outlined that an individual's possessions are capable of becoming an extension of one's self with no need for that to have happened knowingly or intentionally (Belk, 2013). The above information provides a strong argument for users feeling as though their devices are extensions of themselves.

Further elaborating on this research, some literature indicates that users even feel as though these devices are a body part. Research identified that millennials are an "…always connected…" generation, in which results in them treating their hand-held gadgets as a part of their body (Pew Research Centre, 2010, p. 1) whereby they feel "…physically attached…" to their phones (Srivastava, 2005). The same concept has been applied within research looking to understand how researchers utilise mobile technology within ethnographic studies, and the findings suggested that mobile phones become a prosthetic for the ethnographer (Hein, O'Donohoe, & Ryan, 2011). This is further discussed by Belk (2013) who highlights that digital possessions are seen as prosthetics and therefore become part of the self and also amplify an individual's abilities.

Interestingly the ability to see a phone as more than a device but as a body part goes even further, with individuals now beginning to 'anthropomorphise' their mobile phones (Wang, 2017). Anthropomorphisation is the process of treating an object or animal as if it were a person. The claims outlined by Wang are supported by other researchers who have found respondents within their studies also anthropomorphise their mobile devices (Andrews et al., 2012; Harkin, 2003). Research as far back as 2003 found evidence of users thinking of their mobiles as a human with one respondent in a study claiming that their phone was their friend (Harkin, 2003). A similar theme is reiterated again almost a decade later in a study which found that users felt so attached to their mobile phones that they considered them to be their babies, in which they took with them

everywhere (Andrews et al., 2012). This coincides with the research undertaken by Verhoef et al. (2017) who acknowledge that even smart devices such as mobile phones have some level of agency, whereby these devices have the ability to act and interact with their environments independently of their owners. This further elaborates the feeling that smart devices are human or possess human traits. The researchers go onto note that these smart devices also have other unique aspects such as autonomy and authority, whereby they are capable of acting autonomously without the need for consumer commands (Verhoef et al., 2017). For example a mobile device which is connected within a network of IoT choosing the temperature of a house, this relates to authority whereby the device is seen as the expert as to what temperature the house should be (Verhoef et al., 2017). This study illustrates how mobile technology is becoming more humanised and as such it could be argued that this encourages attachment. This is because users no longer see them as devices but as extensions of themselves, body parts, and even as other human beings in which they can interact with.

2.3.4.2.3 What Causes User Attachment?

Researchers have throughout the literature provided some insights as to what has caused users' attachment to their mobile phones. The literature indicates that users can become attached to their mobile devices based upon the physical characteristics of the device or psychological effects these devices can generate. Physical factors include the actual physical features of mobile phones that allow the user to feel attached, for example the fact that users typically have their mobile phone on their person at all times or in a close proximity to their person (Adams & Millard, 2003). The psychological factors are related to what mobile phones allow users to do, for example mobile can be seen as a conduit to social inclusion, which has a strong impact on our self-esteem due to the fact our digital presence is socially constructed and verified (Belk, 2013).

The first aspect to consider is the size and portability of these devices, and how this may ultimately effect the attachment that users have with these devices. One study noted that it is due to the size of a mobile phone in which makes it particularly personal to the user (Mcrae et al., 2013), with other researchers supporting this claim by highlighting attachment occurs due to the portability of the mobile phone and the intimate area in which it is usually carried; such as the pocket (Adams & Millard, 2003). These findings indicate that it could be the size and ability for the user to carry it on their person in which makes this device so personal and as such develop feelings of attachment. Another potential cause of mobile phone attachment is the ways in which users utilise their phones. As technology has developed, so has the landscape in which mobile communications sit. Not only do mobile devices allow interactions such as social sharing, but these devices are now becoming connected as part of an IoT (Verhoef et al., 2017). Through the adoption of wearable technologies, connected devices such as Alexa, and also Smartphones, connectivity is

now "…omnipresent, multifaceted, and multidimensional" (Verhoef et al., 2017, p. 2). Given the capabilities and activities available to users through the use of their mobile phones (Belk, 2013; Fanjiang & Wang, 2016; Gökçearslan et al., 2016; Grant & O'Donohoe, 2007; Harkin, 2003; Kolsaker & Drakatos, 2009; Verhoef et al., 2017; Vincent, 2005a; Walsh et al., 2011; Wang, 2017), these devices are now seen as more than just a means of communication (Sapacz et al., 2016; Walsh et al., 2008). Mobile phones have therefore become an integral component in an individual's daily life (Gökçearslan et al., 2016; Kolsaker & Drakatos, 2009; Srivastava, 2005; Sultan & Rohm, 2005; Walsh et al., 2008), and it is this level of dependency on the devices capabilities in which helps to engender feelings of attachment. Walsh et al. (2008) comment that given the functions mobile phones provide, it is no surprise that young people become so attached to their mobile phones.

The second element to consider is the premise that attachment can also be due to the customisable features available to users on their mobile phones. According to researchers, the customisable features on a mobile phone encourages the personal attachment to the device (Adams & Millard, 2003). This is supported by claims made by researchers who state that when users are able to exercise a level of power or control over their possessions such as a mobile device, the more the object allies with oneself (Clayton et al., 2015). This indicates that as users gain more control over their mobile phones, they see these devices are part of their being and therefore helps to explain the reasons for the attachment to these devices. Customisation of mobile phones also allows users to personalise their devices with features such as custom ring tones and wallpaper backgrounds, as a way of expressing who they are (Sultan & Rohm, 2005). This is particularly interesting as researchers at around the same time found that the personal and emotional relationships that teenagers have with their mobile phones can be clearly identified by the enjoyment gained when they customise these devices (Harkin, 2003). This demonstrates the aforementioned overlap between physical and emotional factors which influence attachment, whereby feeling as though mobile is an extension of self, directly links into behaviour e.g. customising a mobile device to reflect it is part of an individual's being. It could be argued that through customisation users are looking for social validation, and therefore this begins to delve into the realm of socialisation.

It has been acknowledged by one researcher, mobile phone attachment is a result of mobile being a conduit to socialisation (Vincent, 2005b, 2005a), again supporting the argument that users see their smartphones as more than just a mere device. This is further elaborated by Harkin who noted that the appeal and attachment to a mobile phone is due to the possible connections that it can create socially even if these connections don't actually exist (Harkin, 2003). This is particularly interesting as this research highlights that attachment can be created by possibilities of new

relationships, as opposed to actual new relationships. Therefore, perception of possibilities is what is key, perception is an important element to consider as it often has greater effects than reality as evidenced within Harkin's study. This research closely aligns with the seminal work conducted by Dichter (1964) who acknowledged that consumers are driven to purchase certain products by latent motives. The author notes that there are many objects and services that consumers engage with that serve as useful tools for communicating and developing relationships (Dichter, 1964).

The social element to mobile is well discussed within the literature with researchers highlighting that mobile devices allow individuals to gain social validation and affection easily (Walsh et al., 2010). This is of particular interest as the study clearly identifies the link to users' emotional needs, not just mere functionality or technological capabilities. The fact that mobile devices are a conduit to socialisation has led to what researchers identify as fear of missing out (FoMO) (Cheever et al., 2014; Clayton et al., 2015; Przybylski, Murayama, Dehaan, & Gladwell, 2013). Clayton et al. (2015) propose that the attachment users feel towards their smartphones is due to their fears of missing out. This proposition is also supported by Cheever et al. (2014) who stated that a possible explanation for the anxiety that their respondents felt within their study was related to FoMO. FoMO has been defined as "…the desire to stay continually connected with what others are doing" (Przybylski et al., 2013, p. 1841), this definition was operationalised as "…the fears, worries, and anxieties people may have in relation to being in (or out of) touch with the events, experiences, and conversations happening across their extended social circles" (Przybylski et al., 2013 p. 1842). Within this study the researchers found that those high in FoMO were so worried about missing out that they were more likely to check and compose text messages and emails whilst driving (Przybylski et al., 2013). FoMO clearly elicits extreme behaviours in users and clearly demonstrates the effects that attachment has upon users' daily lives, so much so that users are unsure as to when it is appropriate to use these devices (Walsh et al., 2008). Walsh et al. (2008) found that within their research although some young people were aware of when it was socially appropriate to use their phones, there was still a percentage that did not understand when it was appropriate to use their phones and as such would use them in areas such as the cinema for example. The difficulty in ascertaining when it is appropriate to use a mobile device has resulted in a phenomena termed 'phubbing' which refers to 'phone snubbing' (Anshari et al., 2016; Ugur & Koc, 2015), whereby users are distracted by their mobile devices and subsequently snub those that they are in company with (Roberts & David, 2016). For example, going out on a date and then one individual ignoring the other by using their phone. Interestingly researchers have made ties to these types of behaviour and addiction, they went on to comment that it is this conflict between mobile device and other activities which may help to define those that are addicted vs those that are not addicted (Walsh et al., 2008).

Other researchers have focused on looking at further reasons as to why users develop intimate relationships with their devices. As mentioned earlier within the emotional effects section, users have begun to 'anthropomorphise' their smartphones (Wang, 2017); so much so they treated them like babies (Andrews et al., 2012). It was hypothesized that the reason for this anthropomorphisation was a result of innovations with virtual assistants that are available on smartphones (Wang, 2017); such as Siri, Cortana, Alexa, and Google assistant. These assistants allow users to interact with their devices as they do with humans, such as asking questions and being provided with contextually aware responses. This is even more relevant as demonstrated at the annual Google I/O develop conference held in California in May 2018 where developers launched Google Duplex, whereby the virtual assistant is capable of talking on the phone with a human, with the intelligence of these assistants so high that humans are not able to realise that they are talking to a computer (Solon, 2018). Therefore, as smartphones become more human in the way they interact with users, it is understandable that users could build a relationship with these devices in the same way they do with human beings.

As demonstrated throughout this section, physical and psychological factors interlink, therefore these two areas need to be considered with an understanding of how they ultimately affect each other. An example of this overlap is that users feel emotionally attached to their devices due to the information and contact details on their phones (Sultan & Rohm, 2005). This need to protect their personal information is the final physical factor which influences mobile phone attachment. According to researchers the type of functionality given by mobile phones is allowing users to manage their lives in their pocket (Sultan et al., 2009), as such significant amounts of information is stored on these devices (Sofge, 2016; Sultan & Rohm, 2005). As such researchers acknowledge that people around the world are highly emotional about the information contained within their mobile phones (Chen & Katz, 2009), and therefore the information stored within the phone helps to create an attachment to the device.

As users have become more dependent on the functionality that mobile provides, users have also begun to store and share a variety of different and more sensitive information types. As such there has been a rise in phenomena such as 'sexting' and 'sending nudes' whereby users are actively seeking sexual relationships via their smartphones and sending partners explicit photos of themselves (Rice et al., 2012; Weale, 2015). Explicit pictures and sexually geared messages are a very sensitive type of information that users would likely wish to retain control over, therefore could be argued that users become more attached to their devices because of the need to control and manage the information stored on them. The ability to start and maintain a sexual relationship via a smartphone also feeds into psychological factors such as self-esteem. Therefore, what initially is seen as a physical influencer (having the capability of storing basic information such as

email addresses and phone numbers) has developed into a much greater psychological influencer, such as sexting to improve self-esteem along with developing and maintaining relationships.

An argument has been made within the literature which states that factors influencing attachment can also be dictated by age with Adams & Fitch (2006) claiming that younger adults had more attachment to their mobile phones than when compared to the older age group. The researchers went on to acknowledge that older individuals typically become attached to their phones due to the need to be 'contactable' whereas the relationship within younger people appears to be more complex (Adams & Fitch, 2006). A critique of this study is that it looked at young adults through student sampling and the other exclusively looked at those aged 60 and above. Although this provides a good understanding of how different age groups use their phones and why they become attached, there is some difficulty in creating a holistic understanding due to data not existing for those aged around 25-60. Harkin (2003) further supports the arguments put forth by Adams and Fitch (2006), with Harkin stating the highly personal relationship between mobile users and their devices is more visible amongst teenagers. Although these studies are dated, supportive findings have been found more recently in 2012, with it being found that older users were less likely to see their digital possessions e.g. mobile phones, as part of their extended self (Cushing, 2012). This is particularly interesting as it highlights that differences exist in the level of emotional attachment to mobile devices based upon age, and therefore utilising a wide range of ages in the study could result in the group not being as homogenous as looking at one particular generation for example. It also highlights that an age groups level of attachment is also driven by different influencers, therefore this makes it more difficult to assess the impact attachment may have as it is not consistent across the age spectrum. The finding that age will impact on attachment is not particularly surprising as Generation Y and Z consumers have grown up around technology and therefore they see mobile devices as an extension of themselves (Balakrishnan & Raj, 2012; Brasel & Gips, 2014; Clayton et al., 2015; Grant & O'Donohoe, 2007; Jain & Pant, 2015). This still leaves the traditionalists and baby boomers that have not grown up around technology (Jain & Pant, 2015), this may explain why their relationship with these devices are different to that of their younger counterparts. Interestingly Hemsley (2016b) acknowledges the generation Z, which will proceed the current tech savvy generation X and will be the first ever mobile native generation. As highlighted by scholars the age generations can be broken down as follows; traditionalists (1922-1945), baby boomers (1946-1964), Generation X (1965-1980), and Generation Y (1980-2000) (Jain & Pant, 2015), with generation Z being born from 2000 onwards (Hemsley, 2016b). It will be particularly interesting to see as generation Z flourishes, how their responses differ or strengthen in relation to the previous generations highlighted above.

All of the factors mentioned above have ultimately had an impact on the relationship that users hold with their phones, as such there is a need to explore what the effect of this can be, with a specific focus on mobile advertising. Given the level of attachment that users hold with their mobile devices, what is the potential impact in relation to advertising via this medium?

2.3.4.2.4   What is the Impact on Mobile Advertising?

When assessing the effects of attachment on advertising, there are three key studies which need to be considered King et al. (2013), Kolsaker & Drakatos. (2009), and Sultan et al. (2009). The study conducted by King et al. (2013) which as mentioned previously looked to understand how the relationship between man and machine lead to anxiety disorders such as nomophobia. Within this study the researchers highlight that the relationship between user and device has ultimately lead to changes in the user's behaviours (King et al., 2013). Therefore, it could be argued that the relationship held with a device can ultimately shape attitudes and behaviours within the context of daily life and as such daily life experiences such as exposure to marketing communications.

As mentioned briefly earlier, within the study conducted by Kolsaker & Drakatos (2009) the researchers found that those users who were more emotionally attached to their mobile phones were more receptive to mobile advertising. An interesting point to make about this specific study is that there was still a general negative response to mobile advertising, therefore although those more emotionally attached were more receptive than those who were not, as a general rule this 'receptiveness' was still considered negative. Therefore, the key finding within this study is that despite the level of attachment, the sentiment towards mobile advertising was still negative with attachment having the ability to slightly improve receptiveness. Within this context of this study the form of mobile advertising that was being tested was SMS and MMS advertising, which as highlighted earlier within this chapter advertising formats have evolved significantly with users being exposed to various format types. It could be said that continuing to looks at SMS advertising provides limited findings, as it is hard to generalise to other formats such as banner adverts for example.

A study conducted by Sultan et al. (2009) found that across two culturally different markets (US and Pakistan); attachment to mobile has an influence on users' acceptance of mobile marketing. More specifically personal attachment increased the accessing and sharing of content, however there was no support that attachment influenced users to provide more information (Sultan et al., 2009). It could therefore be stated that users although are happy to engage and control what they access and share, there is some level of resistance or an issue with users providing personal information about themselves.

As highlighted throughout this section, there has been strong evidence provided which highlight the changing dynamic of the relationship held between user and mobile phone and how this can ultimately have an impact on users' behaviours. Mobile phones have become increasingly personal devices and as such, users are becoming more attached to these devices. It has also been highlighted within this section that as a result of this relationship there are effects which are or can be related to mobile advertising, therefore it is important to understand more about this complex relationship especially as users' reactions to mobile advertising are inherently negative. This negative perception towards mobile advertising indicates that there is something missing within the story between user and mobile device, and although there is an understanding as to why attachment occurs there is little understanding as to how to mediate the negative feelings held by users. Whilst undertaking the review of the literature, a clear theme emerged which may explain users' negative feelings towards mobile adverts, with this theme being 'control'. The next section will therefore look to discuss the concept of control in more detail, and also highlight the research in which identified control as the main issue within this story.

2.4   The Desire for Control

2.4.1   The link between mobile advertising, control, and attachment

The links between mobile advertising, control, and attachment can sometimes become blurred and as such difficult to understand the roles that each aspect plays within this story. This section therefore aims to clarify these roles by highlighting the links that exist within the literature. When assessing the research conducted in relation to mobile phone experiences, three clear themes emerge in relation to the desire for control which are closely aligned with the theory of controllability (Kirk et al., 2015). Simply put, controllability relates to the objective control available within a given situation, which aligns closely with the research conducted by (Skinner, 1996). The three themes that emerge from the literature are; 1. Control over personal information (Okazaki, Li, & Hirose, 2009), 2. Control over a given situation (Burger, 1989; Thompson, 1981), and finally 3. Control over a given device (Hoffman & Novak, 1996).

2.4.1.1   Control over Personal Information

The first theme that is highlighted is in relation to privacy, as mobile phone usage is becoming more prolific the issue of privacy is becoming more of a concern to users (Bergström, 2015; Smit et al., 2014). According to research users respond more positively to adverts when they believe they have greater control of their privacy (Tucker, 2014). As highlighted in Section 2.3.4 the rising levels of mobile phones use due to attachment, the greater amount of personal information and individual stores on these devices. It could be argued that because of the ways in which users engage with their phones, especially in relation to the information stored within them creates a desire to have control over the subsequent device (Okazaki et al., 2009). For example with users

developing sexual relationships via their mobile devices, a rise in sending explicit pictures to other mobile users has become the norm (Rice et al., 2012; Solon, 2017; Weale, 2015). Facebook has attempted to pilot a new technology which aims to give control back to users over their explicit imagery in a bid to reduce revenge porn (Solon, 2017). This indicates that that if a mobile user desires control over the images they willingly give to another, then it would seem logical to deduce that they would want to retain control over the device in which contains this imagery. Sultan and Rohm (2005) identified that handheld electronic devices such as cell phones and PDAs store information about an individual, for example sensitive contact information for their friends and family, but also calendar appointments for events that they may be attending or doctors' appointments they have booked. This was further elaborated by Chen and Katz (2009) who found that participants within their study, used their mobiles as a way of gaining information about friends and family so that they can properly support those individuals. For example, if a friend had a particularly tough day, individuals will use their devices as a means of investigation and support. It could therefore be argued that these types of information are highly sensitive, and more to the point elicit highly emotional responses within the users (Sultan & Rohm, 2005). As such the users of these devices may desire to have greater levels of control over the information that is stored within these devices.

2.4.1.2   Control over a Situation

The second theme stems from the theory of psychological reactance (Brehm, 1966), and an individual's ability to control or have control over situations in which affect them. Psychological reactance is a motivational reaction to a threat or elimination of an individual's freedoms (Brehm, 1966). According to this theory, individuals wish to maintain ones freedoms and avoid having ones choices and options limited by an external force (Brehm, 1966). The fundamental premise of this theory is that individuals wish to stay in control, and often have negative reactions when they are unable to exert control over their own environments. Therefore, it could be argued that users do not like the lack of control within mobile advertising scenarios and as such their reactions are subsequently negative, due to a fundamental desire to maintain their own freedoms. This was further emphasised by one researcher who commented on the importance of users being afforded control in interactive communication exchanges (Jensen, 1998). With the same concept being more recently supported with researchers noting that users should be able to retain control over marketing communications, such as SMS ads through things such as timing and frequency (Carroll, Barnes, Scornavacca, & Fletcher, 2007). This is particularly important as researchers have noted that "In the competitive marketing arena, choosing the proper timing of stimuli can matter as much as the stimuli themselves" (Guido, Pichierri, & Pino, 2018). In relation to mobile, it can be argued that resistance occurs if " ... advertising is perceived as intending to direct or control one's choices" (Baek & Morimoto, 2012, p. 63). In other words, when an advertiser targets users via

their mobile devices their perceived lack of control over their own freedoms could potentially lead to the user becoming resistant and therefore impact upon the advertising attempt. This is particularly pertinent because advertisers do not wish to create adverts in which cause their audience to become resistant.

A study conducted by Persaud and Azhar (2012) found that consumers feel vulnerable when receiving marketing communications because they lack control over when, where, and from who they received these marketing messages. They went on to state that consumers were more willing to participate in mobile marketing if they were given more control over the interaction and how they participate in mobile marketing. The researchers highlighted that the more control consumers are given then the deeper their involvement would be (Persaud & Azhar, 2012). This study highlights the fundamental desire for individuals to maintain control over situations that relate to their mobile devices. As discussed previously, the more that mobile technology adapts and changes to become more integral to users' lives, the greater issue that control may become.

2.4.1.3   Control over a Device

The final theme relates to an individual's ability to control these devices, on a very simplistic level smartphones are considered personal possessions. According to one author, the driving motive to possess an object is to be in control of that object (Isaacs 1933). Much later work reiterated this idea by stating that the perception of control is a driver of psychological ownership (Rudmin & Berry, 1987), which again highlights that these concepts are interrelated. These pieces of literature highlight that when considering the motivations behind possessing an object, it is ultimately driven by the desire to control it. With this in mind, it would therefore be realistic to make the comment that through the very premise of owning a smartphone, an individual would have the desire to control it. Supporting this idea within context, work by Mcrae et al. (2013) stated that it was the size of mobile which made it so personal, with the researchers also highlighting that it is due to the personal nature of mobile that users wish to exhibit great levels of control over this device. The inability to exert control over a mobile device, such as being able to control the messages pushed to the device will also cause users to feel frustrated and even furious due to the fact it is a personal gadget (Gao et al., 2010). This evidence suggests a quite negative response, with users being furious at marketing messages being pushed to their phones. This is evident in the behaviour highlighted earlier, where users are going out of their way to actively block marketing communications on these devices. This further indicates that the desire to maintain control in reference to the user is a by-product of the attachment and feelings of ownership users have with these devices.

Other researchers have identified the physical elements of controllability, by acknowledging that marketers need to be conscious of the users' desire to believe that they are in control of an

interaction. This is because users desire to feel in charge of the interface and to feel as though the interface responds to their actions (Schneiderman & Plaisant, 2005). This concept has been further touched upon by researchers who state that due to the nature of touch on some devices such as smartphones, consumers may feel more direct control over these devices (Brasel & Gips, 2014). If by default users feel in control due to the very nature of the device being touchscreen, it could be argued that users are conditioned over time through the use of these devices, to feel in control. Therefore, there is an expectation that they would be in control of the device and a threat to this control could be received negatively, in line with the theory of psychological reactance. As such, marketers must be acutely aware of the balance between developing an opportunity and over exploiting the capabilities of mobile at the cost of the user's own control (Adams & Millard, 2003).

The final element of controllability to consider is the interconnected environments which individuals find themselves within, these environments are coined the IoT (Verhoef et al., 2017). Although in Section 2.2.3 it was stated that the IoT allows users to become more passive, it could also be argued that it provides users with the ability to become actively engaged with their networked environment c. Consumers are capable of controlling technology for example making one device interact with another, controlling the ambient environment such as temperature in a house (Verhoef et al., 2017), or even ordering Alexa to purchase products online. It could be argued that this increasing type of control over one's own environment will create greater levels of desire for individuals to control their personal spaces and even external environments.

Outside of these three themes, a study conducted by Watson (1972) highlights that control and attachment are linked, with the researcher stating that when control is given effectively this encourages feelings of attachment. This further supports the arguments highlighted previously within this review of literature that control and attachment are interrelated concepts, that with increased control of a device the greater attachment users build. Therefore, as individuals build greater levels of attachment to their mobile devices, the more control these individuals will desire and expect. As the links between these constructs has now been identified, it is important to consider control more closely, therefore a review of literature on this area will follow within the next section.

2.4.2   Control and Demographics

An interesting area to consider is the role that demographics can play when looking at control. Looking at age for example, age has been found to impact on the perception of control, with younger digital natives seeking greater levels of interactive control over their search processes online (Kirk et al., 2015). This is further supported by researchers who indicate that age has been found to impact the perception of control (Aldwin, 1991; Specht, Egloff, & Schmukle, 2013; Weisz

& Stipek, 1982). This is unsurprising given that as highlighted previously in Section 2.3.4 age has also been shown to affect the levels of attachment to mobile (Adams & Fitch, 2006; Cushing, 2012; Harkin, 2003). In more general studies it has been found that as an individual's age increased, the more the individual perceived that they had greater levels of control, with the exception of very young children who hold over inflated perceptions of control (Weisz & Stipek, 1982). Research by Aldwin (1991) and Specht et al. (2013) found similar results however the researchers acknowledged that there are plateaus and drop-off points in relation to the perception of control as the age of the individual increases. The perception of control therefore can be looked at as a continuum in which an individual moves across throughout their lives (Specht et al., 2013), this evidence indicates that differences in age will result in differing levels of perceived control.

For gender, a study conducted by Jayawardhena et al. (2009) found that institutional trust is the most influential variable in mobile marketing, but personal trust and control were more important for men than women. Research conducted by Specht et al. (2013) somewhat mirrors the above findings by highlighting that men generally had higher levels of perceived control when compared to women, however the development of perceived control were the same across both genders. This indicates that there are potentially differences in relation to the perception of control based upon gender, given that this is the case it could be expected that differences may arise, it will be important to consider how this will be controlled within the context of this research.

From the review of literature above, it is clear to see that age and gender has an impact on control. This is particularly interesting as this will provide an understanding of how to outline a suitable sample population later on within the research methodology section of this thesis.

2.4.3   The Effects of Control

In order to provide a comprehensive review of the literature on control, a significant amount of literature was evaluated and categorised into four key areas. Breaking the literature into these four areas allows for a better understanding of how the story develops and as such these include:

1. The general effects of control.
2. The effects of control within advertising.
3. The effects of control within permission based mobile marketing.
4. The effects of control saturation.

2.4.3.1   The General Effects of Control

The seminal research in the area of human behaviour which looks at control was conducted by Glass and Singer (1972) whereby it was found that when an individual is exposed to bursts of uncontrollable noise, stress is higher when compared to an individual who believes they possess the control to be able to extinguish the noise. According to the researchers this is because the

perception that they are able to avoid the aversive event generally makes life more pleasant, and therefore having that control alleviates the stress felt by the individual (Glass & Singer, 1972). This is further supported by Miller (1979) who highlighted that when individuals are able to control aversive events, the more likely that event will hurt less. This research is particularly interesting as it considers the role that control plays within aversive situations, this is particularly relevant as mobile advertising could be considered as an aversive situation by users. Seligman (1976) further supported these arguments with his research on learned helplessness which looked to assess the effect of control on both animals and humans. From the studies conducted, the author identified that organisms which were able to exert control over their own environments, were typically happier than organisms which lacked that control (Seligman, 1976). The studies also highlighted that when organisms were not in control, they experienced a phenomenon termed 'learned helplessness' whereby organisms believe that success and failure are independent of their own actions (Seligman, 1976). A result of this was that in the animal trials, the dogs didn't attempt to avoid the shocks being administered but laid down and accepted them (Seligman, 1976). The author goes on to note that the cause of learned helplessness is not having control over a traumatic event (Seligman, 1976), this indicates that control has the ability to alleviate the stress felt in very traumatic situations. Looking to more recent literature, a study conducted by Sundar and Marathe (2010) noted that control was a basic human desire which pervaded nearly all aspects of life. The researchers went on to claim that humans who were placed in control of the situations that affected them were often more content than humans that lacked control in the same circumstances (Sundar & Marathe, 2010). On a very simplistic level, these bodies of research identify that when individuals are given more control over their own environment the happier and more content that those individuals will be.

Applying the concept of positive effects derived from control into the realm of human computer interaction, researchers support the previous arguments. Researchers who examined the association between computer anxiety and level of experience with computers found that feelings of mastery or control contributed to reduced feelings of anxiety (Beckers & Schmidt, 2003). This is later supported by researchers such as Bessière, Newhagen, Robinson, and Shneiderman, (2006) who found that when users perceive that they are able to fix an issue that arises through their usage, the less frustrating these issues feel because the user believes they are capable of resolving them. Other researchers also found that individuals may experience higher levels of stress due to a lack of control over negative events, especially when individuals felt as though they were unable to resolve them (Driscoll, Brough, Timms, & Sawang, 2010). Although these studies identify that feelings of control result in a reduction of anxiety and frustration, feelings of control are heavily dictated by previous experiences with technology (Beckers & Schmidt, 2003; Bessière et al., 2006). This is particularly important because this suggests that perhaps feelings of control may not exist

within scenarios that an individual may not have any experience of. Therefore, this will be an important element to consider when looking to design the study as part of this PhD thesis. Although the studies highlighted above look to understand user behaviours with computers, it could be argued that the same logic applies across all forms of personal technology and as such similar findings might be expected of smartphone usage.

Being in control not only impacts upon feelings of anxiety and stress, but being in control creates positive feelings of efficacy and pleasure when users are able to achieve desired outcomes (Baxter, Aurisicchio, & Childs, 2015). This is especially relevant in goal orientated environments such as playing games. A study conducted by Klimmt, Hartmann, and Frey (2007) found that when playing games, being in control is enjoyable for the user as they are able to formulate goals in relation to how they want their game world to be. The researchers went on to note that individuals prefer situations in which they can exert control and will try to avoid situations in which they have none (Klimmt et al., 2007). Similar studies have highlighted that feelings of autonomy and control are consistently strong explanations for enjoyment within games (Kim et al., 2015). This indicates that control can also lead to users gaining feelings of pleasure, which is particularly interesting as this highlights the positive impact control can have on an individual.

The ability to have control or have influence over an environment is what researchers coin 'efficacy', feelings of efficacy leads to feelings of competence/effectance (Baxter et al., 2015). Taking into consideration the definition of competence proposed by White (1959), it can be said that when users have control over an environment (efficacy) (Baxter et al., 2015), the greater feelings the individual will have that they are able to interact effectively with that environment (competence) (White, 1959). Interestingly White (1959) highlights the differences between effectance and competence that Baxter fails to do, by outlining that effectance relates to an individual's ability to explore and have influence over their own environment. This definition aligns more closely to the definition of efficacy outlined by Baxter et al. (2015). Despite some minor inconsistencies between literature, what can be said is that humans sometimes engage within certain activities, just to experience feelings of competence (White, 1959). This reinforces the argument being made that individuals like to feel as though they are able to interact effectively with their environment, which stems from feelings of the ability to be able to influence and control that environment.

It is important to note however, that although the research to this point is very complimentary of the effects that control can have, there has been an argument made that control does not always lead to positive outcomes. Burger highlights that certain conditions exist in which increased level of personal control lead to negative outcomes (Burger, 1989). These are:

"(a) leads to an uncomfortable level of concern for self-presentation, (b) decreases the likelihood that the person will be able to achieve desired outcomes or (c) leads to an increase in predictability that draws the person's attention to the aversive aspects of the situation" (Burger, 1989, p. 247).

An example of when increased control may have negative outcomes could be an increase in the responsibility in the workplace, or giving an individual the ability to administer one's own injections. Despite the situations in which negative outcomes are highlighted, this evidence clearly demonstrates the complexity of control which was acknowledged by (Miller, 1979; Skinner, 1996).

The inconsistencies in outcomes is something that is further elaborated by other researchers, who posit that the link between control and more favourable effects are not always found. Averill (1973) claims that personal control does not always lead to reduced stress in all situations, and that a reduction in stress in relation to control is reliant on multiple factors. This is further supported by Thompson (1981, p. 89) who highlights that in relation to stressful events, the effect control may have on the outcome will be heavily dependent on three dimensions of meaning related to the individual, which are "…endurable vs unendurable, means to desirable outcomes vs no desirable outcomes and planned vs random events". As highlighted above, this evidence further indicates that control is a much more complex construct, as stated by Miller (1979) and Skinner (1996) there is a lack of consensus within the literature about which types of control and in which types of situations it is beneficial or harmful. An important aspect to consider here is that these differences in findings across studies as to whether control increases or decreases positive outcomes could be related to variables such as independence, suggestibility, and conformity (Rotter, 1966). Rotter (1966) highlighted that an individual who believes they have control over what happens to them may be more likely to go along with suggestions except when those suggestions are considered to be attempts at manipulation. In this scenario the individual will act more resistant to those manipulations (Rotter, 1966), which aligns with the theory of psychological reactance (Brehm, 1966, 1989). The claims made by Rotter (1966) highlights that differences in the way that individuals view their own control, ultimately impacts on the way in which they decipher their environments. This is seemingly well aligned with the theory of learned helplessness (Seligman, 1976); whereby reactions are different dependent on whether the individual feels as though they are able to influence the success of an outcome.

2.4.3.2 The Effects of Control within Advertising

The ideas put forward in the sections above discuss control in a more general context, however it is important to consider the literature which discusses the concept of control within the context of advertising. This will allow for a greater understanding of the literature associated with the research aims, therefore this section will look to explore this area further.

Over two decades ago Ducoffe (1996) stated that users will find adverts less intrusive and less irritating if they have greater control over aspects such as the ads exposure. Although this is a dated piece of literature, this research indicates that by increasing levels of control on behalf of the user over the advertising interaction, the more positive results that will be achieved. Looking to more recent literature, one author summarised that within advertising scenarios there was an opportunity for control to reduce the feelings of psychological reactance, in doing so this would help to improve the performance of online advertising (Tucker, 2014). This research highlights that across two timeframes this premise that an increase in the levels of control afforded to a user within the advertising interaction could increase the chances of more favourable outcomes, has stood the test of time. The element of reactance is particularly important as research undertaken by Baek and Morimoto (2012) highlighted that individuals resist advertising, when the advertising is perceived as attempting to direct or control an individual's own choices. Therefore, if advertising removes, or tries to force individuals to make a certain choice, then users will resist these advertisements (psychological reactance). This will then impact upon the adverts effectiveness, which will be discussed in further detail in Section 2.4.3.

Further elaborating the ideas above into the context of smartphones, it could be argued that by providing the user with some level of control over the interaction of a mobile advertisement, the more positive feelings that will be felt towards that advertisement. This idea was supported by Lee, Kim, and Sundar (2015) who claim that the greater levels of control afforded to the user within the context of location based marketing, the more the audience will be positively impressed by the advertisement and the ad message. This indicates that increased levels of control within this study had a positive effect on ad attitude. The interesting aspect to note here is that the researchers within this study highlight that control is achieved through the use of customisation. This study however focuses on the congruency of the location and also product involvement, therefore this study did not give the user any direct control over what aspects of the advert were customised. It could therefore be argued that the term control has been incorrectly operationalised within this study, as customisation in this study does not allow for any level of personal control on behalf of the user. The relevancy of the ad based upon the user's location or other information could cause users to feel as though their privacy is being invaded and personal information being misused (Adams & Millard, 2003; Chen & Hsieh, 2012; Deloitte, 2015; Scharl et al., 2005; Wind & Rangaswamy, 2001), therefore it has been acknowledged the importance that users are able to exert their agency within digital environments (Sundar & Marathe, 2010). This invasion of privacy could be seen as a loss of control on behalf of users, with research indicating that users are concerned about their privacy and want to control how and when they interact with advertising (Persaud & Azhar, 2012). This is further supported by Morimoto and Chang (2006) who state that feelings of intrusiveness could be related to the loss of control that consumers feel when

being directly advertised to. Interestingly users do not always feel this way when they believe their privacy is being respected, with users responding more positively to personalized advertising after the implementation of a privacy policy update (Tucker, 2014). This is of particular interest due to the roll out of the EU GDPR regulation in May 2018 (European Commission, 2018), which could make users believe that in general they have greater levels of control over the personal information that companies hold about them.

Relating back to customisation, a study undertaken in 2014 by Bacile et al., (2014) looked to assess how changes in customisation of mobile ad content, influenced aspects such as consumer response rate and purchase intent. Within the study the subjects were allowed to customise aspects of the advertising interaction by providing users with the ability to control features such as frequency, time, and location of the adverts (Bacile et al., 2014). The results showed that those with the ability to control (customise) the ad content, had higher consumer response rates and also a higher level of purchase intent towards the offering (Bacile et al., 2014). This again supports that users wish to retain control over the when, where, who (Persaud & Azhar, 2012), and what (Morimoto & Chang, 2006) aspects of mobile marketing. In further support of these findings a study conducted by Cortland et al., (2017) found that users most disliked adverts which were 'unskippable ads' and 'auto play audio ads'. Static banner ads and skippable video ads however were stated to be the most preferred option (Cortland et al., 2017), with native ads, such as the ones that are hidden as useful content were found as neither preferred or disliked by users (Cortland et al., 2017). This indicates that adverts where users can exercise control by skipping the ad for example, were much more preferred over those in which the user could not exert control e.g. unskippable ads. An important aspect to note is that being the most favoured option does not indicate that users are positive about ads being shown on their devices, it merely indicates that they are more positive in relation to the other options presented as highlighted earlier (Kolsaker & Drakatos, 2009).

Perceived behavioural control in relation to viewing behaviour has also been found to positively predict users' intention to engage with In-app advertisements (Cheung & To, 2017). This means that the more users are capable of controlling their viewing on video advertisements within apps, the better chance that they will engage with those advertisements. This is particularly interesting as it again supports the arguments put forth by the researchers mentioned throughout, whereby users' involvement is deepened by providing them with greater levels of control over the interaction (Baek & Morimoto, 2012; Persaud & Azhar, 2012). The study conducted by Cheung and To (2017) is particularly interesting as it is one of the most up to date studies which looks to assess the affect control has within advertising however, as highlighted in many of the studies a holistic view of control has not been considered.

In line with the argument put forth by Burger (1989) that control does not always lead to positive outcomes, a recent study conducted in Mexico and Spain found that the perception of control led to a decreased attitude towards mobile advertising, whereas the opposite effect was found in Spain (Jiménez & San-Martín, 2017). The researchers claimed that this was likely a result of Mexico eliciting higher levels of aversion to uncertainty, this again goes to show that there are many factors such as culture in which can impact upon control and perceptions towards mobile advertising. The researchers within this study highlight the need for organisations to fully understand their clients and their perceptions of control when using mobile as this will directly influence their attitude and as such dictate their behaviours (Jiménez & San-Martín, 2017). Although this study conducted by Jiménez and San-Martín (2017) found inconsistent results, there are researchers in which found that control had no impact within their studies and therefore provide an opposing view to the research highlighted thus far. Research undertaken by Sullivan (2003) identified that mobile self-efficacy was not found to influence the use of mobile services, with the researchers elaborating that consumers did not identify barriers to use of mobile technology. In line with the argument made by Sullivan (2003), the work undertaken by Merisavo et al. (2007) did not find control to be an important factor to consumers in relation to mobile advertising acceptance, despite the privacy concerns held by the participants. This was further supported by Karjaluoto and Alatalo (2007) who found that perceived behavioural control had no impact on intention to participate in mobile advertising. An aspect to be critical of is the age of both of the studies conducted by Karjaluoto and Alatalo (2007) and Merisavo et al. (2007), both studies were published in 2003 and 2007 respectively, with the majority of the data collected during a period of time where the feature phone was the most advanced level of mobile technology available. Features that are available on smartphones today such as mobile banking or even photo sharing as an example were not available to users on a feature phone. Therefore, it could be argued that aspects such as privacy on the mobile device were not so prevalent at that time, due to the fact that users could share very little in terms of personal data.

An important aspect to consider is that although control may not be an important factor to mobile advertising acceptance or use of mobile services, there is a still an argument to be made that it is still important for advertisers to consider. Although Karjaluoto and Alatalo (2007) highlighted perceived behavioural control did not impact intention to participate in mobile advertising, there was clearly a managerial implication involved. Respondents within their study were clearly concerned about their privacy and also permission, and as such the researchers acknowledged that it was important for managers to be aware of the need for control (Karjaluoto & Alatalo, 2007). This is further mirrored by researchers who also note the importance of managers needing to understand the importance of user control within marketing communications (Adams & Millard, 2003; Jiménez & San-Martín, 2017; C. Watson et al., 2013). Understanding a users' needs

is particularly important as research indicates that when users had an increased desire for control, this can impact upon participants ad attitude and their recognition of media content (Bright & Daugherty, 2012). Although this research did not look at control over the advert but the control over the environment, it does provide some indication that the desire for control has an impact upon common marketing measures.

As evidenced throughout this section, there is an overwhelming amount of evidence put forward by academics in which supports the argument that control is an important aspect to consider within the context of advertising. As there is with any academic argument, there are some academics in which counter this by evidencing within their studies that control has no impact on some marketing related measures. The definitions of control as used by the researchers also highlight an issue in relation to the findings of their studies, as evidenced throughout, control is a complex construct and as such it is important that it is fully understood. This lackadaisical approach to the concept of control ultimately means that it is difficult to make comparisons across the studies as the operationalisation is not consistent. Also as shown within the literature above, there are circumstances whereby control and customisation are used interchangeably (Bacile et al., 2014; Bright & Daugherty, 2012; Lee et al., 2015). This can create an issue because customisation relates to users being able to make choices, which as will be discussed later is one element of control but does not cover the entire construct. Improper understanding of the construct of control results in research which does not have a solid foundation and therefore the findings could be contested. Given the complexity of control, some important theories which tie to control will be discussed within the following sections, as this will allow for a more comprehensive understanding of this construct.

2.4.3.3 The Effects of Control and Permission Based Mobile Marketing/Advertising

As discussed in Section 2.3.4 a key theme which is discussed within the literature on mobile advertising is 'permission based mobile marketing/advertising' (PBMM/PBMA); whereby users give permission to advertisers to contact them. From the review of the literature in Section 2.3.4 there was evidence to suggest positive outcomes of PBMM and PBMA, however it should be noted that other researchers highlighted that users still found this approach to be intrusive. According to the researchers, this was due to users wishing to retain some level of control, however it would seem logical that if users provide advertisers with permission to contact them that they would feel in control over who can contact them and as such be more positive about those communications. An argument could also be made that by accepting PBMA that users are voluntarily giving up their control over any future advertising interaction. However, it could also be argued that users do not feel in control at all, as such they engage with PBMA as a way of regaining control. This section

will therefore look to outline the research on PBMA with specific focus on how PBMM and PBMA relates to control.

Recent research supports the value of PBMM in relation to control, with one researcher noting that the support for PBMM is due to the ability for users to control the text advertising (Nittala, 2011). The researcher goes on to highlight the specific importance of users being able to have this level of control (Nittala, 2011). Research conducted by Richard and Meuli (2013) support this with their study which indicated that by increasing the level of perceived behavioural control will help to reduce the negative feelings towards permission based location aware mobile advertising. The researchers go on to discuss that one of the reasons for the significant result being found may be in relation to the increasing cynicism towards mobile services (Richard & Meuli, 2013). This indicates that within the context of PBMM/PBMA, increasing control has a positive impact.

Contrary to the findings above, research by Kolsaker and Drakatos (2009) state that even when a user provides permission to a brand, users still resent any invasions to their personal space and as such still wish to retain a sense of personal control. In support of this Jayawardhena, Kuckertz, Karjaluoto, and Kautonen (2009) found within their study which looked to assess the antecedents of participation in mobile marketing, that the perception of control has less of an influence on permission; the more the consumer is experienced with mobile marketing. The study also highlighted differences across countries and postulated that British consumers were more likely to received unsolicited marketing messages and as such were the group which showed the strongest desire for control over their personal information and permission (Jayawardhena et al., 2009). The study also acknowledged notable differences across gender, with the perception of control for men being an important determinant of permission, whereas it is not as strong for women (Jayawardhena et al., 2009). It should be noted that the study conducted by Jayawardhena et al. (2009) although found the influence of control was less important for those experienced with mobile marketing, the study does not indicate what less means; or even what the results were for those not as experienced with mobile marketing.

Within this chapter it has been highlighted that as time has progressed, individuals have become more reliant on their mobile devices, which has led to them becoming more attached to these devices. With technological innovations making it easier for advertisers to contact consumers through their mobile devices, matched with greater levels of attachment, it would seem logical that as time has progressed the desire for control has increased. Although some of these studies are contradictory at face value, an argument could be made that as time has progressed the situation has changed, which is ultimately reflected in the contradictory results across the two opinions. The arguments outlined above indicates that the relationship between permission based marketing and control is also not so clear cut, and that despite users' openness to receiving mobile

advertising there is still a desire to retain control. One element that needs further evaluation is how much control is desired by the user, and is there a point in which there is too much control? The next section will therefore look to explore the literature within control saturation as to provide a more holistic understanding of the control construct.

2.4.3.4   The Effects of Control Saturation

As highlighted by Burger (1989) there are some scenarios in which an increase in control does not always lead to positive outcomes. An important element to consider is; is there is a saturation point in which more control becomes detrimental? If this is the case, it would seem logical to ask the questions, what is the right amount of control? And how much control is too much?

One antecedent of perceived control is the level of choice that is given to an individual, the ability to choose from a variety of options, this is termed 'decisional control' (Skinner, 1996). With this in mind, are the situations in which too much choice becomes detrimental? Research suggests that by providing individuals with too much choice this results in a phenomenon termed 'choice paralysis' (Schwartz, 2004, 2005). According to Schwartz (2004, 2005) choice paralysis is particularly important to consider as it has been found to negatively impact aspects such as decision making and buyer behaviours. Another antecedent of perceived control is information, or typically termed informational control (Skinner, 1996), with Thompson (1981) acknowledging information has the capability of engendering feelings of control. Research supports that in scenarios whereby too much information is provided to an individual, similar paralysis effects can be found (Y. C. Chen, Shang, & Kao, 2009; Iyengar & Lepper, 2000). In these scenarios, it is possible for the audience to become overwhelmed with significant amounts of information in which makes it difficult for the receiver to assimilate. This is an even more pressing issue within the context of mobile advertising, where advertisers are restricted by the small screen size and as such concise information is paramount (Drossos et al., 2013). In this situation, there is even more pressure on advertisers to provide the right amount of information as it could be argued that it is easier for accidental information overload to occur on mobile which could have a detrimental effect.

To the researcher's knowledge there is no literature to date which ascertains the effect of too much predictability, which is the third antecedent of control (Skinner, 1996). However, from the above review of literature what can be seen is that two of the antecedents clearly have a saturation point in which results in some form of paralysis or negative effects. This highlights that advertisers need to be conscious of the amounts of control that they potentially provide their audience, as too much may result in negative outcomes.

2.4.4 Control and Psychological Reactance

Although acknowledged in a few places throughout this review of literature, psychological reactance is an important theory to consider in further detail. According to the definitions of advertising used within this thesis, the aim of advertising is essentially to persuade an audience to undertake some form of behaviour or to influence attitudes. A study conducted by Baek and Morimoto (2012) found that if advertising is perceived to be attempting to direct or control one's choices, that this would create psychological reactance. Psychological reactance as mentioned previously is a motivational reaction to a perceived threat of elimination of a freedom (Brehm, 1966). The effect of this motivational reaction can result in changes in behaviour in order to re-establish the feeling of freedom and control (Brehm, 1966; Heckhausen & Schulz, 1995). This means that when an individual believes an advertisement is trying to direct their choice, they may try to re-establish their feeling of control through their behaviour. For example, within advertising, if an individual feels as though a Pepsi advertisement is seen to be controlling the choice of drink a consumer purchased, the subsequent reactant behaviour could be to purchase a competitor of the brand such as Coca Cola.

Reactance is typically seen as a negative motivational state in which causes the individual unpleasant feelings (Brehm, 1966). This feeling ultimately impacts the way in which users feel and subsequently behave, this is particularly pertinent as this may result in undesirable behaviour such as ignoring the advert or downloading ad blockers. As mentioned previously Tucker (2014) summarised that if the perception of control could reduce reactance, that control could therefore in theory minimise the potential for consumer reactance and subsequently improve the performance of online advertising. Therefore, it would seem logical that if the perception of control could reduce reactance that can be caused by intrusive mobile adverts, the more likely users will respond positively to the messages.

In line with the theory of psychological reactance, Dahlén, Murray, and Nordenstam (2004) commented on the ways in which consumers have control over the content of advertising. The researchers made the claim that although the consumer may not have control over whether they are targeted by the advertiser, they do have control over the content (Dahlén et al., 2004). In relation to this study, the researchers are referring to the users' ability to choose what type of content they engage with and to what level they engage with it. It also refers to the users' ability to go through the advert at their own speed and if it is online, click and engage further with links for example. This argument aligns quite closely to some of the claims made by Brehm (1966), whereby users can in some scenarios gain some level of cognitive control over a situation. According to Averill (1973) in most situations individuals do not have choice about whether they endure a noxious event however they do maintain behavioural control through aspects such as

avoidance or even self-administration. This is further evidenced by researchers who did not find a significant relationship between direct mail and psychological reactance (Morimoto & Chang, 2006). The authors highlight that this may be due to the respondents growing accustomed to online marketing communications and therefore although perhaps perceived as intrusive it is not considered a loss of control (Morimoto & Chang, 2006). It could be argued that the findings of this study tie closely to the study conducted by Dahlén et al. (2004), and that although print advertisements doesn't provide individuals with a choice about if they are targeted, they do retain a level of cognitive control in regards to processing of those messages.

On the contrary, findings from a study conducted by Edwards et al. (2002) within the context of interactive environments found that forced exposure conditions results in increased levels of irritation and avoidance. This type of forced exposure is similar to what researchers highlighted earlier as individuals having no control over being targeted by advertisements (Dahlén et al., 2004). The interesting aspect to note here is that within the study conducted by Edwards et al. (2002) negative effects were found despite users having the cognitive ability to not process the advert. The same concept can be applied to mobile, whereby users have no control over their exposure to adverts, and as such tying this back to the point made previously this could cause irritation and further avoidance. This then may also explain why users are going out of their way to download mobile ad blockers as they are seeking ways to effectively avoid marketing messages, which highlights the potential significance of control. This is furthered by Li et al. (2002) who identify that adverts can be seen as intrusive to cognitive processing and therefore users associate these with negative emotional effects such as emotional (irritation) and behavioural (ad avoidance). Interestingly when considering cognitive processing, there is also the argument to be made in relation to the limited level of cognitive processing ability available. According to Lang (2000) individuals only have a certain amount of capacity in which to process information and as such similar conclusions have been drawn in relation to interactive advertising conditions (C. Li & Meeds, 2007). As mentioned by Salz, because users switch off what is irrelevant in their minds it is vital that marketers are focused on what is contextually relevant (Pophal, 2016).

Throughout this chapter, control has been highlighted as a potential factor that may improve the responses to mobile marketing, with some discussion of the limitations that control may also have. What is yet to be considered is whether control must be real or whether it is just the perception of control which is important, the following section will therefore look to assess this and discuss this in further detail.

2.4.5   Perception of Control VS Objective Control

Control has also been defined within the literature as containing two distinct areas; self-efficacy and controllability (Kirk et al., 2015). Self-efficacy in relation to this research subject would be an individual's belief in their own ability to control their smartphone. Controllability on the other hand refers to the external resources (e.g. functionality) on a smartphone that allows an individual to take control, for example being provided with a more interactive or customisable user interface (Kirk et al., 2015). Simply put, one is about the individual's perception of their control, and the other is the objective control within a situation which aligns with the research conducted by Skinner (1996). Throughout this review of literature, it has been highlighted that increased levels of control may produce more favourable outcomes in relation to mobile advertising. However, an aspect which has been discussed by researchers is whether this control must exist, or whether individuals only need to perceive it. In other words, does the control need to be real, or do individuals just need to feel as though they have control.

Looking back to the work undertaken by Glass and Singer (1972); the researchers highlighted that individuals believing that they had the ability to stop an aversive event was enough to reduce stress, even in situations whereby control was never exerted. This indicates that individuals only need to perceive that they are in control in order to reduce the stress experienced by a noxious event. This study highlights that the most important element in producing favourable outcomes was the perception of control, not the actual level of control provided within a situation. This was further elaborated at a similar time by Watson (1972, p. 337) who stated that the most important aspect is "…the perception of the relationship of contingency between a specific stimulus and a specific response". Within this study the researcher assessed the smiling and cooing of babies, when the babies believed their actions resulted in a mobile above their crib to move (J. Watson, 1972). This is particularly interesting as studying babies highlights an inherent natural desire that exists within human beings to be in control of their own environments. This theme continues throughout the literature with other researchers making the same claims that is the perception of control which is integral (Burger, 1989; Thompson, 1981).

Looking towards literature within the field of mobile, in a study conducted by Nysveen et al. (2005, p. 332) the researchers claimed that the perception of control is "…directly related to behavioural intention" therefore the authors note that the perception of control is a key antecedent of intention to use mobile services. Although this study does not directly look at mobile advertising, it could be argued that similar findings could be found within mobile advertising due the mostly consistent findings throughout the literature that control leads to more positive outcomes. The seminal work on the theory of planned behaviour by Ajzen (1991) further supports these arguments by highlighting that the perceptions of behavioural control are more important at

driving attitudes and subsequent behaviours; than the actual level of afforded control. Within the context of interactive environments such as a website, even if users are given links and buttons and other interactive functionality, it is only their perceptions of this functionality that will affect the response (Song & Zinkhan, 2008). Looking to more recent literature one study which looks to understand more about choice paralysis within consumers decision making process, found that it is not necessarily the actual level of choice that can cause an affect, but it is the perception of choice which is important (Beneke, 2014). Given that choice is tied to decisional control, it would seem that this was just as relevant as the other studies highlighted within this section.

As shown above, there is a plethora of literature which makes the claim that perception is the most important aspect in relation to altering attitudes and subsequent behaviours. In order to understand more about the control construct in general, the following section will look to outline the definitional parameters of the construct. This will provide a solid basis in which to operationalise the construct for this study, therefore the next section will look to provide a comprehensive review of literature on control.

2.4.6 Definitional Parameters of Control

This literature review has heavily relied on the term 'control', yet to this point there has been little discussion of what is meant by control. As briefly touched upon earlier, researchers seem to define this term differently or using the term control synonymously with other terms. For example as mentioned before examples of research used the term control and customisation interchangeably (Bacile et al., 2014; Bright & Daugherty, 2012), which evidences that these researchers defined control as some form of customisation.

The large number of terms which have been used to describe control has been discussed by Skinner (1996) who stated that these numerous terms typically overlap, are interrelated, relate to the same construct, or in some cases are entirely different. This causes a wealth of ontological issues, and as such the meaning derived from research can be misunderstood due to poor definitional parameters. Skinners seminal paper on the subject of control titled 'A guide to constructs of control' aimed to bring together the key pieces of literature surrounding the subject of control and organise these constructs in a meaningful way as to highlight the overlaps and inconsistencies (Skinner, 1996). It is from this paper that the definitional parameters used within this study has been outlined.

According to Skinner (1996) the perception of control is made up of six antecedents; choice, information, predictability, warning signal, regulated administration, and decisions. Although there are six antecedents, the author outlines that the most widely accepted antecedents of perceived control are choice, information, and predictability, with academics referring to these as

decisional control, informational control, and predictive control (Skinner, 1996). The author goes on to note that these antecedents are not descriptions of objective control (controllability/the actual amount of control given); as these antecedents do not refer directly to means- end and agent-means conditions (Skinner, 1996). They have however been hypothesized to have the potential to influence experiences and the perception of control (Skinner, 1996). As discussed previously it is the perception of control which is key in driving subsequent behaviour, not necessarily the level of objective control. Therefore, it can be highlighted that although choice, information, and predictability are not descriptions of objective control, they do influence the perception of control.

It is important to acknowledge however that increases in choice, information, and predictability do not always lead to an increase in the perception of control (Miller, 1979), sparking the question posed by Skinner (1996, p. 555); "…whether and under what conditions information, choice and predictability is likely to change subjective control".

2.4.6.1   Decisional Control

Decisional control has been defined by scholars with a common theme being echoed throughout these definitions. This theme is that decisional control relates to an individual's ability to select or make a decision. Both the definitions outlined by Averill (1973) and Miller (1979) for decisional control relates to having the ability to make a choice based upon a variety of options. Whereas Fiske and Taylor (1991) acknowledge decisional control in a similar way, but within the realms of a stressful event. The common theme which ties all of these definitions together relates to the ability to make a decision based upon a choice of various courses of action. To assume that one would only have decisional control within the context of a negative event could be seen as very limiting, as there are many scenarios in which individuals will feel in control without the need for a negative context to exist. Therefore, given the lack of importance on negative events in the previous definitions, this research will adopt the definition put forth by Averill (1973) and Miller (1979).

2.4.6.2   Informational Control

As highlighted previously within this chapter "…information may at times engender feelings of control" (Thompson, 1981, p. 91). The researcher goes on to note however, that it is not possible to consider information as "…conceptually homogenous…" and therefore differences should be expected in operationalisations of this construct and also in outcomes of the research (Thompson, 1981, p. 91). Informational control can be defined as "…the communication delivered to a person who is a potential recipient of an aversive event" (Thompson, 1981, p. 89). This is further supported by Fiske & Taylor (1991, p. 201) and their definition of this construct being "…a sense of control that is achieved when the self obtains or is provided with information about a noxious

event". Again as above, Fiske & Taylor (1991, p. 201) along with (Thompson, 1981, p. 89) highlight the need for a negative, 'aversive' or 'noxious' event, with noxious and aversive typically being associated with words such as harmful and unpleasant. Burger (1989) further elaborates on this by highlighting that informational control is considered to be providing individuals with an increased understanding about things that are going to happen to them, or that they are doing. Interestingly however the author goes on to highlight that this then falls more into the predictability element of control, if the information provided does not give the individual useful information which leads to increased feelings of control (Burger, 1989). Looking at the definition of informational control provided by (Thompson, 1981, p. 89), it could be argued that some of the elements highlighted relate more heavily to predictability than information. For example, just giving an individual information of a medical procedure they will undergo relates more to predictability as opposed to providing them with relevant information that will allow them to feel more in control, such as explaining how and why they are ill for instance (Thompson, 1981). It is therefore vitally important that when creating the experimental manipulations as part of this study that this is considered. The researcher believes that within the context of consumer behaviour, the information would relate more closely with the type of information contained within the advert about the product or service. For example, would the information that was included be that of emotional information or utilitarian information such as price and reviews, this will be further discussed within 4.4.1 of this thesis.

2.4.6.3   Predictive Control

Miller (1979) highlights that predictability is when an individual knows something about an event, regardless of whether they can do anything about it. Work by Skinner (1996) furthers this definition by highlighting that predictive control can be broken down into primary and secondary processes. A primary process is an "Attempt to predict events so as to succeed at them" and a secondary process is an "Attempt to predict events so as to avoid disappointment" (Rothbaum, Weisz, & Snyder, 1982, p. 12). The second element relating to the ability to predict events in order to avoid disappointment is interesting, as highlighted earlier in Section 2.4.4 there are two key ways of achieving this. Researcher have acknowledged that individuals will try to re-establish control through either an attempt to change the external environment, or through the adjustment of one's self to align with the external environment (Brehm, 1966, 1989; Heckhausen & Schulz, 1995). The definition that will be utilised within this study will relate to the ability to predict events as to avoid disappointment. The reason for this is that users lack control over whether they are targeted by mobile advertisements, and therefore it can be considered that within the context of this research the focus will be on secondary processes as opposed to primary processes.

Although six antecedents of perceived control had been outlined, this study will look to assess the three main antecedents which are choice, information, and predictability (Skinner, 1996). This research has chosen to focus in on these antecedents specifically due to restrictions of time and also resources. Future research however could look to incorporate the remaining antecedents to provide a more holistic view of the perception of control. Given that this study is exploratory in nature it was deemed more relevant to focus on the key antecedents for the reasons stated above. Utilising the information highlighted within this section will provide a good understanding in which to begin to create manipulations within the experiments. This is discussed in further detail within the research methodology chapter of this thesis.

Within this review of the literature it has been hypothesized that increasing the level of perceived control could potentially lead to more positive or favourable outcomes for advertisers. With this in mind it is important to consider what the positive outcomes of advertisements would be, the next section will therefore look to explore this further.

2.5   Advertising Effectiveness

It would seem logical that a positive outcome or more favourable outcome would be that the advert would be more effective at achieving set objectives. This premise is supported by Dichter (1949) who acknowledges in a seminal paper on advertising effectiveness that the desired effect of an advertisement will vary. As such in order to understand how to best measure the dependent variable (Mobile Advertising Effectiveness), it is important to gain an understanding of how the dependent variable has been operationalised (Bearden, Netemeyer, & Haws., 2011). It is important to acknowledge the changing landscape of mobile communication technology, and the fundamental challenges that relate to this field of study (Scolari et al., 2012). Given the dynamic changes that take place within this area, aspects such as concepts and taxonomies must be reviewed regularly due to the market innovating on a weekly basis (Scolari et al., 2012). The impact of this is that ultimately many of the concepts highlighted by researchers becomes quickly outdated and therefore it is important to consider this carefully. Within the literature there is little agreement or consistency in how researchers actually measure advertising effectiveness, as shown in the table below there are a variety of contexts and ways in which this has been operationalised.

Table 2.1 - Outline of Existing Advertising Effectiveness Measures

Author	Application/Context	Construct	Perception Vs. Behaviour	Method
(Bart, Stephen, & Sarvary, 2014)	Mobile Advertising	Two Psychological Measures; 1. How favourable are consumer's attitudes towards the advertised products? 2. Consumer intention to purchase or use advertised products	Perception	Field Experiment and Survey
(Drossos et al., 2013)	Mobile Advertising	Devised that advertising effectiveness consisted of attitude towards the ad, attitude towards the brand and Purchase Intention. (Aad , Ab, PI = Advertising effectiveness)	Perception	Field Experiment and Questionnaire
(Bright & Daugherty, 2012)	Online Advertising	Consisted of three aspects; 1. Attitude toward the ad, 2. Recognition of media content, and 3. Behavioural intention for ad interaction.	Perception	Laboratory Experiment and Questionnaire
(Rosenkrans & Myers, 2012)	Mobile Advertising	Analytically focused and includes aspects such as click through rate (CTR), impressions and day of the month.	Behaviour	Field Experiment
(Bellman et al., 2011)	Mobile Advertising	Defines advertising effectiveness in terms of persuasiveness. Can the advertising positively change brand attitude? Can it change intention to purchase the brand?	Perception	Laboratory Experiment and Survey
(Danaher & Rossiter, 2011)	Covers multiple aspects of advertising	Measured advertising effectiveness in terms of engagement and Purchase Intention.	Perception and Behaviour	Survey and Laboratory Experiment
(Soroa-Koury & Yang, 2010)	Mobile Advertising	Summarised that TAM (technology acceptance model) influenced costumer attitudes towards mobile advertising, and that an intention to adopt mobile advertising is an influencer of advertising effectiveness.	Perception	Survey

Author	Application/Context	Construct	Perception Vs. Behaviour	Method
(Spilker-Attig, 2010)	Online Advertising Effectiveness	The final measure of advertising effectiveness was the final number of orders received.	Behaviour	Secondary Data (Data collected from 1.2 million real transactions)
(Calder, Malthouse, & Schaedel, 2009)	Mobile Advertising	Measured advertising effectiveness in terms of engagement.	Behaviour	Survey and Experiment
(Rau, Chen, & Chen, 2006)	Mobile Advertising	Identified five variables of advertising effectiveness; 1. Ad Recall 2. Ad Recognition 3. Ad Attitude 4. Brand Attitude 5. Purchase Intention.	Perception	Laboratory Experiment and Survey
(La Ferle & Choi, 2005)	Endorser Advertising Effectiveness	(Aad, Ab, PI = Advertising effectiveness).	Perception	Experiment and Survey
(Baltas, 2003)	Internet Advertising Effectiveness	Measured advertising effectiveness using the following factors; click through rate (direct response) and ad attitude. Also talks about response to the ad as a general term.	Perception and Behaviour	Secondary Data (Data collected from 18 Advertising & Media Agencies with a total of 259 banner ads)
(Barwise & Strong, 2002)	Mobile Advertising	No general rule but looked at aspects such as; readership, advertising awareness, stronger brand attitudes, direct behavioural responses and unintended positive effects of the advertisement.	Perception and behaviour	Field Experiment & Interviews

Author	Application/Context	Construct	Perception Vs. Behaviour	Method
(Woodside, 1999)	Advertising Effectiveness	States that actual behaviour is the best measurement of advertising effectiveness – utilises the idea of signing up for a free sample as a way of determining behaviour is more suitable as opposed to a mere judgement of future behaviour.	Behaviour	Systematic Review of Literature
(Ha, 1996)	Traditional Advertising	Seven measures; 1. Attitudes towards the advertising media vehicle, 2. General ad readership, 3. Degree of advertising message involvement, 4. Memory of the ad, 5. Attitude toward the ad, 6. Resistance to competitive ads, and 7. Brand equity.	Perception and Behaviour	Field Experiment and Questionnaire
(Bendixen, 1993)	Advertising Effects	Advertising effectiveness was measured as the increase in percentage of market share.	Behaviour	Scale Development – Systematic Review of Literature
(Grønhaug, Kvitastein, & Grønmo, 1991)	Advertising Effectiveness	Although critical of the measurement, the authors outline that marketers typically see sales as the way of measuring the effectiveness of an advertisement.	Behaviour	Experiment and Interviews
(Petty, Cacioppo, & Schumann, 1983)	Advertising Effectiveness	Used four different measures to assess the effectiveness of advertisements. These four measures were grouped together to create two separate groups. 1. Attitudes and Purchase Intentions 2. Recall and recognition.	Perception	Laboratory Experiment and Survey
(Lavidge & Steiner, 1961)	Advertising Effectiveness	Outlined three major functions of advertising. The first being awareness and knowledge. The second being about liking and preference (favourable attitudes), and the third being about the action or the acquisition of the product. It was therefore summarised that good advertising will work toward moving people up the ladder towards purchase.	Perception and Behaviour	Theoretical Paper

As shown in the in Table 2.1, researchers use a wealth of different measures and title this advertising effectiveness, therefore it is important to consider the value of some of these measures within the context of this study. A good starting point is to look to industry practice, as this will allow for an understanding as to how effectiveness is ascertained within the industry. By looking at industry practice as a way of operationalising a construct, the more practical relevance the research will have and as such this is an important element for the researcher to include. With this in mind it was important to consider the outcomes most desired by advertisers undertaking mobile advertising campaign. This evaluation of practitioner outcomes will also be assessed in tandem with the academic literature on the area of advertising effectiveness, to provide a solid understanding of this area. Given that different campaigns will have different objectives, it is important to be aware that there is not just one operationalisation of 'advertising effectiveness' and as such there are inconsistencies in the way in which it is defined throughout this section.

Within Section 2.2.1 of this chapter, the role of advertising is to persuade its audience to undertake some form of action. Typically, this has related to users purchasing products or consuming services, essentially the aim of advertising relates to driving some form of profitable action. Therefore, considering what this means within practice, the most obvious measure would likely be sales, as identified by Grønhaug et al. (1991) sales effects are what primarily marketers use to measure the effectiveness of an advertising campaign. A critique of this measure is that a sale is very rarely a "…direct and immediate result of an advertisement", and as such the preliminary processes must be also understood (Dichter, 1949, p. 61). It has also been stated that immediate sales are incapable of measuring advertising effectiveness in a holistic view, as it does not consider aspects such as long term advertising effects (Lavidge & Steiner, 1961). It could be argued that sales only provide a snapshot in time, however this is not always considered to be a significant issue as academic research is often a snapshot in time due to the cross sectional nature of much consumer research. The aspect that needs to be considered when looking at immediate sales is understanding the limitations that relying on this measure may have. Other issues arise when using sales effects within academic research due to the need for either a real company/brand to be used, or the research is designed in such a way as to measure sales effects which can prove particularly difficult e.g. fictional scenarios. As mentioned briefly before, one of the main aims of mobile advertising is to drive direct profitable action and therefore it would erroneous to ignore this type of measure within the study. A way in which research could look to overcome this issues outlined above is by using measures such as Purchase Intention as an indication of behavioural intention.

There are however inherent risks in using Purchase Intention as a measure for effectiveness, and this relates to the differences between what an individual says they will do, and what they actually

do. The inconsistency between a stated behaviour and the way in which an individual actually behaves has been a topic of extensive discussion within the social sciences and has been termed hypothetical bias (Beck, Fifer, & Rose, 2016; Camerer & Mobbs, 2017; Fifer, Rose, & Greaves, 2014; Verneau, La Barbera, & Del Giudice, 2017). Stated preferences originated within marketing research and has been widely used since the late 70's (Kroes & Sheldon, 1988), and as such is often a common method of identifying potential preference or behaviours. This is potentially an issue when researchers make claims about their research on stated behaviours, they cannot guarantee that these findings will be replicated in action. In the example of medical discrete choice experiments; only 80% of respondents had corresponding stated and revealed preferences (Lambooij et al., 2015). This means that for 20% of the respondents, there was an inconsistency with what they state and what their actual preference was (Lambooij et al., 2015). As stated above, this causes problems for the researchers when drawing conclusions in regards to their own research. A study conducted by Camerer and Mobbs (2017) looked at understanding the brain activity during hypothetical and real choice situations. In this study the researchers highlighted that there was substantial differences in the hypothetical consumer purchasing situation and the real consumer purchasing situation (Camerer & Mobbs, 2017). They went on to note that although both hypothetical and real choices activate relevant areas in the brain, the real scenarios had greater levels of brain activation which was also more widespread with certain areas of the brain only activated through real choices (Camerer & Mobbs, 2017). This indicates that when looking at hypothetical measures of behaviour it is important to note that there are differences, and an evaluation on what this means for a study and whether it is relevant will have to be undertaken on a case by case basis. Despite the research in the area of hypothetical bias in relation to stated preferences, some researchers argue that there seems to be little consensus as to the reasons why these inconsistencies occur or even to what extent these consistencies exist (De-Magistris, Gracia, & Nayga, 2013; Loomis, 2011).

Important research to note at this point is the work conducted by Ajzen (1991) who elaborated on this area with the original theory of reasoned action model (TRA) and the newer model for the theory of planned behaviour (TPB). Within both of these models, 'intention' is a predictor of behaviour (Ajzen, 1991), and has for years been a widely accepted model of persuasion within the marketing field. In support of these models research has found that there is a direct relationship between attitude and consumer behaviour (Izquierdo-Yusta et al., 2014; Shimp, 1981; Tsang et al., 2004). The study conducted by Tsang et al. (2004) was undertaken within the context of SMS marketing and a key finding within their work was that attitudes drive behaviour. Therefore, the more favourable attitudes users have towards an ad; the more likely they are to participate in the advertising interaction. Therefore, when looking at a measure like Purchase Intention which is purely hypothetical, supporting metrics such as Ad Attitude can be used to further indicate

potential behaviours of the customer. This is further supported by Drossos et al. (2013) who published the first paper utilising experimental design within a text based mobile ad context which provides a clear link between Ad Attitude, Brand Attitudes and behavioural intention. The use of these measures further evidences the need for multiple and complimentary measures to be used. When summarising the results of research however, it is important that any researcher is aware of the limitations that hypothetical bias will have on the results as hypothetical bias can be significant limitation and therefore needs to be carefully considered when drawing conclusions or making decisions (Beck et al., 2016).

It is important to note that it is not always possible or ethical to undertake experiments which include real choices or consequences and therefore hypothetical choices will remain useful (Camerer & Mobbs, 2017). Experiments which utilise lifelike situations will often provide better results than those which are more hypothetical in nature (Camerer & Mobbs, 2017). As will be discussed within Section 3.3.5, this element has been carefully considered in order to reduce the differences found in hypothetical vs real choice experiments.

Tying back to the point made by Lavidge and Steiner (1961); long term advertising effects are often useful to understand as measures of success or effectiveness. These may include elements such as; Brand Attitude, Ad Attitude, Ad Recall, and engagement. As highlighted above, Ad Attitude is useful as it is the attitudes towards the advertisement which drive the behaviours (Drossos et al., 2013; Izquierdo-Yusta et al., 2014; Shimp, 1981; Tsang et al., 2004), aligning with TRA and TPB (Ajzen, 1991). Attitudes do not only relate towards the advert itself but attitudes can also relate to the brand, therefore it is also important to consider the attitude towards the brand as this will also impact upon the behaviours of individuals. In relation to Brand Attitude, mobile advertising has been argued as an effective way of contributing to branding efforts, due to the fact it is capable of promoting products and exposing users to brand related imagery (Scolari et al., 2012), therefore brand related measures may prove useful. There are however limitations of measuring branding within research due to the fact that using an existing brand can impact upon the results due to brand familiarity (Gao et al., 2009; Keller, Heckler, & Houston, 1998; Martí-Parreño, Bermejo-Berros, & Aldás-Manzano, 2016), but also issues can arise with neutrality bias when utilising fictional brands. Research conducted by Dahlén (2001) found that when comparing familiar and unfamiliar brands, significant differences were acknowledged with familiar brands peaking early in terms of click through rate and unfamiliar brands needing multiple exposures to wear in. This highlights the difficulty in using brand related measures within studies as it evidences the potential impact this may have upon the results, depending on the method adopted. This however will be discussed in further detail within the research methodology chapter in Section 3.4.1.

In relation to the term engagement, this is often a poorly defined construct within the field of advertising and has been subject to much misuse within the academic and practitioner world. Practitioners often identify engagement with metrics such as time on site, bounce rate, and number of pages visited (Marketlive, 2015). Academics however, acknowledge the vast use of the term engagement and comment that many of the definitions of engagement used relate to second order constructs as opposed to engagement itself (Calder et al., 2009). The researchers comment that engagement starts with the feeling of connectedness which relates to individual experiences (Calder et al., 2009), which evidences the difficulty in defining and measuring this construct as this is highly subjective.

As well as looking at long term effects, there are arguments to be made about the dependence on more simple indicators of effectiveness such as click through rate (CTR). As technology has developed and greater amounts of data is generated online, advertisers now have at their disposal a wealth of metrics which allow them to assess the effectiveness of digital advertising campaigns. Click through rate (CTR), advert impressions, and checkout abandonment rate are just a few examples of the metrics available, similar to the argument above, it is important to understand the limitations of the measurements being used to assess effectiveness. Simple metrics such as the ones outlined above, on their own are not sophisticated enough to be the only determinant of advertising effectiveness. This view is supported by King (1968) who states that there is an acceptable middle ground between a complete hunch, and over reliance on one measurement. Simple metrics such as CTR only provide a small part of a larger picture, and it is difficult to ascertain whether a click means that the user has a positive perception of a brand for example. As summarised by Woodside (1999); advertising effectiveness cannot be measured by its individual ingredients, but it is about how the ingredients work together that is important. This again supporting the argument that looking at metrics in isolation is a poor way of measuring any form of effectiveness, and any measurement used within this thesis would be a combination of supportive measures.

Throughout this thesis it has been argued that there is a fundamental difference between advertising on mobile and advertising via alternative media vehicles, and it has been concluded that this is due to users' emotional attachment to their mobile devices. Billore and Sadh (2015) highlights that there is a clear need for new scales and instruments to be developed to help measure the distinct parameters of mobile advertising. It would therefore be contradictory to choose a scale to be used within this research in which measures the effectiveness of a different media vehicle. Therefore, after a rigorous review of the literature as shown at the beginning of this section, the final measurement that would be used within this study was chosen; the Mobile Advertising Effectiveness scale outlined by Drossos et al. (2013). Drossos et al. (2013) concluded

that Mobile Advertising Effectiveness consisted of, attitude towards the ad, attitude towards the brand, and also Purchase Intention, as demonstrated below:

Aad, Ab, PI = Mobile Advertising effectiveness

This scale is useful as it was developed within the context of mobile marketing, which many of the scales identified in table 2.1 were applied within more traditional contexts. The instrument developed by Drossos et al. (2013) has also evidenced its satisfactory level of composite reliability by exceeding the 0.70 threshold, along with a suitable level of discriminant validity, which further supports the instruments use within this research. Other researchers have adopted the use of this scale as a way to explore permission based SMS marketing (Tseng & Teng, 2016), which again supports the instruments applicability to be utilised within other studies.

A similar instrument was also utilised by researchers looking to explore QR codes on consumer attitudes (Narang et al., 2012), which included Ad Attitude, Brand Attitude and Purchase Intention measures which was derived from a scale conducted by Batra and Stayman (1990) and Mitchell and Olson (1981). Earlier seminal work by Batra and Ray (1986) was also the foundation for the instrument designed by Drossos et al. (2007) in his earlier work on Mobile Advertising Effectiveness. This scale has then subsequently been used in his later study (Drossos et al., 2013) in which looks to examine the factors that influence Mobile Advertising Effectiveness. The use of the scales formulated by Batra and Ray (1986) and Batra and Stayman (1990) evidences a strong level of consistency used across a variety of studies; looking to understand advertising effectiveness. The highly cited article by Batra and Ray (1986) proved that affective responses in advertising which incorporates emotional elements and drivers were related to three key elements, these were Ad Attitude, Brand Attitude, and Purchase Intention. What is interesting here is the although the scale from Batra and Ray (1986) was used by researchers, alterations were made to the scale by Drossos et al. (2007). This is particularly important as Grønhaug et al. (1991) drew the conclusion that the effectiveness of different advertising vehicles change over time and therefore should be considered carefully as they will have differences. This was further supported by researchers who aimed to test this very concept by assessing whether the elaboration likelihood model still applied within digital environments, the findings of the research concluded that the model was not fully applicable in a digital context (Kerr et al., 2015). The researchers highlight that given the development of technology within the mobile telecommunications industry it is important to be aware that the suitability of scales as models can quickly diminish (Kerr et al., 2015). Over the past decade the mobile advertising industry has seen a complete transformation in the ways in which users can be targeted. The original feature phone saw users being targeted solely by SMS, whereas the development of the technology and proliferation of internet services has seen users targeted through apps, internet based messaging services, and

email. It could therefore be argued that a scale constructed in 1986 bears no relevance to more innovative methods of advertising. As the scale has been updated since its creation in 1986 and successfully applied within more recent mobile advertising contexts (Drossos et al., 2013; Drossos et al., 2007; Tseng & Teng, 2016), it can be argued that this scale is suitable for use within this thesis. The reason for its successful use within newer contexts is likely because the scale was adapted from highly reliable scales which evidences the scales high levels of external validity (Drossos et al., 2007).

Researchers note that interactive advertising must be able to prove its effectiveness through elements such as consumer engagement and also persuasion (Bezjian-Avery et al., 1998). This is highly aligned with the role of advertising but also acknowledges the importance of supporting metrics. The scale used within the study conducted by Drossos et al., (2013), utilises persuasion metrics through Purchase Intention, and also engagement metrics through Ad Attitude and also Brand Attitude which further supports the use of this scale.

Chapter 3: Conceptual Framework and Hypotheses Development

The extensive review of literature has helped to create, and further shape the conceptual models and testable hypotheses that are proposed within this chapter. It is from the review of literature that the researcher wishes to understand whether increasing the level of control within a mobile advertising interaction, will result in a change to the Mobile Advertising Effectiveness measure. This aim was based upon researchers acknowledging the importance of control within the mobile advertising context (Adams & Millard, 2003; Gao et al., 2010; Kolsaker & Drakatos, 2009; Mcrae et al., 2013; Persaud & Azhar, 2012), with it being argued that control has the potential to improve advertising effectiveness (Tucker, 2014). As discussed earlier in Section 2.4.2, given that there is evidence to suggest a saturation point in which negative results are found, along with the uncertainty in which situations control is beneficial, the hypotheses within this research are non-directional. In scenarios where it cannot be said with confidence in which direction the relationship exists, a two tailed test must be used (Cunningham & Wallraven, 2012). Two tailed tests relate specifically to the hypotheses generated within this research, with one tailed tests only suitable for directional hypotheses where the researcher can be certain of a relationship (Cunningham & Wallraven, 2012). Other circumstances whereby one way tests can be used is when the researcher is only interested in one direction of a relationship, with the opposing direction being considered the same as no difference (Harris, 2008). For this reason, it was more beneficial for the researcher not to state the direction of the hypotheses, as any relationship, whether that be negative or positive would be of interest within this context. Therefore, all conceptual models and hypotheses within this section will not specify a direction, but highlight a hypothesised relationship. A very simplistic overarching conceptual model was created for this research, which can be seen below.
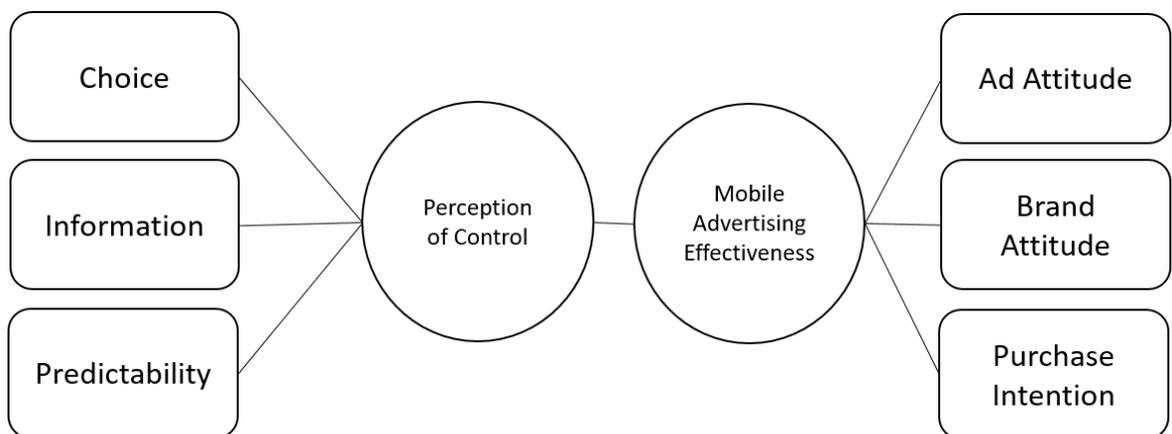
Figure 3.1 - Overarching Conceptual Model for the Study

As shown in Figure 3.1, the proposition can be seen that there is a relationship between the perception of control and Mobile Advertising Effectiveness. The model highlights that the antecedents of the perception of control are choice, information, and predictability, which aligns with the work conducted by Skinner (1996). In relation to Mobile Advertising Effectiveness, it can be seen from the model that Ad Attitude, Brand Attitude, and Purchase Intention are the dimensions in which create the Mobile Advertising Effectiveness construct, which is aligned with the model constructed by Drossos et al. (2013). It was from the overarching conceptual model in which the hypotheses were generated, these can be seen below with the specific corresponding conceptual models.

3.1 Hypothesis 1 and Conceptual Model

H1 - There is a relationship between choice and…
   a. *Mobile Advertising Effectiveness*
   b. *Ad Attitude*
   c. *Brand Attitude*
   d. *Purchase Intention*
   e. *Ad Recall*
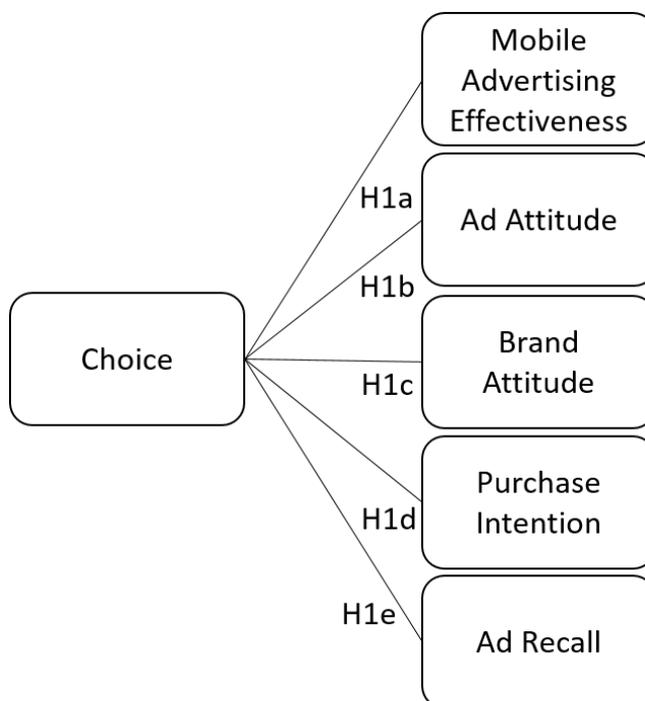
Figure 3.2 - Hypothesis 1 Conceptual Model

3.2   Hypothesis 2 and Conceptual Model

H2 - There is a relationship between information and…

    a. Mobile Advertising Effectiveness

    b. Ad Attitude

    c. Brand Attitude

    d. Purchase Intention
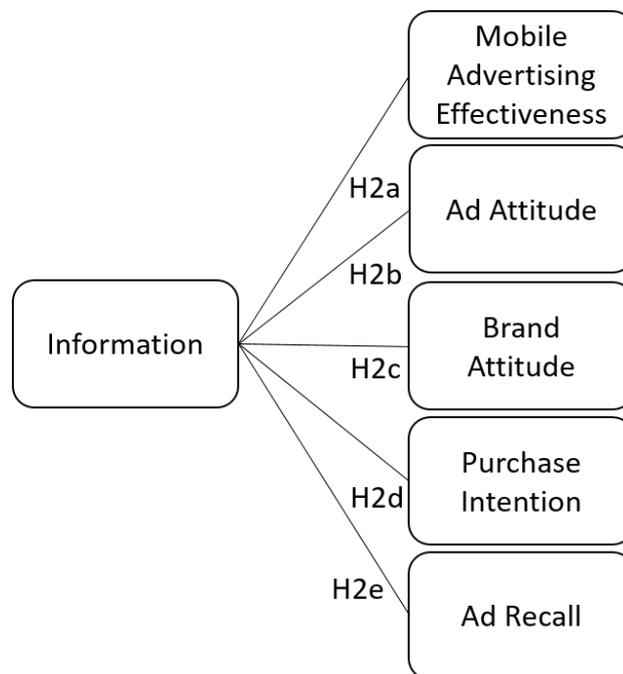
    e. Ad Recall

Figure 3.3 - Hypothesis 2 Conceptual Model

3.3 Hypothesis 3 and Conceptual Model

H3 - There is a relationship between predictability and...

    a. Mobile Advertising Effectiveness

    b. Ad Attitude

    c. Brand Attitude

    d. Purchase Intention
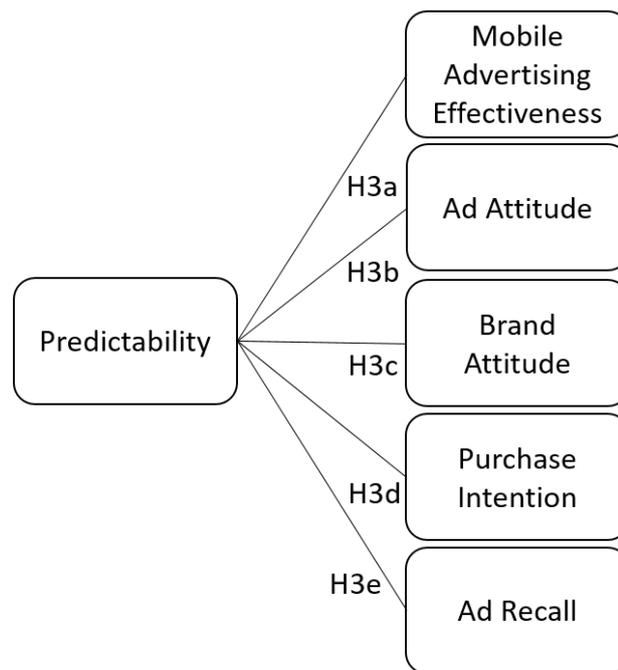
    e. Ad Recall

Figure 3.4 - Hypothesis 3 Conceptual Model

3.4 Hypothesis 4 and Conceptual Model

H4 - There is an interaction effect of choice and information on…

   a. *Mobile Advertising Effectiveness*

   b. *Ad Attitude*

   c. *Brand Attitude*

   d. *Purchase Intention*

   e. *Ad Recall*
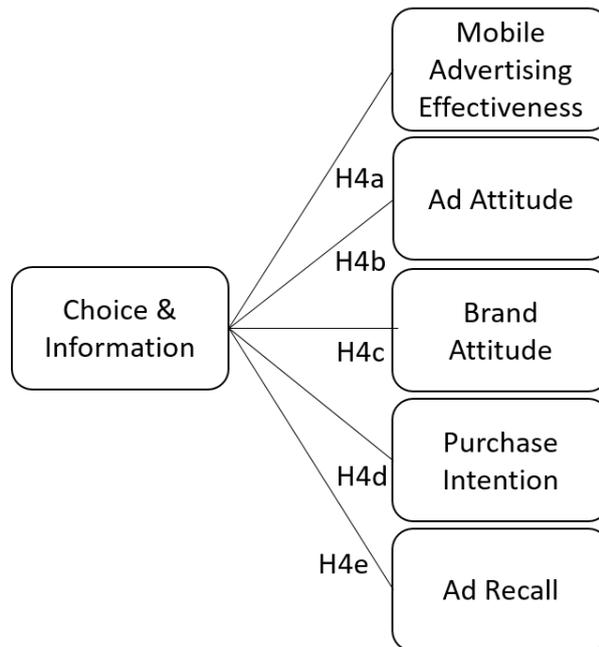
Figure 3.5 - Hypothesis 4 Conceptual Model

3.5 Hypothesis 5 and Conceptual Model

H5 - There is an interaction effect of choice and predictability on…

    f. Mobile Advertising Effectiveness

    g. Ad Attitude

    h. Brand Attitude

    i. Purchase Intention

    j. Ad Recall
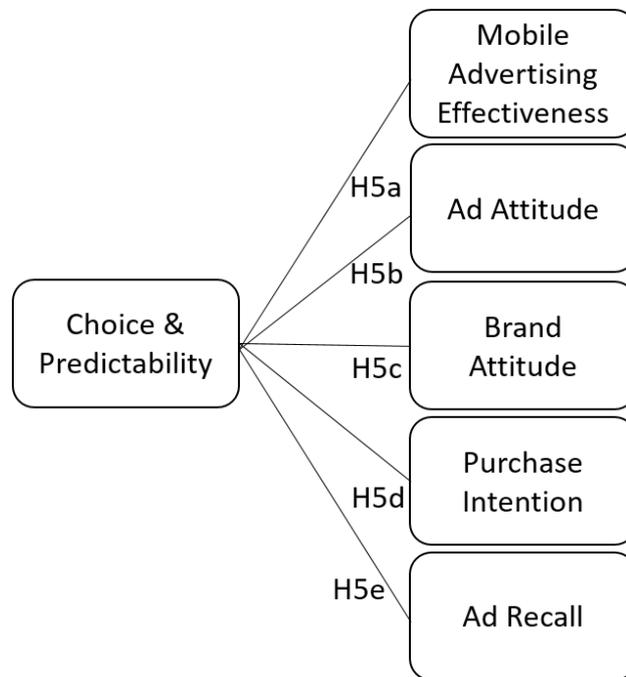
Figure 3.6 - Hypothesis 5 Conceptual Model

3.6 Hypothesis 6 and Conceptual Model

H6 - There is an interaction effect of information and predictability on…

    k. Mobile Advertising Effectiveness

    l. Ad Attitude

    m. Brand Attitude

    n. Purchase Intention

    o. Ad Recall
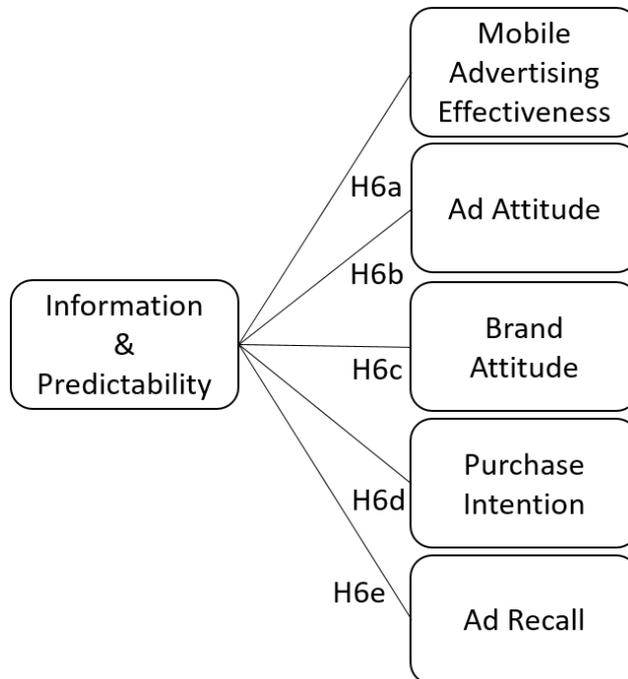
Figure 3.7 - Hypothesis 6 Conceptual Model

3.7   Hypothesis 7 and Conceptual Model

H7 - There is a three-way interaction effect of choice, information, and predictability with…

p. *Mobile Advertising Effectiveness*

q. *Ad Attitude*

r. *Brand Attitude*

s. *Purchase Intention*

t. *Ad Recall*
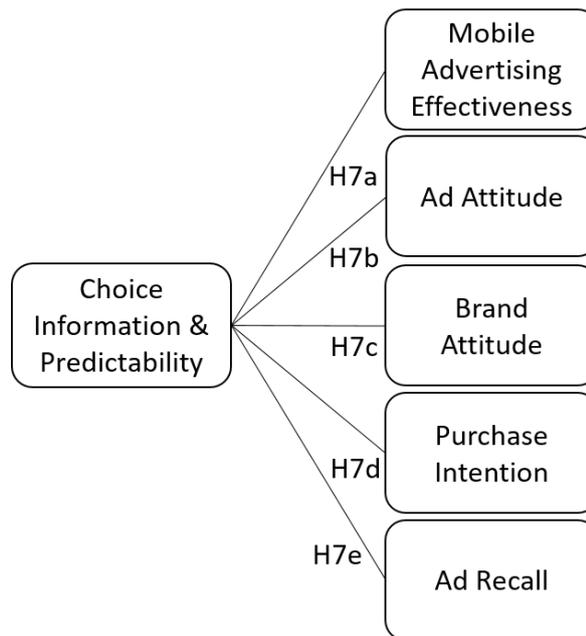
Figure 3.8 - Hypothesis 7 Conceptual Model

Chapter 4: Research Methodology

4.1 Introduction

This thesis examines the premise that an increase in the users' perception of control during a mobile advertising interaction, can lead to an increase in Mobile Advertising Effectiveness. The following section therefore outlines the method adopted within this study which aims to address the following research question.

Does the users' perception of control during the advertising interaction, influence Mobile Advertising Effectiveness?

The chapter will start by outlining the aims and objectives of the research methodology chapter, this is particularly important as this provides a structure in which the researcher must conform to. The second section will look to outline the researcher's philosophy, and the way in which the researcher views the world. This will provide a valuable insight into the potential biases that may limit the research. This section will also look to highlight some of the practical considerations that the researcher needs to be aware of, such as the suitability of the experimental method. The third section will look to outline the actual process that took place, this will be covered by three main areas; pre-pilot studies, pilot study, and the final run of the experiment. Finally, there will be a discussion of the data analysis techniques that will be covered as part of this study, this will look to outline the choice of data analysis techniques in conjunction with the aims of this study.

The method adopted for this research will consist of an experimental design which utilises both an experiment along with a post-experiment questionnaire. It will be cross-sectional in nature, with the experiment and questionnaire working together to help achieve the research aim. In order to adopt a suitable method for undertaking the research, it is important that the decisions are led by the aims of the research. This will ensure that the most appropriate method is being used to answer the research question.

4.2 Aims and Objectives

As acknowledged throughout this thesis there is a lack of literature which looks holistically at the construct of control from a human behaviour perspective within the context of mobile advertising. Literature as discussed previously has briefly considered control such as customisation for example in the context of mobile advertising, but have failed to create a strong basis for testing the effect of control due to the weak operationalisation of the construct. Literature also exists within the field of gaming technology which look to apply the concept of control and relate it to video game enjoyment, and some brief attempts to note the importance of control in advertising have been made. There is currently a gap within the literature in regards to understanding the

construct of control in its entirety, and measuring its effects in relation to Mobile Advertising Effectiveness.

As mentioned within the introduction chapter of this thesis, the aim of this study is to fill the gap within knowledge by critically identifying whether a relationship exists between the perception of control and Mobile Advertising Effectiveness. In order to satisfy the research aim and meet the overall research objectives, the following research proposition was developed in conjunction with the hypotheses and conceptual models highlighted in the previous chapter:

Variations in Mobile Advertising Effectiveness will be associated with variations of control in the advertising conditions.

In order to test the research proposition and hypotheses, the method adopted in this study must be suitable. In order to identify the most suitable method to undertake this research, the following objectives for the research methodology must be met;

- Identify a suitable research population.
- Recruit a representative sample of the identified research population.
- Ensure that the sample is homogenous in order to reduce noise within the experiment and to increase internal validity.
- Utilise an appropriate method as a way of conducting the research and collecting the data.
- Analyse the results from the study using a suitable statistical test in order to allow the researcher to identify whether a statistically significant relationship exists between the dependent and independent variables.

4.3   Research Philosophy

As this research aims to add to the current field of knowledge, it is important to consider the issues relating to the construction of knowledge as it allows for a better understanding of how new knowledge will add to existing knowledge. When looking to conduct business research, there are five elements which are important to consider, these are epistemology, ontology, theory (deductive vs inductive), axiology (values), and practical considerations (Bryman & Bell, 2015). Through an understanding of these five elements, it is possible to provide a more holistic understanding of how this research will add to existing knowledge within the field, and also the limitations of these findings.

The way in which an individual views the world is considered a 'paradigm' which is highly subjective. According to researchers, the paradigm of a researcher undertaking a study will ultimately have an effect on the research output (Dobson, 2002; Saunders, Lewis, & Thornhill, 2012), and as such needs to be considered. According to Guba (1990) a researcher's paradigm can

be best understood through three elements, these are; ontological position, epistemological position, and also the methodological approach. Understanding the potential biases the researcher may hold, allows the researcher to minimise the potential effects these may have upon the research output (Flowers, 2009). Despite attempting to remain neutral within the research, it is impossible for the values and political views of the researcher not to have an impact (Baert, 2005). Therefore, it is important to understand how these values and views play a part within the research, in order to be able to understand the limitations of the research findings. This following section therefore considers the philosophical orientation of the researcher and the potential impact this may have.

4.3.1 Ontological Position

Throughout this thesis the researcher has used multiple constructs which have been measured or classified, such as the 'control', 'perception of control', and 'Mobile Advertising Effectiveness'. This measurement or classification of constructs relates directly to ontology, which is a branch of metaphysics concerned with the grouping of entities and the relevant hierarchies of entities (Williams, 2016). Ontology is important because the existence or non-existence of an entity cannot be asserted unless it is understood what it means for said entity to exist (Dale, 2002). In relation to this research, it is not possible to assert the existence of Mobile Advertising Effectiveness, if researchers are unable to measure it or classify it; which is an integral aspect of quantitative research. Therefore, in order to avoid any ontological issues, the constructs outlined (entities) within this thesis must be adequately defined (classified), in order to allow for effective measurement and subsequently meaningful thought (Dale, 2002). For example, the perception of control consists of three main sub constructs as discussed throughout; these are choice, information, and predictability. In order to understand that the perception of control is made up of these, they have been defined and understood, and subsequently categorised, grouped, and placed within a hierarchy. Without such classification and measurement, constructs can become quickly misinterpreted (Saunders et al., 2012), and the impact of this is that poor research which lacks rigor is conducted. An example of this could be the perception of control; many researchers may define this differently and therefore the construct may be open to misinterpretation. In order to avoid such misinterpretation a clear definition of what is being manipulated and measured within this study is crucial in order to produce knowledge that is worth knowing. In the experiment creation section of this chapter, the researcher will outline the constructs used in order to provide a basis for meaningful understanding of their existence within the natural world. However, in order to do this with transparency, it is imperative to consider what the reality of the researcher is.

The reality of the researcher or how a researcher perceives the world can be seen at any point on a continuum between positivist and interpretivist, with the realist position sitting between both (Flowers, 2009). Positivism which is positioned at the far end of the continuum looks to test hypotheses derived from theory (Saunders et al., 2012). Positivist studies are more likely to adopt quantitative methods of research, such as laboratory experiments or through the use of surveys (Galliers & Land, 1987). At the other end of the continuum, the interpretivist paradigm adopts a more qualitative approach to understanding reality and will typically use interviews or focus groups as a way of understanding the thinking and feeling elements of social actors (Flowers, 2009). The aim of this research is to understand whether a relationship exists between the perception of control and Mobile Advertising Effectiveness. Initially it might seem as though the researcher has adopted the stance of a hard positivist, who wishes to identify casual relationships in the data to create law-like generalisations (Saunders et al., 2012). However, the issue relating to the constructs within this study is that they do not exist separately from social actors; they are not value free and not objects. Therefore, the positivist paradigm is not suitable, however, the interpretivist paradigm does not value empirical research and therefore a mixture of both is needed, and this is where the realist sits. The realist adopts aspects from both the positivist and interpretivist philosophies (Flowers, 2009), it accepts that real structures do exist independently from the consciousness of individuals, however knowledge is socially created and therefore does not adhere to the hard rules applied within the scientific method (Flowers, 2009).

A critical realist perspective adopts a scientific approach to knowledge development, however realises that knowledge is a result of social conditioning and that our understanding of such knowledge cannot exist independently of social actors (Benton & Craib, 2001; Dobson, 2002; Flowers, 2009; Mingers, Mutch, & Willcocks, 2013). This is because what an individual knows is determined by social, cultural, economic, technological, and political factors (Williams, 2015). By adopting this perspective, the researcher will be able to answer the research question through empirical evidence, with the understanding that the constructs within this study are socially constructed. The critical realist perspective also assumes a two-step process to experiencing the world, the first step being 'the thing itself' and the second step being 'the sensation that is conveys' (Saunders et al., 2012). In relation to this research, the aim is to understand whether the users' perception of control can influence Mobile Advertising Effectiveness. The issue here relates to 'perception' that the process of perceiving an increase in control must first start with a change in objective control. Therefore, step one in this process is making manipulations within the experiment in order to increase the objective level of control. Step two would be the user perceiving the manipulation of objective control ('sensation'), and whether that equated to an increase in the user's perception of control. The two step process adopted by the critical realist, allows the researcher to make sense of the complex nature of the subject and appropriately

answer the research question. One element of the critical realist philosophy is the concept of causality, whereby there is a fundamental belief that events are caused despite how complex the mechanisms that cause them may be (Williams, 2016). The concept of causality is one which is deep rooted within the experimental approach, with the logic of this method closely tied to causal reasoning whereby experiments look to find causes (Williams, 2016). Therefore, looking at the ontological position of the researcher and the aims of the research, the experimental method fits well.

4.3.2   Epistemological Position

The researcher adopts the position of an empiricist, who believes that all knowledge is dependent on experience or empirical evidence, therefore in order to show or infer that something is real it must be experienced (Meyers, 2014). Empiricism posits that an understanding of the external world is based upon interactions with an individual's five sense (Williams, 2016), which contradicts the view of the rationalists. Rationalists believe that beings do maintain a level of innate knowledge and ideas, and therefore there is no need to experience in order to gain knowledge (Markie, 2017). The argument however has been made that although someone may hold innate knowledge; this knowledge is about the conceptual order and does not relate to reality (Meyers, 2014). Empiricism values empirical evidence with empiricists often coined 'logical positivists' (Williams, 2016), with empiricists valuing causality which is gained through methods typically adopted via the scientific method. Examples would be methods such as experiments, which aim to test hypotheses derived from observations of the natural world (Williams, 2016). In relation to this research, the researcher has made observations from the literature and observations from personal experiences relating to the construct of control and its role within mobile advertising. It is from these observations that the researcher created a conceptual model in which testable hypotheses were created. The researcher utilised an experimental and survey method in order to test the hypotheses that had been conceptualised, and therefore this follows the empiricist approach. Whilst associating with an empiricist, it is reasonable to believe that all research adopts some level of pragmatism. Pragmatism, like any epistemological position has many variations and as such it is important to note that here, logical pragmatism is being discussed (Montague, 2018). The researcher is very much driven by the needs of the research, and allowing the research to define the method utilised in relation to practicality. Therefore, it can be argued that there are threads of the pragmatic method which ties this research together. This is unsurprising given that pragmatism also holds features of empiricism, due to the principles of pragmatism being influenced by British empiricism (Williams, 2016).

4.3.3 Theory (Deductive vs Inductive)

The author of this research adopts a deductive approach which aims to either confirm or reject the null hypotheses. The deductive approach utilises existing theory at the start of the research process, and from this hypotheses were developed and tested (Bryman & Bell, 2015; Saunders et al., 2012). Appendix 1 shows the deductive based process model for this particular study. The deductive approach typically utilises many quantitative based methods and can be an effective way of identifying relationships between variables (Bryman & Bell, 2015; Saunders et al., 2012), and therefore this supports the overall aims of the research.

4.3.4 Axiology (Values)

As argued by Bryman & Bell (2015) it is expected that social scientists are value free, however the authors state that there is a growing recognition within the field of social research which indicates that 'keeping the researcher's values in check' is not feasible. Researchers have acknowledged that even when a researcher actively aims to stop their personal preferences from affecting the research, that bias is still heavily prevalent (Xinping, 2002). As stated previously, what an individual knows is heavily determined by factors in which values feature heavily (Williams, 2015), and therefore it could be argued that complete neutrality is impracticable within social science research. It would also however be just as impracticable to assume that research cannot be undertaken with some level of objectivity.

In relation to this specific study, the researcher is utilising a pilot study to reduce the level of bias within the actual experiment. By undertaking a pilot study, the researcher can identify any issues with the questions used, the experiment process itself and even some data analysis issues which were not identified previously due to researcher bias. By undertaking the pilot, individuals not directly involved with the study are able to highlight any issues before the main study takes place and therefore the researcher is able to implement changes in order to further improve the study (Leon, Davis, & Kraemer, 2011).

The research method, the constructs used within the study, the measures, and also the data analysis process has all undergone a peer review by a variety of area specialists which are identified in Appendix 2. This will help to improve the level of neutrality within this study and ensure the method adopted is the most suitable given the research aims.

4.3.5 Practical Considerations

Practical considerations of how research should be undertaken, is something that needs to be carefully considered by the researcher. This is because it is important that all the choices made by the researcher are analysed, this will ensure that the study is being conducted in such a way that is best suited to the aims of the research as opposed to being biased due to researcher preference.

As outlined by Bryman and Bell (2015) there are three practical considerations which need to be considered when undertaking research; choice of research strategy, design, and method. The next section will look to discuss and justify the choices made in regards to the strategy, design, and method that have been adopted within this research.

4.3.5.1 Experiment

It is from a review of the literature that the researcher predicts an increase in the perception of user control, will lead to an increase in Mobile Advertising Effectiveness. In order to test this prediction correctly, the most relevant research method must be adopted.

The most effective way of testing a causal relationship is to adopt the experimental method as it is an effective way of isolating variables and therefore learning more about cause and effect relationships (Kardes, 1996; Lucas, 2003); through an observation of change associated with a manipulation (Field & Hole, 2013; Montgomery, 1991). This method also helps to reduce inconsistencies and ambiguity that can often be found in other types of research design (Kardes, 1996). Utilisation of this method will allow the researcher to control the experimental conditions by isolating the effects of control and therefore identify relationships between the independent and dependent variables.

According to Cunningham and Wallraven (2012) there are four types of validity within experimental designs, these are; statistical conclusion validity, internal validity, construct validity, and external validity. The statistical conclusion validity is discussed in the power analysis Section 5.2 and the test assumptions in 5.3.2.1, whilst the construct validity is discussed later within this chapter in Section 4.4.1. In relation to internal validity, the experimental method retains high internal validity due to the ability to control for potential noise (extraneous variables) within the experiment and the isolation of specific variables as mentioned previously. The researcher will be utilising a pilot study in which will allow for extraneous variables to be identified and subsequently reduced within the experiment design (Harris, 2008). Alongside this, the researcher will be utilising random assignment to groups, which will again increase the level of internal validity (Harris, 2008).

Internal validity however is just one aspect of the many types of validity outlined previously. External validity is also an aspect which the researcher needs to consider as this will affect how generalizable the results of this study are. The external validity of the experimental method has been questioned by academics, with researchers outlining that very rarely are experimental conditions representative of the real world and therefore, the results from these experiments cannot be generalised to the broader population or outside the confines of the experiment (Berkowitz & Donnerstein, 1982; Galliers & Land, 1987). This is even more prevalent in experiments that are overly simplified. Although easier to control for, an overly simplistic design

can be critiqued for its lack of realism (Camerer & Mobbs, 2017). This argument however has been countered by academics who state that there are two types of experimental design, systematic designs which 'control and manipulate a limited set of variables through only a restricted range of values of these variables', and representative designs which utilise a representative sample of situations and of the subjects used (Berkowitz & Donnerstein, 1982). This is further supported by Cunningham and Wallraven (2012) who state that the closer the experiment is to real life, the more effectively it can be generalised to real life. Camerer and Mobbs (2017) support this by noting that better results are achieved in more realistic contexts. Given that the researcher has mirrored real life mobile advertising interactions, the researcher believes that the issue of external validity has been negated as much as possible within this study. As stated by Harris (2008); a study with high internal validity will to some extent have a 'modicum' of external validity. Although a lack of external validity may still exist despite the researcher's actions, the value of external validity within the context of experiments has been contested by academics. One argument is that the generalisability and external validity of experimental research cannot be based on one single study, and that experimental research is typically one way of identifying a relationship between two variables before undertaking further studies in which to test generalisability to other contexts (Jiménez-Buedo & Miller, 2009). This view is further supported by Lucas (2003) who identifies that the aims of experimental research is not to make generalisations to larger groups, but to test theoretical principles. Given that this research area is in exploratory stages, the aims of this research were to create the building blocks of knowledge in which can be built upon in the future, not necessarily generalisability.

After a thorough evaluation of the benefits and drawbacks of the experimental method, it was deemed by the researcher as the only way to identify a causal relationship between the user's perception of control and Mobile Advertising Effectiveness. Considering this from the researcher's pragmatist perspective, the researcher is allowing the research aims to define the method used, and therefore the experimental method is most suitable given the aims of the research.

4.3.5.2   Questionnaire

Although utilisation of experiments allows for the study to identify causal relationships, in order to do so there needs to be some form of measurement system of the dependent variable. In relation to this research the dependent variable being measured is Mobile Advertising Effectiveness, as the aim is to test the relationship between the perception of control and the dependent variable. With this in mind it is important to consider how data is collected in regards to the dependent variable. As highlighted previously the three elements to consider is Ad Attitude, Brand Attitude, and Purchase Intention. Given attitudes and intentions are not tangible and are

relative to each individual, the most suitable way to collect this data would be through the use of a questionnaire.

The aim of the questionnaire is to provide a means of measuring the level of Mobile Advertising Effectiveness in a quantitative form. This will be measured using the 'Mobile Advertising Effectiveness scale' that was discussed in the literature review of this thesis and is outlined in Section 3.4.1 of this chapter. Questionnaires are a good way of collecting individual feelings, values, and preferences (Fink, 2017). Therefore, when looking to measure Ad Attitude, Brand Attitude, and Purchase Intention this would be the most suitable way of doing so.

The researcher also believed that utilisation of a questionnaire was suitable for this research given that questionnaires are an easy and effective way of gaining a large number of responses from respondents (Fink, 2017). If the questionnaire is administered online, the questionnaire can be created quickly, distributed quickly, responded to quickly, and in a fairly cost effective manner (Fink, 2017). Given the sample size that will need to be obtained for this research due to the large number of variations in experimental conditions that will be required, it was decided that the most effective way of collecting the data was through a questionnaire, which supplemented the experimental conditions.

As with all types of research strategies, there are some issues related to the utilisation of questionnaires within research; the most obvious being the arguments surrounding the validity of self-reported questionnaires. Similar to the discussion above, questionnaires can be subject to heavy bias, with three of the main forms of bias being social desirability bias, acquiescence bias, and extreme response bias (Paulhus, 1991). In relation to the first form of bias, questionnaires are typically subject to heavy bias in relation to social desirability (Wakita, Ueshima, & Noguchi, 2012), with participants trying to make a good impression being the most common form of social desirability bias (Bearden et al., 2011). Given the questionnaire within this research will be administered anonymously and via an online portal, it is assumed that the issue of social desirability would not be expected to have an effect on the overall results. This is supported by the argument made by Cunningham and Wallraven (2012) who state that anonymity in experimental design, reduces response bias. Therefore, the issue of social desirability within this research has been reduced, and is not considered a limitation of the research design.

For acquiescence bias this is the tendency to say yes, or respond positively to all questions in a questionnaire (van Sonderen, Sanderman, & Coyne, 2013). A method of negating this issue has been highlighted as utilisation of reverse worded items in a scale in order to control for this effect (Ebesutani et al., 2012; Solís Salazar, 2015; Woods, 2006; Zhang & Savalei, 2016). Some researchers however questioned this approach by highlighting that this often causes other issues

such as reducing internal consistencies, reliability, and validity in scales (Woods, 2006), method effects (Ebesutani et al., 2012; Woods, 2006; Zhang & Savalei, 2016), or not reducing acquiescence bias at all (Solís Salazar, 2015; van Sonderen et al., 2013). In relation to this research, given the subject matter and the general feeling individuals have towards mobile advertisements, disacquiescence (van Sonderen et al., 2013) which is considered a negative response bias is more likely. Although as mentioned previously, it is not possible to eliminate all forms of bias, the researcher will acknowledge where relevant how this form of bias was minimised. For example, within Section 4.4.1.2 a further discussion of how acquiescence bias was minimised was outlined.

Extreme response bias is the tendency to respond to a question in an extreme way, for example utilising the extreme ends of scale (Clarke, 2001). Extreme response bias can affect the research findings due to the fact that it alters the measures of central tendency and also distribution, in doing so this can impact upon the statistical data analysis. The way in which this was counteracted within this study was by identifying the outliers within the data set and making the decision to remove these before undertaking the relevant statistical analysis. The outliers were identified as any data point exceeding than three standard deviations, this was generated as part of the multiple regression output. The corresponding data for that outlier was then removed and the data analysis was run without the outlier. By doing this the researcher was able to negate the negative impact of extreme response bias.

As the questionnaire will be accessed and completed online via a smartphone device, this creates more potential issues that need to be carefully considered. Due to the size of a mobile device it is very important to consider how readable and legible a questionnaire would be on a small screen. Research undertaken by De Bruijne and Wijnant (2014) found that Likert scales which adopt either a scale with either a five or seven points are more user friendly than an 11 point scale in the mobile context. It was from this that the decision to use a seven point Likert scale within this study was also supported. Other issues in relation to design could also arise such as the limited screen space, the way in which the scale will be anchored and how this will potentially impact upon the user experience. In order to counteract any effect that this may have, pilot studies will be used to assess the impact of these elements. After having reviewed the methods that will be adopted within this research, the following section will outline the process in which this research was undertaken.

It must be highlighted that this study is novel in the sense that it utilises an experiment, but measures user intentions as opposed to actual behaviour. The reason that this research is measuring intention as opposed to behaviour is for a variety of reasons, the first is that it is more difficult to measure the actual behaviour for a fictional brand in both practical terms and also in relation to ethical research practice. The second reason was due to the time constraints of this thesis it was not plausible to measure behaviour based upon suggestions from the ethics board.

Intention to purchase was therefore suggested as a suitable alternative by the ethics board, as this measure can provide an insight into potential behaviour. Despite the discussion within the literature in Section 2.5 in relation to hypothetical bias, the researcher concluded that given the aims of the research, the outcome of the discussion, and also the restraints on the researcher that the use of hypothetical measures was suitable. When summarising the results of the research, it is however important that the researcher is aware of the limitations that hypothetical bias may have upon the research findings (Beck et al., 2016).

4.4   Research Process

Although an establishment of the practical considerations is important, it is also vital to outline the process in which this research will take. Therefore, this section of the chapter highlights the three phases that have taken place within this research study. Phase one outlines the pre pilot studies which were undertaken as part of this study, this includes the predictability survey and also the experiment feedback session. Phase two covers the pilot study run of the experiment with phase three covering the final experiment run. One aspect to consider before outlining the method adopted, is that there is no such thing as a perfect research design (Patton, 1990; Richardson, Vine, & Goodwin, 2011), and as such there will always be some level of trade-offs (Patton, 1990).

4.4.1   Initial Experiment Creation

This part of the chapter will discuss the choices surrounding the creation of the first iteration of the experiment that includes the measures used, the conditions created, and also some technical aspects which have been considered.

4.4.1.1   Independent Variable (IV)

The independent variable within this experiment is the perception of control, this is however made up of three main antecedents which are; choice, information, and predictability (Skinner, 1996). In order to create different conditions for the purpose of this study, it is important that the experiment can sufficiently manipulate each one of these constructs. This section will therefore highlight the specific manipulations that were made to each of the conditions in order to manipulate choice, information, and predictability.

4.4.1.1.1   Decisional Control – Manipulating Choice

As mentioned within the literature review chapter of this thesis, the definition of decisional control was in regards to the amount of choice an individual had in relation to choosing a course of action. In order to give users the option to make a decision, there must be at the core of the experiment an opportunity for choice. In order to provide choice to the users, there must be more than one course of action available to them. The issue lies within the fact that within any given

advertisement there is typically two courses of action, 1. Click the ad and gain more information and 2. Cross the ad off. Therefore, at the heart of what advertising is, there does seem to already have a premise of choice, however what could be improved is the perception of more choice. It was deduced by the researcher that although no more options could be provided to the user, that the already existing choices could be made more obvious to the user which could improve the perception of choice. As discussed within the literature chapter of this thesis, the researcher indicated that it is the perception of control that is vital in the context of this study, and therefore there does not need to be an actual change in control but users must perceive there to be a change. In order to achieve this, the user will be provided at the end of the advert with two clear options outside of the ordinary cross to exit. Option one will be a button which allows the user to find out more, such as 'Yes please, show me more information'. Options two will be a similar sized button which makes it clearer to the user that they have an option to leave the advert, such as 'No thank you, take me back to the article'. The researcher believes that this will provide the user with two clear courses of action therefore should engender more feelings of choice than just a cross off box and a 'more info' button. This type of functionality can be seen in practice with the brand 'Women's Health' where the user is given two distinct choices of finding out more about the advertised product/service or exiting the advertisement interaction via a 'No thanks' button Appendix 3. Other examples can also be seen which follow a similar concept in Appendix 4, and also on other forms of interactive advertising such as online TV streaming, adverts are also beginning to provide other types of choice to users. Appendix 5 shows an advert shown on 4OD which allows users to choose the topic of advert in which they wish to see. Although these examples highlight that choice is sometimes provided to users within advertising scenarios, these are not common practice and therefore this type of manipulation was considered to be suitable. Changes were also made to the 'X' to close button on the advertisement within the choice conditions, the 'X' was made more prominent to the user through the use of greater colour contrasts, which may help the user to believe that they have more choice in relation to the course of action they wish to take.

The baseline for choice (conditions where choice needs to be low) would be 1. To remove the second button to cross off the advert and 2. To make the 'X' to cross off, less visible and potentially harder to find. Making the 'X' harder to find is a common approach used by advertisers who are aware of users habitually interacting with their devices and often crossing off an ad before even consciously acknowledging the advert is there.

4.4.1.1.2   Informational Control – Manipulating Information

As highlighted within the literature review of this thesis, information has the capability of engendering feelings of control and as such the following manipulations made to the experiment in order to create feelings of informational control were created.

Due to the constraints of the screen size the manipulations made to increase feelings of information control were ones in which allowed the user make an informed decision such as; price, how easy it is to sign up, reviews, and some brief contractual information. In order to therefore recreate the feeling of control engendered by information, the advert will contain the above pieces of information, whilst however keeping it concise enough for the mobile screen.

The baseline for information would be that the extended level of information was not provided, for example there would be no price or reviews. As such the information provided within the low information IV was the functionality available; such as the ability to share playlists, multi device usage, and also the ability to see what peers and favourite artists listen to. It was important that even within the low information condition, that the advert still reflected a reasonable and realistic amount of information that a user would expect to see on a mobile advertisement. This is important because as mentioned previously, advertisers do not purposefully make bad adverts (Kardes, 1996), therefore it would seem unlikely that they wouldn't provide relevant information about the functionality their product or service provides.

4.4.1.1.3   Predictive Control – Manipulating Predictability

After consideration of the literature highlighted earlier, it was decided by the researcher that any functionality afforded to the user attempting to manipulate predictability should relate to timings and sequences. As humans base their predictions on previous experiences, it is likely that a 'predictable' advertising scenario is one in which they have likely experienced before. In order to understand more about common advertising scenarios in relation to timing and sequence, the researcher undertook some brief background research which can be found in Appendix 6. The background research identified that although there are various ways in which advertisements can be delivered to users, the most common way of doing so would be to insert an advertisement at a logical 'break' within the task sequence. This custom is practiced regularly, with games apps and mobile websites typically having advertisements between levels or user actions, these are called interstitial adverts (Bhave et al., 2013). Therefore, the researcher decided to manipulate predictability by having the advert show up at a sequential point in the experiment task. The manipulation was therefore to have the advert pop up once the user clicked to view the next page on the music blog, as this would likely be considered to be a natural break in content.

The baseline (control) of this manipulation would be to have the advert show up at a non-sequential point within the content. After initially testing how long it would take to read the first page of the blog, it was decided that an advert which loaded right in the middle of reading the first page would be considered the least predictable. However, due to the lack of clarity in regards to predictability, a pre-pilot study was conducted to confirm or reject these manipulations based upon what individuals considered predictability to be. The findings of this questionnaire will be discussed later in Section 4.4.2.1 of this thesis.

Within this study there are five overall conditions, one control, three main effects, and one three-way interaction effect condition, these are labelled in Table 4.1. The Control/Constant condition is what the researcher is classifying, as the baseline comparison condition (Control/Constant) contains no IV's. Table 4.1 illustrates each condition and which IV is being manipulated.

Table 4.1 - Conditions and Manipulations

Name of Condition	Manipulated IV
Control/Constant - Constant	• No manipulations
Choice - (C)	• More obvious 'X' to close • Additional button to close the ad
Information - (I)	• More information such as reviews, pricing, and contractual details
Predictability - (P)	• Advert is shown when the user clicks to view the next page of the music article
Choice, Information and Predictability - (C*I*P)	• More obvious 'X' to close • Additional button to close the ad • More information such as reviews, pricing, and contractual details • Advert is shown when the user clicks to view the next page of the music article

The manipulations highlighted within Table 4.1 across each of the conditions are aimed to sufficiently manipulate choice, information, and predictability within the experiment. Appendices 7, 8, 9, 10, and 11 highlights the workflows for each one of the five conditions.

4.4.1.2   Dependent Variable (DV)

As mentioned within the literature review chapter of this thesis, it was not within the realms of this study to recreate and validate an entirely new scale to measure Mobile Advertising Effectiveness. As such the scale outlined by Drossos et al. (2013) was deemed to be the most appropriate given the aims of the research. The scale consists of three main measures, these are attitude towards the ad, attitude towards the brand, and also intent to purchase *(as demonstrated below):*

Aad, Ab, PI = Mobile Advertising effectiveness

This scale is useful as it was developed and applied within the context of SMS advertising and therefore it has evidenced its appropriateness within the mobile advertising domain. As this scale looks at SMS advertising, it was not a perfect fit with this specific study, as this study looks at pop up adverts within socially shareable content on mobile devices. As such it was imperative that some adjustments were made to the scale, in order for it to be used more effectively within this study.

The original scale developed by Drossos et al. (2013) consisted of:

- Four 7 point anchored Likert scales to measure Ad Attitude
- Three 7 point anchored Likert scales to measure Brand Attitude
- Three Likert type statement anchored measures for Purchase Intention

The first change the researcher made was to include questions which verified the age and gender of the research participants. As was highlighted within the literature review, age and gender were considered to be potential extraneous variables and therefore it was important to assess the relationship that this demographic information had upon the results.

Further adaptations were made to the scale as the original scale adopted a mixture of both positively worded (PW) and reverse worded (RW) items, which as highlighted within the earlier section of this chapter often creates a host of other issues such as affecting the integrity of the scale and subsequently the validity of the results (Ebesutani et al., 2012; Solís Salazar, 2015; van Sonderen et al., 2013). Another issue relating to using a mixture of PW and RW items is that participants can lose focus and respond in a careless manner in which will subsequently affect the overall results (Woods, 2006). This is particularly important due to the small screen space available on smartphones, which could make it more difficult for participants to follow the questionnaire. Because of this it was decided that the survey needed to be as simple as possible, in order to improve the participant experience. One aspect to consider when undertaking research is how

long and confusing questionnaires may put off research participants, and therefore ensuring the experience is as pleasurable as possible is vital in ensuring good data collection. This is especially pertinent in scenarios where participants are not being watched and are using their mobile phones, an argument can be made that participants maybe be more easily distracted from the research task when they are not being supervised under laboratory settings. In order to ensure good participant experience, the questions from the pre-existing scale were swapped in order to provide consistency of framing e.g. PW and RW items. As a general rule, users will typically associate an increase in scale points to a positive, such as '1' being bad and '10' being good. Therefore, it was deemed logical due to the previously mentioned arguments that the scale within this study remained consistent with expectations of the participants, therefore the scale will go from negative to positive and all the scales used within this study reflected the same pattern.

As mentioned earlier within this chapter, with any questionnaire there is an issue with acquiescence bias, however there are ways in which the researcher has adapted the scale in order to reduce this. A way of avoiding validity issues and acquiescence bias is by providing opposing statements on a Likert scale and asking users to place themselves against those opposing statements (Zhang & Savalei, 2016). The benefit of using this method is that it has a higher level of reliability than using anchor points (Boote, 1981). The scale in which will be used as part of this experiment which was developed by Drossos et al. (2013); already does this to some extent with the first seven questions, but the last three questions rely on a strongly agree and strongly disagree to positively worded questions. Therefore, the entire scale will be adapted to utilise statement anchors throughout, the new scale can be seen in Appendix 12.

4.4.1.3   *Experimental Conditions*

When creating experimental conditions, it is vital that the researcher is aware of any potential extraneous variables in which could affect the overall results. Therefore, a careful consideration of the way in which the conditions were created was needed as this allows for identification of such variables. It is first important to refine the type of advertisement that will be used within this study, as research undertaken by Bendixen (1993) stated that current effects of advertising are 'most likely to be found in the upper reaches of the informative and affective quadrants' of the FCB Grid. To summarise, the author proposes that current advertising effects can be found at their highest in advertisements with levels of high involvement such as cars, household items, jewellery, and cosmetics for example. These types of products can be further broken down into 'think' and 'feel' as shown on the FCB Grid (Bendixen, 1993). In order to decide which would be most relevant to mobile advertising it would be important to question the users' likely behaviours on mobile whilst viewing an ad. Mobiles provides both practical functionality along with being a conduit to socialise with friends (Belk, 2013; Fanjiang & Wang, 2016; Gökçearslan et al., 2016; Grant &

O'Donohoe, 2007; Harkin, 2003; Kolsaker & Drakatos, 2009; Verhoef et al., 2017; Vincent, 2005a; Walsh et al., 2011; Wang, 2017). Therefore, depending on the type of activity the user is engaging with, could define the type of advertisement that is congruent to the given circumstances. Given however that mobiles are known for their quick response rates (Barnes, 2002; Barwise & Strong, 2002; Franklin, 2014; Kannan et al., 2001; Tsang et al., 2004), it would seem logical to deduce that the products covered under the affective quadrant of the FCB grid would be more suited to mobile than the informative quadrant, as informative products are typically larger more considered purchases (Drossos et al., 2007). The mobile context will likely have a negative effect on adverts for more considered purchases such as a house, due to the inability to effectively communicate the information needed for this type of purchase (Drossos et al., 2013). It was deemed by the researcher that the product being advertised would therefore need to be affordable for an impulse purchase but also maintain the emotional high involvement aspects in relation to the FCB grid. Therefore, for the purpose of this study the product/service being advertised will be a music streaming service; which is relatively low cost, but maintains an emotional element to the purchase due to music relating heavily to an individual's identity (Frith, 1996). By choosing a music streaming service it also helps to achieve gender neutrality in terms of the advertised service appeal. Gender neutrality of the advertisement is important within this study as the study will utilise both males and female participants, and therefore in order to provide consistent and valid responses it is important the service being offered is equally as lucrative to both genders.

The music streaming service will be a fictional brand under the name 'Loop'; this is because a search on Google indicates no associated brands which could potentially cause bias effects. This is based on research by Keller et al. (1998) which states that phonetic similarity to existing brands, and suggestive names should be avoided in order to reduce the potential effects of bias. Results from other research within the field of video games also highlight that consumers recall familiar brands placed within the game better than they do unfamiliar ones, along with better brand recognition (Martí-Parreño et al., 2016). In order to create an unbiased environment, the use of a fictional brand is important. This is because when utilising a fictional brand, participants within the research study will not have built any prejudices towards that brand which is very important in advertising research (Gao et al., 2009). Research has shown that the use of fictional brand within advertising research to be effective and suitable (Narang et al., 2012), which further supports the use in this study. There are however issues with utilising a fictional brand, this is due to the fact that no prejudice exists and it is likely that in these situations participants will respond neutrally to any brand related measures. Research conducted by Graeff (1999) explored this premise and found that the more unfamiliar brands were, the greater levels of uniform response bias whereby participants show little deviation in answers and cluster towards the neutral point on the measurement scale. The researcher noted that the effect was significantly more prevalent in

unfamiliar brands than it was highly familiar brands (Graeff, 1999). Therefore, the researcher will need to be aware of the limitations to the Brand Attitude measure when assessing the findings and drawing conclusions.

Congruency is also an issue in which needs to be addressed, as the context of the ad and task can affect the results (Calder et al., 2009; Lee et al., 2015). When mobile advertising was in the stages of infancy, users were subject to randomised adverts which held little to no relevance to the users' actions or even interests. As big data, personalised marketing and context marketing have developed and become more widely available to advertisers (Couldry & Turow, 2014); users have seen an increase in highly personalised and contextualised advertisements sent to their mobile devices. If a user was browsing a music site and was advertised a music streaming service or a new album, this would be a highly congruent advertisement because the task is aligned with the user's actions/interests. If a user was browsing a music site but was advertised an electronic toothbrush however; this would be considered a non-congruent advertisement as the advertised product is not aligned with the user's actions/interests. The important aspect to consider is relevancy, and how relevancy can impact on the overall perceptions, attitudes, beliefs, and behaviours users hold and exert post advertisement exposure. It was deemed by the researcher that in the era of big data, that congruency is common and therefore to create a typical user experience within the experimental design, a highly congruent advert was important. This will however be discussed later on within this thesis as a limitation to the research's wider generalisability, however as this work is exploratory in nature this seems the most suitable choice to make.

To summarise, the experiment will be accessed via a mobile browser and the format of the advert will be a pop up ad. The advert will be advertising a fictional music streaming service called Loop, and the website in which the advert is shown upon will be a music blogging website to maintain congruency. With the design of the experiment outlined, it is important to consider the ways in which participants will be assigned to the conditions. As mentioned in Section 4.3.5.1 this experiment requires random assignment in order to improve internal validity (Harris, 2008). In order to achieve this a plug in called 'Hot Random Image' was used, which randomised the button which was shown to the participant and subsequently the condition they were assigned to. In order to test the randomness of the plugin, the website was tested 50 times and the following results were found as highlighted in Table 4.2.

Table 4.2 - Randomisation of Exposures

Condition	Number of Exposures
Constant (Control)	9
Choice (C)	10
Information (I)	11
Predictability (P)	11
Choice*Information*Predictability (C*I*P)	9

Table 4.2 indicate that the use of the plugin would provide a sufficient level of randomisation, which would result in a roughly equal number of users being sent to each condition.

Due to the physical constraints of this research such as time, money, and realistic scope of the project, the study will only expose users to one advertisement per session. Therefore, it could be questioned how far the results found from this study can be generalised further into advertising which conducts multiple exposures (King, 1968), or even across differing involvement, affective, and informative based advertisements. This however is an important element which will be discussed within the limitations section of this thesis. It is important again to reiterate that this research is exploratory in nature and as such future research could look to expand on other possible avenues of inquiry.

The experiment is conducted online via the participant's smartphone and can be found at the following website address;

www.musiqquiz.co.uk

In the event that a participant makes an attempt to view the site on any device other than a smartphone, the website will display a note indicating the research must be undertaken on a smartphone. Alongside the mobile website, the researcher utilised Google Forms as a way of measuring Mobile Advertising Effectiveness. When participants arrive at the initial holding page for the experiment, information regarding the study, consent, and ethical information will be provided. Participants will then be provided with a button which starts the experiment, once clicked participants will be randomly assigned to one of the conditions. Participants will read a

short two-page music blog during which they will be exposed to an advert. Once they have finished reading the blog, participants will then be asked to complete a survey via Google Forms on their experience. Appendix 13 depicts a generic workflow of what will happen for the participant when they take part within this study.

Due to the study's wide applicability to various demographic groups, there is no obvious pre-defined sample in which to target. The most obvious sampling criterion as stated previously within this chapter would be that the research participant needs to own, or have access to a smartphone in order to take part within the research. An aspect to consider after the pilot study has been conducted would be to look at the impact that age has upon the responses, and as such perhaps limiting the final study moving forward. As the pilot will look to identify any issues with the design, this was not a necessity at this stage. However, for the purpose of this research, those under the age of 18 will be excluded for the following reasons,

- Ethical issues arise when looking to target minors within research and appropriate safeguarding makes them a difficult sample to access.
- Those under the age of 18 years old may be under the supervision of their parents and therefore parents may have downloaded ad blockers on their devices or certain websites maybe blocked making it difficult undertake the research.
- Those under the age of 18 years old typically have little purchasing power due to their lower levels of disposable income (ONS, 2017). It could be argued that this population is less able to take financial action on advertisements, especially if they are under the age of 16 and don't manage their own finances. Given the product being advertised will also be a music subscription; the user would need to be over the age of 18 to enter a contract. As such this type of advertisement could be deemed irrelevant to that given population.

Although at face value it is positive that the study can be disseminated online, given that the limits of time and space no longer apply, anyone in the world could take part. This was an important aspect to consider as when looking to undertake research amongst different countries it is important to be aware of the issues related to direct translations, interpretations, and even colloquial idioms. By restricting the sample to those based within the UK there is a better chance of reducing any issues caused by the aforementioned elements. This ties closely to the second reason for limiting the study to the UK which is due to cultural differences. With research having identified differences in the internal locus of control in individualistic and collectivistic cultures (Mueller & Thomas, 2001), it is important to consider that this may also have an potential impact upon the results and as such will need to be controlled for. Although not within the scope of this

research, future research could look to take this further by comparing differences across varying cultures.

The third and final issue relates to the technical infrastructures in different countries which can affect aspects such as page load times, and even website blocking. In order to keep the controlled experiences consistent, it was decided the study would be limited to the United Kingdom. By doing so this has allowed for potential noise to be controlled for in a more systematic way, for example if load times are higher in a certain country this may frustrate participants and ultimately impact upon the results they give within the questionnaire. The way in which the research will be limited to the UK will be through the use of a WordPress plugin called 'IQ Block Country' where all countries except the UK will be excluded. Although this is not a guaranteed way of avoiding traffic from other countries, users outside of the UK would need to exert some effort to mask their IP addresses in order to take part. It was concluded by the researcher that it was very unlikely that users outside of the UK would want to take part to the extent they would exert any effort masking their location.

As highlighted within the literature review, as gender may have an impact on the results of the study gender can be considered an extraneous variable (Harris, 2008). An argument could be made to limit the study to one gender, however, the issue caused by excluding certain genders is that it would take longer to collect the data due to a further segmentation of the research population. The researcher decided that it wasn't suitable to exclude certain groups based upon gender as this would reduce external validity, in order to control for this extraneous variable the researcher decided that randomised assignment to the conditions would be implemented (Harris, 2008). This ensures that men and woman both equally have the chance to go to any one of the conditions, and therefore reduces any potential effects of this variable on the data. The researcher also decided to ask participants their gender so that if there was a difference between the two groups, the data could be further broken down and reported separately if required. It was deemed by the researcher that this level of control over the extraneous variable was suitable given the aims of the research.

In order to effectively run the pilot study an unrelated sample design was adopted, unrelated samples are the ideal option in experimental research when considering sample populations. This is due to the fact that no order effects can be present when utilising an unrelated sample design (Greene & D'oliveira, 2006). Utilising this type of design means that greater numbers of participants will be needed in order to achieve the desired sample size, with this in mind it is important to consider the method of recruiting this sample. Some elements to consider when looking to recruit the sample within the context of this study is that the recruitment needs to be achieved quickly with minimal costs to the researcher due to the resource limitations.

One way of achieving a suitable amount of responses when resources are lacking is to utilise convenience sampling (Bryman & Bell, 2015). Typically convenience samples come in the form of student recruitment, due to the majority of research being taken place within university settings, where access to the student population is abundant (Bryman & Bell, 2015). However, convenience samples can also take the form of personal network recruitment through work, social groups, family members, or even waiting outside a doctors surgery to survey individuals (Fink, 2017). Convenience sampling has been highly critiqued due to the argument that the sample is not as representative of the population and therefore the generalisability is limited (Bryman & Bell, 2015). Research conducted by Peterson and Merunka (2014) for example, found inconsistencies in results based upon a comparison of four convenience samples, which the researchers highlight as one of the uncertainties when utilising this type of sampling strategy. This is further supported by Semiz (2016) who found that there was a statistically significant difference between the mean of the population, and a quota sample achieved via a convenience approach.

Other researchers however highlight that the use of convenience sampling is suitable as in some contexts convenience samples have been shown to be representative of the respective research population (Sousa, Zauszniewski, & Musil, 2004). This is further supported by another paper which discusses the use of convenience sampling which argued that the larger the sample size, the greater the statistical power of the sample increases (Etikan, Musa, & Alkassim, 2016). Therefore, in some cases convenience sampling is a suitable option due to the ability to gain the number of participants required. Finally, researchers also acknowledge the suitability of this approach when the research is exploratory in nature (Bryman & Bell, 2015). As future research can look to assess the impact of utilising a probability sample (Bryman & Bell, 2015).

As evidenced above, there is currently no universally agreed answer as to whether it is right or wrong to utilise convenience sampling within academic research. It has been argued that the context of the research, the needs, and resources available are the true dictators of whether a researcher should adopt or avoid convenience sampling (Etikan et al., 2016). As stated previously within this chapter, it was made clear that the researcher lacks financial resources and therefore a convenience sampling strategy is more appropriate given the limitations imposed. This is particularly pertinent as researchers have acknowledged that convenience sampling is a useful way of targeting a sample when the target population is too large or general and when resources are lacking (Etikan et al., 2016). It was therefore decided that utilising a convenience sample which utilised the researcher's social networks, was the most effective means of gathering data for the pre pilot and pilot study based upon the context and needs of the research being undertaken. An argument could be made that the resulting data from a convenience sample would be skewed due to the researcher's social networks not being representative of the general population. As this was

the pilot study and was being used as a way of fault finding within the experiment, this was not of particular concern as no final conclusions will be drawn from the pilot study data (Leon et al., 2011). Alongside convenience sampling, snowball sampling can be used as a supporting technique, this technique is where research participants actively recruit other participants to take part within the study (Fink, 2017). This is particularly relevant when looking at social media recruitment for example, whereby participants share the research with the own networks and as such can be considered a form of snowball sampling.

In order to recruit the sample needed for the pilot study the researcher utilised their own personal connections and social networks. Peer referral was also used by taking advantage of word of mouth via social media, this was achieved by encouraging participants to share the study and recruit others to take part which creates a snowball effect (Allison et al., 2012; Arayasirikul, Chen, Jin, & Wilson, 2015). According to research utilisation of a researcher's social networks has been shown to be an effective and cost efficient way of recruiting research respondents in doctoral research (Fileborn, 2015). This was also reflected by research which found that Facebook was the most successful way of recruiting research participants even when compared to traditional strategies (Leonard, Hutchesson, Patterson, Chalmers, & Collins, 2014). Given the financial and time related limitations imposed upon the researcher, it was deemed the most appropriate strategy to adopt. It is however important that when using this type of strategy to be aware of the limitations and potential ethical issues (Fileborn, 2015). The ethical issues will be addressed within the ethical approval process that is required as part of this research, this can be found at the end of this thesis.

4.4.2   Phase 1 – Pre Pilot Studies: Questionnaire and Feedback Session

As part of this research a two part pre pilot study was undertaken in order to ensure a variety of aims, which were:

1. To ensure that the conditions are representative of real life advertising conditions.
2. To ensure that the functionality provided within the advertisements sufficiently manipulates the antecedents of perceived control.
3. To ensure that the survey questions are coherent, clear, and that users are happy with the wording of these questions.
4. To ensure that any potential flaws with the Mobile Advertising Effectiveness scale are identified.

The pre pilot study was conducted in two different ways in order to achieve the aims stated above; these are outlined as follows

1. A short questionnaire was conducted in order to ascertain whether the operationalisation of predictability was correct.
2. Five participants were taken through each condition and subsequently asked to provide feedback on the five conditions.

4.4.2.1 Pre-Pilot Study Part 1 – Predictability Questionnaire

As stated earlier within this chapter in Section 4.4.1.1.3, it was identified by the researcher that the operationalisation of predictability lacked clarity and whether the suggested manipulations reflect this construct. A short questionnaire was conducted in order to confirm or reject that the manipulations chosen were reflective of predictability. The questionnaire was short and consisted of four questions as found in Appendix 14, in total 42 responses were collected using Bristol Online Surveys from those aged 18-35 and based within the UK. Respondents were recruited via a convenience method through the researcher's personal networks.

Findings

The findings from the survey found that the researcher's initial conclusions regarding the operationalization of predictability based upon an initial review of the relevant literature were supported. The participants agreed with how the researcher operationalised predictability, with the findings from the survey evidenced below.

Table 4.3 - Findings from Predictability Survey

Statement	Response
'An event is predictable when I am able to pre-empt its occurrence.'	81% of participants agreed
'I make predictions about events in my life based on my previous experiences.'	90.4% of participants agreed
'I can predict when I will see an advert on my mobile phone due to my previous experiences using mobile apps and mobile websites.'	76.1% of participants agreed

The element of particular interest from Table 4.3 is that the survey confirmed that the sample use previous experiences with mobile advertising as a way of predicting future advertising exposure. Participants were asked to rank the level of predictability in relation to timing for a mobile

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advertisement with 1 being most predictable and 4 being the least predictable. The results indicated that when looking at the mode for each statement, two and four were tied in last place as the least predictable. In order to ascertain which would be ranked in third and fourth place, the researcher assessed the percentage weighting of the rankings for each statement. The statement with the greatest percentage towards the more predictable end of the scale would take 3rd place, which resulted in the final rankings as highlighted in Table 4.4.

Table 4.4 - Ranking of Predictability

Statement	Rank
1. An advert loads at a sequential point in a task e.g. during a break in a game	1
2. An advert loads whilst I am part way through my task e.g. halfway through reading an article	4
3. An advert loads when I take some form of action e.g. click to read more on an article	2
4. An advert loads first as soon as I open an app, or click on a link	3

As shown above, participants viewed the most predictable scenario as the one in which the advert loads at a sequential point. The least predictable was when an advert loads part way through a task, such as reading a blog for example. These findings supported the manipulations of predictability that were made within the experimental conditions.

4.4.2.2   Pre-Pilot Study Part 2 - Feedback Session

When creating a baseline condition (control condition), there is the potential to end up with an experimental condition which is completely devoid of any real life representation. This is particularly important because in order to improve external validity, experiments must represent real life situations. In order to then create a control, elements of that real life scenario are being removed and as such it could be argued that this makes the control unrepresentative. Given that advertisers do not deliberately produce adverts which are weak and un-compelling (Kardes, 1996), it is vital that even the control condition within this experiment is realistic. A useful way of assessing whether the experimental conditions are representative of real life and as such follow a representative design, is to gain feedback from participants. Five participants were recruited by a convenience sampling method, and asked to explore all five of the experimental conditions. Participants were then asked to provide feedback on elements such as, how well the conditions reflected real life advertising scenarios, whether the manipulations represented choice,

information, and predictability. Participants were also asked to comment on the layout in relation to both design and ease of use, along with making further recommendations to improve the study.

Findings and Alterations

In the original workflow of the experiment, there was no 'pre-survey' page. Feedback from one of the participants indicated that this made the experiment and the questionnaire overlap. They stated that clearer defined lines between the experiment and the questionnaire would help improve the participant's user journey. The researcher agreed with the comments made by the participant, and therefore made the change to make the distinction between the experiment and the questionnaire more defined by inserting a 'pre-survey' page which can be seen in Appendix 15. This informed the participant that they had finished the experiment and were now being directed to the questionnaire.

There were also multiple comments made about the orientation of the questionnaire, as participants felt that it did not suit the small screen of a smartphone. Although a valid point, given the limitations of all mobile screen sizes this was not within the control of this study and therefore very little could be done to alter this. Within the blueprints of the experiments, a small statement was inserted on the 'pre-survey' page which states that for optimum viewing pleasure to orientate the mobile device to landscape, however this was missed by a few pre-test subjects. In order to overcome this the statement was made clearer by making it bolder, it was hoped that this would catch the participants attention and provide them with the information needed in order to achieve a better viewing experience.

A participant highlighted that as they were conditioned by previous experiences with mobile adverts, which meant they felt as though they knew where the cross off box would be placed and therefore aimed for that immediately. The participant suggested that in the constant (control) condition that the box be moved. The subject went on to state that this was common of adverts they had experienced more recently, in which they had to leave a website because they couldn't find the cross off box for an advert. The researcher agreed that users are conditioned to look to the top right for cross off boxes, as this is an industry standard in any form of software such as Microsoft office and web browsers. As the researcher had already made alterations in regards to the clarity of the 'X' on the advert in the control condition, it was decided that there was no need to move this functionality to the left as it was already being manipulated.

One of the concerns raised by the participants was whether or not the respondents would remember the Loop brand, and subsequently be able to answer the questionnaire effectively. The respondent suggested that perhaps providing a 'don't know' option or the ability to skip the questions would help to alleviate this. The researcher felt as though by providing users with the

option to state 'don't know' or skip the question, that users would become less inclined to answer or attempt to recall the advertising experience (Kalton & Schuman, 1982). Therefore, the researcher decided that providing this functionality would not be suitable for the research. The researcher did however feel as though this was a valid claim, and therefore inserted a title before the questions relating to the Loop brand. The title stated that the following questions were related to the advertisement that they just saw during the task which was related to the music streaming service Loop. It was hoped by doing this that it may remind the users of the brand and allow the participants to recall the advertising experience, by providing context to the questions being asked.

4.4.3   Phase 2 – Experiment Pilot Study

The second phase of this study was to run a pilot study of the experiment with all the changes being made based upon the pre-pilot study tests. The pilot study was undertaken to ensure;

1. The website works and any design flaws are identified
2. The survey is well organised and laid out
3. That the researcher is effectively testing what is required within the study

The second phase of the study was conducted using 89 naïve participants, with an independent samples method adopted. The ages of the participants ranged between the ages of 18-72, and were UK based with access to a smartphone. This sample was collected utilising convenience sampling via social media through the researcher's personal networks. The following section identifies the most important findings from the pilot study run of the experiment.

Findings and Alterations

The first observation that was made in regards to the pilot study was that there was a wide range of participants varying in different ages. This was due to the fact that the pilot study had very basic limitations on the age requirements, and as such anyone above the age of 18 could take part. After the pilot study however, the researcher became more conscious of the need to control the experimental environment to ensure that any changes to the dependent variable can be associated to the independent variable with confidence. As outlined within the literature review of this thesis, age has been found to impact the perception of control (Aldwin, 1991; Specht et al., 2013; Weisz & Stipek, 1982), desire for control (Kirk et al., 2015), along with the level of attachment (Adams & Fitch, 2006; Cushing, 2012; Harkin, 2003), and also advertising effectiveness (McKay-Nesbitt, Manchanda, Smith, & Huhmann, 2011). Despite researchers noting that a better way of segmenting individuals is based upon lifestyle motivations as demographic variables are less representative of behaviour (Sultan & Rohm, 2005), the researcher felt a more homogenous group would be beneficial for the reasons discussed later within Section 4.4.4.

Given that mobile phone behaviours can be associated with age; it is important to consider what generation or age range that this study will focus on for the final run of the experiment. According to Jain and Pant (2015) there are four different types of consumers, the traditionalists, baby boomers, generation X and generation Y, with Hemsley (2016b) identifying a fifth group, generation Z. Generation Y and Z have grown up with mobile devices being readily available and therefore the way in which they engage with this type of technology is different to the traditionalists, baby boomers, and generation X consumers. The older consumers are not digital natives and have had to learn to adapt to these new technologies, unlike the Generation Y and Z who have grown up with this technology and therefore see it as an extension of themselves (Balakrishnan & Raj, 2012; S. A. Brasel & Gips, 2014; Clayton et al., 2015; Grant & O'Donohoe, 2007; Jain & Pant, 2015). As age clearly has an effect on the ways in which individuals interact with mobile technology and therefore would be deemed logical to assume that age will influence the effectiveness of a mobile advertising campaign. As such in order to make sure there are no other extraneous variables causing noise within the experiment; it was vital that the sample population is homogeneous (Harris, 2008).

Due to generation Y and Z having being the most experienced with mobile technology, it was decided by the researcher that this group is likely to have fewer outliers in terms of mobile experience and therefore were the most appropriate. Generation 'Z' however are under the age of 18 at the time of data collection, and due to the comments made previously about the issues associated with using minors within research it was decided this research would only focus on generation 'Y'. By doing this the researcher will create a homogenous sample which will consist of individuals between the ages of 18-35 years old. Alongside the changes made to the age range of the sample, changes were also made to the question used to ascertain age and how this data was recorded. In the pilot study categories of age groups were used in order to ascertain the ages of the participants. After consideration, it was deemed more valuable to ask the exact age of a participant rather than to put themselves within a category, this will provide the type of scale data required for more detailed statistical analysis.

The second major finding was that there was no acknowledgement of two-way interactions between the variables. Within the pilot study the researcher had acknowledged the main effects and three-way interaction effects, but had failed to create scenarios in which tested the two-way interaction effects such as, Choice*Information, Choice*Predictability, and Information*Predictability. Without these interactions the findings from this study would not provide a sufficient picture in which to draw any meaningful conclusions in regards to the perception of control and Mobile Advertising Effectiveness. In order to improve the final

experiment, three more conditions were added, in order to cover the two-way interaction effects. The new conditions and their corresponding abbreviations can be seen in Table 4.5.

Table 4.5 - Addition of New Two-Way Interaction Conditions to Existing Design

Number of Condition	Condition
1	Constant (Control)
2	Choice (C)
3	Information (I)
4	Predictability (P)
5	Choice*Information (C*I)
6	Choice*Predictability (C*P)
7	Information*Predictability (I*P)
8	Choice*Information*Predictability (C*I*P)

This change would ultimately mean that the researcher would be able to assess all of the relationships across the variables. This will provide a much clearer picture of the relationship between the perception of control and Mobile Advertising Effectiveness.

The third finding from the pilot study was that when looking at the data generated, it was impossible to ascertain which manipulation related to a change in the dependent variable. In each condition within the pilot study, there was more than one manipulation in a single condition along with inconsistent baseline conditions. This resulted in the researcher being unable to draw any conclusions in regards to the data. Although the researcher acknowledged that there does need to be distinct differences between the conditions, it is vital that the differences between the control condition and the remaining conditions needed to be controlled for in a more systematic way. This was achieved by making only one change per condition, with the exception of the interaction conditions which aims to measure multiple effects together and contains a total of two or three of the IV's manipulations. Table 4.6 depicts the new manipulations and baseline for choice, information, and predictability.

Table 4.6 - Intervention and Baseline Changes for Each Antecedent

	Manipulated IV	Baseline
Choice	User is provided with two buttons to provide choice.	User is only provided with one button.
Information	User is provided with more information which includes; ratings, contractual information, set up information, and price.	Users are not provided with minimal information such as what the service allows them to do.
Predictability	Advert loads at a sequential point in the task which is when the user clicks to read the next page of the blog.	Advert loads at an interruptive point in the advertising interaction, which is 10 seconds into the first page of the blog loading.

As shown above, there is a consistent intervention and also baseline for each element that this research is looking to manipulate. As shown in Table 4.7 each condition and the corresponding set up in relation to what manipulations are made can be seen.

Table 4.7 - Outline of Manipulations for Each Condition

	Choice Manipulation	Information Manipulation	Predictability Manipulation
Constant	BASELINE	BASELINE	BASELINE
Choice	IV PRESENT	BASELINE	BASELINE
Information	BASELINE	IV PRESENT	BASELINE
Predictability	BASELINE	BASELINE	IV PRESENT
Choice*Information	IV PRESENT	IV PRESENT	BASELINE
Choice*Predictability	IV PRESENT	BASELINE	IV PRESENT
Information*Predictability	BASELINE	IV PRESENT	IV PRESENT
Choice*Information*Predictability	IV PRESENT	IV PRESENT	IV PRESENT

The initial iteration of the experiment lacked control over various manipulations, and therefore some issues relating to how the researcher would compare this to a control group was identified. However, as evidenced in Table 4.7, the final iteration of the experiment clearly identifies the manipulations made in each group, and can be compared to the baseline with a greater level of confidence due to increased consistency. Final workflows for each condition can be found in Appendices 16, 17, 18, 19, 20, 21, 22, and 23.

4.4.4   Phase 3 – Final Experiment

Once the final changes were made to the experiment based upon the findings from the pilot study, the researcher then had to again consider the sample recruitment technique needed for the final run of the experiment. Ultimately when looking to undertake sample recruitment there are two main objectives; the first is to recruit enough participants to provide enough statistical power and the second is to obtain a representative sample of the target population (Hulley, Cummings, Browner, Grady, & Newman, 2013). In order to choose the most effective sample recruitment strategy for the final run of the experiment, both elements will be discussed below.

In relation to the first objective, according to data extrapolated from the ONS in 2018 there were an estimated 15,009,676 men and women within the UK between the ages of 18 and 35 (ONS, 2016). A summary provided by Poushter (2016) found that within 2016, 98% of those between the ages of 18 and 34 owned a smartphone. With 98% of 15,009,676, it can be estimated that around 14,709,482 individuals between the ages of around 18-35 that own a smartphone within the UK. With a research population at almost 15 million individuals, it is not realistic for the researcher to access the entire population and therefore a power equation was undertaken in order to decipher the number of respondents needed for statistical power. As is discussed later in Section 3.5.3 a total of 103 participants were required.

Due to the nature of the topic being studied, the experiment had to be designed in such a way that it could be completed on a smartphone. The effect of this was that the study was easily accessible, and could be disseminated online with ease, as such a consideration of the ways in which it could be disseminated online was important. To the researcher's knowledge there are a number of ways in which research can be disseminated online such as; email (to smartphone), SMS (to smartphone), QR Codes, forum posts, social media, paid advertising, and student encouragement. Before deciding upon the most appropriate strategies in order to recruit the sample population it is important to understand the restrictions of this study, and also the sample population looking to be targeted. This is because the limitations of the study and the sample population will have an effect on which strategy is not only the most effective, but also the most feasible.

The recruitment technique adopted for the final run of the experiment is particularly important as there are a number of restrictions which the researcher needs to be aware of. The first restriction is that the experiment again requires the use of unrelated samples, however as the experiment has already been run anonymously during phase two of this study there is the concern of an overlap of participants as there is no way to identify who took part. In order to ensure that the researcher does not have related samples, the recruitment technique needs to be carefully considered in order to ensure that one person does not take part in the pilot study and also the main study due to the issue of order effects (Greene & D'oliveira, 2006). Therefore, it was not possible to utilise convenience sampling via social media using the researcher's personal networks, as this method has already been exhausted.

The second restriction is that this study has no funding available and therefore any money spent on this research will need to be provided by the researcher. This ultimately limits the researcher to finding the population sample in the most financially viable way possible and as such paying an external company to recruit participants was not valid.

The third restriction relates to timing, with a deadline for this thesis it was important that any form of data collection would fit within the projected timescales set out by the researcher. As such the recruitment method adopted would also need to be relatively quick at identifying and recruiting the participants required.

The final restriction of the research study is that as the experiment is administered online, traditional methods such as direct mail or contacting potential respondents via the telephone is not going to be the most effective way of achieving the desired number of participants. It was deemed by the researcher that in order to create an easy experience for the research participant, that any link to the study must be accessible via the smartphone as it is unlikely people will switch between devices or media types. With the restrictions outlined an analysis of some of the main recruitment techniques and their relative costs and drawbacks can be seen in Appendix 24.

Despite the discussion on convenience sampling within Section 4.4.1.3, the researcher was still limited on resources and given this research was exploratory in nature, the use of convenience sampling was still suitable. One way of recruiting a convenience sample is through the use of student cohorts, given that most academic research is conducted within universities, access to this population is very easy (Bryman & Bell, 2015). According to Sears (1986), after the 1960's most social psychology research has been conducted using student samples, which highlights the ease of access to this group. The researcher goes onto the note the effect that this has upon research by stating that student samples are inherently different in important elements such as attitudes and sense of self, which ultimately makes this sample a narrow data base (Sears, 1986). This view

is further supported by researchers within a more modern context, who state that student samples differ based upon a variety of factors which ultimately reduces their ability to represent a broader target population (Espinosa & Ortinau, 2015). Researchers go on to claim that student samples are not very good for creating results which are generalizable to the population (Bearden et al., 2011); or even to the greater student population (Peterson & Merunka, 2014). Ultimately the key argument against the use of student samples is their lack of generalisability (Druckman & Kam, 2009), however as highlighted by Peterson (2001) student samples are often compared against 'consumers' which are often based upon a sample of housewives. In Peterson's review of literature which draws comparisons against students and non-students, of the ten studies, five used housewives for the non-student sample, one used entirely adult females, and one other used parents (Peterson, 2001). What can be argued here is that the primary research which makes comparisons across both samples is based on the concept that consumers are entirely made up of housewives, which is evidently not the case in the modern consumer context. Therefore, when making comparisons across two very distinctly different groups such as students and housewives, it should be of no surprise that a difference is evident. An argument that can be made here is the notion that a consumer must be a housewife is fundamentally outdated, and as such the argument of not using a student sample due to lack of generalisability is concerning given researchers consider housewives to be representative of all consumers.

Some of the researchers highlighted within the above discussion do acknowledge that use of student samples can be useful as a starting point in research with the aim to further improve generalisability in future (Bearden et al., 2011). According to other researchers this can be achieved by undertaking the experiment more than once with a variety of different samples (Cunningham & Wallraven, 2012). A discussion piece by Druckman and Kam (2009) however argues that within experimental research, the issue of using student samples typically relates to external validity. They go on to note that researchers have become blind to the fact that external validity incorporates a variety of elements such as context, time, and conceptual operationalisation; all of which are more likely to be issues of external validity within experimental design (Druckman & Kam, 2009). They go on to state that student samples are often desirable to use, and as such they note that researchers need to look at the other dimensions of generalizability (Druckman & Kam, 2009).

Interestingly a method being adopted by researchers to overcome the student sample debate, is to utilise online crowdsourcing markets (Steelman, Hammer, & Limayem, 2014). The researchers note that from the findings of their study that there were no real differences between the results for the OCM sample and a student sample. Which indicates that despite the arguments made

against the use of student samples, they are similar to the use of other commonly accepted methods of sample recruitment such as using MTurk or Qualtrics.

A benefit of utilising student samples is that research has found student samples to be highly homogenous, with research conducted by Peterson and Merunka (2014) finding their student sample to be more homogenous than of non-student subjects. This is particularly useful as increased levels of homogeneity help to reduce noise within experimental designs (Peterson, 2001). However, overly homogenous groups do present their own limitations, with homogeneity being found to reduce the magnitude of difference and the relationships that exist among the variables (Peterson, 2001). This could mean that results become weak as the levels of homogeneity are increased, and as such put into question the conclusions drawn from this research and increasing the chance of making a type II error (believing that there is no relationship when there is) (Field, 2014; Pallant, 2016). It can be said that student samples present benefits and drawbacks and as such the decision to utilise a student sample is purely down to the context and aims of the research. Given that this research is experimental in nature, the researcher decided that the most integral component to good experimental research was to have high internal validity through controlling for as much noise as possible. Given that this research was also exploratory in nature, the researcher deemed the use of student samples appropriate, with the thought that future research could look to improve external validity by undertaking the experiments again with different samples. As highlighted by Cunningham and Wallraven (2012) it is important to note that not all forms of bias can be eliminated within sample recruitment, therefore utilising the most effective method for the aims of the research is important.

Tying back to the fourth restriction, the study is conducted online and therefore a discussion of how the participant will either be recruited online or will move from online to offline will be discussed. Utilising internet based recruitment techniques would mean that potential participants were able to access the study immediately from a referred online location which reduces the delay between the recruitment advert participation, which can be found in more traditional studies (Arayasirikul et al., 2015). Initially the researcher had considered utilising paid advertisements on social media (Arayasirikul et al., 2015), as this would allow for the researcher to pay for an advert which can be targeted at the desired population. However, as financial resources were limited, the researcher decided that this would be too expensive and likely yield low response rates. This was mirrored in a study undertaken by Gu et al. (2016) who found that Facebook was the most expensive in terms of cost per participant on a paid advertisement basis. Therefore, other means of recruiting the sample online was required, as such a research page was set up on www.callforparticipants.com, emails were sent to the postgraduate school so the study could be

circulated to relevant departments, and an article on the universities call for participant's page was created.

To recruit participants' offline the researcher would need to be conscious of making the journey from offline to online more seamless; this could for example be achieved via the use of QR codes. This method is particularly useful as health research has acknowledged that QR codes showed to have the highest participant response rate and also the lowest cost per recruited participant (Gu et al., 2016). After brief prototype testing of the QR codes, it became clear that all free QR code readers that students would likely use happen to overlay their own advertisements over the content as shown in Appendix 25. An overlay of an external advertisement would reduce the control within the experiment and increase potential noise through an additional extraneous variable, and as such compromise the results generated within the study. Although Apple adopted native QR functionality in 2017, given that the researcher could not be sure that all users would realise this and use the native functionality it was decided the utilisation of QR codes was not a viable option within this study. A more suitable method would be to provide clear signs with the URL in which participants could type into their web browsers. Stalls were set up initially in high footfall areas around the university, signs were put up on a notice board behind the stall which included the study's URL and the researcher utilised lollipops as a way of encouraging engagement. After the first two hours it became clear that this method was not effective and that students were apprehensive to approach the stall, even when a small treat was offered. The researcher therefore decided to alter the strategy which involved a more proactive approach to sample recruitment. The researcher printed off small leaflets and proceeded to approach students in communal areas and study spaces throughout the university. The researcher also contacted colleagues across the university and asked to have five minutes of the lecture time in order to recruit participants within four allocated lecture slots. The researcher handed students a leaflet and offered them a lollipop as a way to encourage them to take part, in total 450 lollipops were handed out by utilising both of these techniques. The final number of participants that took part within the study was 241, with 235 of these being usable cases to undertake the statistical analysis due to some cases violating the set age parameters.

4.5   Data Analysis Process

With the data collected it is important to outline how the data will undergo analysis. This section will therefore outline the data analysis process required in order to answer the research hypotheses, which were outlined in the literature review of this thesis. In order to do this in a systematic way, this section is broken into four parts,

1. Data classification
2. Data preparation

3. Power analysis

4. Data analysis techniques

4.5.1 Data Classification

The data collected from this study from a purist perspective is considered ordinal data this is because as highlighted by researchers, it is a widely accepted myth in statistics that Likert scales do not provide a 'true zero' point (Carifio & Perla, 2007). The researchers however go on note that the notion of a 'true zero' is nothing more than an 'arbitrary zero point', which means that even some pure interval data can still not undergo parametric tests (Carifio & Perla, 2007). Boone and Boone (2012) go on to elaborate that it is ratio data which is typically categorized with interval data, and it is ratio data which needs a true zero not interval data. The authors go on to claim that for interval data the requirement is that there is a meaningful difference between each point on the Likert scale, which can be achieved by having a meaningful order and also a scale in which is symmetrical (Boone & Boone, 2012). This is further supported by researchers who state that a well-constructed scale in which provides symmetry in its opposing statements does in-fact provide a measurement scale with equal weighting between the data points, which meets the criteria of an interval scale (Carifio & Perla, 2007; Likert, 1932). Wigley (2013) acknowledges that just because the response items on a Likert scale can be considered as ordinal in nature, that this do not mean that the data collected from the scale as a whole is ordinal. The researcher goes on to elaborate that the resulting data can be used as interval data when the scale has been well designed (Wigley, 2013). If researchers do not consider the weightings between each point to be equal, then researchers are doing nothing more than creating data points in which bear no relevance to each other. In other words, this creates 'nominal data'. This contradicts the very idea of using a Likert scale as no data point can provide any level of analysis unless it is looked at holistically within the context of the scale in which it is used (Carifio & Perla, 2008; Wigley, 2013).

Boone and Boone (2012) note that interval data can also be collected from scales when there are multiple questions being asked, with the aim to work together to measure a single construct. Likert scales in their most pure state should ask multiple questions in order to provide a composite score for a given construct which can be measured at interval level (Boone & Boone, 2012), and as such it again can be argued that only poor scales will result in ordinal data. In relation to this study, the researcher has adopted the use of a scale in which uses multiple items which work together to create a single construct. In a scenario where this is not the case the researchers state that this is when ordinal data is collected (Boone & Boone, 2012), therefore this study meets the requirement for interval data.

Researchers also acknowledge that the use of parametric tests (used for interval data) have been used for a long time with confidence and reliability with Likert scale data, and as such this is

nothing more than a controversial topic (Carifio & Perla, 2008; Likert, 1932; Wigley, 2013). As so eloquently stated by Wigley (2013, p. 368-369); "Because the typical communication trait study focuses on general trends as opposed to individual or singular cases (hence, the social in ''social science''), the use of para- metric statistics is appropriate and welcome".

After consideration of the literature surrounding the topic of interval data and Likert scales it was decided that when using a well-constructed Likert scale, it is possible to use the resulting data as interval data. Given that this is common practice within the social science research domain, it was deemed a suitable method of classifying the data in which resulted from this study. This would allow for a greater level of analysis through utilization of stronger statistical tests, and this will help to appropriately answer the hypotheses and as such achieve the research aims.

4.5.2 Data Preparation

The data was collected via Google Forms and downloaded in the format of an Excel spreadsheet. All of the conditions had independent questionnaires which allowed the researcher to keep responses from conditions separate and reduce the chances of data contamination. The data was then screened for any errors such as missing answers, responses from individuals outside of the specified sample population and any other data anomalies. Appendix 26 shows the log of changes which were made to the main study data set in order to prepare the data for statistical analysis. Given that the researcher has specified that the data collected is used as interval data, all relevant variable columns within SPSS have been labelled as scale data in order to allow for the relevant statistical tests to be conducted.

4.5.3 Sample Size

The main aim of undertaking a sample size calculation is to provide an estimation of the amount of participants that will be needed in order to detect an effect (avoid a type II error); without gaining too many participants that the researcher wastes time and resources (Fink, 2017; Noordzij et al., 2010). Often called power analysis, this can be either undertaken before the sample is recruited (a priori) or after the sample is recruited (post hoc). The a priori power analysis will allow the researcher to determine an appropriate sample size in order to avoid under recruiting or exceeding the data saturation point. The post hoc is used in order to determine the power of the study once all the data has been collected, essentially the resulting power is the probability of not making a type II error (Fink, 2017; Harris, 2008). Therefore, an a priori will be utilised to estimate the required sample size, and then a post hoc power analysis which will confirm the power of the study in order to determine the effect size, this allows for an understanding as to whether the findings have any practical concern (Fink, 2017). In order to ascertain the ideal sample size, a sample size calculation was used specifically for a multiple regression analysis. With an anticipated effect size of 0.15, desired statistical power of 0.8 and a probability level of .05, an estimate of 103

participants was produced. As a convention .05 significance level has been used (Cunningham & Wallraven, 2012; Fink, 2017; Harris, 2008), along with the commonly used levels for both anticipated effect size and also a desired statistical power level of 0.8 (Harris, 2008).

4.5.4 Data Analysis Techniques

The data analysis techniques adopted for this research will be conducted in two clear parts, descriptive statistics and inferential statistics.

4.5.4.1 Descriptive Statistics

Descriptive statistics will allow the researcher to uncover general patterns and trends and should always be used as the first step when analysing data acquired from an experiment (Cunningham & Wallraven, 2012). Therefore, the first stage within this data analysis will be to look at the descriptive statistics as this normative information e.g. means, variances, measures of central tendency, provides a useful reference point that can be used across different sample groups (Bearden et al., 2011). Good descriptive analysis will allow the researcher to uncover patterns, trends, and also identify outliers or issues that may impact upon the use of certain statistical tests. By understanding what the data looks like, it is also possible to make more meaningful observations about the overall findings. Therefore, the researcher will make reference to;

- Demographic breakdown
- Means
- Standard deviation
- Distribution
- Skewness
- Kurtosis

4.5.4.2 Inferential Statistics

The aim of inferential statistics is to make claims to the population and not just the sample collected (Cunningham & Wallraven, 2012). Therefore, using these types of tests allows for researchers to decide between two specific outcomes, do the findings support the research hypotheses? Or are the scores random and therefore support the null hypotheses? (Greene & D'oliveira, 2006). As stated by Harris (2008) analysis will inevitably find differences between two groups even if the IV had no effect, therefore it is important to be able to detect differences that would be experienced if participants were measured repeatedly without exposure to the IV and this is how inferential statistics can help (Harris, 2008). The adopted statistical approach will be utilising multivariate statistics in the form of a multiple regression analysis. Multiple regression analysis is suitable to use when the objective .is to predict a change in the dependent variable in response to a change in the independent variable(s) (Tabachnick & Fidell, 2007; Hair, Black, Babin,

& Anderson, 2014). As the researcher expects age and gender to affect the results, hierarchical multiple regression will be used as this will allow the researcher to control for these variables at a different stage within the analysis. Given that this research will look to analyse the main effects, two-way interaction, and three-way interaction effects in addition to age and gender, hierarchical multiple regression was the most suitable test to use as each level of effects could be input into its own block. Typically multiple regression requires a metric independent variable, in this case the independent variable is not metric and will need to be coded into dummy variables (Hair et al., 2014). The dummy variables will be '1' for when the IV is present within the condition, or '0' for when the IV does not exist in that condition.

Chapter 5: Data Analysis and Testing of Hypotheses

5.1   Introduction

As highlighted in the conceptual models provided in Chapter 3 of this thesis, the research proposition for this study is,

Variations in Mobile Advertising Effectiveness will be associated with variations of control in the advertising conditions.

This proposition lead to the identification of nine key hypotheses, which are also outlined in Chapter 3. This chapter will undertake the statistical analysis required in order to answer the research hypotheses, and in doing so address the research proposition. In order to undertake this in a systematic manner, the chapter is organised as follows.

The first section will look to outline the power analysis that has been undertaken as part of this study, this will create a greater understanding of how confident the researcher can be that a type II error was not made. Section two will highlight the descriptive analysis of the data, this will provide a greater understanding of the sample in regards to age, gender, general distribution, and dispersion of the data. Section three will look to test the hypotheses that have been put forward as part of this research study. The hypotheses will be tested using a hierarchical multiple linear regression analysis and will use the construct measure of Mobile Advertising Effectiveness as the dependent variable. Section four will provide further analysis by testing additional hypotheses through the utilisation of the dimension measures and Ad Recall. This will allow the researcher to further assess the relationship that exists between the dimension measures and the independent variables. The final section will look to further explore the impact that age has had upon the data, followed by a correlation analysis across the dependent variables. The chapter will then finish by providing an overview of the key findings which will be presented as a hypotheses table, with the table highlighting which null hypotheses have been either confirmed or rejected.

In order to provide clarity over the terms used throughout this chapter, Figure 5.1 highlights the research design and terms used throughout. As shown in the figure the key terminologies are; construct, dimension, and items.
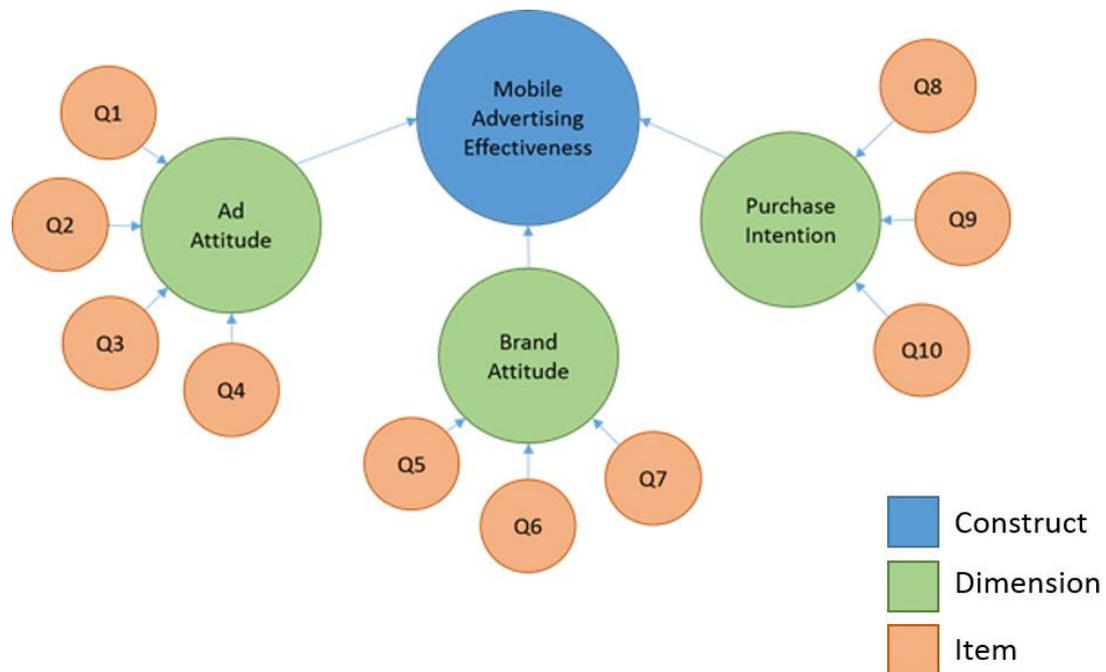
Figure 5.1 - Deconstruction of the Dependent Variable

Due to Ad Recall not being an element of Mobile Advertising Effectiveness, it was not included within Figure 5.1. When this measure is discussed, it will be referred to as Ad Recall.

Before undertaking the descriptive analysis of the data, it is important to understand whether enough data was collected to provide sufficient power to the statistical tests that have been used within this study. Therefore, the next section will outline the power analysis in relation to the final run of the experiment.

5.2 Power Analysis

Within research is it possible to make a type I error (when it is said that a relationship exists when it does not) and a type II error (believing that there is no relationship when there is) (Field, 2014; Pallant, 2016). A type I error is minimised by utilising a conventional alpha level of .05, but in doing this there is a greater opportunity to create a type II error (Field, 2014; Pallant, 2016). In order to understand the chances of making a type II error, a power analysis was used with a conventional power level of .80 (80%) (Field, 2014; Pallant, 2016). In total the study recruited 241 responses, of these responses six cases were removed. This was due to some of the respondents violating the set age restrictions, which resulted in a total of 235 suitable participants for data analysis. Cases were also removed from the data analysis due to violating the outlier assumption, as acknowledged by the case exceeding more than three standard deviations. This resulted in the power analysis being conducted individually to reflect the sample used for each analysis as shown

by N within Table 5.1. The table highlights the resulting power analysis for each stage of the hierarchical multiple regression analysis for the construct, dimensions, and Ad Recall measure.

Table 5.1 - Power Analysis

	MAE N=234	Ad Att N=235	Brand Att N=234	Purch Int N=235	Ad Recall N=235
Model 1	.74611680 75%	.70616281 71%	.26149102 26%	.69112482 69%	.12352905 12%
Model 2	.77346370 77%	.71053961 71%	.64528790 65%	.73349452 73%	.56161879 56%
Model 3	.92963976 93%	.85276821 85%	.92226036 92%	.88767405 89%	.73967782 74%
Model 4	.92520853 93%	.83411519 83%	.92520853 93%	.91088202 91%	.71589828 72%

As stated above, when higher levels of statistical power are achieved, the lower the chances are that this study will make a type II error. The Table 5.1 has been colour coded according to the power achieved, green represents that it has met the 80% threshold, amber represents close to the threshold of 70%+, and red highlights the models which have not achieved suitable statistical power. As highlighted in Table 5.1, generally the statistical power across the analysis was good, especially within the later models such as model 3 and 4. An area for concern would be the Ad Recall measure, which is very low in model 1 in particular. Therefore, within the discussion chapter of this thesis, the researcher must proceed with caution. As such will not be able to make confident claims that no effect is found in the models highlighted red.

Power is decided by three factors, effect size, alpha level, and the sample size (Field, 2014; Hair et al., 2014; Pallant, 2016). As the alpha level is already set at the convention level of .05, it should be considered how the other elements may have impacted upon the power of the models. Sample size is a double edged sword, too small a sample will result in not finding an effect, whilst having too large a sample will result in over sensitivity (always finding an effect) (Hair et al., 2014). Therefore, increasing sample size to increase power to find an effect is not always advised,

assessing the effect size however provides a good indication as to why the power might also be low. As will be highlighted within the hypothesis testing section of this chapter, the effect size (R^2) within the models were smaller within the earlier models, and therefore this gives an indication as to why the power of these models is low. This finding is most important when drawing conclusions in relation to the data, and therefore will be discussed further within the discussion and conclusion chapter of this thesis.

5.3   Data Analysis

5.3.1   Descriptive Analysis of Data

This analysis will start with an assessment of the descriptive statistics as this will allow the researcher to uncover general patterns and trends, and should always be used as the first step in analysing data collected from an experiment (Cunningham & Wallraven, 2012). Utilisation of normative information such as means and variances; provides a useful reference point that can be used across different sample groups (Bearden et al., 2011). Good descriptive analysis will allow the researcher to also identify outliers or issues that may impact upon the use of statistical tests, which will be important when looking to see if the data meets the assumptions needed for certain statistical analysis. Through understanding what the data looks like, it is possible to make more meaningful observations in regards to the findings that have been generated as part of this study.

5.3.1.1   Demographics

Looking at the data collected in relation to gender, the sample that this study has recruited demonstrates an overall split of 61% males and 39% females. Utilising data from the ONS on the general UK population, the split between men and women aged 18-35 which suits the demographic for this study is considered be fairly even at 51% males and 49% females (ONS, 2016). Therefore, this means that there is not an exact match between those aged 18-35 in the UK population, and the sample recruited as part of this study. Further investigation is therefore needed to understand how this split can be observed within each condition, as significant lack of representation may have an impact upon the findings. As identified in Table 5.2 it is clear to see that greater levels of unequal representation are only prevalent within three of the eight conditions, these are the; Constant, Predictability, and Choice*Information*Predictability conditions.

Table 5.2 - Gender Split across Sample and Conditions

	Male	Female
Constant/Control (C/C)	74.1%	25.9%
C (Choice)	57.1%	42.9%
I (Information)	58.6%	41.4%
P (Predictability)	70.3%	29.7%
C*I (Choice and Information)	46.7%	53.3%
C*P (Choice and Predictability)	44.4%	55.6%
I*P (Information and Predictability)	58.6%	41.4%
C*I*P (Choice, Information, and Predictability)	73.1%	26.9%
Total	60.9%	39.1%

A reason for the less representative sample, may be the result of the recruitment technique adopted within the study. An argument could be made that at the time of recruiting the sample, more men were prevalent in the areas that the researcher was targeting. Looking towards the research for an indication as to why this may be, indicated that given the researcher is female, men are more likely to offer their help due to social role theory of being heroic and chivalrous (Eagly & Crowley, 1986). Looking towards the breakdown of students across the university, there is a 57% male and 43% female split (University of Portsmouth, 2018), and as such the findings in Table 5.2 are not for the most part to dissimilar to the student population at the university.

In relation to the distribution within the specific conditions, as the participants were randomly assigned to the conditions by software this was outside of the researcher's control and any interference could have led to bias within the data. In order to understand the effect this may have upon the data the Mann-Whitney U test was used to identify whether there was a difference in responses across the two genders. This test was used as opposed to an independent samples T test due to the unequal sample sizes between males and females, therefore a non-parametric test

was better suited to the data (Fink, 2017). The test was undertaken on the construct measure (Mobile Advertising Effectiveness) and the three dimension measures (Ad Attitude, Brand Attitude, and Purchase Intention) along with Ad Recall. The subsequent analysis identified non significance (P values = .254, .481, .284, .226, and .501), this indicates there was no difference in responses between males and females. Further analysis was also undertaken using the Kruskall-Wallis test across each of the conditions by splitting the data file in SPSS. This confirmed that there were no differences across genders as shown in Table 5.3.

Table 5.3 - P Values for Kruskall-Wallis Test Comparing Responses Based on Gender

	MAE	Ad Att	Brand Att	Purch Int	Ad Recall
C/C	.219	.464	.607	.400	.198
C	.732	.909	.568	.599	.280
I	.303	.283	.325	.586	.845
P	.731	.781	.857	.832	.961
C*I	.287	.897	.956	.056	.564
C*P	.719	.486	.200	.548	.829
I*P	.679	.744	.471	.245	.325
C*I*P	.135	.073	.152	.735	.083

It was therefore concluded that given the results of these tests that the lack of representation in the sample in relation to gender would not have an impact upon the data, as men and women both responded in a similar fashion. This will be further tested within the hypotheses section of this thesis, whereby gender is used as a predictor variable in the hierarchical multiple regression analysis.

An important area to look at when evaluating the demographic breakdown of the data is to look at the dispersion of age across the sample. Originally within the pilot study respondents were put into age categories, however within the main run of the experiment it was decided to ask for the exact age of the participant to allow for greater understanding of the data. The most common age within the sample was 21 years old, with a great deal of the age frequencies clustered between 19 and 23 as shown in Figure 5.2.
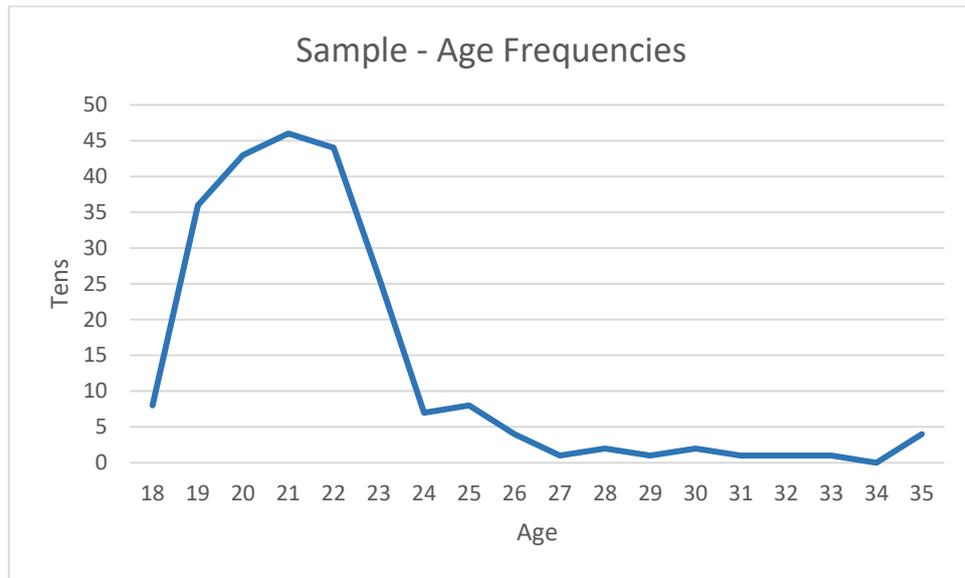
Figure 5.2 - Age Frequencies of Sample

Given the researcher recruited the sample on The University of Portsmouth premises, it was no surprise to see these frequencies within the data given the majority of students are between the ages of 18 and 23 years of age. One age group which was unrepresented within the sample was 34, with a general lack of representation as age increases. This study however is focusing specifically on millennials, so although there may be some lack of representation from older millennials there is an argument that given they are all millennials there is still some level of homogeneity. Utilising the data provided by the ONS based on population data for 2014, it was possible to extrapolate the data to provide an estimation of how many individuals were aged between 18-35 in 2018 (ONS, 2016), which can be seen in Figure 5.3. From this it was possible to compare the sample's age frequencies with that of the UK population as of 2018.
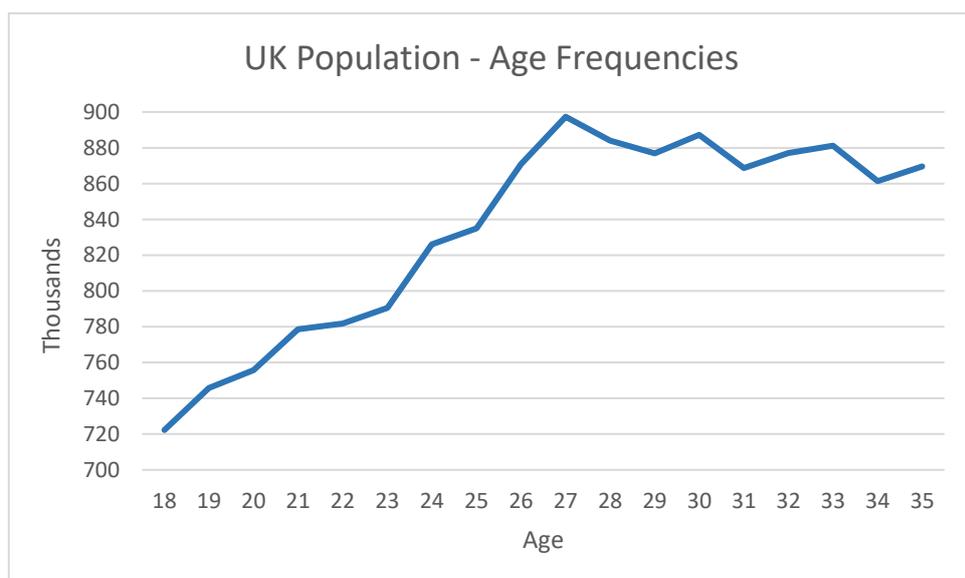
Figure 5.3 - Age Frequencies of UK Population (ONS 2016)

When the sample is compared to the UK population in relation to age frequencies, it is clear to see that the sample differs in relation to the older ages. This was expected given the recruitment technique, as students below the age of 25 make up the greatest number of individuals on the university's campus at 91% (University of Portsmouth, 2018). When the sample is compared to the overall university student cohort at Portsmouth, the recruited sample proves to be fairly representative with an 89% representation of those aged 25 and under. Given the lack of representation in relation to the UK population, it is important to consider the effect that this may have upon the data in relation to generalisability. In order to assess the potential impact of this, a visual inspection of a scatter plot depicting the age and Mobile Advertising Effectiveness score was used. This is shown in Figure 5.4.
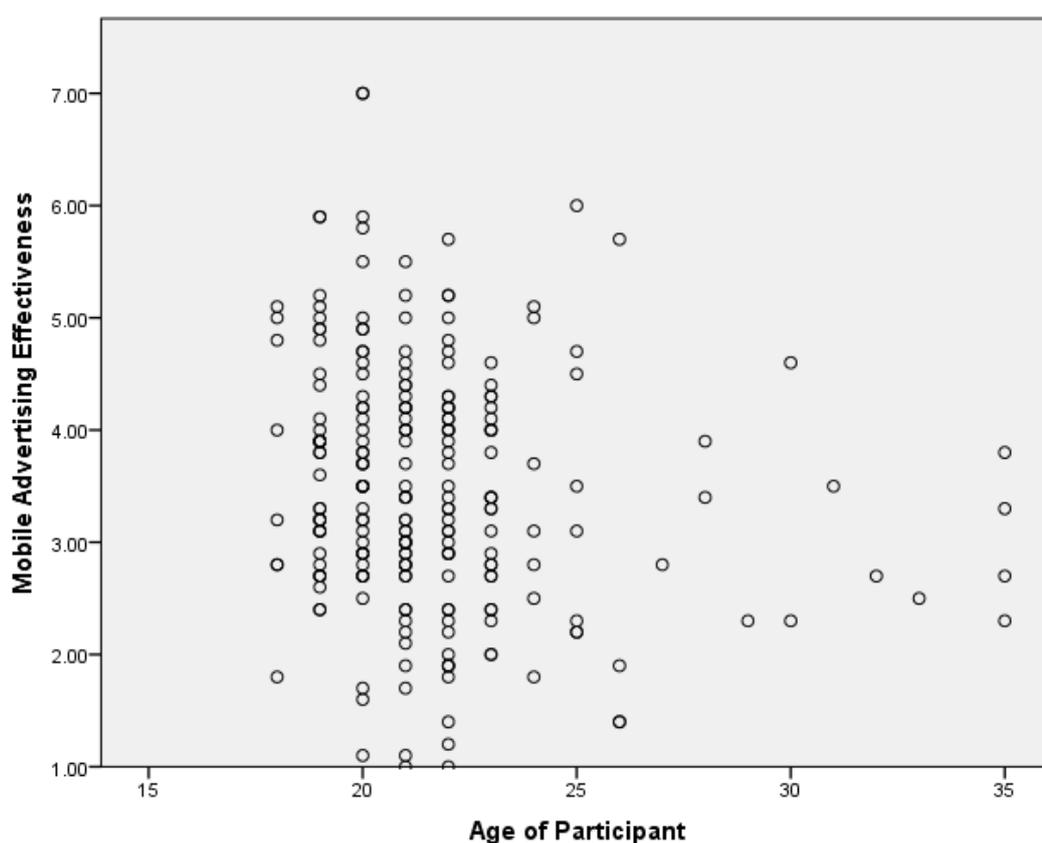
Figure 5.4 - Scatterplot (Responses for Mobile Advertising Effectiveness against Age)

It can be seen in Figure 5.4 that as age increase the variance in responses slightly reduced. In general, there were no obvious patterns or signs for concerns in relation to age, however it is always important to have confidence in the sample and as such further analysis was undertaken. In order to provide greater clarity, age was coded as nominal variable but the ages were kept distinct and none of the ages were grouped together. Due to the uneven frequencies across the

ages, a Mann-Whitney U test was used across all of the measures (Fink, 2017). The results indicated that there were no significant differences between the ages and Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, Purchase Intention, and Ad Recall (P = .593, .184, .923, .692, and .540). To further analyse the differences in groups the data was split and analysis across each condition was undertaken utilising the Mann-Whitney U test. This analysis indicated that there were statistically different answers in the Choice*Information condition for the Purchase Intention measure P=.037. Although this is useful, the researcher deemed the lack of representation for older ages in each condition limiting, therefore the impact of age will be further assessed within the hypothesis section of this thesis to see whether the findings of the Mann-Whitney U test can be withheld.

5.3.1.2   Measures of Central Tendency, Dispersion and Skew

To further explore the data, it is important to consider measures such as central tendency, skewness, and kurtosis, as this will help to create a better understanding of how the data looks. In order to do this in a systematic way, the analysis is broken down into four key parts;

1. Construct measure (Mobile Advertising Effectiveness)
2. Dimension measures (Ad Attitude, Brand Attitude, and Purchase Intention)
3. Ad Recall measure
4. Items (questions asked)

As the overall dimension measures and the Mobile Advertising Effectiveness construct measure are an average score of the individual items, it should be noted that repetition of points may exist as the analysis progresses.

5.3.1.2.1   Construct (Mobile Advertising Effectiveness)

The main dependent variable within the study is Mobile Advertising Effectiveness, and therefore in order answer the research question it is important to look at this measure first. Table 5.4 shows the mean, standard deviation, skewness, kurtosis for this measure.

Mobile Advertising Effectiveness	Mean	St Dev	Skewness	Kurtosis
Constant	3.4519	0.83176	.754	.006
Choice	3.5964	1.12200	-.017	-.962
Information	3.3655	1.13083	.514	-.084
Predictability	3.2081	1.05892	.469	.095
Choice*Information	3.6700	0.87932	-.242	1.544
Choice*Predictability	3.2556	1.06819	-.343	-.408
Information*Predictability	4.0586	1.15434	.542	.011
Choice*Information*Predictability	3.3500	1.19373	.456	-.215

Note: *Interaction condition

In general, across all conditions the standard deviation is small, with the Constant and Choice*Information conditions in particular showing standard deviations of less than 1. This indicates that the participants were consistent in their responses to the questions. There is little consistency across the conditions in relation to skew with the Constant showing a value of .754 and Choice being closest to 0 at -.017. However, the skewness measure can be highly sensitive as the size of the data set increases and therefore it is always valuable to inspect the histogram to confirm findings (Pallant, 2016). A visual inspection of the histograms highlighted that across all conditions the weighting of responses fell towards the lower end of the X axis. This indicates that in general participant's Mobile Advertising Effectiveness scores were more negative. This was consistent with expectations as highlighted throughout the literature chapter, it is as unlikely that participants would respond in an overly positive manner due to mobile advertisements often being annoying and frustrating.

Looking at the overall Mobile Advertising Effectiveness measure for all conditions combined through the use of a visual inspection of the histogram as shown in Figure 5.5, highlights normal distribution.
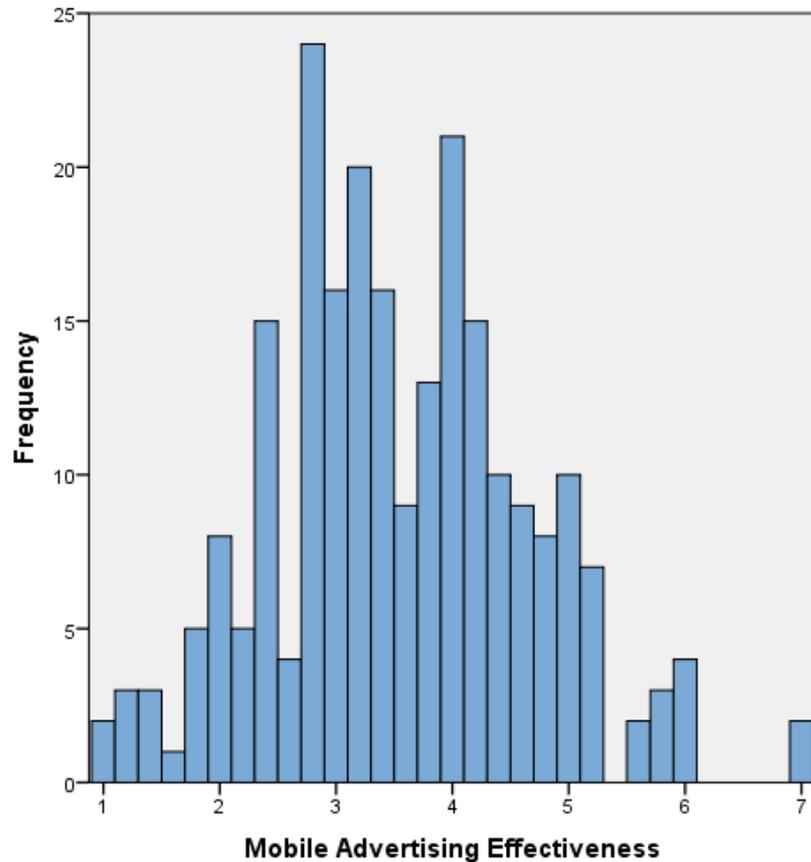
Figure 5.5 - Overall Mobile Advertising Effectiveness Distribution (across all conditions)

Normal distribution will be important later on within this chapter when the assumptions for the hierarchical multiple regression must be met. What must be noted at this point, is that despite there being some level of skew at the condition level, with larger data sets multiple regression remains strong even with slight violations to the normality assumption (Pallant, 2016).

5.3.1.2.2   Dimensions (Ad Attitude, Brand Attitude, and Purchase Intention)

Having assessed the construct measure Mobile Advertising Effectiveness, it is possible to further break down this measure into the dimensions which are Ad Attitude, Brand Attitude, Purchase Intention. To further explore these dimensions, the same measures will be assessed which are mean, standard deviation, skewness, and kurtosis.

Ad Attitude

For the Ad Attitude measure, there does not seem to be a particularly obvious or distinctive pattern in relation to the means. The Information*Predictability condition seems to hold a higher mean, but whether this is statistically significant would need to be confirmed. Table 5.5 outlines

the means, standard deviations, and skewness values across each of the conditions for the Ad Attitude measure.

Ad Attitude	Mean	St Dev	Skewness	Kurtosis
Constant	3.1852	1.00860	-.031	-.976
Choice	3.4554	1.35067	-.415	-1.113
Information	3.1724	1.29060	.079	.701
Predictability	3.2770	1.31205	.228	-.236
Choice*Information	3.6667	1.03252	-.186	.498
Choice*Predictability	3.4444	1.29409	-.315	-.552
Information*Predictability	4.1034	1.34383	-.056	.170
Choice*Information*Predictability	3.3558	1.53488	.055	-.624

*Note: *Interaction condition*

Looking at Table 5.5, the mean and standard deviations across the conditions seem fairly consistent of being around the value of 1 – 1.5. This again indicates that participants within the study have answered in a consistent manner and indicates similarity across the conditions. All of the skew measures are fairly low which would imply normal distribution, however as stated previously the skew measure should be backed up via visually supporting data.

Looking at the overall distribution of the Ad Attitude measure as shown in Figure 5.6, it is clear to see that there is still a slight positive skew to the data.
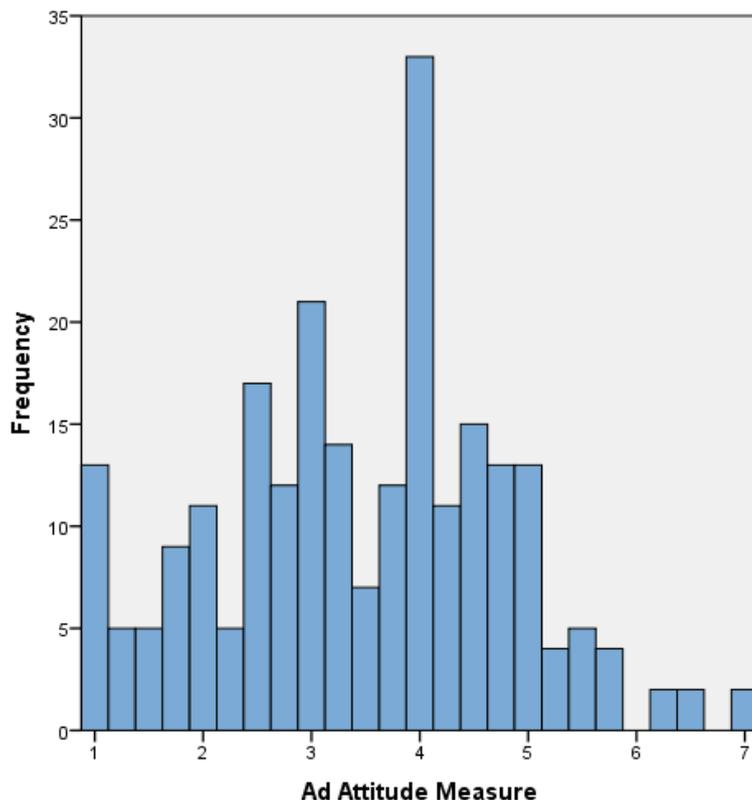
This is further evidenced when the measure is broken down by each condition, as shown in Figure 5.7, where most of the conditions are positively skewed as responses are clustered towards the negative end of the Likert scale. Figure 5.7 provides a useful comparative overview of how the distribution looks across each condition.
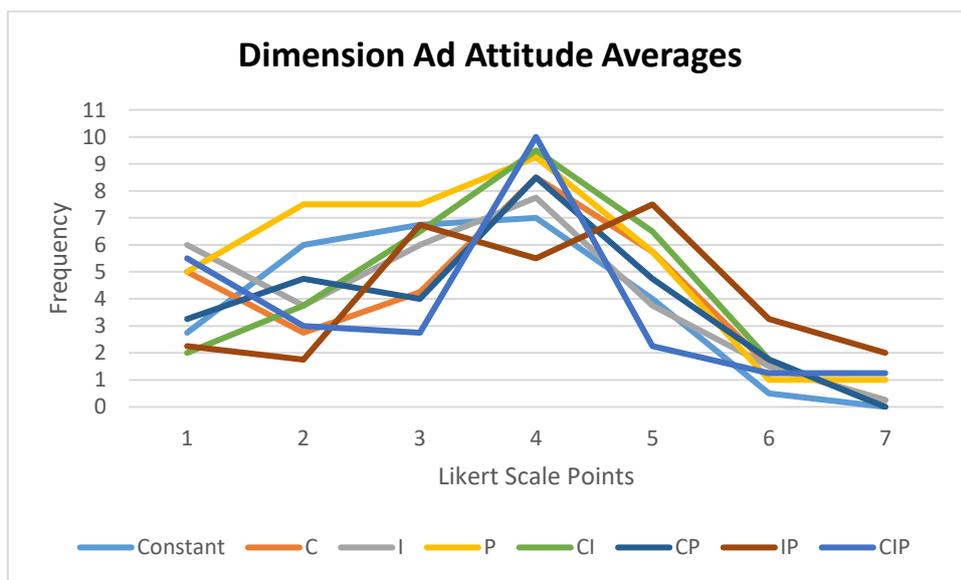
Figure 5.7 provides an average frequency for each Likert scale data point based upon all four Ad Attitude items. This gives a holistic view of comparable distribution across the conditions for the

Ad Attitude measure as a whole, however this figure does not show every data point for every participant for every question. This figure provides a visual representation of the way the distribution looks across each of the conditions in a way that is comparable. The figure indicates that participants feel negative in relation to their attitude towards the ad. Information*Predictability is the only condition in which shows some type of normal distribution, however this distribution does not peak at the middle, but peaks either side of the neutral point in a bimodal distribution. As stated earlier, given the subject that is being tested within this study there was an expectation that the data would be skewed.

Brand Attitude

The most interesting finding when looking at the Brand Attitude measures highlighted in Table 5.6 relates to the very small standard deviations with an average of 0.93 and slightly inflated means. When comparing this to the previous measures of Mobile Advertising Effectiveness and Ad Attitude, it is apparent that the means for Brand Attitude are higher.

Table 5.6 - Brand Attitude (Mean, St Dev, Skew, and Kurtosis)

Brand Attitude	Mean	St Dev	Skewness	Kurtosis
Constant	4.0988	0.59063	.991	1.416
Choice	4.3214	0.86772	.680	.743
Information	3.9195	1.05656	.353	-.072
Predictability	3.7477	0.97311	-.828	1.182
Choice*Information	4.2889	0.78165	-.791	2.880
Choice*Predictability	3.7284	0.96537	-1.512	2.201
Information*Predictability	4.4598	1.03285	.438	.409
Choice*Information*Predictability	3.8846	1.15832	-.626	.217

Note: *Interaction condition

As the tables indicates there are some high kurtosis scores which indicates that the distribution of the data will be highly peaked. Figure 5.8 highlights the overall distribution for the Ad Attitude measure.
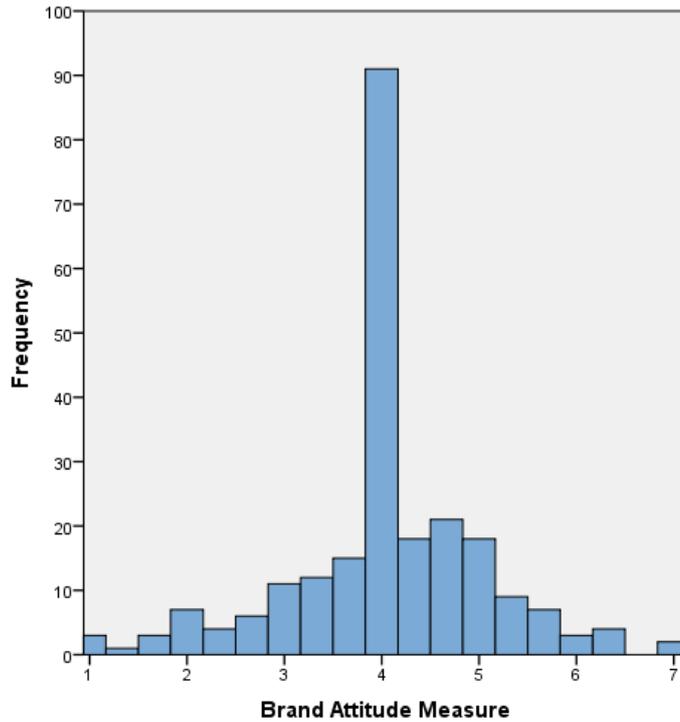
Figure 5.8 - Overall Brand Attitude Distribution

As shown in Figure 5.8 there is a significant peak at the neutral point on the Likert scale, with a few participants answering across the entire scale. Looking more closely at each condition reiterates the same findings as above with some slight variations.
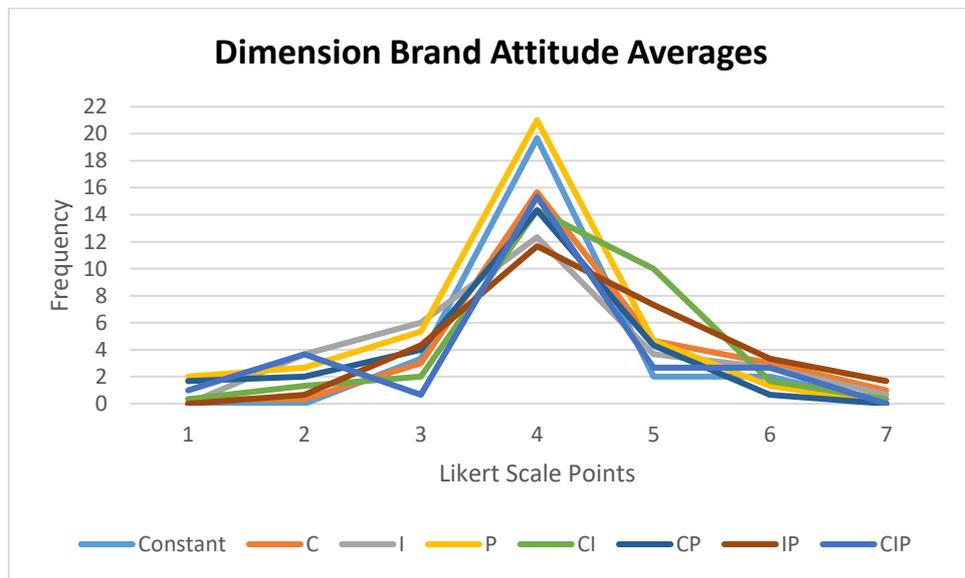
Figure 5.9 - Brand Attitude Average Frequencies for Each Likert Point across Conditions

Similar to the Figure 5.7 for Ad Attitude, Figure 5.9 provides the same type of data but within the context of Brand Attitude. As evidenced in Figure 5.9, the data across all of the conditions have a highly condensed peak which indicates that the majority of the responses were similar, and that

the standard deviation is low. The lines in which depict each individual condition follow a similar pattern and are all close together, this again reiterates that the participants within this study have responded to this measure in a very similar way. The reason as to why this particular measure shows such a small standard deviation and a neutral mean is likely due to the fact a fictional brand was used within the study. As mentioned within the research methodology chapter, this was undertaken to reduce the level of brand bias that may skew the results; the issue here is that neutral response bias is evident within the data set. It is likely that users have responded neutrally to these measures due to unfamiliarity with the brand (Gao et al., 2009; Keller et al., 1998; Martí-Parreño et al., 2016). It could be argued that the findings are therefore only applicable to fictional brands as opposed to real brand contexts, and as such this will need to be considered within the limitations section of this thesis.

Purchase Intention

Assessing the Purchase Intention measure in more depth, there seems to consistency in regards to the means across the conditions. The three-way interaction condition Choice*Information*Predictability, a visual comparison of the mean looks to be lower than the other conditions however.

Table 5.7 - Purchase Intention (Mean, St Dev, Skew, and Kurtosis)

Purchase Intention	Mean	St Dev	Skewness	Kurtosis
Constant	3.1605	1.55077	.387	-.833
Choice	3.0595	1.62555	.218	-1.115
Information	3.0690	1.51547	.213	-.961
Predictability	2.5766	1.52277	.675	-1.007
Choice*Information	3.0556	1.36761	-.003	-.246
Choice*Predictability	2.5309	1.47416	.553	-.849
Information*Predictability	3.5977	1.59707	.181	-.286
Choice*Information*Predictability	2.8077	1.39259	.193	-1.131

Note: *Interaction condition

The interesting finding to note from Table 5.7 in relation to Purchase Intention is the lower means and fairly high standard deviations. Three of the eight conditions had means in the range of 2

whilst other conditions reached highs of around 3.6, this indicates that generally for the Purchase Intention measure participants responded more negatively. The variance between answers however, were greater which indicates that the data will be more widely dispersed. In relation to skew, there seems to be some conditions in which show greater levels of positive skew, therefore this means that the data will fall to the lower end of the Likert scale. To confirm this finding a visual inspection of the histogram for the overall Purchase Intention measure was undertaken as shown in Figure 5.10.
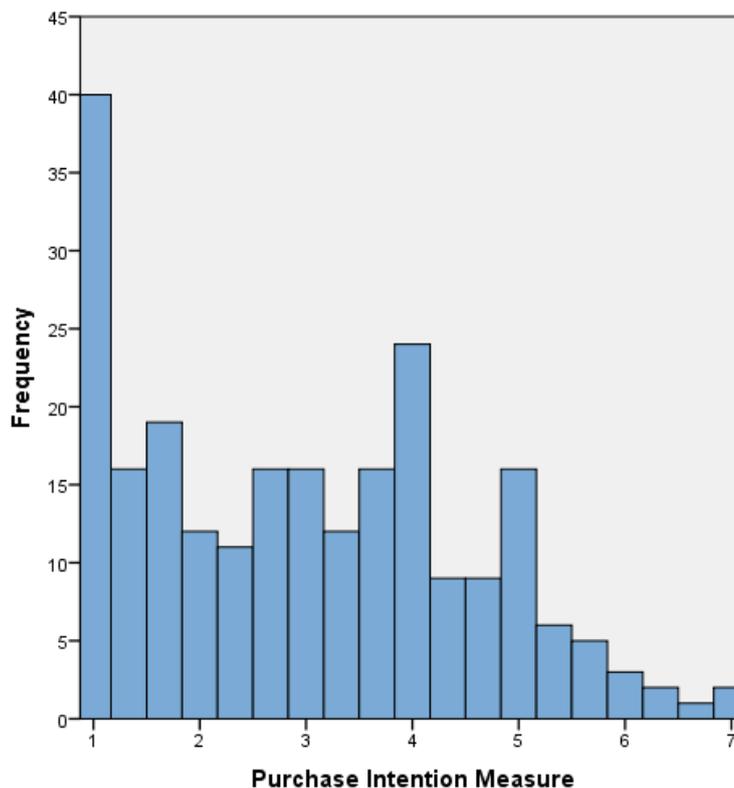
Figure 5.10 - Overall Purchase Intention Distribution

As expected the histogram depicts a fairly high level of positive skew with many of the participants responding around the point 1 on the Likert scale. This indicates that most of the participants in the study generally had a very low intention to purchase. However, this may not continue to exist within each of the conditions, therefore to explore this further, the average frequency for each Likert scale data point is shown in Figure 5.11.
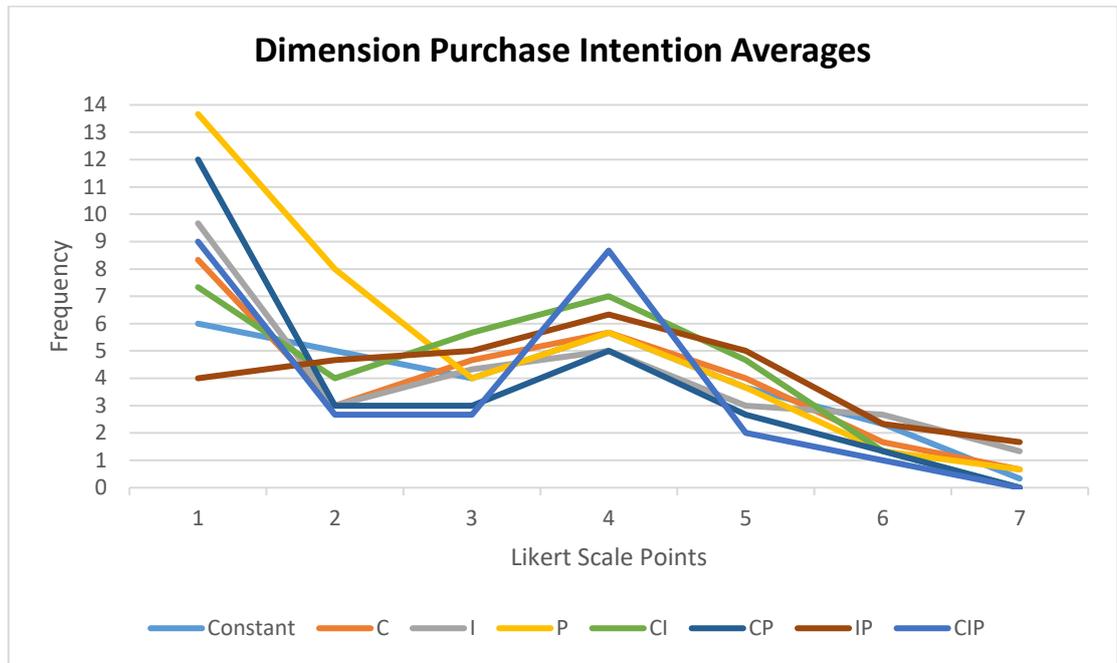
Figure 5.11 - Purchase Intention Average Frequencies for Each Likert Point across Conditions

Similar to the Figure 5.7 for Ad Attitude, Figure 5.11 provides the same type of data but within the context of Purchase Intention. As shown in Figure 5.11, although there does seem to be a pattern across all of the conditions there are also some differences. For example, the Information*Predictability condition shows a very flat distribution. With the Choice*Information*Predictability condition showing a high level of kurtosis and a bimodal distribution.

5.3.1.2.3   Items

Having already analysed the main construct measure and the dimensions in which create this measure, it is also valuable to assess the descriptive statistics for each item. In order to achieve this in a systematic way the items will be discussed in relation to their grouped dimensions which are Ad Attitude, Brand Attitude, and Purchase Intention.

Ad Attitude

As shown in Table 5.8 all four of the items used to measure Ad Attitude are identified, along with the respective means, standard deviations, skewness, and kurtosis values for each condition.

Table 5.8 - Ad Attitude Items (Mean, St Dev, Skew, and Kurtosis)

	Condition/Interactions							
	Constant	**C**	**I**	**P**	**C*I**	**C*P**	**I*P**	**C*I*P**
Ad Att 1	3.2963	3.7500	3.1379	3.4595	3.9000	3.5926	4.2759	3.5385
	1.17063	1.43049	1.57490	1.57400	1.15520	1.42125	1.57880	1.77157
	-.320	-.261	-.067	.260	-.512	-.593	-.140	.212
	-.653	.404	-1.236	-.107	.471	-.421	-.046	-.377
Ad Att 2	3.1852	3.6429	3.1034	3.4054	3.9333	3.5926	4.0690	3.5000
	1.03912	1.52058	1.31868	1.38362	1.22990	1.30853	1.46217	1.67929
	-.177	-.361	-.203	-.059	-.223	-.385	-.422	-.055
	-.773	-.593	-.498	-.665	-.027	-.502	-.138	-.521
Ad Att 3	3.0370	3.3214	3.0690	3.1892	3.3333	3.2593	3.7931	3.3077
	1.55617	1.67892	1.68885	1.39120	1.37297	1.43024	1.65571	1.76112
	.265	-.095	.410	.100	-.397	.102	-.153	.299
	-.811	-1.349	-.589	-1.050	-.528	-.716	-.693	-.344
Ad Att 4	3.2222	3.1071	3.3793	3.0541	3.5000	3.3333	4.2759	3.0769
	1.33973	1.52362	1.56784	1.63207	1.35824	1.64083	1.66683	1.52113
	.079	-.261	-.029	.597	.044	.094	.025	-.066
	-1.304	-1.436	-.850	-.088	-.418	-1.209	-.914	-1.139
*Note: Mean / Standard Deviation / Skewness / Kurtosis, Interactions**								

As evidenced within Table 5.8, the means and standard deviations across all four measures in all conditions show consistency with values comfortably sitting within the range of 1. This indicates that participants showed the same level of variance across all four questions that were asked.

In order to understand more about these individual measures, it is important to look at the distribution through a visual depiction, it is here that the consistencies are reiterated with only slight differences in distribution across the four measures.
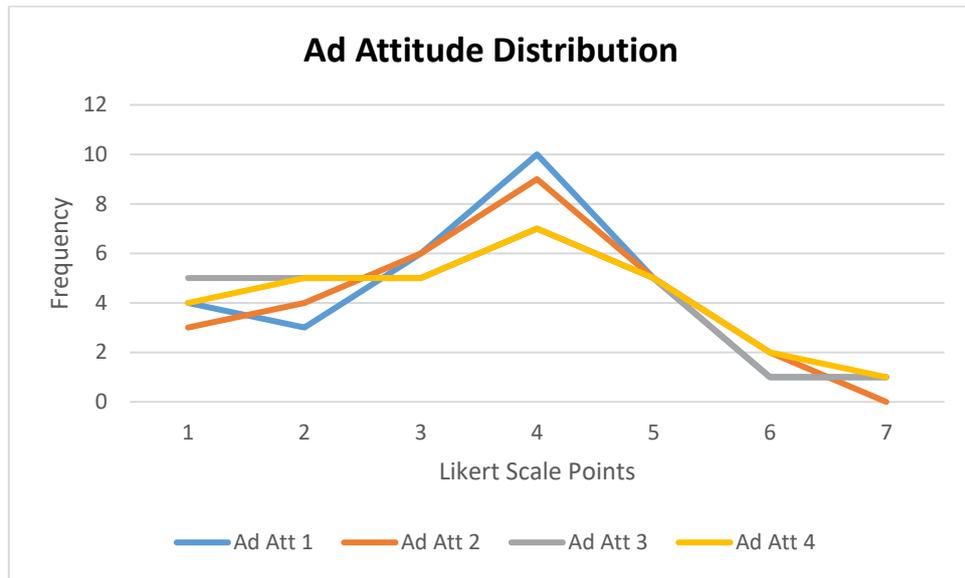
Figure 5.12 - Ad Attitude Distribution of Items

As evidenced within Figure 5.12, it is clear to see a pattern in terms of the distribution of items whereby the questions are all answered in a similar manner. Distribution for Ad Att 3 and Ad Att 4 are almost identical, with Ad Att 1 and 2 demonstrating a similar mirrored pattern. This indicates that question 1 and 2 are similar in relation to responses as is 3 and 4. Items 1 and 2 look to assess the level of approve/disapprove and like/dislike which could be argued are very similar items. For example, if an individual likes an ad, then it is more likely that individual will also approve of that advert. Measure 3 and 4 look at uninteresting/interesting and unpleasing/pleasing, which again the assertion could be made that if something is interesting this is likely to be pleasing. Analysing the distribution of each individual measure in relation to each individual condition becomes much more difficult as the patterns within the data cannot always be so clearly seen. Figure 5.13 highlights the distribution of answers across the conditions for item 1 of the Ad Attitude measure.
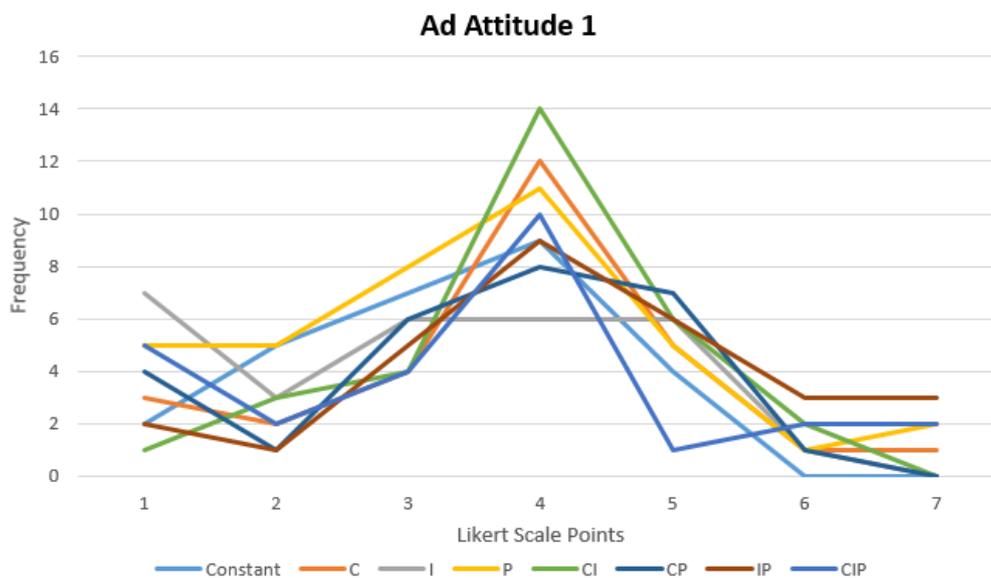
Figure 5.13 - Ad Att 1 - Distribution across Conditions

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As depicted above, the distribution although showing variation, a pattern across all of the conditions can clearly be seen. The most interesting element to note in this figure is the Information condition, which shows a flatter distribution in comparison to some of the other conditions that show higher levels of kurtosis. Across all the remaining measures, it becomes clear to see that the patterns are less obvious as shown in Figure 5.14, 5.15, and 5.16.
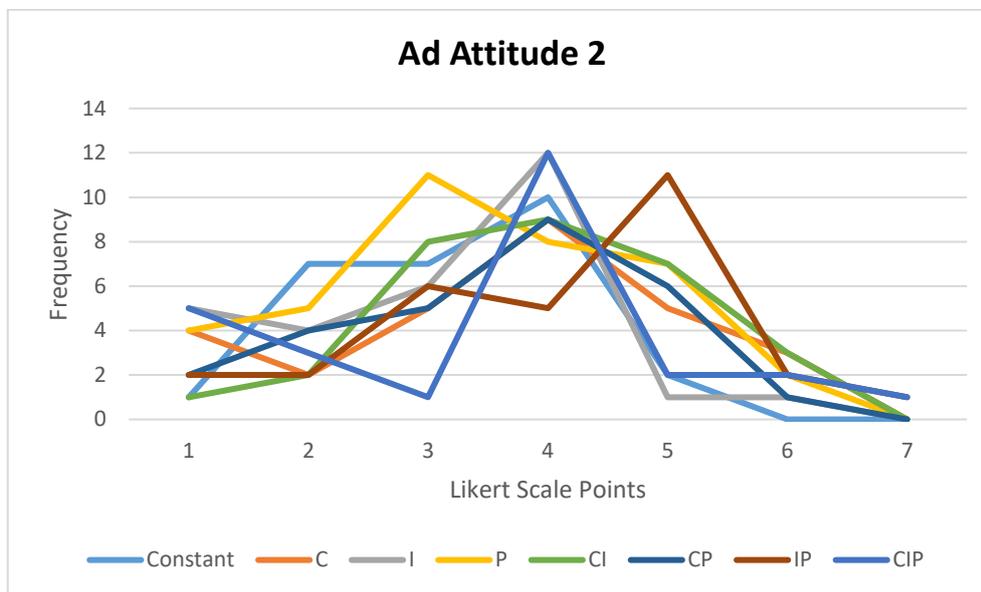
Figure 5.14 - Ad Att 2 - Distribution across Conditions

Ad Attitude 2 shows very little consistency across the conditions in relation to an overall pattern, there does however seem to be some consistency in that the peaks of the distribution fall between three and five on the Likert scale, which indicates that the majority of people fell within this range for the approve/disapprove question.

The third Ad Attitude measure as shown below again shows very little in terms of discernible patterns, with peaks in the data ranging from 2 on the X axis all the way to 5. There does however seem to be some consistency in relation to Likert point 1, where many people felt as though they did not find the advert interesting. An interesting aspect to note is the slight skew to this measure, again as mentioned previously this is expected given the nature of the topic being studied.
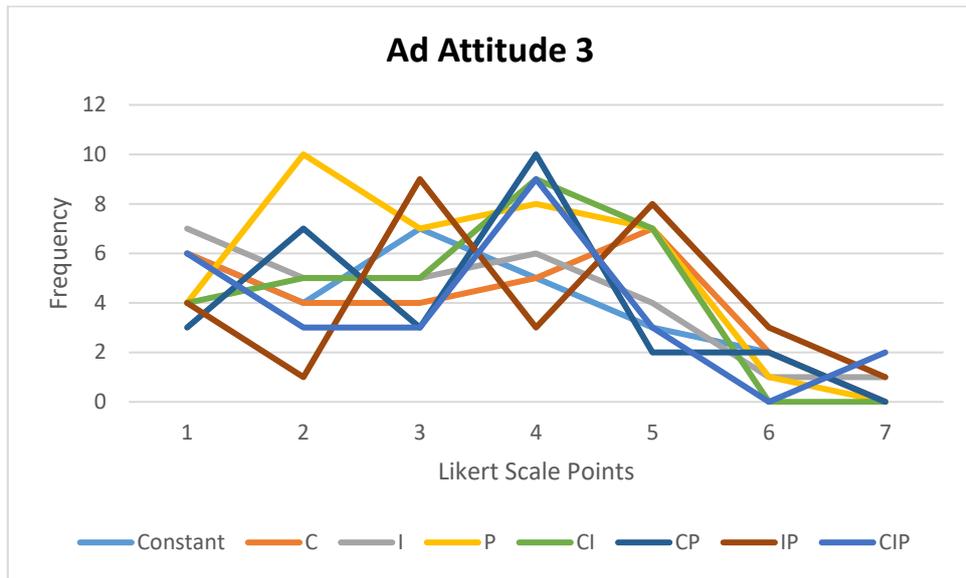
The final Ad Attitude measure shows more of a pattern as highlighted below, across four of the conditions there seems to be a consistent peak at four on the Likert scale.
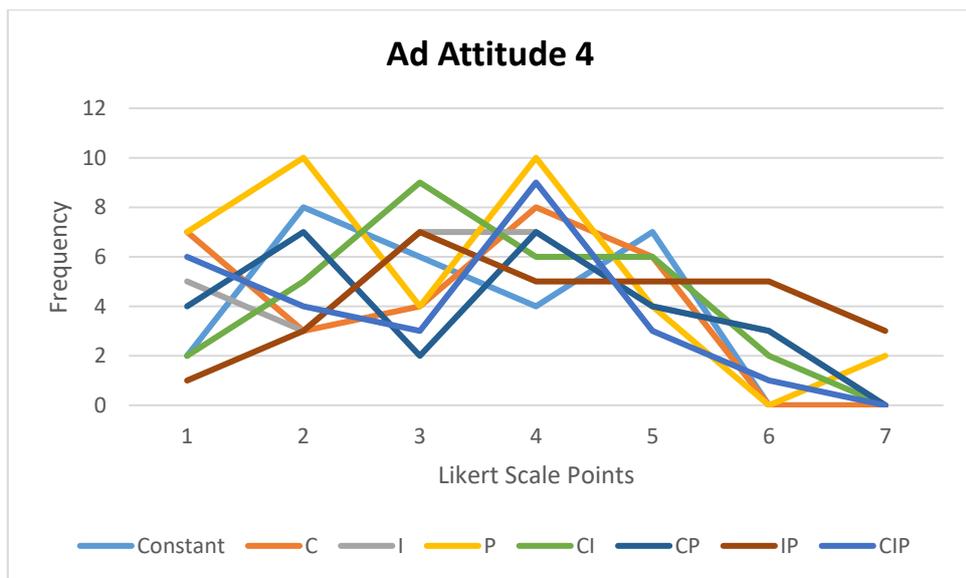
Another interesting aspect to note is the bimodal distribution of the data, this highlights that the majority of participants either hold a more unpleasing view of the ad, or a neutral view. This discrepancy in responses highlights two opposing opinions which could be potentially interesting to consider exploring with future inquiry. Again here there is a slight positive skew to the data which indicates that although the distribution is bimodal, generally views towards the ad were more unpleasant.

Brand Attitude

As shown in Table 5.9 all three of the questions used to measure Brand Attitude are identified, along with the respective means, standard deviations, skewness, and kurtosis values for each condition. As discussed previously, the Brand Attitude measure is broken down into the individual items it can be seen that the means across all three measures are consistently high with a generally low standard deviation. The constant condition however shows incredibly low standard deviations across the three variables which indicates that within this condition people are responding very similarly.

Table 5.9 - Brand Attitude Items (Mean, St Dev, Skew, and Kurtosis)

	Condition/Interactions							
	Control	**C**	**I**	**P**	**C*I**	**C*P**	**I*P**	**C*I*P**
Brand Att 1	4.0741	4.3571	3.8966	3.8108	4.1333	3.7037	4.3448	3.9231
	0.54954	1.25357	1.29131	1.12640	0.97320	1.13730	1.14255	1.05539
	1.563	.107	.419	-.716	-1.245	-.887	.334	-.279
	6.127	1.461	.179	1.112	2.144	1.280	-.037	.568
Brand Att 2	4.1481	4.2500	3.7931	3.7027	4.3333	3.7778	4.4828	3.6923
	0.81824	0.96705	1.01346	0.99624	0.95893	1.01274	1.02193	1.28901
	1.075	.248	.225	-.955	.009	-1.437	.589	-.949
	1.301	.434	.326	2.114	1.698	2.706	-.027	.555
Brand Att 3	4.0741	4.3571	4.0690	3.7297	4.4000	3.7037	4.5517	4.0385
	0.72991	0.91142	1.27982	1.09668	0.96847	1.17063	1.24172	1.28002
	1.165	1.090	.302	-.761	-.430	-.456	.354	-.077
	2.478	1.652	-.313	.860	1.599	-.022	.065	-.342
*Note: Mean / Standard Deviation / Skewness / Kurtosis, Interactions**								

This is further reflected when looking at the distribution of the Brand Attitude dimensions, as highlighted in Figure 5.17.
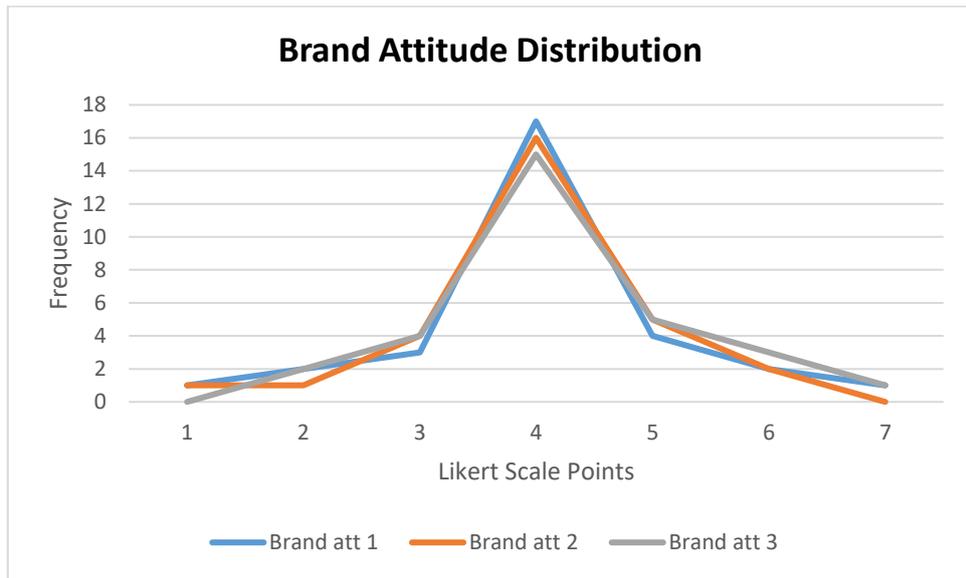
Figure 5.17 - Brand Attitude Distribution of Items

All of the items for the Brand Attitude measure show little to no skew, which indicates normal distribution. There are however high levels of kurtosis present as mentioned previously, this was expected by the researcher for the reasons stated earlier in relation to the use of a fictional brand.

In order to understand more about the distribution of each condition, each Brand Attitude item was plotted on a line graph (Figure 5.18, 5.19, and 5.20). As shown in Table 5.9, it can be seen that the kurtosis for this measure is high across all of the conditions for the first Brand Attitude measure, as there is a distinct peak at the midpoint of the Likert scale.
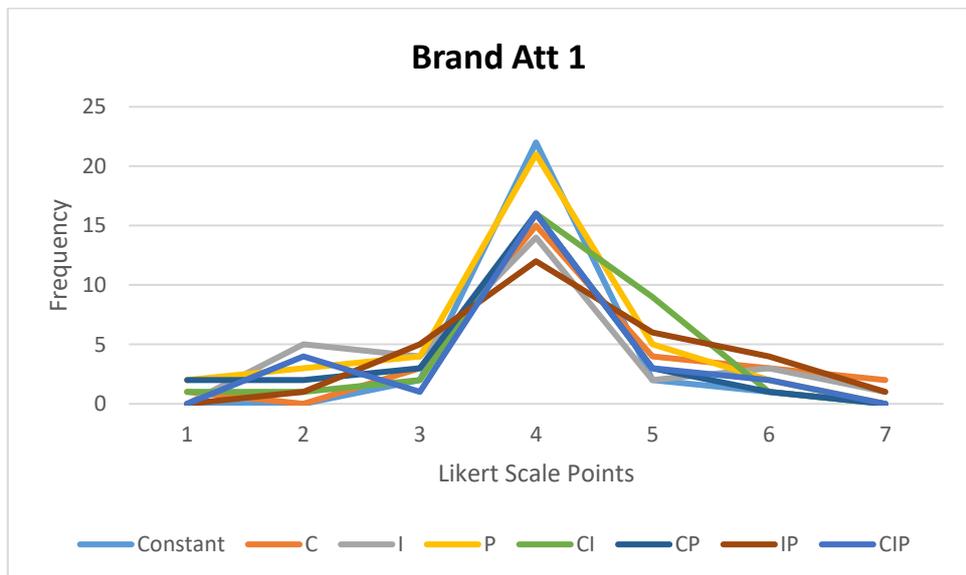
Figure 5.18 - Brand Att 1 - Distribution across Conditions

These findings are also found within the Brand Attitude 2 measure which was 'I hold favourable/unfavourable attitudes towards the brand'. As shown in Figure 5.19 the high level of kurtosis is still apparent in all conditions with the exception of Choice*Information. The kurtosis measure in this condition is flatter, which indicates that the data is more evenly spread out. Within this condition it is evident that points 4 and 5 are almost similar showing an almost bimodal distribution. This indicates that participants within this condition seemed to answer ever so slightly more positively than participants did in other conditions.
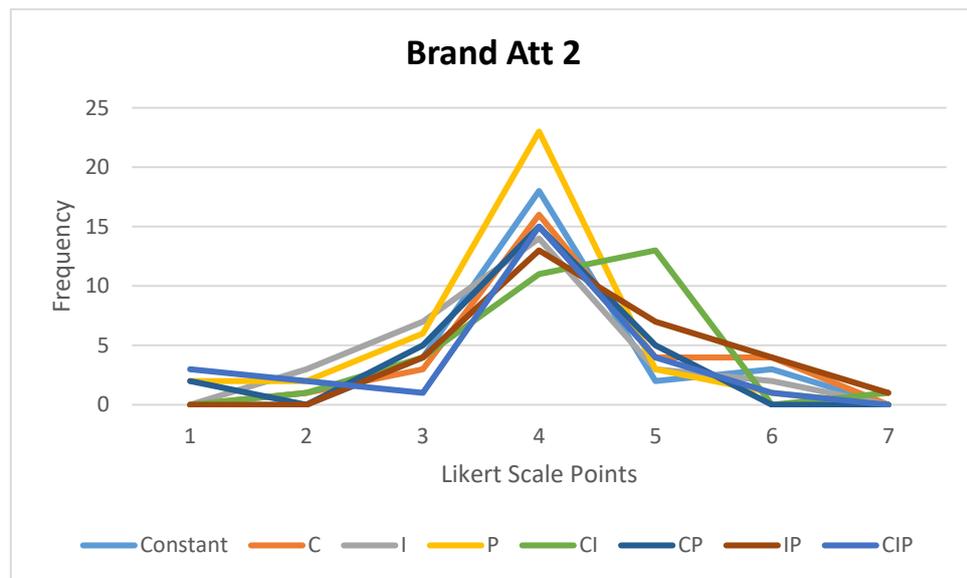
The third Brand Attitude variable measure which was 'I feel negative/positive about the Loop brand' showed lower levels of kurtosis than the previous two measures, especially within the Information and the Information*Predictability conditions.
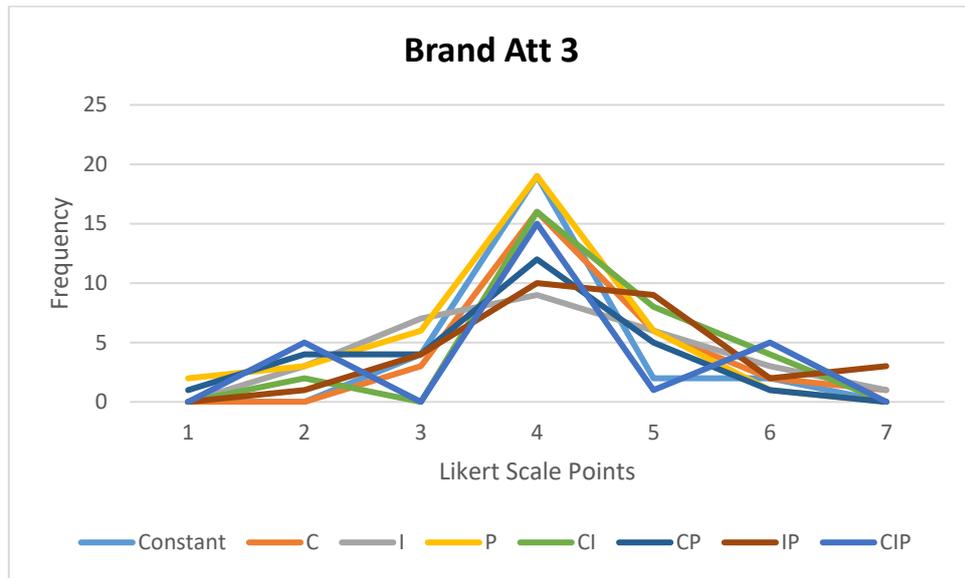
Figure 5.20 - Brand Att 3 - Distribution across Conditions

Again this highlights that the responses are more spread out, however overall the figures for all three variable measures indicates that all of the conditions showed a similar shape and little deviation in responses.

Purchase Intention

As shown in Table 5.10 all four of the Purchase Intention variable measures are identified; along with the respective means, standard deviations, skewness, and kurtosis values for each condition.

Table 5.10 - Purchase Intention Items (Mean, St Dev, Skew, and Kurtosis)

	Condition/Interactions							
	Constant	**C**	**I**	**P**	**C*I**	**C*P**	**I*P**	**C*I*P**
Purchase Intention 1	2.8889	2.8929	2.5862	2.3514	2.8667	2.1111	3.3448	2.5000
	1.69464	1.89227	1.88068	1.73551	1.63440	1.47631	1.77836	1.52971
	.392	.519	.790	1.040	.280	.956	.540	.436
	-1.160	-.910	-.845	-.011	-.695	-.606	-.575	-1.059
Purchase Intention 2	3.1481	2.8571	3.1034	2.5405	2.9000	2.5556	3.5172	2.6538
	1.65724	1.55669	1.93363	1.57400	1.56139	1.69464	1.61733	1.64784
	.020	.255	.480	.734	.177	.460	.103	.315
	-1.213	-1.097	-.878	-.606	-.739	-1.321	-.569	-1.362

Purchase Intention 3	3.4444	3.4286	3.5172	2.8378	3.4000	2.9259	3.9310	3.2692
	1.69464	1.75179	1.84431	1.62470	1.42877	1.73041	1.75114	1.48479
	.359	.039	.191	.687	-.240	.411	-.187	-.265
	-.773	-.895	-.766	-.318	-.581	-1.074	-.675	-.943
Note: Mean / Standard Deviation / Skewness / Kurtosis, Interactions*								

The interesting aspects to note from the table shown above in particular is the difference in means across all three Purchase Intention measures. Purchase intention item 1 was consistently low across all conditions with the only exception being the Information*Predictability condition which managed to attain a mean of over 3. This measured asked participants "It is very unlikely/likely that I will pay for the Loop music streaming service". Item 2 and 3 "I will not/will pay for Loop next time I am looking for a music streaming service" and "I definitely will not/will try the Loop music streaming service" respectively. The reason the first measure may be so low is because the item highlights some level of immediacy, whereas item 2 relates to the next time a user needs a service, and item 3 relates to trying, not necessarily purchasing the service. When inspecting the distribution of each item however (Figure 5.21), it is clear to see that the data is positively skewed. All of the items seem to follow a similar pattern with the peak of the distribution being towards the lower end of the axis, with the exception of measure three, which show a fairly flat distribution throughout with the peak at the neutral point on the scale.
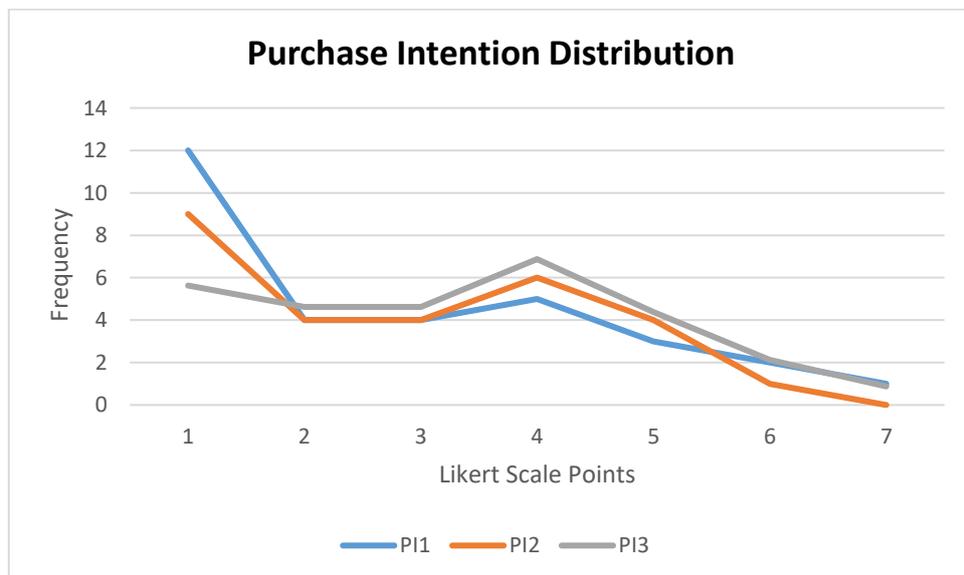
Figure 5.21 - Purchase Intention Distribution of Items

Looking more closely at Purchase Intention item 1 in Figure 5.22 it is clear to see this positive skew is evident again. The reason for this is that some people may already own a music subscription, and therefore not want to pay for another service and as such responded negatively to this

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question. Some people may also not own one, or be looking for a new one which is perhaps why there was also an equal amount of neutral responses in some conditions.
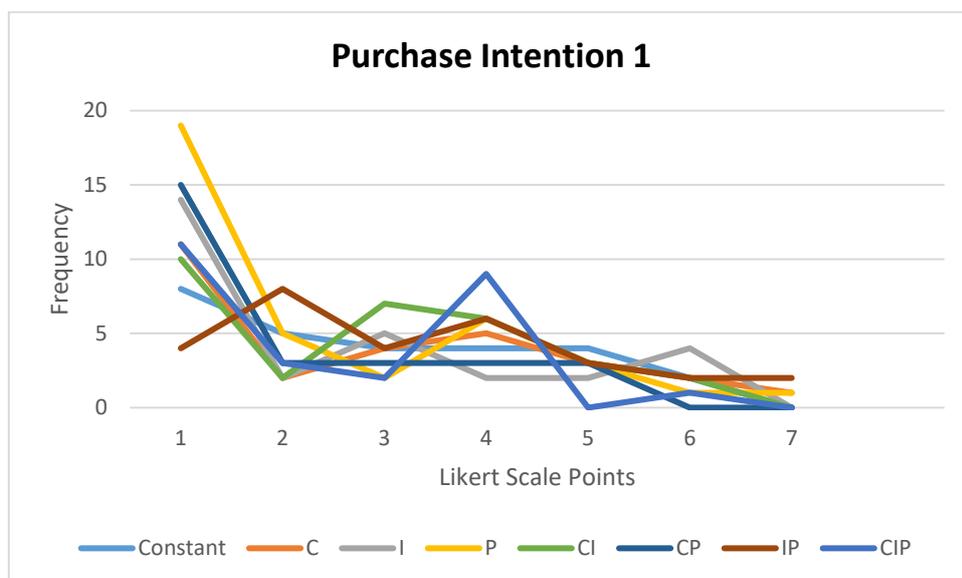
Figure 5.22 - Purchase Intention 1 - Distribution across Conditions

Generally, for the second Purchase Intention measure in Figure 5.23, a similar but weaker pattern to the previous figure can be seen, this is because the question asked in relation to the next time the respondent is looking for a music subscription service, would they try Loop? Given that the question indicates the participants would be in a scenario where they were seeking a music subscription service, it might be expected that participants would consider swapping. However, there is a strong indication of skew here as shown in the distribution with only a small peak in some of the conditions at the neutral point on the scale. This may be because as mentioned earlier key players in the market usually offer free trials, and as no free trial was offered participants may feel they would get a better deal elsewhere.
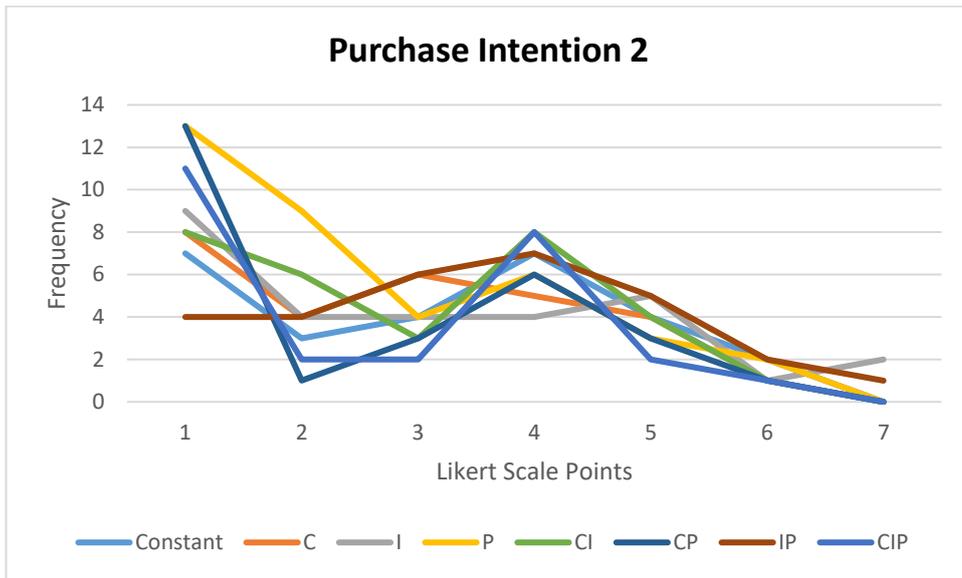
Measure three (Figure 5.24) which looks at whether or not the respondent will try the music service shows a different distribution, which doesn't really identify much in terms of a discernible pattern. This may be because this measure did not specify whether there was a cost involved with trying the service (e.g. no free trial available), and therefore this ambiguity may have resulted in people responding more sporadically.
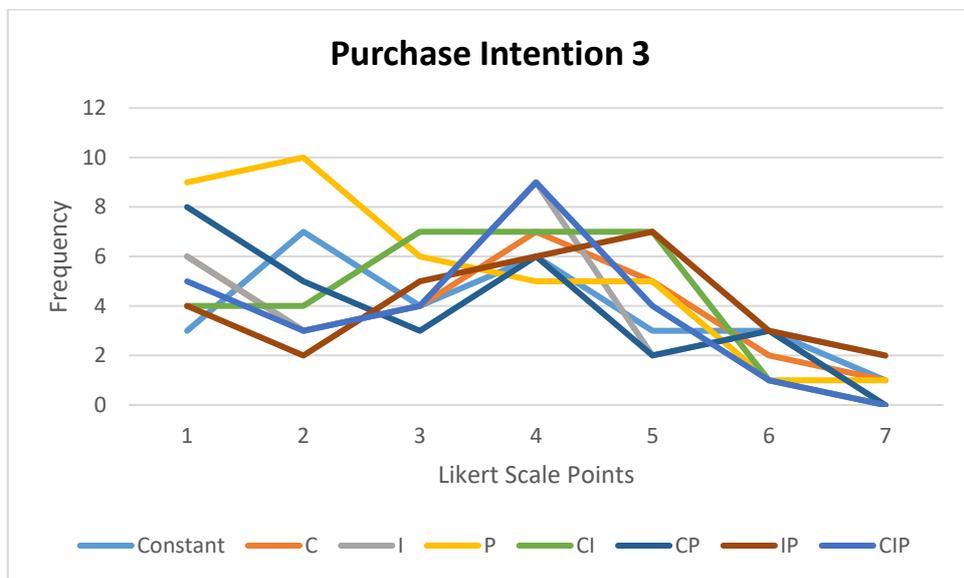
5.3.1.2.4 Ad Recall

One of the changes made to the questionnaire after the pilot study was conducted was to include an Ad Recall measure, where participants could place themselves on a Likert scale between 1 and 7 going from negative to positive. Ad recall is an interesting measurement to look at as mentioned previously, it allows for an understanding of the validity of the responses based upon the participant's memory of the advert. If Ad Recall is low, it could be argued that the findings are less valid because the participants are responding based upon a poor level of Ad Recall. The table below provides the mean, standard deviation, skewness, and kurtosis measures across all conditions for the Ad Recall measure.

Table 5.11 - Ad Recall Measure (Mean, St Dev, Skew, and Kurtosis)

Ad Recall	Mean	St Dev	Skewness	Kurtosis
Constant	3.1111	1.80455	.373	-1.098
Choice	3.5357	2.00891	.195	-1.017
Information	2.4483	1.82417	1.132	.153
Predictability	3.0541	1.80963	.212	-1.692
Choice*Information	3.5000	1.67641	.165	-.447
Choice*Predictability	3.1111	1.92820	.387	-.1066
Information*Predictability	4.0345	1.70048	-.245	-.615
Choice*Information*Predictability	3.1154	1.88312	.326	-1.266

*Note: *Interaction effects*

As evidence in the Table 5.11, the Ad Recall measures tend to have a mean of around 3, with two exceptions which is the information condition which has a particularly low mean of 2.45 and the Information*Predictability condition with a high mean of 4. This indicates that within the information condition people struggled to recall the ad when compared with the other conditions. The information*Predictability condition however showed that people's ability to recall the ad was higher when compared to the other conditions.

Another interesting finding is the standard deviation, across all conditions are relatively high, this indicates that there is a lot of variance between the answers provided. Looking to understand the distribution of the data better, the responses to the Ad Recall item are depicted in Figure 5.25.
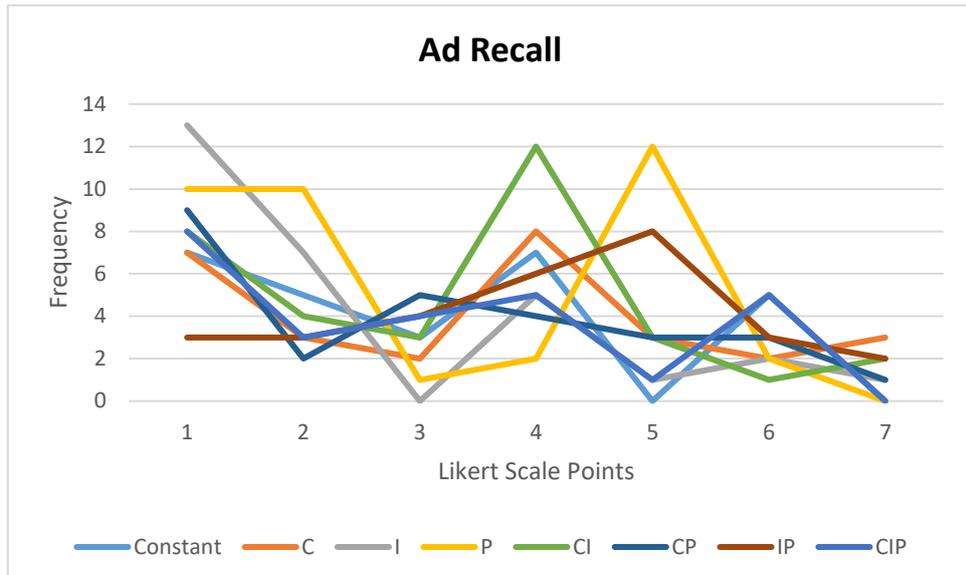
Figure 5.25 - Ad Recall Distribution across Conditions

Across all the conditions, no clear pattern seems evident with some distributions looking positively skewed, whilst others show bimodal distributions. In general, the Ad Recall measure was low when considered in context to the scale itself which is confirmed by a visual inspection of the overall Ad Recall measure shown in the Figure 5.26.
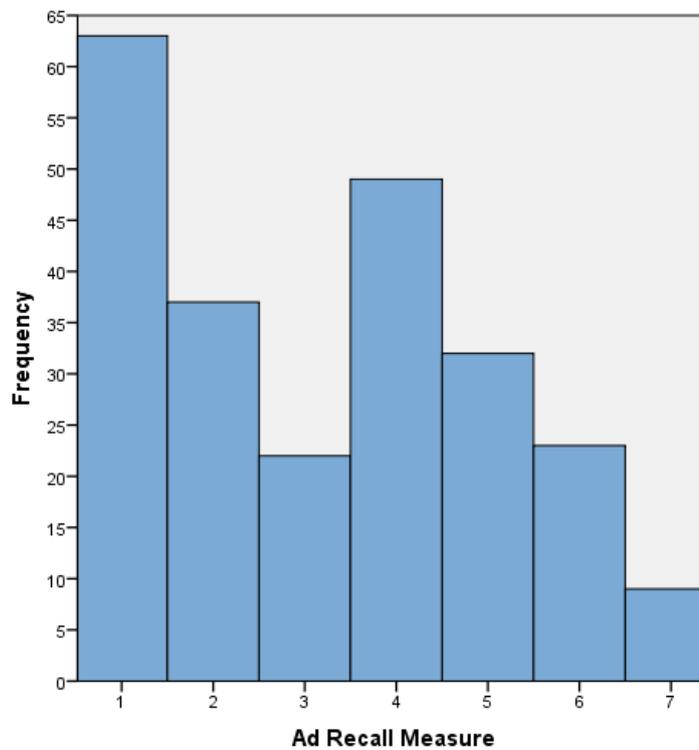
Figure 5.26 - Overall Ad Recall Distribution

Research undertaken measuring the Ad Recall on mobile for a standard advert amongst millennials found that 40% were able to recall the ad (Undertone, n.d.), however there was no indication to what extent the participants were able to recall the advert for example were the participants just able to recall the topic of the advert, or specific information incorporated into the advert. Respondents within the Undertone study were also re-exposed to the ad to help remind them during the questionnaire, whereas within this study, no imaged based post stimuli were used to jog the participant's memory. The Undertone study also used ads related to real life popular brands and therefore it could be argued that the brand had a strong influence on how much respondents were able to recall the ad. Interestingly the advert with the lowest level of recall is the information condition. This may be due to the fact that the increased level of information made users less likely to even scan the advert for key themes as the information was potentially overwhelming. However, if this were the case, then it would be expected that similar findings would be experienced within any condition involving greater levels of information. However, the Information*Predictability condition showed high levels of Ad Recall, which could indicate that when adverts are more predictable, users are more open to reading the information provided to them and as such improves the ability to recall the advert.

In order to assess the effect of Ad Recall it was recoded into nominal variables Low (1-3), Neutral (4), and High (5-7). Table 5.12 was generated to provide an understanding of the frequencies within each Ad Recall group across each of the conditions.

Table 5.12 - Ad Recall Recoded - Frequencies across Conditions

	Low Ad Recall	Neutral Ad Recall	High Ad Recall
Constant	15	7	5
Choice	12	8	8
Information	20	5	4
Predictability	21	2	14
Choice*Information	13	12	7
Choice*Predictability	16	4	7
Information*Predictability	10	6	13
Choice*Information*Predictability	15	5	6

As shown in the table above, there are generally greater numbers of lower Ad Recall across all of the conditions, with the exception of Information*Predictability which showed a greater level of high Ad Recall.

In general, the means across all three groups are different within the sample, with those having a higher Ad Recall generally responding more positively to the Mobile Advertising Effectiveness measure.

Table 5.13 - MAE Means across Recoded Ad Recall Groups

	Low Ad Recall	Neutral Ad Recall	High Ad Recall
Mobile Advertising Effectiveness Score	2.9467	3.9163	4.1985

What needs to be assessed is whether the same argument can be made for the entire population, in order to do this a one-way ANOVA was run. The results from the ANOVA highlighted that equal variances were not assumed (P= .007), and therefore the Games-Howell output was assessed. The results highlighted that there are statistically different means for the population between low and neutral Ad Recall groups P= .000 and also low and high Ad Recall groups P= .000. The differences in means between neutral and high were not statistically significant P= .307, the results for the Games-Howell output can be seen in Table 5.14.

Table 5.14 - Ad Recall ANOVA Output

	Low Ad Recall	Neutral Ad Recall	High Ad Recall
Low Ad Recall		.000	.000
Neutral Ad Recall	.000		.307
High Ad Recall	.000	.307	

It can be said that those in the low Ad Recall group when compared with the neutral Ad Recall group, responded differently in relation to Mobile Advertising Effectiveness. Those in the low Ad Recall group when compared with the high Ad Recall group also responded differently in relation to Mobile Advertising Effectiveness.

5.3.2 Hypotheses Testing

As mentioned within the research methodology chapter, inferential statistics will be used to test the hypotheses set out within Section 2.6 of this thesis. The main focus of this thesis is to understand the relationship between user control and Mobile Advertising Effectiveness which resulted in the seven main hypotheses, however further sub analysis was undertaken which resulted in a further 28 hypotheses. These additional hypotheses look to assess the impact that the independent variables have upon Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, Purchase Intention, and Ad Recall. All 35 hypotheses can be found in the table in Section 5.4 of this chapter.

As discussed within the research methodology chapter in Section 3.5.4, the most appropriate method of undertaking the analysis, was through the use of a hierarchical multiple linear regression. As highlighted below, an example of one of the empirical model for this analysis can be found, this empirical model is for the Mobile Advertising Effectiveness measure.

Equation 5.1 - Empirical Model for Mobile Advertising Effectiveness

$$Mobile\ Advertising\ Effectiveness_i = \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \varepsilon_i$$

(1)

$$Mobile\ Advertising\ Effectiveness_i = \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 Choice_i + \beta_4 Information_i + \beta_5 Predictability_i + \varepsilon_i$$

(2)

$$Mobile\ Advertising\ Effectiveness_i = \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 Choice_i + \beta_4 Information_i + \beta_5 Predictability_i + \beta_6 Choice*Information_i + \beta_7 Choice*Predictability_i + \beta_8 Information*Predictatbility_i + \varepsilon_i$$

(3)

$$Mobile\ Advertising\ Effectiveness_i = \beta_0 + \beta_1 Age_i + \beta_2 Gender_i + \beta_3 Choice_i + \beta_4 Information_i + \beta_5 Predictability_i + \beta_6 Choice*Information_i + \beta_7 Choice*Predictability_i + \beta_8 Information*Predictatbility_i + \beta_9 Choice*Information*Predictatbility_i + \varepsilon_i$$

(4)

Before undertaking any analysis, it is important to understand whether the data is suitable to undertake the statistical test that is being proposed. In order to assess whether the data is suitable to undergo the relevant statistical analysis, assumptions of the data must be met.

5.3.2.1   Assumptions of a Hierarchical Multiple Regression

The first assumption to meet when running any parametric test is the test of normality, after visually inspecting the dependent variable on a histogram, the researcher was able to confirm normality of the Mobile Advertising Effectiveness measure, this was further supported by the Skewness (.267) and Kurtosis statistics (.088).

The researcher will be utilising blocks in order to control for age and gender before inputting the dummy variables into the regression analysis. After this has been controlled for, the dummy variables will be input into the regression in the following order; main effects, two-way, and three-way interaction effects. The assumptions of the hierarchical multiple regression are stated below according to Laerd Statistics (n.d.), and Pallant (2016).

1. **Dependent variable is measured on a continuous scale**

This study measures the dependent variable on seven point Likert scale which conforms with the requirement of the test to measure on a continuous scale. As discussed within the methodology chapter of this thesis, it has been outlined that within the context of this study it is suitable to treat the data as interval data.

2. **Two or more independent variables measured at a continuous or nominal scale**

Each condition within this study is considered to be an independent variable, this therefore means in addition to the Constant (control group), there are seven independent variables with two additional confounding variables (age and gender) which results in a total of 10 variables. Age is measured on a continuous scale, with gender being measured on a nominal scale. The remaining independent variables have been coded as dummy variables (nominal), therefore these are considered as dichotomous variables and will ultimately impact on assumption five which will be discussed later.

3. **Independence of observations**

This study utilises a between-subjects design and all conditions are entirely separate from each other, therefore there is no opportunity for a relationship to exist between observations. This is further assessed by the Durbin-Watson statistic (1.773), which confirms independence of residuals.

4. No outliers

The data should contain no outliers as multiple regression analysis is very sensitive to very high and very low scores (Pallant, 2016). In order to identify any potential outliers within the data the multiple regression utilised casewise diagnostics for any cases which exceeded three standard deviations. The casewise diagnostics highlighted one case in which the outlier exceeded this rule. In order to understand whether this outlier can be deleted it is important to assess the effect that the outlier has upon the regression line (Figure 5.27).
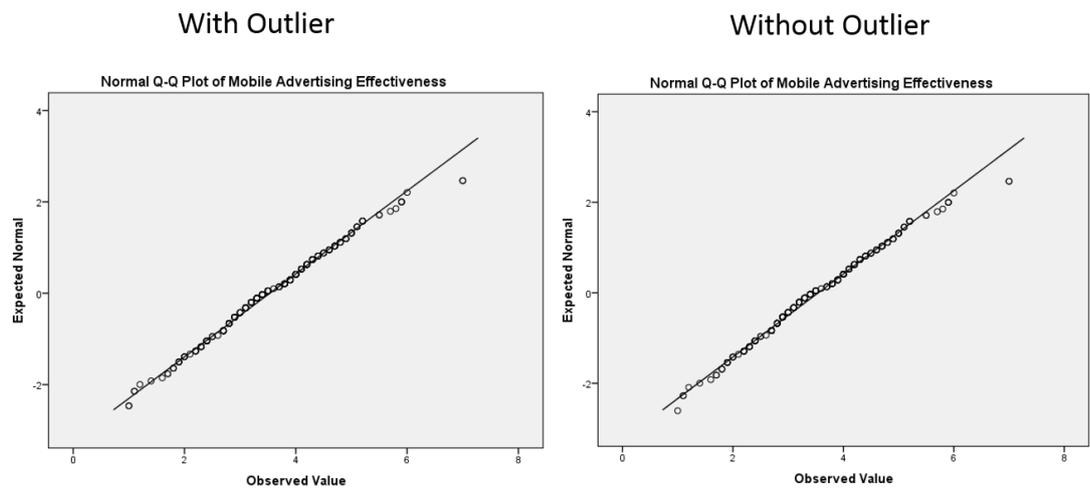
Figure 5.27 - QQ Plot and Outliers for Mobile Advertising Effectiveness

As shown in Figure 5.27 on the QQ plots, the outlier had no effect on the regression line and as such it was removed from the data set. The regression was then run without the outlier for the Mobile Advertising Effectiveness dependent variable. This resulted in the final regression for Mobile Advertising Effectiveness being undertaken on the 234 resulting cases.

5. Linear relationship between the dependent variables and the independent variables, collectively and individually

Given that the independent variables within this research have been dummy coded, these are considered to be dichotomous variables and as such the variable can only be 0 or 1. Therefore, due to the way in which the variable has been coded, the assumption of linearity is met.

6. Homoscedasticity of Residuals

As shown in Figure 5.28, the residuals are distributed in a rectangular fashion, with the majority clustered in the centre around 0. This indicates that the assumptions have not been violated

(Pallant, 2016). Given that there is no obvious pattern is apparent and the residuals appear to be randomly scattered, the assumption of homoscedasticity has been met.
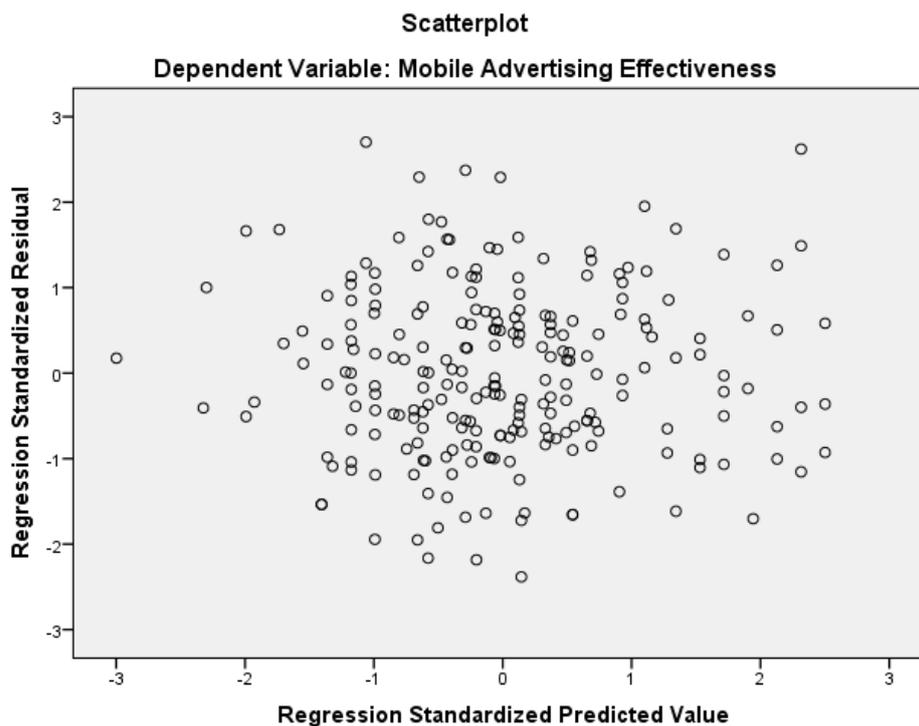
Figure 5.28 - Scatterplot of Studentized Residuals against the Unstandardized Predicted Values

7. No multicollinearity

Multicollinearity and singularity refers to the relationship among the independent variables, multicollinearity is a high correlation (r=9 or above), and singularity is when one independent variable is the combination of other independent variables through the use of subscales and the total scale score (Pallant, 2016). In order to assess multicollinearity and singularity the correlations output table from SPSS is used. The first thing to check would be that there is some level of correlation between the independent variables and the dependent variable. In Table 5.15, there are no independent variables which have a correlation of 0.7 or above and this therefore suggests that the correlations are weak.

Table 5.15 - Correlations between Independent Variables

	C	I	P	C*I	C*P	I*P	C*I*P
C	1.000	-.139	-.160	-.144	-.133	-.139	-.130
I		1.000	-.163	-.147	-.136	-.141	-.133
P			1.000	-.169	-.157	-.163	-.153
C*I				1.000	-.141	-.147	-.138
C*P					1.000	-.136	-.128
I*P						1.000	-.133
C*I*P							1.000

In order to test whether multicollinearity exists between the variables, Pearson's Correlations were used. Results indicate that none of the independent variables show a level of correlation which is too high (r=.9 or above) (Pallant, 2016), which is the first indicator that multicollinearity does not exist between the independent variables. In order to further assess this a quick look at the Tolerance and VIF statistic indicates again that there is no multicollinearity. The tolerance level in for all the variables are above .10 (Pallant, 2016), which indicates that there is no multicollinearity. Looking at the VIF statistic, the above findings can be confirmed as the results show well below the value of 10 (Pallant, 2016).

8. **Residuals must be normally distributed**

One way of checking this assumptions is to inspect the normal probability plot (p-p plot) (Pallant, 2016) as shown in Figure 5.29 the points on the plot lie reasonably close to the line. This suggests that there are no major deviations from normality.

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Mobile Advertising Effectiveness
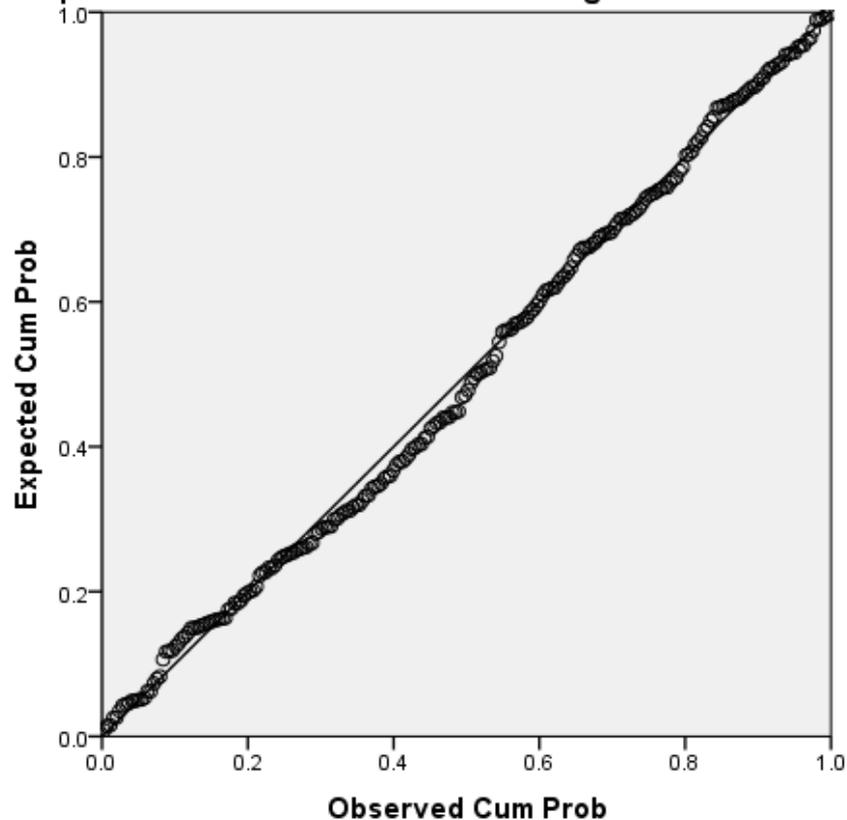
Figure 5.29 - P-P Plot Mobile Advertising Effectiveness

To conclude, as shown above the data used within this analysis meets the assumptions required of the hierarchical multiple regression. The following section will therefore report the results from this analysis.

5.3.2.2   Results

In order to address the hypotheses, this analysis will firstly focus on the main dependent variable within this study which is Mobile Advertising Effectiveness. In order to understand the influence of each level of effects (main effects, two-way, and three-way interaction effects), a four step multiple linear regression was undertaken. The variables were input into the regression model in the following order; age and gender in step 1, main effects in step 2 (C, I, and P), two-way interaction in step 3 (C*I, C*P, and I*P), and finally the three-way interaction in step 4 (C*I*P).

The results of the analysis indicate that the final regression model was statistically significant, R^2 = .087, $F(1, 224)$ = .715, p = .013; adjusted R^2 = .051. This indicates that the final model was a statistically significant predictor of Mobile Advertising Effectiveness.

Table 5.16 - Hierarchical Multiple Regression Results - Mobile Advertising Effectiveness

MAE	Model 1		Model 2		Model 3		Model 4	
	B	ß	B	ß	B	ß	B	ß
Constant	4.474		4.622		4.424		4.641	
Age	-.059*	-.161*	-.061*	-.167*	-.056*	-.153*	-.060*	-.165*
Gender	.198	.089	.177	.080	.192	.086	.193	.087
Choice			.000	.000	.073	.022	-.057	-.017
Information			-.143	-.043	-.076	-.023	-.200	-.061
Predictability			-.362	-.122	-.287	-.096	-.416	-.140
C*I					.076	.024	-.052	.016
C*P					-.288	-.085	-.417	-.123
I*P					.525*	.159*	.394	.120
C*I*P							-.251	-.073
R^2	.035		.050		.085		.087	
F	4.151*		2.376		2.598*		2.385	
ΔR^2	.035		.015		.035		.003	
ΔF	4.151*		1.185		2.870*		.715	

Note. N=233. P<.05*

Looking at the results from the analysis it can be seen that as the model develops the better it becomes at predicting Mobile Advertising Effectiveness R^2= (.035, .050, .085, and .087). The addition of two-way effects (C*I, C*P, I*P) to the prediction of Mobile Advertising Effectiveness (model 3), led to a statistically significant increase in R^2 of .035, F(3, 225) = 2.870, P = .037.

Looking at the B coefficients and significance values for the individual variables it can be assessed whether there is a linear relationship between the independent and dependent variables within the population. Age within all of the models was statistically significant P= .015, with a negative unstandardized B coefficient (-.060). This indicates that a one-year increase in age is associated with a .060 decrease in Mobile Advertising Effectiveness.

Within model 3, Information*Predictability was statistically significant P=.037, with a positive standardized B coefficient (.159). This indicates that when Information*Predictability is present this is associated with a .159 increase in Mobile Advertising Effectiveness, therefore for *H6a* the null hypothesis was rejected.

To summarise, the null hypotheses H6 can be rejected, the remaining null hypotheses cannot be rejected (*H1a, H2a, H3a, H4a, H5a, and H7a*). Although there are some interesting findings here, it was expected that each variable would have a greater relationship with Mobile Advertising Effectiveness. Therefore, further analysis was undertaken on the dimensions used as part of the Mobile Advertising Effectiveness construct. This would allow for the researcher to identify whether the dimensions were influencing the results at the construct level.

5.3.3   Sub Analysis

5.3.3.1   Sub Analysis of Dimensions

As highlighted within the previous section, to understand more about the results it is important to further analyse the individual dimensions. This section will therefore undertake the same analysis undertaken on Mobile Advertising Effectiveness on the measures; Ad Attitude, Brand Attitude, and Purchase Intention. Ad Recall will also undertake the same analysis; it is important to note that Ad Recall does not feed into the overall Mobile Advertising Effectiveness measure. As mentioned previously, measuring Ad Recall allowed the researcher to understand more about the ability to recall the ad within the experiment, in which allowed for a better understanding of the data and its validity. This additional analysis resulted in an additional 28 hypotheses which can be seen in Chapter 3 and Section 5.4 of this chapter.

The hierarchical multiple regression was again undertaken in a four step process, first controlling for the expected extraneous variables (age and gender) and then separating out the main effects in step 2, two-way interaction effects in step 3, and three-way interaction effects in step 4. This was the consistent procedure across all the dimension and Ad Recall measures.

In order to assess whether the independent variables are capable of predicting Ad Attitude, Brand Attitude, Purchase Intention, and Ad Recall, it is important to ensure the new dependent variables meet the tests assumptions. As such this will be covered under the relevant sections.

5.3.3.1.1   Ad Attitude

The same assumptions that were highlighted for the Mobile Advertising Effectiveness measure were also assessed in relation to Ad Attitude. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.876. There was homoscedasticity, as assessed by visual inspection of the studentized residuals versus unstandardized predicted values plot. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no

studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. The assumption of normality was questioned as the kurtosis score for Ad Attitude was moderate (-414), which indicated a potential issue with distribution, with a visual inspection of the histogram confirming this. This was not considered an issue for the data given that theory dictates individuals often choose the neutral point on a Likert scale and therefore this explains the grouping of responses at this point on the scale with a visual inspection of the histogram confirming this. As such the researcher continued to undertake the hierarchical multiple regression with all the assumptions met.

The results of the analysis indicate that the final regression model was not statistically significant, R^2 = .069, $F(1, 225)$ = .001, p = .060; adjusted R^2 = .032. This means that the model as a whole was not able to predict Ad Attitude. The Table 5.17 provides an overview of the coefficients for each of the models.

Table 5.17 - Hierarchical Multiple Regression Results - Ad Attitude

Ad Attitude	Model 1		Model 2		Model 3		Model 4	
	B	β	B	β	B	β	B	β
Constant	4.894		5.040		4.621		4.612	
Age	-.075*	-.170*	-.075*	-.171*	-.065*	-.147*	-.065*	-.147*
Gender	.135	.050	.122	.045	.099	.037	.099	.037
Choice			-.169	-.042	.066	.016	.071	.017
Information			-.343	-.086	-.124	-.031	-.119	-.030
Predictability			-.327	-.091	-.096	-.027	-.091	-.025
C*I					.324	.085	.329	.086
C*P					.047	.011	.052	.013
I*P					.699*	.175*	.704	.176
C*I*P							.010	.002
R^2	.032		.044		.069		.069	
F	3.789*		2.118		2.098		1.857	
ΔR^2	.032		.013		.025		.000	
ΔF	3.789*		1.004		2.017		.001	

Note. N=233. P<.05*

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Looking at the results from the regression analysis despite not being able to predict Ad Attitude, it can be seen that as the model develops through the stages the better it becomes at predicting Ad Attitude R^2= (.032, .044, .069, and .069). None of the additions at each stage throughout the models showed a statistically significant difference from the previous model P> .05. Interestingly, however model 3 was a statistically significant predictor of Ad Attitude P= .037, this indicates that as more variables were added into model 4 (C*I*P) the weaker the model was at predicting Ad Attitude. This was evidenced by the R^2 value which highlights no change in prediction within the final model (.069) when compared to model 3 (.069).

Looking at the B coefficients and significance values for the individual variables it can be assessed whether there is a linear relationship between the independent and dependent variables within the population. Age within all of the models was statistically significant P= .031 with a negative unstandardized B coefficient (-.065). This indicates that a one-year increase in age is associated with a .065 decrease in Ad Attitude.

Within model 3, Information*Predictability was statistically significant P=.023, with a positive standardized B coefficient (.175). This indicates that when Information*Predictability is present this is associated with a .175 increase in Ad Attitude, therefore *H6b* null hypothesis can be rejected.

The remaining null hypotheses cannot be rejected (*H1b, H2b, H3b, H4b, H5b, and H7b*).

5.3.3.1.2   Brand Attitude

Although the descriptive statistics showed little variance across conditions within the Brand Attitude measure, it is important to further analyse in order to identify whether any significant results occurred at a more granular level. Again the multiple regression assumptions must be met for the Brand Attitude dimension. The outlier assumption was violated by one case which was then assessed on the basis of the regression line, given it had no effect on the regression line it was removed from the subsequent data analysis. This resulted in the analysis being undertaken on the remaining 234 cases. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.858. There was homoscedasticity, as assessed by visual inspection of the studentized residuals versus unstandardized predicted values plot. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. The assumption of normality was questioned due to a high kurtosis score (1.299), however as mentioned previously this is not an issue if expected within the data. Given the literature mentioned previously on the use of fictional brands, it was expected that the

kurtosis score for this dimension would be high and therefore it is not particularly concerning to the analysis.

The results of the analysis indicate that the final regression model which looks to assess the effect of the three-way interactions was statistically significant, R^2 = .087, $F(1, 224)$ = 2.386, p = .013; adjusted R^2 = .051. This indicates that the final model was a statistically significant predictor of Brand Attitude. In order to explore this further a further look into the b coefficients as shown in Table 5.18 was undertaken.

Table 5.18 - Hierarchical Multiple Regression Results - Brand Attitude

Brand Attitude	Model 1		Model 2		Model 3		Model 4	
	B	β	B	β	B	β	B	β
Constant	4.501		4.605		4.429		4.677	
Age	-.027	-.084	-.028	-.085	-.024	-.074	-.029	-.088
Gender	.114	.057	.088	.044	.091	.045	.092	.046
Choice			.176	.058	.274	.091	.125	.042
Information			-.185	-.062	-.093	-.031	-.234	-.079
Predictability			-.384*	-.143*	-.287	-.107	-.435	-.162
C*I					.334	.115	.188	.065
C*P					-.329	-.107	-.477	-.155
I*P					.408	.137	.258	.087
C*I*P							-.286	-.092
R^2	.010		.039		.083		.087	
F	1.220		1.840		2.540*		2.386	
ΔR^2	.010		.028		.044		.005	
ΔF	1.220		2.240		3.602*		1.138	

*Note. N=233. P<.05**

Looking at the results from the regression analysis it is clear that as the models develop the model becomes better at predicting Brand Attitude R^2= (.010, .039, .083, and .087). The addition of two-

way effects (CI, CP, IP) to the prediction of Brand Attitude (model 3), led to a statistically significant increase in R^2 of .083, F(3, 225) = 3.602, P = .014.

Looking at the B coefficients and significance values for the individual variables it can be assessed whether there is a linear relationship between the independent and dependent variables within the population. Within model 2, Predictability was statistically significant P=.035, with a negative standardized B coefficient (-.143). This indicates that when P is present this is associated with a .175 decrease in Brand Attitude, therefore *H3c* null hypothesis can be rejected.

Although highlighted previously within the descriptive statistics, evidence to suggest that age was a significant predictor of Brand Attitude within the Choice*Information condition was not supported P= .279. Given the parametric test is stronger than the non-parametric test the researcher can be confident to say that age has no effect here.

To summarise the sub hypotheses, the null hypotheses *H3c* can be rejected, the remaining null hypotheses cannot be rejected (*H1c, H2c, H4c, H5c, H6c, and H7c*).

5.3.3.1.3 Purchase Intention

The final dimension to be analysed is Purchase Intention, as highlighted for the other dimensions this measure must also meet the assumptions of a hierarchical multiple regression. There was independence of residuals, as assessed by a Durbin-Watson statistic of 1.995. There was homoscedasticity, as assessed by visual inspection of the studentized residuals versus unstandardized predicted values plot. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. The assumption of normality was met, as assessed by Q-Q Plot. The kurtosis measure was quite high -.832 however as mentioned previously this was expected given the topic being studied, and therefore not of a concern.

The results of the analysis indicate that the final regression model which looks to assess the effect of the three-way interactions was statistically significant, R^2 = .083, F(1, 225) = 2.271, p = .019; adjusted R^2 = .047. This indicates that the final model was a statistically significant predictor of Purchase Intention. In order to understand more about the models, Table 5.19 highlights the coefficients for the independent variables used within the analysis.

Table 5.19 - Hierarchical Multiple Regression Results - Purchase Intention

Purchase Intention	Model 1		Model 2		Model 3		Model 4	
	B	$β$	B	$β$	B	$β$	B	$β$
Constant	4.330		4.589		4.567		5.076	
Age	-.079*	-.153*	-.085*	-.165*	-.085*	-.165*	-.095*	-.184*
Gender	.264	.084	.232	.073	.280	.089	.282	.089
Choice			-.059	-.012	-.111	-.023	-.416	-.088
Information			.074	.016	.023	.005	-.269	-.057
Predictability			-.507	-.120	-.552	-.131	-.857*	-.203*
C*I					-.032	-.007	-.332	-.074
C*P					-.669	-.138	-.973*	-.202*
I*P					.410	.088	.103	.022
C*I*P							-.589	-.120
R^2	.031		.046		.075		.083	
F	3.712*		2.195		2.302		2.271	
$ΔR^2$	.031		.015		.030		.008	
$ΔF$	3.712*		1.179		2.412		1.945	

Note. N=233. P<.05*

Looking at the results from the regression analysis it is clear that as the models develop the model becomes better at predicting Purchase Intention R^2= (.031, .046, .075, and .083). None of the additions at each stage throughout the models showed a statistically significant difference from the previous model P> .05, with the exception of the addition of age and gender in model 1. Interestingly however as mentioned previously the final model was statistically significant which indicates that the model as a whole is able to predict Purchase Intention.

Looking at the B coefficients and significance values for the individual variables it can be assessed whether there is a linear relationship between the independent and dependent variables within the population. Age within all of the models was statistically significant P= .007, with a negative

unstandardized B coefficient (-.095). This indicates that a one-year increase in age is associated with a .095 decrease in Purchase Intention.

Within the final model, two variables were shown to have a statistically significant linear relationship with the dependent variable. These were Predictability P= .030, and Choice*Predictability P= .023. Predictability had a negative standardized coefficient (-.203), which indicates that when P is present this is associated with a .203 decrease in Purchase Intention, therefore *H3d* null hypothesis can be rejected. Choice*Predictability had a negative standardized coefficient (-.202) which indicates that when Choice*Predictability is present this is associated with a .202 decrease in Purchase Intention, therefore *H5d* null hypothesis can be rejected.

The remaining null hypotheses cannot be rejected (*H1d, H2d, H4d, H6d, and H7d*).

5.3.3.2   Sub Analysis – Ad Recall

Although not a dimension of Mobile Advertising Effectiveness, the Ad Recall measure is interesting to consider as it allows inferences to be made in relation to how well the ad was recalled dependent on the condition the participants experienced. As with all the measures thus far, the data for this measure must also meet the assumptions of a hierarchical multiple regression analysis.

There was independence of residuals, as assessed by a Durbin-Watson statistic of 2.068. There was homoscedasticity, as assessed by visual inspection of the studentized residuals versus unstandardized predicted values plot. There was no evidence of multicollinearity, as assessed by tolerance values greater than 0.1. There were no studentized deleted residuals greater than ±3 standard deviations, no leverage values greater than 0.2, and values for Cook's distance above 1. There assumption of normality was met as assessed by Q-Q Plot. The kurtosis value was a little high (-.832), however as mentioned previously, this is not an issue when there is theoretical reasoning behind the kurtosis score.

The results of the analysis indicate that the final regression model which looks to assess the effect of the three-way interactions was not statistically significant, R^2 = .055, $F(1, 225)$ = 1.465, p = .162; adjusted R^2 = .018. This indicates that the model was not a statistically significant predictor of Ad Recall. To further evaluate these findings, Table 5.20 highlights the b coefficients for all of the variables throughout all four of the regression models.

Table 5.20 - Hierarchical Multiple Regression Results - Ad Recall

Ad Recall	Model 1		Model 2		Model 3		Model 4	
	B	β	B	β	B	β	B	β
Constant	3.447		3.425		2.936		2.935	
Age	-.022	-.035	-.013	-.021	.001	-.002	.001	-.001
Gender	.184	.049	.173	.046	.157	.041	.157	.041
Choice			.140	.024	.395	.069	.395	.069
Information			-.927*	-.165*	-.689	-.122	-.688	-.122
Predictability			-.319	-.063	-.066	-.013	-.066	-.013
C*I					.317	.059	.318	.059
C*P					-.049	-.009	-.049	-.008
I*P					.896*	.159*	.896	.159
C*I*P							.000	.000
R^2	.004		.033		.055		.055	
F	.425		1.582		1.665		1.465	
ΔR^2	.004		.030		.022		.000	
ΔF	.425		2.349		1.751		.000	

Note. N=233. P<.05*

Looking at the results from the regression analysis it is clear that as the models develop the model becomes better at predicting Ad Recall R^2= (.004, .033, .055, and .055). None of the additions at each stage throughout the models showed a statistically significant difference from the previous model P> .05. Although none of the models were statistically significant predictors of Ad Recall, an interesting aspect to note is the lack of difference R^2 values between model 3 (.055) and model 4 (.055). This indicates that there is no difference between C*I, C*P, I*P and the addition of C*I*P at improving the prediction of Ad Recall.

Looking at the B coefficients and significance values for the individual variables, it can be assessed whether there is a linear relationship between the independent and dependent variables within the population. Although none of the variables in the final model has a statistically significant

linear relationship with Ad Recall, there was some evidence of statistical significance in other models.

Within model 2, Information, was statistically significant P=.015, with a negative standardized B coefficient (.165). This indicates that when Information is present this is associated with a .159 decrease in Ad Recall, therefore *H2e* null hypothesis can be rejected.

Within model 3, Information*Predictability, was statistically significant P=.039, with a positive standardized B coefficient (.159). This indicates that when Information*Predictability is present this is associated with a .159 increase in Ad Recall, therefore *H6e* null hypothesis can be rejected.

The remaining null hypotheses cannot be rejected (*H1e, H3e, H4e, H5e, and H7e*).

5.3.4   Further Analysis

5.3.4.1   *Exploration into the Effect of Age*

From the analysis it was clear to see that for the Mobile Advertising Effectiveness, Ad Attitude, and Purchase Intention measures that there was a variable confounding the results. From the regression analysis it was clear to see that the effect of age was carrying throughout all of the models, despite having been controlled for in model 1. Therefore, this required further analysis in order to understand why this was happening, and what effect this may have had upon the other findings generated from the analysis. In order to explore age further, the data was split by the conditions and then a regression analysis was run in order to determine which conditions showed a relationship between age and the dependent variables being measured. The only condition to show any statistically significant relationship between age and the dependent variable was the Choice condition, this relationship was significant across the Mobile Advertising Effectiveness, Ad Attitude, and Purchase Intention measures. The remaining conditions were not found to hold a statistically significant relationship between age and the dependent variable measures. This indicates that this relationship is isolated purely to the Choice condition.

The multiple regression model statistically significantly predicted Mobile Advertising Effectiveness, $F(1,26) = 10.746$, $P = .003$ with a negative unstandardized b coefficient of -.335. This indicates that as age increased within the Choice condition, that Mobile Advertising Effectiveness decreased.

The multiple regression model with Ad Attitude as the dependent variable was statistically significant, $F(1,26) = 9.829$, $P = .004$, with a negative unstandardized b coefficient of -.390. This indicates that when age increased within the Choice condition, Ad Attitude decreased.

Finally, the model which measured the dependent variable as Purchase Intention was statistically significant, $F_{(1,26)} = 8.907$, P = .006, with a negative unstandardized b coefficient of -.453. This indicates that as age increased within the Choice condition, Purchase Intention decreased.

All of these findings indicate that within the Choice condition, as age increases the level of Mobile Advertising Effectiveness, Ad Attitude, and Purchase Intention reduces. Therefore, this indicates that the age effects found within the Choice condition were having an effect on the overall results found earlier. In order to ascertain whether this condition skewed the other significant results as highlighted throughout the analysis, the Choice condition data was removed and the analysis was run again on all measures. Although age was no longer statistically significant predictor of the dependent variables, the remaining relationships were still statistically significant. Therefore, it can be said that although the Choice condition skewed the data on the age measures, this did not impact upon the other significant relationships that were highlighted throughout the analysis.

5.3.4.2   Correlations across the Dependent Variables

Although not the focus of this research, in order to understand more about the relationships between the dependent variable and the dimensions. As such it was important to look at the correlations between these measures, to see if any underlying relationships may have impacted upon the results of this study. Utilising all 235 cases and separating the data by condition allowed for a Pearson's correlation to be undertaken on the measures across each condition. The results indicated some inconsistencies throughout some of the conditions, these are highlighted below.

Constant/Control

Within the Constant/Control condition the relationship between Ad Attitude and Purchase Intention was not statistically significant P = .143, this positive correlation was weak r = .290.

Choice

Within the Choice condition the relationship between Ad Recall and all other measures were not statistically significant, Mobile Advertising Effectiveness P= .368, Ad Attitude P = .645, Brand Attitude P = .460, and Purchase Intention P = .243. Although these relationships were positive, they were non-significant and weak r = .091, .145, .228, .177 respectively.

This condition also indicated that the relationship between Brand Attitude and Purchase Intention was not statistically significant P = .067 with a moderate correlation r = .351.

Choice*Information

Within the Choice*Information condition the relationship between Ad Recall and Purchase Intention was not statistically significant P = .294, this positive correlation was weak r = .191.

*Information*Predictability*

Within the Information*Predictability condition the relationship between Ad Recall and Brand Attitude was not statistically significant P = .053, this positive correlation was moderate r = .363.

*Choice*Information*Predictability*

Within the Choice*Information*Predictability condition the relationship between Purchase Intention and Ad Recall was not significant P = .222 and this correlation was weak r = .248.

No significant relationship was found between Brand Attitude and Ad Recall P = .075 with a moderate positive correlation r = .355.

5.4 Summary of Key Findings

Given the significant amount of analysis which has been conducted over a variety of dependent variables, Table 5.21 highlights the main findings from this analysis in relation to the hypotheses proposed as part of this research. As evidenced within the table it is possible to reject ten of the null hypotheses from the analysis of the data.

Table 5.21 - Hypotheses Findings

	Dependent Variables				
	MAE	**Ad Attitude**	**Brand Attitude**	**Purchase Intention**	**Ad Recall**
There is a relationship between Choice and…	H1a – Cannot Reject Null	H1b – Cannot Reject Null	H1c – Cannot Reject Null	H1d – Cannot Reject Null	H1e – Cannot Reject Null
There is a relationship between Information and…	H2a – Cannot Reject Null	H2b – Cannot Reject Null	H2c – Cannot Reject Null	H2d – Cannot Reject Null	H2e – Reject Null
There is a relationship between Predictability and…	H3a – Cannot Reject Null	H3b – Cannot Reject Null	H3c – Reject Null	H3d – Reject Null	H3e – Cannot Reject Null
There is an interaction effect of Choice and Information on…	H4a – Cannot Reject Null	H4b – Cannot Reject Null	H4c – Cannot Reject Null	H4d – Cannot Reject Null	H4e – Cannot Reject Null

	MAE	Ad Attitude	Brand Attitude	Purchase Intention	Ad Recall
There is an interaction effect of Choice and Predictability on…	H5a – Cannot Reject Null	H5b – Cannot Reject Null	H5c – Cannot Reject Null	H5d – Reject Null	H5e – Cannot Reject Null
There is an interaction effect of Information and Predictability on…	H6a – Reject Null	H6b – Reject Null	H6c – Cannot Reject Null	H6d – Cannot Reject Null	H6e – Reject Null
There is a three-way interaction effect of Choice, Information, and Predictability with…	H7a – Cannot Reject Null	H7b – Cannot Reject Null	H7c – Cannot Reject Null	H7d – Cannot Reject Null	H7e – Cannot Reject Null

To conclude the data analysis section, generally although the findings can be considered rather weak there is evidence to support the rejection of some of the null hypotheses across some of the analysis. It is important to note that the strength of these findings and indicated by the explained variance within the model, is typical of consumer behaviour research (Zinkhan & Muderrisoglu, 1985).

Further analysis went on to explore the effect of age and also consider the relationships between the dependent variable, the dimension measures and Ad Recall. The findings of this concluded that age was impacting specifically within the Choice condition, with the effect so strong that this carried throughout the different steps of analysis of the hierarchical multiple regression. Analysis also identified that within some of the conditions, some of the relationships that would be expected for example a positive relationship between Ad Attitude and Purchase Intention did not exist. This suggests that there is some form of breakdown across some of these correlations which warrants further discussion. The following chapter will therefore look to discuss all of the integral findings which have been generated as part of this study.

Chapter 6: Discussion and Implications

6.1 Introduction

Looking back to the original problem identified, which relates to user control and Mobile Advertising Effectiveness, it is important to consider all of the findings that have been generated in relation to this core issue. This chapter will therefore follow a similar structure to the data analysis chapter in order to provide a systematic approach to the evaluation of the results. The chapter will start discussing the relationship of the individual antecedents of perceived control which are choice, information, and predictability. The chapter will then look to further discuss the key interactions which will cover both the two-way and three-way interaction conditions. A discussion of demographic measures will then be explored before looking to discuss the dimension measures and finally the relationships that exist across the dimensions. The findings that will be discussed will not only highlight the statistically significant relationships that were found from the analysis of data, but also the relationships that were not supported. The reason for including the non-significant results is due to the researcher hypothesising from a review of the literature, a relationship. Failure to have identified the hypothesised relationship is particularly interesting as this provides a contradiction to the existing literature. It will be from this discussion that the findings will be logically synthesised and interpreted, to understand the reasons for the findings and also the research problem as a whole. This chapter will present the discussion alongside the existing research within the field, and highlight any implications that this will have upon practitioners.

6.2 The Role of Choice

The findings generated as part of this study highlight that the Choice condition did not show a statistically significant relationship with any of the measures as shown in Figure 6.1 by the dashed lines. This is particularly important as at a very rudimentary level, this implies that providing greater levels of choice to users does not create a significant outcome. The only condition which included elements of choice that was statistically significant was the two-way interaction condition for Choice*Predictability which was significant for the Purchase Intention measure. What is important to consider here is that the Predictability condition was significant on its own for Purchase Intention, as such it could be argued that the addition of choice did not have any impact within the Choice*Predictability condition, and the effects of predictability is what had carried through into the interaction.
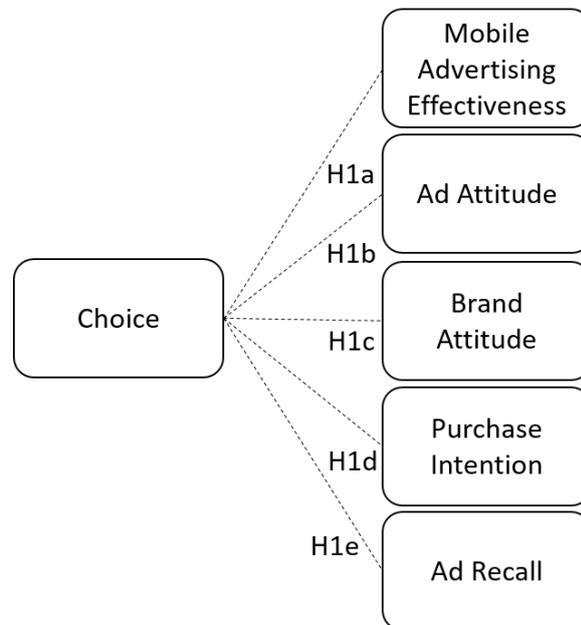
Figure 6.1 - Choice and Dependent Variables

An explanation for this finding may be that regardless of how many choices an individual has, ultimately there is a negative perception or a nonchalant attitude towards mobile adverts (Drossos et al., 2013; Grant & O'Donohoe, 2007; Izquierdo-Yusta et al., 2014; Kolsaker & Drakatos, 2009; Watson et al., 2013). This could be because the aim of the user when using their mobile device is not to be advertised to as highlighted throughout. This is even more prevalent during the experimental condition when the user is trying to engage with a task, as such the addition of choice did not have any impact upon the dependent variables. As highlighted by Smit (2000) most advertising exposures happen when individuals are using that medium for other purposes outside of advertising for example surfing the internet or watching TV. A study conducted by InsightsNow (2013) for AOL and BBDO, found that the seven motivations for using a mobile device were; me time, socialising, shopping, accomplishing, preparation, discovery, and self-expression. Given that only a very small number of individuals remove ad blockers from their devices because they missed the adverts Statista (2018a), highlights that users do not use their mobile devices for marketing communications.

Another element to consider when assessing these findings is what this study considers as choice, and how ultimately that may be perceived by users. Within this study choice was manipulated as two or more courses of action available to the user. However, with any advertisement and argument can be made that there is always an option to click off the advert and click to find out more. These two options can be considered two courses of action, however, this had to remain as the constant in order to ensure this research reflected real practice because advertisers do not go out of their way to create poor adverts (Kardes, 1996). Therefore, in order to provide users with the perception that they have been given more choice in a mobile advertising scenario than had

already been provided at the baseline, a similar technique to that used by Women's Health was adopted. As shown in the methodology section of this thesis, Womens Health make their website users feel as though they have more choice by having the normal X to cross of the advert option and also two buttons which may say for example 'Yes I am interested in this product, I want to find out more' or 'No thank you, take me back to the website'. Although the same amount of choice exists within the Control condition, and those provided by women's health for example, the second one does attempt to make people perceive that there is more choice by making the two courses of action much more explicit. An argument therefore could be made that the choice afforded in the high choice conditions did not accurately mimic choice, however, this would have expected to have been flagged within the pilot studies when assessing whether the conditions sufficient replicated the antecedents being manipulated. Future research would be useful in assessing what constitutes greater feelings of choice in advertising scenarios, and empirically testing whether there is a consensus that the manipulations within this study were appropriate at manipulating choice.

The impact of this finding for practitioners at face value would be that providing users with additional levels of choice has no impact upon any of the measures used within this study. Choice does not impact, Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, Purchase Intention, or ability to recall the advert. There is also evidence to suggest that when choice is combined with the Information*Predictability two-way interaction to create a three-way interaction (Choice*Information*Predictability), the synergistic effect created by Information*Predictability is lost and the relationship between all three antecedents becomes non-significant. Therefore, this study highlights that the use of choice within this context is null and void, and as such advertisers should not concern themselves with trying to create adverts such as the ones used by Womens Health. It is however, important to note that although there was no significant relationship with the measures used within this study, there could be other benefits associated with different dependent variables in which have not been tested for in this study.

6.3   The Role of Information

One particularly interesting statistically significant finding in relation to information is the relationship between the Information condition and Ad Recall, with this relationship being negative as highlighted in Figure 6.2 by the red arrow.
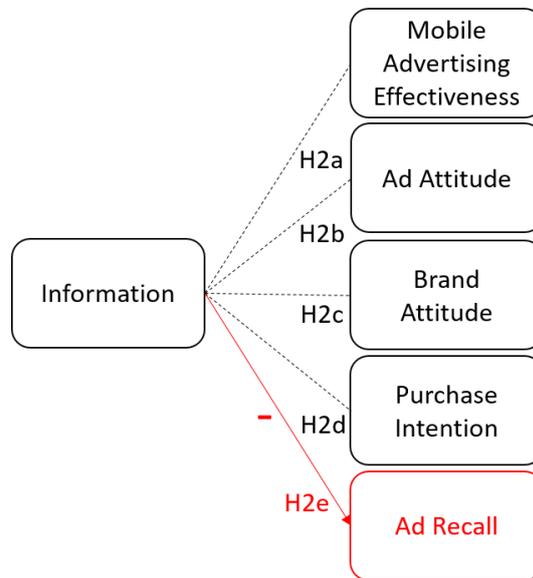
Figure 6.2 - Information and Dependent Variables

This indicates that when the amount of information within an advert is increased the ability to recall the advert diminishes. An explanation for this may be that as stated in the literature review of this thesis, as the level of information increases the more the user may feel overloaded (Chen et al., 2009; Iyengar & Lepper, 2000), and as such begin to switch off the advert in their mind due to the ability to only process a certain amount of information. This related back to the Elaboration Likelihood Model created by Petty and Cacioppo (1986), and Petty et al. (1983) which explains that individuals will process stimuli based upon either the central or peripheral route, which is ultimately dictated by the motivation to process the information and also the ability to process it. Elements which dictate the route of processing and whether information is processed include; distraction, credibility, personal relevance, argument quality, and peripheral cues (Petty & Cacioppo, 1986; Petty et al., 1983), which can be argued are all relevant within the context of mobile advertising. For example, distraction can relate to the fact that in the situation of mobile advertising, users are not motivated to process the advertising message due to the fact that they are using their mobile to undertake other tasks such as socialise and play games for example. Given the advert is by its nature; interruptive (Salz, 2015), this could cause the user to become distracted which ultimately impacts upon the ability to process the information within the advertisement. This is particularly important as research has identified that an individual's ability to process information is limited, and as such when all information processing resources are being utilised and individual is not capable of processing any additional information without forgetting something else (Lang, 2000). Advertisers therefore must ensure that adverts are created in such a way to improve the ability to process the information. This is particularly important as the small size on mobile creates a delicate environment where the correct amount of information is vital (Drossos et al., 2013). Logically in line with the elaboration likelihood model, the more a user has to remember in terms of information, the less likely they will be able to remember other

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information such as the ad imagery for example. Coinciding with this potential explanation, there is also a potential argument that adverts with less information cause greater levels of intrigue or curiosity in the audience by creating a knowledge gap (Loewenstein, 1994; Menon & Soman, 2002), and therefore pay more attention and are able to better recall the advert because of this. This is a commonly adopted approach with teaser trailers, whereby users are fed small elements of information to create a form of knowledge gap whereby they then desire to engage and search for further information (Trehan & Maan, 2012). Therefore, as the information condition did not create a knowledge gap, Ad Recall was reduced. In contrast to the theory posited above it could be argued that if the level of information is low, then the adverts isn't providing the audience with enough information to generate interest (Olsen & Young, 1984), and therefore it could be considered a double edged sword. In relation to this researcher however, as the Information condition is compared to the Constant this theory can be refuted as more information was provided within the Information condition than the Constant.

An argument could also be made in relation to congruency of the ad with the interest of the user (Cho, 2003), if the user has a lower level of interest in the topic being advertised then it could mean that greater levels of information will cause the user to be even more disinterested in the advert and as such reduce Ad Recall. Existing literature looking at interest and recall within the context of video learning indicated that when interest was higher the ability to recall information was improved (Weber, Corrigan, Fornash, & Neupauer, 2003). Although not directly relevant due to the context of the research, the fundamental element of interest and recall could cross apply into the field of mobile advertising. This is supported by researchers in the field of advertising who acknowledge the impact that interest has upon recall (Bagozzi & Silk, 1983). It could also be found that if an individual is actually in the process of looking to purchase a music subscription service then added levels of information may give that individual a better idea of whether the music streaming service is suitable, if it isn't then they may write it off in their heads and reduce the recall of the advert. This closely aligns with the consumer decision making process (Nicosia, 1966) whereby consumers will continue to look for information, all the time they haven't found what they need (Pellémans, 1971). Interestingly research acknowledges that there is also an issue relating to unfamiliar brands and how consumers will need information to form an opinion on the brand to make a decision (Pellémans, 1971), which adds another interesting element to consider. Given that the participants were randomly assigned to each condition; it is unlikely that interest would be the reason for this finding as it would be expected that overly interested participants would be neutralised by the other participants who were not so interested in the service being advertised.

Finally, an argument could also be posited that when new information is added, so is additional noise. This happens through not only the addition of extra information but also the way in which the new information is phrased/framed for example. Additional information may create a different reaction based upon the way in which it was worded and ultimately a consideration that this may have caused some level of noise within the experiment is needed. A review of research in this area has shown that although inconsistent there is evidence to suggest framing effects exist (Levin, Schneider, & Gaeth, 1998), and as such provides an important potential explanation for the finding. The addition of stars for a rating system also impact upon the physical design of the advert and as this is changed, it could be said that this has impacted upon the results. Therefore, there is some room to say that it could be that the information made no difference when compared to the control condition, and actually it was the phrasing or design of the new information in which impacted the users' responses. This could be further tested in the future utilising a similar research method, whereby variations in phrasing and design of information is tested to assess the effects this may have upon the dependent variable.

The implications of this finding is interesting as it further supports the argument for information saturation (Chen et al., 2009; Iyengar & Lepper, 2000), and that overloading the user may cause negative outcomes. This is especially pertinent given the small screens available on mobile devices and the intrigue that less information can also generate. Therefore, fully understanding the role that information plays within the mobile advertising interaction, and its effect on Ad Recall and lack of effect on the remaining measures will provide advertisers with a greater understanding of best practice.

6.4   The Role of Predictability

Predictability as an individual independent variable shows a statistically significant relationship with Brand Attitude and Purchase Intention, with this relationship being negative as shown in Figure 6.3. This indicates that an increase in the level of predictability will reduce the Brand Attitude and Purchase Intention.
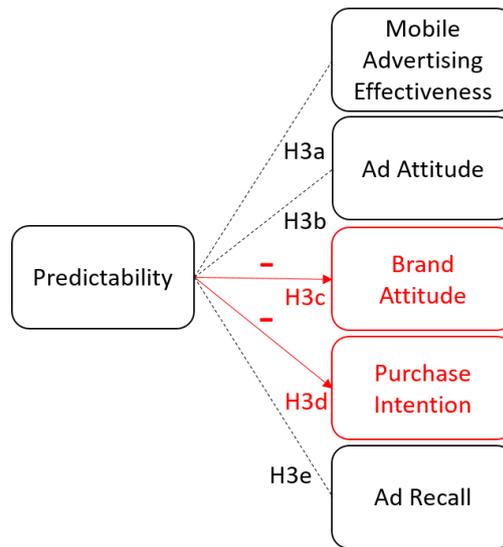
An aspect to consider here is the difficulty in drawing any strong conclusions in relation to Brand Attitude, the reason for this may be due to the use of a fictional brand within the design of the experimental conditions. When fictional brands are used there is no brand value or loyalty due to the fact this would be the first exposure with the brand and such it could be said that participants may be more ambivalent towards the brand. This may help to explain the general lack of enthusiasm and as such explain the negative relationship that was found to exist. This is in line with the findings that were highlighted by Dahlén (2001) that unfamiliar brands initially perform poorly. However, given that a fictional brand was used throughout and as the results from the predictability condition were compared against the control it can be deduced that the predictability element is the cause for the change in the relationship. As such further discussion as to why predictability reduced Brand Attitude must be considered. It might be hypothesised that when there are greater levels of predictability, one will expect an advert, as such be more prepared to process this advert as it is less interruptive. This preparation may provide them with the time and opportunity to form an opinion around the brand, when individuals do not have the time it could be argued that they do not process it as well and as such be more prone to neutrality bias. Through this brand evaluation, users may decide that they don't like the brand, which may explain the findings.

Increased levels of predictability might also encourage individuals to scan the advert to save time, and as such errors may arise when processing the brand. The impact of this on practice is that advertisers should avoid placing adverts in predictable positions if they are looking to gain greater levels of Brand Attitude. However, as this research is only undertaken within the context of fictional brands, it would be valuable to extend this research to look at existing brands as ultimately this will have the greatest effect on practice. This research however can assess the effects that might be relevant to new brands, given that both new brands and fictional brands

share the same qualities. Therefore, it can be said for new brands utilisation of unpredictable placement of advertisements is more suitable, as predictable advert placement creates a negative relationship with Brand Attitude. The reasoning for this, could be that as the advert is more unpredictable, the more attention the user may give to the advertisement and as such assimilate greater levels of information. It could be argued that users scanning over predictably placed adverts are somewhat similar to the fast forwarding of TV advertisements, whereby research has shown that fast-forwarding creates significant bias in visual processing (Brasel & Gips, 2008). The result of this is that it evidences the significant difference in the ways in which users process visual stimuli based upon the speed of the content. It would not be erroneous to conclude therefore that the predictability of an advert shown on mobile could also affect the ways in which individuals process the brand related information and as such this warrants further investigation.

In relation to Purchase Intention, predictability also showed a negative statistically significant relationship. This indicates that with greater levels of predictability there is a reduced level of intent to purchase. As acknowledged above, the reason why this may have occurred is due to the unfamiliarity with the brand, users may be more ambivalent towards it and not as prone to purchase due to increased feelings of risk. However, as stated previously, this effect would be expected to carry through to all other conditions given that all conditions utilised an unfamiliar brand. Given the lack of literature that exists within this area, it is important that this finding and the one highlighted above is further explored. By undertaking further research to explore these findings, a more elaborate understanding of the issue can be achieved. The effects that this finding will have on practice is that within the scenario of an unfamiliar brand, greater levels of predictability will reduce the intent to purchase. Therefore, advertisers who have unfamiliar brands should have their adverts show up at non predictable points within the advertising interaction, as this will not result in a negative impact on intent to purchase. In relation to existing brands which have high levels of familiarity, no conclusions can be drawn due to the context that this study was undertaken. Further research could look to assess whether the same effects can be replicated with familiar brands with the aim of closing this gap in knowledge.

6.5   The Effects of Interaction

6.5.1   Two-way Interactions

The first two-way interaction between Choice*Information across the measures shows no statistically significant relationships as shown in Figure 6.4. This indicates that as choice and information are increased, there is no change in Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, Purchase Intention, or Ad Recall.
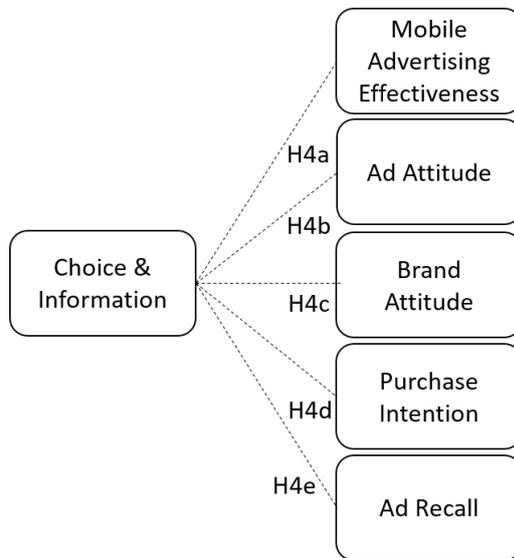
Figure 6.4 - Choice*Information and Dependent Variables

As discussed earlier in Section 6.3 on the role of choice, the researcher noted that lack of effect that choice has had within this experiment. Matched with the poor results highlighted within the information condition, it can be said that not much change occurs when the antecedents are combined. The only element to note is that within the information condition, there was a statistically significant negative relationship with Ad Recall. Once choice is combined to create the two-way interaction, the relationship is lost and becomes non-significant. As highlighted previously, the impact for practice is that the addition of choice provides no benefits to advertisers.

For the second interaction, Choice*Predictability shows evidence of a statistically significant relationship with Purchase Intention, with this relationship being negative as shown in Figure 6.5.
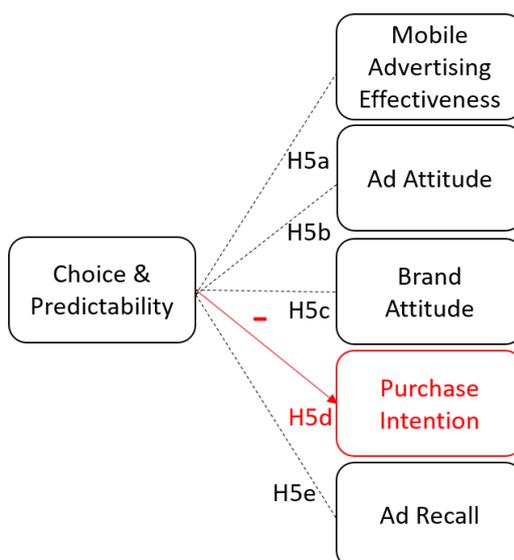
Figure 6.5 - Choice*Predictability and Dependent Variables

This indicates that as choice and predictability are simultaneously increased, there is a subsequent reduction in Purchase Intention. Choice showed no statistically significant relationships throughout, and predictability showed a negative relationship with Purchase Intention. It could be argued that there is no interaction effect between the two elements and that actually the effect from the predictability condition was carrying through in the two-way interaction condition. The impact for practice is that if advertisers want consumers to drive profitable action through the intent to purchase, it would seem logical that advertisers need to avoid providing too much choice and predictability within one advertising interaction. However, logically one might argue that the effect being experienced was actually just predictability and the choice element was having no effect in the interaction. Therefore, it could be deduced that showing adverts are an unpredictable time is more valuable.

In relation to interaction to the two-way interaction effects for Information*Predictability a statistically significant relationship was found for Mobile Advertising Effectiveness, Ad Attitude, and Ad Recall as shown in Figure 6.6 by the positive green arrows.
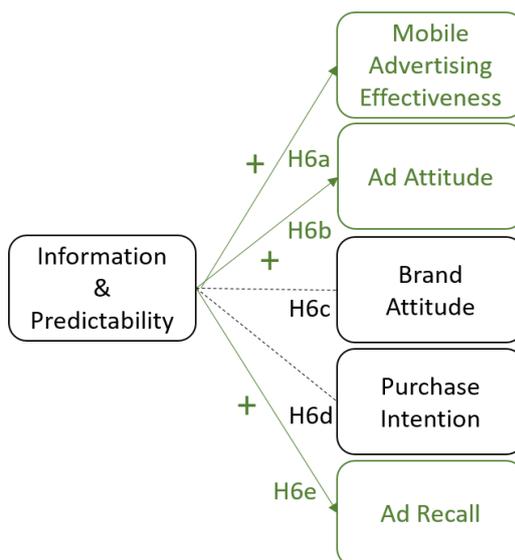
Figure 6.6 - Information*Predictability and Dependent Variables

All of these relationships are positive relationships which indicates that as the levels of information and predictability increase within the advertising interaction, the greater subsequent outcome on Mobile Advertising Effectiveness, Ad Attitude, and Ad Recall are achieved. An explanation for this finding might be that when there are greater levels of predictability, users are able to scan the advert which means the users don't absorb as much of the additional information. Scanning the advert allows the user to deal with the significant amounts of information available (Duggan & Payne, 2011), and perhaps reduces the feeling of being overwhelmed. The researchers go on to note that when skim reading users predict where information is going to be placed (Duggan & Payne, 2011), which ties in the predictability element of the interaction. By having an advert show

up at a predictable point, this may encourage users to attempt to predict other elements of the advertisement and encourage information scanning and as such improve Mobile Advertising Effectiveness, Ad Attitude, and Ad Recall.

It could also be argued that when information is in a predictable location and when it fits with the context as it does within this study, the more susceptible the user is for the advert to stick. Research on the congruency of web ads highlighted that adverts are more successful when there is congruency between the advert and the web pages the adverts are shown on (Cho, 2003). According to the researchers this ties to the interest element as discussed previously, whereby an advert that is congruent with the user's interest is less likely to interrupt their task (Cho, 2003). It could be argued therefore that this helps users because the advert is helping them to think about something that they are already thinking about, in a place in which that they expect to see it.

This relationship is particularly interesting because when looking at predictability and information as individual variables the relationships with the dependent variables seem to be inconsistent. Predictability has two statistically significant relationships (as highlighted in green) with Brand Attitude and also Purchase Intention and these relationships are negative, which indicate when there is an increase in predictability the lower the Brand Attitude and Purchase Intention measures become. The pattern of the relationship can be seen in Table 6.1.

Table 6.1 - Information and Predictability Findings

	MAE	Ad Att	Brand Att	Purchase Int	Ad Recall
Information	-	-	-	+	-
Predictability	-	-	-	-	-
Information*Predictability	+	+	+	+	+

The interesting element to highlight from the table is the lack of relationship between Information*Predictability for Brand Attitude and Purchase Intention. What can be seen from this table is that through the interaction of information and predictability, the statistically significant negative relationship has become neutral. The impact of this is that it further supports the premise that there is a positive interaction happening between information and predictability.

By itself, predictability seems to across the board, despite not all relationships being statistically significant to have a negative effect on all of the dependent variables. A similar conclusion can be drawn in regards to information, with only one statistically significant relationship showing a

negative direction. Therefore, it can be said by combining both information and predictability within the same condition to create a two-way interaction (Information*Predictability), synergistic effects can be seen. This results in the negative effects found to exist for the individual relationships, changing to become a positive relationship.

What is important to note is that even within the single variable conditions, the remaining variables still exist to some degree. For example, within the information condition, predictability existed, but this was considered low by the researcher. Therefore, it could be said that when users are shown lots of information in an unpredictable scenario, this could lead to frustration and reduces the ability to recall the ad and therefore an interaction still exists between the two elements. However, when the unpredictable nature is removed by adding greater levels of predictability, alongside the higher levels of information within the Information*Predictability condition the more receptive the user is to the advert.

The implications of this finding for practice is that both greater levels of information and predictability should be provided to users in a mobile advertising scenario. In relation to the informational element of the interaction effect, this poses some difficulty due to the small screen size and lack of ability to convey greater amounts of information. It is important to acknowledge that despite the discussion earlier in relation to information by itself, the interaction condition of Information*Predictability evidence the teaser information element does not apply here. Key information such as that used within this study e.g. price, reviews, and benefits have shown to be beneficial when matched with higher level of predictability e.g. shown at a sequential point such as during a page transition on a mobile website.

6.5.2   Three-way Interaction

The main aim of this research was to explore the relationship between the perception of control and Mobile Advertising Effectiveness and therefore this is the most pertinent relationship to discuss. With reference to Figure 6.7 below, there is no evidence to suggest that the perception of control in its entirety (all antecedents together) as shown in the three-way interaction condition; influences Mobile Advertising Effectiveness or any of the other measures.
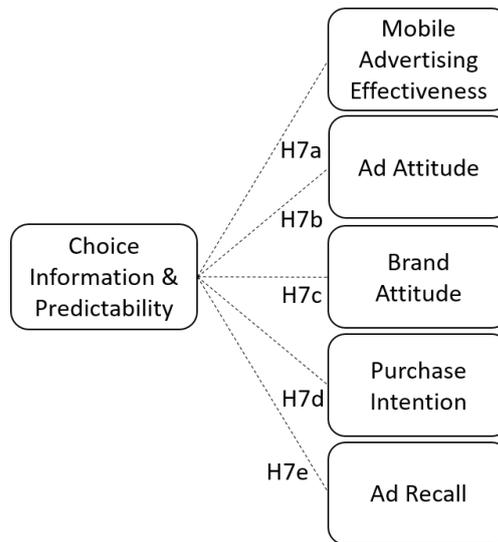
Figure 6.7 - Choice*Information*Predictability and Dependent Variables

This finding is particularly interesting as highlighted within the literature review chapter of this thesis there are a plethora of academics who have highlighted the importance of increased control. The reason for this finding may be due to the fact that as highlighted by academics, control is a complicated construct in which an increase does not always lead to positive outcomes and as such the conditions in which control increases positive outcomes is unclear (Burger, 1989; Miller, 1979). Therefore, this could be one of the contexts in which control as an entirety fails to lead to positive outcomes.

Looking back to the data to explain the findings indicates that it is the addition of Choice to Information*Predictability in which makes the positive significant two-way effect relationship to become non-significant. To summarise, the two-way interaction is non contingent with the third variables which is Choice. Looking at Choice within the main effects model re-emphasises this finding by showing that Choice has no effect on any of the dependent variables.

Looking towards the remaining two-way effect conditions which also incorporate Choice a similar finding occurs, within the Choice*Information condition none of the relationships with the dependent variables is statistically significant. In relation to the Choice*Predictability condition, the relationship with Purchase Intention is statistically significant, with this relationship being negative. The relationship for the main effect of Predictability however was statistically significant and this relationship was negative, this reinforces the premise that the Choice variable has no effect.

Given that it can be summarised that Choice has no effect within the analysis, it must therefore be questioned whether there is something inherent about choice in which has created non-significance in the three-way effect model. In order to ensure that this was not due to poor data, a reflection upon the descriptive statistics.

It is important to consider is that each individual will have a different level of desire for control, with individuals having different motivations which lead to their subsequent level of desire (Burger & Cooper, 1979). As such, given that individuals desire different levels of control and are motivated differently, this can cause variability in responses and as such reduce the level of homogeneity. This as an explanation for the lack of findings however is insufficient, as the participants were randomly assigned to conditions and therefore it would be highly unlikely that each condition had individuals with all similar desire levels, whilst also being distinctly different to the other conditions in relation to their desire for choice specifically.

As will be discussed in further depth later within Section 6.6, it is eluded to that there is something inherent about the Choice condition in which has led to the negative relationship between age and Mobile Advertising Effectiveness, Ad Attitude, and Purchase Intention. This is particularly important to understand as the relationship before the addition of Choice for Mobile Advertising Effectiveness and Ad Attitude are significant and positive, but Choice by itself is not significant for any of the dependent variables. Given that participants were randomly assigned to each condition; it is unlikely that a bias has impacted upon the findings here. To confirm this tying back to Section 5.3.1.2.1 on demographics the Choice condition, Information*Predictability, and three-way effect conditions were all representative in relation to both gender and age with no anomalies being identified within these groups. This indicates that the data again is not the reason behind the lack of relationship in the three-way effect condition, as such an understanding of other reasons must be considered.

As highlighted in Section 2.4.3, providing too much choice and also information can often lead to negative outcomes due to individuals feeling overwhelmed which results in paralysis. It could be argued that all three antecedents combined created an overwhelming effect on behalf of the user, which resulted in the non-significant finding. However, if this were to be the case then it would be unlikely that Choice would have no effect throughout the models, it would be more logical to expect the relationship to be strong in the initial stages and become weaker as greater levels of control were added which was not the case. As such this fails to address the explanation needed for Choice.

Tying back to some comments made in Section 4.4.1.1.1 in which looks to outline how Choice was manipulated within the experimental conditions, an explanation may be found. Within this section it was highlighted that at the fundamental core of any advertisement there will always be a cross to exit button, and also some form of call to action (CTA) which directs the user to more information or to purchase for example. Therefore, at the very basic level or mobile advertising, there are always two options provided to the user to make a decision and as such there is the opportunity for choice. This is reflected within the control condition in which both of those

opportunities were provided to the participant. The addition of control was operationalised as providing another clear button which allowed the user to cross off the advert, this button was clearer, larger, and also directly below the CTA. The researcher hypothesized that although no more choice was really provided to the participants objectively, that the perception of control would be increased because it more options were clearly available to the participant. Despite being pretested within the pilot studies, and argument could be made that across the board outside of the sample used within the pilot participants did not perceived this manipulation as an increase in choice, hence the lack of effect.

Looking towards the literature to provide an understanding highlights the complexities of perceived choice. Research indicates that the perception of choice can be significantly impacted based upon a variety of elements, for example the attractiveness of the outcome for example (Harvey & Johnston, 1973). An argument could be made that the outcome in both the control condition and the conditions which received the choice manipulation had the same outcome, and therefore the attractiveness of the outcome remained the same which may be a reason as to why choice had no impact as participants did not perceive there to be any additional choice. A year later the author further elaborated on the findings of their original paper and assessed the impact that timing and number of choices had upon the perception of choice (Harvey & Jellison, 1974). The results indicated that the amount of time available to make a decision along with the number of options impacted the perception of choice (Harvey & Jellison, 1974). As it was not possible to control for the timing in which users had to make a decision it could be argued that the ability to encourage the perception of control was limited, which further explains the lack of effect it may have had within this study. These studies clearly highlight the complexities of perceived choice, and therefore further or a more rigorous operationalisation of choice may impact future findings in this area.

Another explanation for the lack of effect may be due to the fact that despite the level of control provided to an individual through different buttons, their willingness to engage with the desired CTA will always be low, due to the disruptive nature of advertising. It would seem logical that providing users with a better ability to cross the advert off may not actually impact upon their overall Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, intent to purchase, or even their ability to recall the advert. Making it easier/clearer for users to cross the advert off will just make it easier for them to skip the advert and get back to the task in which they were trying to engage with. This is particularly interesting as this is aligned with the findings highlighted in a recent study which indicated that giving users early opportunities to skip video advertisements online reduced the CTR of the ad (Chiong, Shum, Webb, & Chen, 2018).

This finding to some extent supports the arguments put forward by researchers that state control and trust are not important factors to consumers in mobile advertising scenarios (Merisavo et al., 2007) in that Choice has been identified as having no effect. However, being more critical of the comparison, these two studies are not directly comparable in the fact that there were elements of control which showed to have a statistically positive and negative significant relationship with Mobile Advertising Effectiveness. Arguments can also be made that the dependent variables, operationalisation of control, and also the level of technology tested differed across the two studies. As highlighted throughout the literature on mobile advertising, there is evidence to support the variety of different measures used (Table 2.1) and as such direct comparisons across studies will always prove difficult.

It could be said that the findings from this research is particularly important, as they have empirically challenged the statements made by academics that control is the at the heart of improving mobile advertising campaigns (Adams & Millard, 2003; Gao et al., 2010; Kolsaker & Drakatos, 2009; Lee et al., 2015; Persaud & Azhar, 2012) and conventional advertising scenarios (Ducoffe, 1996; Tucker, 2014). This study highlights that the when combined, information and predictability create a synergistic effect in which creates an increase in Mobile Advertising Effectiveness, Ad Attitude, and also Ad Recall. This study also however highlights that choice (or at least the operationalisation of choice) has little impact within the context of this study, and therefore its relevance is questioned. The impact of this finding on advertising practice is that providing users with greater levels of choice does not create positive outcomes for the advertiser, specifically the dependent variables tested within this research. What this research does highlight, is that the concept of control within mobile advertising is complex and requires further exploration. This is particularly pertinent as there are clearly prominent issues within the mobile advertising industry which relate to users such as the prevalence of ad blockers, and as such failure to address these could ultimately impact upon the longevity of the medium. Although the entire construct of control was not found to have a relationship with Mobile Advertising Effectiveness, the results do support relationships in other models such as the I*P two-way interaction effect model, and as such the findings need to be considered holistically and not in isolation.

6.6   The Role of Demographics

As highlighted within the literature review chapter of this thesis, there are clear differences in relation to attachment (Adams & Fitch, 2006; Cushing, 2012; Harkin, 2003) and the perception of control (Aldwin, 1991; Kirk et al., 2015; Specht et al., 2013; Weisz & Stipek, 1982) when looking at age. Therefore, it was expected that age would have an effect on the results and as such was used within the first block of the analysis, so that this could be controlled for. From the initial regression analysis, age seemed to have a consistent relationship with Mobile Advertising Effectiveness, Ad

Attitude, and Purchase Intention. However, when further exploration was undertaken on this measure, it became clear that this relationship only existed within the choice condition and these results were impacting on the regression model as a whole. The relationship between age and Mobile Advertising Effectiveness, Ad Attitude, and Purchase Intention was negative which indicates that as an individual gets older the lower levels of the above measures, but this only exists within the choice condition. Ultimately what this indicates for practice is that providing more choice to older individuals has a negative effect on Mobile Advertising Effectiveness, Ad Attitude, and also Purchase Intention. As differences were found within the choice condition, the question must therefore be to understand what is it about the choice condition which is creating this negative relationship? As the sample was randomly assigned this type of anomaly would not be expected, therefore it must be considered what is it about the actual condition in which explains these findings.

As age could be considered to be a conditioning element, with research acknowledging the differences in decision making processes across younger and older generations, with the older generations utilising wisdom and insight in their process (Worthy, Gorlick, Pacheco, Schnyer, & Maddox, 2011). As such it can be argued that as age differs so will the expectations of the advertising scenarios and as such will impact upon the responses to mobile advertising attempts. For example, millennials have grown up with technology at the forefront of their everyday lives and therefore will be conditioned to perceived mobile advertisements differently to those in older generations who are learning to adopt technologies. A study conducted which looks to evaluate the effects of age on advertising effectiveness identified that there were differences between younger and older adults (McKay-Nesbitt et al., 2011). What is interesting to note, and may explain the null findings across all the conditions bar Choice, is that the researchers found that attitudes for different appeal frames remained the same across the younger adults (McKay-Nesbitt et al., 2011). This potentially highlights that when using a younger sample that advertising effects that may be expected to be observed, are actually lost.

For the remaining conditions, the findings of this research do not identify age as a predictor of Mobile Advertising Effectiveness, Ad Attitude, Brand Attitude, Purchase Intention, or Ad Recall. In relation to the existing research on this subject, the findings of this research does not agree with previous findings. However, as mentioned throughout this thesis, it is not possible to make direct comparisons against these studies as they are looking to explore different areas. Therefore, although they have provided an indication as to how the relationship may develop based upon age, this study is not a replication study and therefore differences have shown to exist.

For gender, the regression analysis did not find a relationship with any of the measures, this indicates that throughout the conditions males and females did not significantly differ in their

responses and as such gender is not expected to predict Mobile Advertising Effectiveness, the dimension measures, or Ad Recall. This is particularly interesting as previous research has shown differences in mobile phone behaviours across genders in relation to perceived control (Jayawardhena et al., 2009; Specht et al., 2013) and mobile phone use (Adams & Fitch, 2006; Van Deursen et al., 2015). Therefore, it could be argued that it would be expected to see this reflected in the results when looking at both age and gender. Although differences have been found across studies, gender has not been found to predict any of the dependent variables used throughout this study. It could be argued that although differences may exist in relation to mobile phone use and perceptions of control, that ultimately feelings towards mobile advertisements are not gendered. The impact for practice is that advertisers do not need to adjust the level of control based upon genders, as this makes no difference in relation to the response. It is important to consider here that this research utilised an unfamiliar gender neutral brand, and therefore further consideration of how this may change dependent on the type of product or service being advertised could be further explored in future research.

6.7   The Reality of Ad Attitude

For Ad Attitude there were only two statistically significant relationships, a positive relationship with Information*Predictability and a negative relationship with age. As discussed within the demographics section of this chapter, age was only found to have a statistically significant relationship throughout the analysis within the choice condition. Therefore, this finding must be considered with extreme caution. However, the positive relationship that exists with Information*Predictability evidences an interaction effect between the two antecedents. What can be said holistically in regards to Ad Attitude is that with the exception of these two relationships, very little can be found. One of the reasons that this might be is because as mentioned throughout this thesis, users do not hold positive attitudes towards mobile advertising. Given that this is the case it would seem logical that despite the different variations in control, this actually made no impact upon their overall attitude towards the ad. Relating back to the comments made by Kolsaker and Drakatos (2009); despite adverts being permission based, users still resent this invasion. It would seem logical that despite the advert providing greater levels of functionality, ultimately it could be argued these small changes between each condition are not enough to completely change a users' attitude towards the ad and therefore perhaps warrants further investigation.

6.8   The Reality of Brand Attitude

For Brand Attitude measure, there was only one statistically significant relationship which was the predictability condition, with this relationship being negative. The lack of relationships for this measure supports the idea that control within this context has little impact on Brand Attitude.

One of the most logical reasons for this finding is that the Brand Attitude measure was effected by the fact that the brand was fictional. As highlighted within the methodology chapter of this thesis, a fictional brand was utilised as it was decided by the researcher that the bias created by using an existing brand needed to be excluded. Therefore, it could be argued that in this scenario the bias was neutrality bias (Gao et al., 2009; Keller et al., 1998; Martí-Parreño et al., 2016), whereby feelings towards the brand was neutral due to users only having one interaction with the brand. As mentioned previously, when consumers are looking to make a decision in regards to a purchase consumers will need a suitable amount of information on an unfamiliar brand to form an opinion which can cause processing issues (Pellémans, 1971). Therefore, it could be argued that one exposure to the brand is not enough to generate positive feelings of Brand Attitude, and as such requires further research (Wang, Shih, & Peracchio, 2013). This is particularly important as researchers have acknowledged the issues relating to measuring marketing activities based purely upon on exposure to an advert (King, 1968). The researcher goes on to note that it must be accepted that research objectives are limited (King, 1968), trying to measure everything will never be a suitable option.

Again as mentioned above this study utilises a fictional brand and therefore further research could look to undertake the same study utilising an existing brand and then make comparisons between the fictional and real brand to assess the differences. If research also looks to elaborate further on the level of exposures, discussions could look to elaborate on how the results differ based upon this. This is particularly relevant as research indicates that with greater levels of exposure to online advertisements causes a priming effect which results in more favourable attitudes towards the brand regardless of how much attention they gave these exposures (Yoo, 2008). An argument can also be made that brands which are emphasised across a variety of channels such as offline and other online channels may also result in the same effect. Therefore, future research could look to see how the results generated as part of this study change, dependent on the number of exposures the users experience across offline and online.

6.9   The Reality of Purchase Intention

Looking at the dimension measure of Purchase Intention, it can be seen that throughout all of the conditions only three were statistically significant (Predictability, Choice*Predictability, and Age) with all of these relationships being negative. In relation to the existing literature, this research does not support the findings from the study conducted by Bacile et al. (2014) who found that control had a positive effect on Purchase Intention, as elements of control within this study (Predictability and Choice*Predictability) were found to have a negative relationship with Purchase Intention. The remaining conditions also showed no statistically significant relationship

with Purchase Intention, which indicates that within this study changes to control does not improve intent to purchase and in some cases reduces this.

An element to consider when deciphering the reasoning behind this finding is the number of exposures undertaken within the experimental conditions. Within the experimental conditions, individuals were only exposed to an advertisement once, and therefore a logical question to ask would be, is one exposure to an advert enough to create or encourage an intent to purchase? As highlighted in the Brand Attitude section, a greater number of exposures results in better attitudes towards the brand. As such it would seem logical to argue that similar effects might also be found for Purchase Intention. Research conducted by Dahlén (2001) indicated that for familiar brands increased exposure resulted in decreased CTR's, whereas increased CTR's were found when repeated exposures were used with a non-familiar brand. The researchers go on to note that unfamiliar brands should utilise a long term strategy in order to increase the number of exposures and as such CTR (Dahlén, 2001). This provides an understanding as to why Purchase Intention may not have shown positive relationships with the conditions, as this study used one exposure and an unfamiliar brand. A critique of the study conducted by Dahlén (2001) is that it is dated, and further research can look to undertake the same experiment using multiple exposures to assess if this theory stands in the modern day context.

Although it can be argued that one exposure is not enough to generate intent to purchase, it can be stated that one exposure to the advert is considered as the first step on a journey to purchase intent. As this was not the aim of the research it is hard to speculate as to how exposure levels have affected the results, however future research could therefore look to assess the differences across a variety of exposure levels and therefore confirm the findings within this study. Looking towards previous advertising campaigns, one ad exposure has been shown in the past to be responsible for a significant increase in sales, for example the 1985 Levi's advert for Levi 501's changed the way in which Levi's were perceived. As a notoriously uncool brand, one advert created a surge of sales in which was further developed into an entire campaign which revolutionised the brand image of Levi's (Pearse, 2016). A critique of this however, could be that although the first advert started the revolution for Levi's, it was the subsequent marketing campaign with additional exposures which really created the change. However, the initial advert did show a change in sales and therefore it could be said that one exposure is enough to create intent to purchase. A further argument could be made that as Levi's is an existing brand and the one used within this study was fictional, as such it is not directly comparable.

6.10 The Reality of Ad Recall

Ad recall is interesting as there are two statistically significant relationships, a negative relationship with information and a positive relationship with information and predictability. Although discussed in the relevant sections above it is important to consider other elements which may have impacted this relationship. One argument that can be made for Ad Recall is in relation to the exposure time of the advert. Researcher indicates that the longer users are exposed to an advert, the more likely that they will be able to remember it (Danaher & Mullarkey, 2003). As this study did not measure how long each individual looked at the advert, it is not possible to say with any confidence that the results are based upon this theory. What can be said is that through random assignment this type of effect would have likely been counteracted and as such future research may wish to look to confirm the finding by measuring the impression time of each advert and the corresponding scores. Another element to consider from the same study is that the researchers found that users who are online and who can be considered goal directed, are less likely to recall the advert when compared to those just surfing the internet (Danaher & Mullarkey, 2003). As all of the participants who took part in the research can be considered goal orientated, it could be said that this is difficult to ascertain the true level of Ad Recall when in a more natural environment.

Further analysis on the Ad Recall measure, through the use of a one-way ANOVA indicated that those in the low Ad Recall group when compared with the neutral Ad Recall group, responded differently in relation to Mobile Advertising Effectiveness. Those in the low Ad Recall group when compared with the high Ad Recall group also responded differently in relation to Mobile Advertising Effectiveness. This indicates for practitioners that there is a direct link between Ad Recall and advertising effectiveness, however, it does not indicate which influences the other and therefore future research could look to explore this further.

6.11 The Relationship between Dependent Variables

Although not the main focus within this research, during the data analysis chapter of this thesis the researcher looked to see if there were relationships between the dependent variables, such as the relationship between Ad Attitude, Brand Attitude, and Purchase Intention. The reason for this is that logically one would assume that many of these measures were related, and this is further supported by the literature which indicates their interrelated nature (Batra & Ray, 1986; Laczniak & Carlson, 1989; Laroche, Kim, & Zhou, 1996; Sallam & Algammash, 2016; Spears & Singh, 2004). For example, if an individual had a positive attitude towards the ad, the more likely they will have a better attitude towards the subsequent brand and as such they may be more inclined to purchase the product. To provide a greater depth of understanding of the relationships between the dependent variables, correlations were used to assess these across each condition.

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This allowed for the researcher to understand whether the manipulations in the conditions resulted in the inconsistent relationships amongst the dependent variables. Table 6.2 highlights the correlations which are not statistically significant, this means that there is no evidence to support a correlation between the two dependent variables in question.

Table 6.2 - Non-significant Correlations for Dependent Variables

Condition	Variables
Constant/Control	Ad Attitude and Purchase Intention
Choice	Brand Attitude and Purchase Intention

As evidenced in Table 6.2, there is no evidence to suggest a statistically significant correlation between Ad Attitude and Purchase Intention within the constant/control condition. This is particularly interesting because as highlighted, many researchers have found supporting evidence that these relationships should exist (Batra & Ray, 1986; Laczniak & Carlson, 1989; Laroche et al., 1996; Sallam & Algammash, 2016; Spears & Singh, 2004). However, what can be said is that researchers have acknowledged Ad Attitude as a mediator of Purchase Intention (Batra & Ray, 1986; Mitchell & Olson, 1981), and therefore although no relationship exists directly between Ad Attitude and Purchase Intention, this does not indicate that it does not mediate the relationship between Brand Attitude and Purchase Intention. For the Choice condition it was found that Brand Attitude and Purchase Intention were not correlated, this is particularly interesting as previous research indicates that these two measured are highly correlated (Laroche et al., 1996; Sallam & Algammash, 2016). Therefore, it must be questioned what impact Choice had upon the correlation between these two variables. Although the conditions were similar it would seem logical to point out that the manipulations within the Choice condition would have some effect on the look of the advertisement and as such had an impact on the results. As highlighted earlier when discussing the findings within the information condition, an element such as including star ratings in one condition may completely alter the way in which a consumer views that imagery and as a result impact upon the findings. This is further supported by Mitchell and Olson (1981) who noted that consumers are capable of developing brand perceptions based upon imagery alone which provides no brand explicit information, even when imagery is irrelevant to the product.

Outside of the commonly utilised Ad Attitude, Brand Attitude, and Purchase Intention measures, the researcher also looked to understand the composite score of Mobile Advertising Effectiveness and the Ad Recall score. The Table 6.3 highlights the correlation of Ad Recall against the remaining four measures.

Table 6.3 - Non-significant Correlations with Ad Recall

	Ad Recall
Mobile Advertising Effectiveness	No correlation evident in the Choice condition.
Ad Attitude	No correlation evident in the Choice condition.
Brand Attitude	No correlation evident in, Choice, Information*Predictability, and Choice*Information*Predictability conditions.
Purchase Intention	No correlation evident in, Choice, Choice*Information, and Choice*Information*Predictability conditions.

As highlighted in Table 6.3, one particular anomaly within the correlational analysis was that within the Choice condition, there was no correlation between Ad Recall and the remaining dependent variables. This indicates that when given more choice, the relationship between Ad Recall and the remaining measures no longer exists. Speculatively it could be possible to link this finding with the finding earlier whereby age was only a statistically significant predictor within the choice condition. This leads to the question, is there something inherent about choice in which has resulted in these findings, or is there additional noise within the experiment? As acknowledged within the research methodology section of this thesis, the experiment was highly controlled for with only the manipulations changing between conditions, with participants being randomly assigned and as such the additional noise theory should not withstand. Additionally, there is a lack of correlation evident in other conditions such as Choice*Information and the three-way interaction condition. Although it is not feasible to interpret these findings and make confident claims about the data, what this does highlight is that this area of inquiry requires further investigation. This is particularly important as significant research identifies the relationships between the dimension measures, future research could also further explore the relationships that exist between Ad Recall and the dimension measures.

6.12 Summary

Although at face value the findings within this research can be considered weak, with a few examples of statistical significance what can be said is that this research adds significantly to the field of knowledge. In relation to the theory of refutability or falsifiability by Popper (2002), a statement can be considered falsifiable if it is contradicted by a basic statement. For example,

researchers noted the importance of control and highlighted that this would solve the issues relating to mobile advertising. This research however refutes this with evidence to suggest that this is not always the case as the findings from this research highlight the complex nature of control. Therefore, this research is particularly valuable as not only does it address the proposition put forth by academics, it also refutes these claims and highlights avenues for future inquiry. As such it can be said with confidence that control is a nuanced concept and as highlighted previously, it is difficult to pinpoint in what scenarios control has an effect and whether this effect is positive or negative. There are also variables in humans in which means that it is not always clear how the objective control offered is perceived by the participants in the study. As acknowledged within the research philosophy chapter of this thesis, the researcher views the world as that of a critical realist. As part of the critical realist philosophy, the researcher accepts that not all individuals perceived the same sensations in the same way. Therefore, although manipulations have been made to the external world through the conditions, there is no guarantee that each individual will perceive the sensation in the same way. As such this variability in human behaviour will ultimately create a plethora of different scenarios relating to control with a wealth of varied outcomes.

It is also important when considering the correlational findings in relation to the dependent variables, is that all of the correlations within this analysis were all positive and although not always statistically significant correlations were either weak or moderate. Therefore, it is not possible to say that an association does not exist between them, as none of the coefficients were 0. It does not however empirically test this relationship and therefore, these findings should be considered with caution as the aim of the study was not to test the relationships between dependent variables, and thus these findings serve as an indication and are speculative. This analysis purely serves as a way to further understand the data and help to aid better synthesis of the findings.

Chapter 7: Conclusion

7.1 Contributions to Knowledge

The aim of this research was to test the following research proposition,

Does the users' perception of control during the advertising interaction, influence Mobile Advertising Effectiveness?

This thesis has successfully met this aim through the implementation of a rigorous research design, in which allowed the researcher to test cause and effect relationships between the independent and dependent variables. In doing so this thesis provides valuable contributions in which will be discussed throughout this section.

7.1.1 Theoretical Contributions

The theoretical contributions to knowledge that have been generated as part of this thesis can be broken down into four clear themes. In order to address this section effectively, each theme will be discussed independently.

7.1.1.1 Challenges Existing Theories

The findings of this research specifically bridges the gap between the theory of control and Mobile Advertising Effectiveness. This is particularly important as researchers over time have acknowledged the importance of control within mobile advertising scenarios (Adams & Millard, 2003; Gao et al., 2010; Kolsaker & Drakatos, 2009; Mcrae et al., 2013; Persaud & Azhar, 2012). Despite the acknowledgment, there are no studies which look to explicitly test these assumptions put forth by academics. Some research has focused around the customisation which researchers consider to be control (Bacile et al., 2014; Bright & Daugherty, 2012), however there have been no studies which actually look to assess control as a well operationalised construct in its entirety within the context of Mobile Advertising Effectiveness. Therefore, this research empirically tests and challenges the claims made by these researchers, and as such contributes to the understanding and knowledge surrounding the role in which control plays within mobile advertising scenarios. Through the combination of various fields of inquiry, this thesis also successfully manages to provide an insight for academics into the complex relationship that exists between the user, their mobile phone, and the advertising activities that take place upon it.

7.1.1.2 Application of Perceived Control within Mobile Advertising

This research extends the current understanding of perceived control by testing the most commonly accepted antecedents outlined by Skinner (1996) within the context of mobile advertising. This is particularly important as it was highlighted by researchers that it is not always clear in which scenarios an increase in perceived control will result in positive outcomes (Burger,

1989; Miller, 1979). The findings of this research highlight within the context of mobile advertising which specific antecedents have a negative or positive effect on Mobile Advertising Effectiveness measures, alongside which antecedents have no effect. This provides valuable insights to academics looking to further understand the situations in which perceived control can be beneficial.

7.1.1.3 Extends Current Understanding of Mobile Advertising Effectiveness

This study provides a theoretical contribution to knowledge through the extension of application for the Mobile Advertising Effectiveness scale created by Drossos et al. (2013). Currently the context of which this scale has been applied has been limited to that of mobile SMS advertising (Drossos et al., 2013; Tseng & Teng, 2016). This research takes the scale that was created by Drossos et al. (2013) and tests its applicability and suitability within the context of more innovative forms of advertising, which was as defined in this study as, adverts which pop up within socially shareable content.

7.1.1.4 Provides a Basis for Future Research

This research also allows for future research to build upon the findings of this study in other and relevant media channels, advertising formats, and across different devices for example. Given the fast pace of technological innovation, new technologies are opening up greater opportunities for marketers such as different formats in which to undertake advertising (Tan, 2018). Alongside this, wearable devices like the Apple watch, which are becoming increasingly popular as a supplementary device to a users' smartphone (Stern, 2015). As time progresses and the networked devices as part of the IoT increase (Verhoef et al., 2017); a greater understanding of the different contexts in which control can play a vital role within advertising is necessary. By providing future avenues for research this allows researchers to develop the theory and also improve generalisability by testing in different contexts.

7.1.2 Methodological Contributions

The premise of this study was not to generate methodological contributions, however throughout the process of this thesis some valuable insights were generated in which were deemed important to highlight.

The first insight relates to the use of smartphone technology within mobile advertising research contexts. With experiments typically defined as either laboratory or field; experiments can be conducted within the field, working with real consumers in real situations or they have been conducted in artificial and highly controlled laboratories. The method adopted within this study is novel in the fact that it merges the benefits that can be seen from both types of experiments. The benefits of field experiments are that they are able to depict real life scenarios and therefore have

a greater level of external validity and generalisability. Laboratories benefit as they are able to better control for noise and extraneous variables, in which may affect the results and as such higher levels of internal validity is gained through the use of laboratory studies. This study, through the adoption of a mobile website which was accessible via a smartphone, was able to create a hybrid approach to experimental research. By using the mobile website, it was possible to control for the experience that was had by the participants which highly reflects the traditional laboratory experiment. The use of the mobile website also allowed for the researcher to create a representative experiment design, whereby the experiment accurately depicts real life advertising scenarios, which is something that cannot be easily achieved in laboratory designs. This research was therefore able to also recreate elements of field experiments and as such attain the benefits of both methods and counteract some of the limitations associated with each type.

The benefits of undertaking research via smartphones was also that when giving a participant the URL for the study, they were making the conscious decision to engage with the research. In doing so, the participants were essentially recruiting themselves, which helps to reduce some of the ambiguities relating to informed consent. This approach also helped improve the user experience, through the use of a mobile website, it was possible to engage participants outside of a traditional laboratory setting. This meant that the experience for the participant was smooth and easy and therefore it could be argued that this encouraged more people to engage with the research. The use of the URL also created a more seamless transition from offline to online which helped aid sample recruitment. Ultimately, research takes time and anyway to reduce the amount invested on behalf of the participants will help to improve the response rate of the study. This approach reduced the amount of time needed to collect the data required for the study, but it also allowed for the researcher to collect responses in a digital format, which also helped to reduce the time to undertake data preparation.

Using the mobile website meant that the researcher was able to conduct these experiments during an individual's day to day life, whether they were on the train, sat in the university library, or even in bed at home. By using technology as a way to facilitate greater mobility, it was easier to recruit the required sample. This study, as highlighted within the methodology section of this thesis, unearthed the issues related to the utilisation of QR codes as a sample recruitment tool within advertising research. The researcher identified the unsuitable use of some QR code readers within advertising research due to the overlay of adverts typically used by these free QR code reader apps. This is typically overcome due to Apple and some Android devices having native functionality which does not rely on advertisements, and therefore this study identified a way in which the first issue could be counteracted. The researcher also acknowledged the requirement to pay for a QR code generator which would not overlay their own advertisements for example.

Therefore, the researcher identified two key areas which would need to consider when looking to utilise QR codes within sample recruitment in advertising research. This is particularly pertinent as health research has acknowledged the use of QR codes for sample recruitment, with a study highlighting QR codes were found to be the cheapest and had the highest response rate (Gu et al., 2016), therefore they may be used within the advertising context without proper caution being taken.

7.1.3   Managerial Contributions

The managerial contributions generated as part of this study are two fold, the first contribution relates to the review of literature, and the second relates to the findings generated as part of this study. In regards to the review of literature, this provides advertisers with a greater understanding of their audience in a way in which has not been considered before. The literature review allows advertisers to understand the elements in which makes their audience less receptive to advertisements such as the deep and meaningful relationships that they hold with their mobile devices. Through this understanding, advertisers can gauge better ways in which to communicate their messages to their audience that are more aligned with the user's own preferences. With the role of marketing aimed at focusing on the users' needs and advertising an element of marketing, it is vital that advertisers understand the complex relationship held with mobile phones in order to provide a better advertising experience.

As evidenced earlier within the introduction section of this thesis, mobile advertising has seen a 36.2% year on year growth in Q1 of 2017 (Advertising Association, 2017), despite growth in this area, users are actively seeking ad blockers in order to control the advertising content they could potentially be exposed to (Cortland et al., 2017). In addition, research has found that advertisers are also not seeing the expected levels of return on investment (Feng et al., 2016). This highlights the clear disconnect between what users are willing to see, and what advertisers are delivering. Therefore, one of the biggest managerial contributions is that the findings and the review of literature from this thesis will help to provide a strong basis for identifying best practices within the field of mobile advertising.

The results from this research will allow advertisers to make more informed decisions in relation to their advertising practices. By discovering the most effective ways of undertaking advertising via smartphones managers will be capable of gaining an understanding of user preference and familiarity of best practice within this medium, which as identified by Parsons (2012) as one of the reasons why advertising via this medium are so ineffective. The findings from this research specifically identified a two-way interaction effect between information and predictability, which had a positive impact upon Mobile Advertising Effectiveness, Ad Attitude, and also Ad Recall. The research also highlighted that many relationships were negative or entirely unsupported by the

data. The contribution here is that this provides evidence to advertisers in regards to what they should do, and what they should avoid in mobile advertising practice.

As highlighted within this thesis, in order to ensure that access to mobile apps and content remains free, advertisements will remain as these are the backbone to any free to use service (Bhat, 2015; Fanjiang & Wang, 2016; E. G. Smit et al., 2014). As users begin to download ad blockers there is a serious threat to this advertising ecosystem in which results in free apps and free content becoming an unviable business model. Too many users downloading ad blockers can also result in ad blocking companies acting as 'gate keepers' in which they decide which adverts users will be exposed to. The effect of this could be that the interest of the user will be second to that of the advertiser who is willing to pay the most money to have their advert seen, which again creates an unstable online environment. This research therefore highlights ways in which the industry can create advertisements which are more effective, and by doing so create adverts that users are happier to receive, and as such reduce the amount of ad blocker usage. The effect of this will help towards restoring the ecosystem of advertising that exists online and on mobile phones, whereby users can still enjoy free content in a way that is less stressful and invasive, and advertisers are still able to target their audience with marketing messages.

7.2   Limitations of the Study

Although the aim of this research was to create a rigorous study in which reduced the amount of limitations in order to improve validity, there are always some limitations that must be acknowledged in order to fully understand how to interpret the findings. As acknowledged by Cunningham and Wallraven (2012) there is no way to reduce all bias, and no such thing as a perfect research design (Patton, 1990; Richardson et al., 2011). Therefore, it should be expected that within research, there will always be trade-offs (Patton, 1990). As such this section will therefore look to highlight the limitations of this research study, with some discussion on how this reflects on the interpretation of the findings.

7.2.1   Researcher's Paradigm

The first limitation that can be discussed relates to the researcher's paradigm, which can essentially be described as the belief system of the researcher. As highlighted within the research methodology chapter, it is important to understand the researcher's paradigms as this will ultimately impact upon the way the research is conducted, analysed, and interpreted (Dobson, 2002; Saunders et al., 2012). Different paradigms ultimately rely on different views of the world and emphasises value on different types of assumptions about the world. This results in different data needing to be attained, and as such different methods being adopted to attain said data. Given the researcher sits more towards the positivist end of the philosophical spectrum as a critical realist, it can be said that the researcher values data in the form of numbers. In order to

collect such data, the researcher was required to use quantitative methods of data collection through the use of an experiment. Therefore, it can be said that the researcher's paradigm of the world has ultimately dictated the way in which the research has been conducted.

The same argument can be put forward in relation to the interpretation of findings, with each researcher having their own identity and paradigm, it would seem logical that the conclusions drawn from the data would also be different. Much like the ancient parable of the blind men and the elephant, each man will come at the elephant from a different perspective and as such describe the elephant differently. The same can be said for academic research, whereby a researcher's own experiences and perspectives of the world ultimately impacts upon the way in which the findings are reported. This again highlights the way in which the researcher's paradigm can create limitations for research. It is however important to note that although the men in the ancient parable described the elephant differently, none of them were incorrect. Therefore, so long as researchers understand their potential biases, it is possible to reduce the potential effects these biases may have upon the research (Flowers, 2009). As highlighted by Baert (2005) it is impossible for the values and political views of the researcher not to ultimately impact upon the research, which is why the acknowledgement of a researcher's bias is so pertinent.

7.2.2   Perception of Control

A limitation of the study is that an argument can be made that the researcher did not actually measure the perception of control. Although the relevant manipulations were made to help encourage feelings of the perception of control, it can be argued that the perception of control is entirely subjective. Therefore, despite manipulations being made to the antecedents of the perception of control, increased levels of perceived control is ultimately dictated on an individualistic basis (Skinner, 1996). Therefore, it cannot be said with confidence that feelings of perceived control were achieved. An argument could also be put forward that despite the manipulations made to the antecedents of perceived control, users will always view advertising scenarios as ones in which they feel helpless, and as such the perception of control despite the manipulations may remain the same. In line with the theory of learned helplessness, individuals will not feel in control if they do not believe their actions have an impact on the outcome (Seligman, 1976), which as highlighted by Gao et al. (2010) can happen in mobile advertising. What can be said with confidence from this study is that the manipulations made, resulted in the findings. What it is not possible to say is how users perceived the different manipulations in relation to their own control. This limitation was mitigated through the use of a pilot study whereby participants were asked to confirm they acknowledged differences in the amount of control they were afforded. Future research however, could look to further elaborate on this study

by empirically assessing the perceptions of control alongside the manipulations as this would result in greater levels of academic rigor.

Another element to consider is that this study assessed the effects of three most commonly accepted antecedents of control, which are choice, information, and predictability (Skinner, 1996). As highlighted by Skinner (1996), the perception of control has six antecedents which include warning signal, regulated administration, and also decision. It could therefore be argued that because the researcher focused only on the main three, this is an explanation for the weak results. However, as discussed previously this research was limited in terms of time and therefore the decision to focus on the main three was a strategic one, with the aim to explore this avenue further in post-doctoral research.

7.2.3   The Context of Perceived Control

Within the literature review a poignant point was made by Dahlén et al. (2004) that although users may have no control over whether they are targeted by advertising, an argument can be made that they retain control over whether or not they process the advert. Therefore, a question arises as to whether users want control over the advertising interaction or whether users would like control over whether they have been targeted or not. This research looks to assess control within the context of the advertising interaction, but it is important to be aware of the fact that the desire for control may happen at different stages in an audience's life cycle, whether that be from the initial targeting, through to remarketing for example. It could be argued that research already exists in relation to targeting when researchers look to assess the need for users' privacy. Future research could look to elaborate on different areas within the life cycle, in order to provide a better picture of which variations of control and at what stages this may have an effect. It is important to be aware that the findings of this research, given its exploratory nature are confined to the context in which it was tested and therefore this limits its generalisability to different points in the advertising life cycle.

7.2.4   Variability in Human Behaviour

Social science research looks to understand human behaviours, and it is when research looks to study these behaviours that limitations to findings can be questioned. Human beings in their very nature are chaotic, and researchers have highlighted that humans vary a great deal in their behaviours (Greene & D'oliveira, 2006). Because of this it is incredibly difficult for researchers to make exact predictions that will be generalizable to all humans in the same manner (Greene & D'oliveira, 2006). As mentioned previously, although utilising more homogenous groups helps to reduce this variability in data, some level of variability will always exist in human behaviour and therefore social researchers attempt to make predictions in a way in which accounts for this variability (Greene & D'oliveira, 2006). In relation to this study, the researcher has no control over

the variability in human nature however, this is a prominent issue throughout all research which studies human behaviours. The researcher as mentioned previously did aim to reduce this variability through using a homogenous group, although this can cause its own limitations which was discussed in Section 7.2.5. It can be said that the researcher has aimed to reduce the level of bias throughout the research wherever feasibly possible.

Variability in human behaviour also related to the self-reported measures used within this study, such as Ad Recall. An argument could be made that the findings derived in relation to Ad Recall could be limited due to the fact that a 7 point Likert scale was adopted. The issue here is that there is no uniformity in response to this measure, for example two participants may be able to recall the advert to the same level, however one may perceived the recall to be a 3 for example, whilst the other may state 5. In order to reduce the effect of the limitation, all Likert scales used within this research were statement anchored which helps to provide a uniform context for all participants and help to guide their self-reporting in a more consistent manner. Utilising anchor points within Likert scales allows for a greater level of reliability (Boote, 1981), however there will always be some level of variability despite attempts to control this.

7.2.5   Hypothetical Bias

As discussed earlier within Section 2.5 of this thesis, hypothetical bias is something the researcher of this study needs to be conscious of, this is because this study utilises stated behaviours as opposed to real behaviours. An argument can therefore be made that what an individual says they will do; is often different to what they actually do in real life. Although a thorough discussion was outlined in Section 2.5 on the subject of hypothetical bias, it was ultimately decided by the researcher that utilising stated behaviours was the only way to move forward with this research project. Ultimately this decision was heavily impacted by the board of ethics who advised against any attempts to measure real behaviour, due to the potential ethical issues that may have arisen. For example, it may have mislead respondents to believe that they could actually go on to purchase the music streaming service offered by Loop when in fact they could not. Due to the time constraints of this thesis it was unfeasible to spend a significant amount of time trying to navigate the ethical intricacies of measuring real behaviour, as such the most suitable option was to use stated behaviours. Although the researcher discusses in Section 2.5, that the potential effects of this and how this can be mitigated, ultimately it is important to be aware of the limitation that this has upon the conclusions drawn from this research. Although the findings provide a useful guide at understanding how this will impact actual behaviour, ultimately the findings from this research only relate to stated behaviours. As such it is important to be aware that confidence in claims can only truly be made within the context of the study.

7.2.6 Student Samples

Another limitation can be argued to be the use of student samples within the research design of this experimental study. As highlighted within Section 3.4.4 of this thesis, the use of student samples has been widely discussed, but ultimately the final decision to use this type of sample was based upon there being more benefits to the use of this sample given the research context.

One of the limitations in relation to the context of this research is that this research was looking to increase the level of homogeneity of the sample to ensure a greater level of accuracy, which was helped through the use of a student sample. However, given the large representation of students from a variety of international backgrounds at the University of Portsmouth, it could not be guaranteed that culture would not have an effect on the results. This was particularly pertinent as culture has been shown to have an impact on the topic being studied (Jiménez & San-Martín, 2017; Liu et al., 2012; Mueller & Thomas, 2001). With an average international student cohort of 11% across all faculties within the university (University of Portsmouth, 2018), it could be argued that this may have created noise within the experiment. The generally low standard deviations that have been highlighted within the data analysis section for this study however show a strong level of homogeneity of responses. This indicates that although culture can have an impact on the findings, within the context of this research there is little evidence to suggest a lack of homogeneity. However, this cannot be said with complete confidence as the researcher did not collect data on the participant's cultural backgrounds, and as such this need to be taken into consideration.

An argument can also be made in relation to the homogenous sample in which was inherently based on students, that was used within this research. As identified by Peterson (2001) as homogeneity increases the results can become weaker, as such this puts into question the conclusions drawn from this research and increasing the chance of making a type II error. As shown within the data analysis chapter of this thesis, the results from the hierarchical multiple regression were not very strong and therefore it could be argued that due to the homogeneity of the sample, there could have been a reduction in the strength of relationships or the potential that a type II error has occurred. However, as identified previously, weak findings such as these within consumer behaviour research is fairly typical (Zinkhan & Muderrisoglu, 1985).

7.2.7 User Experience

As acknowledged by Harris (2008), when creating an experiment it is important to control for the variables in which may have an impact upon the results of the study. However, given that the experiments are being undertaken by users at their choosing, it is not possible to control for all potential variables and as such it is important to be aware of the impact this may have. Participants within this research may have undertaken the study at different times of day when they felt more

tired, whilst others may have participated in the experiment early in the morning when they felt awake and alert. Some participants may have taken part whilst at university, whilst others may have waited until they arrived home to participate. Participants may have been listening to music, whilst another may have been listening to their lecturer. Ultimately what can be said about this study is that the researcher could not control for the external environment in which the participants undertook the study, and as such this can result in extraneous variables that ideally should be controlled for (Harris, 2008). Harris (2008) acknowledges that is not possible to control for every extraneous variable, but it is important to consider what tactics the researcher used to reduce any potential impact these may have.

The main aspect to consider is that this research is looking to utilise a representative design, in which replicates real life scenarios in order to help improve external validity (Berkowitz & Donnerstein, 1982; Camerer & Mobbs, 2017; Cunningham & Wallraven, 2012). What can be said about the topic that this study is concerned with, is that mobile advertising scenarios can happen to users in a variety of different contexts and as such it could be argued that in order to have a representative design it must incorporate different contexts. The final aspect to consider is how the researcher aimed to reduce the effect this may have upon the data, by utilising random assignment to conditions (Harris, 2008). By randomly assigning individuals to conditions this will result in reducing any potential patterns that may impact upon the data. Therefore, although controlled for, it is still important to be aware that the context of the experiments in which users participated was outside of the researcher's control. What can be said is that internal and external validity is to some extent a trade-off, whereby, as the level of internal validity is increased through the use of extra controls, there is a reduction in external validity and vice versa.

Another potential limitation of this research design is that artificial exposures to advertisements can often result in individuals giving too much attention to the advertisement, even though typically in a natural environment they would not give as much attention to the ad (King, 1968). In order to counteract this behaviour, the advertisement will be deployed in a 'typical' controlled mobile experience. As discussed previously in the research methodology chapter, through the use of a representative experiment design, the issue of participants giving too much attention to the advert can be negated.

7.2.8 Context of Research

Although typical of the majority of studies, a limitation of this study is that the context in which it was designed and tested was very specific. For example, this research aims to understand the relationship between control and Mobile Advertising Effectiveness, however it only tests this within the context of a pop up advert, on a music blog which advertises a music streaming service. Although, a very typical example of mobile advertising, the mobile advertising landscape has a

plethora of formats and placements. For example, focusing purely on the format of the advertisements, mobile adverts can be in the form of banner adverts, pop up adverts, click to expand adverts, video adverts, and picture ads. For the placements, adverts can be placed at the top of a website, it could be placed in the midst of a variety of other adverts, the advert could load between a level in a game or pop up on a webpage. The potential variations that could have been tested as part of this research were numerous, and therefore it is important to consider these findings in relation to the context in which they were tested. The researcher was unable due to resource and time constraints to test multiple formats and placements, and therefore this is a potential avenue for future research to see whether the findings are consistent across different advertising variations. In order to reduce the limitation, the study incorporated an advert format and placement that was most prevalent at the time of the construction of this thesis. This would result in the research findings being highly relevant to the current situation faced by the mobile advertising industry.

In relation to the type of product/service being advertised, there are a variety of limitations that could be considered. Firstly, it could be argued that there would be a difference in results if the researcher focused on low/high involvement or hedonic/utilitarian products as mentioned within the research methodology section when discussing the FCB grid it was found that greater effects could be found in different quadrants (Bendixen, 1993). This is further supported by Dahlén (2001) who states that online banner advertisements work differently for different types of products and as such strategies should take this element into account. Research conducted on online skippable advertisements for example, found that product involvement is positively related to Ad Attitude and Brand Attitude whilst also reducing the level of intrusiveness (Belanche, Flavián, & Pérez-Rueda, 2017). This indicates that different results will be found when looking at different types of products with differing levels of involvement, as such this should be considered as a potential avenue for future research. It is important to note that that these findings are limited to the context in which this study was conducted.

Due to time constraints and the aims of this research, the focus was not to differentiate between different types of products but to focus on a product/service that would normally be advertised via mobile. A music streaming service was gender neutral but was also a typical type of service that is advertised via mobile. Creating the experiment to incorporate common examples that exist within the mobile advertising environment helps to improve the level of generalisability as it is commonly experienced by users.

It could also be argued that a limitation exists due to the use of a fictional brand, as such the brand measure could be questioned. As stated in Section 4.4.1 of this thesis, the utilisation of a fictional brand was important in order to create an unbiased environment (Gao et al., 2009). An argument

however could be made that brand related measures within this study are irrelevant, as brands are built over time with researchers acknowledging the issues relating to measuring marketing activities based purely upon on exposure to an advert (King, 1968). Although some research has shown this approach to be effective and suitable (Narang et al., 2012); arguments can be made against the use of fictional brands. Graeff (1999) highlighted that uniform bias was more prevalent with brands that were unfamiliar, with this limitation potentially resulting in neutrality bias (Gao et al., 2009; Keller et al., 1998; Martí-Parreño et al., 2016). An argument could be made that in this scenario, the measurement would be assessing the attitude towards the ad rather than the brand itself, as brands are built over time with multiple interactions, which this research did not test.

7.2.9   Cross Validation of Results

The experiment conducted within this study, was undertaken twice, once for the pilot study and then the main run of the experiment. Idealistically the experiment would have been run multiple times as highlighted by Cunningham and Wallraven (2012), in order to cross validate the results to ensure reliability of findings and further improve external validity. Unfortunately, due to resource constraints the final experiment was only able to run once, therefore some caution needs to be taken when interpreting the results of the study. Although a pilot study was undertaken, the changes between the two iterations of experiments makes the data from both runs incomparable. It should also be noted that pilot studies are not used as a means of hypothesis testing, but as a way of testing feasibility and the initial step in exploring new methods (Leon et al., 2011). Therefore, further research would be required to assess the reliability of findings. Given the time constraints experienced by the researcher it was not feasible to undertake multiple runs of the experiment, therefore this will be an avenue that can be explored as post-doctoral research.

7.2.10   Achieved Statistical Power

Looking at the achieved statistical power across each of the models for the construct measure, dimension measures, and Ad Recall highlighted in Table 5.1 in Section 5.2, there is evidence of strong statistical power achieved with models 3 and 4 across the board. There are however in some of the models lower than 70% statistical power which does mean that there is an increased chance of making a type II error, whereby the test is not strong enough to detect an effect even when an effect exists.

For Brand Attitude, model one and model two were both below the 70% threshold, along with model one for Purchase Intention and model one and two for Ad Recall. This means that trying to make any claims of null hypotheses based on these models will be based on weak statistical power and as such should be considered with caution. As the researcher has mainly focused on the final models or statistically significant results in the earlier models, this was not considered an issue.

However, what is important to note is that the non-significance in some of the earlier models across some of the conditions may not be because there is no effect, but merely that the statistical power was too low in the early models to detect such an effect, especially when these effects are weak.

7.3   Future Research

This research provides a fundamental understanding of the role that control plays within mobile advertising interactions. This research has also highlighted interesting areas of future inquiry, and therefore this section will look to highlight these avenues for future research.

7.3.1   Expanding upon the Research Context

This research adds to the knowledge of the field of mobile advertising within the context of mobile pop up adverts on socially shareable content. As highlighted previously in the limitations section of this chapter, there is an opportunity for future research to not only look across different contexts and samples, but also to consider different types of technologies. With the rise of the IoT, wearable technologies are now becoming a part of everyday life which creates an additional channel in which audiences are able to be targeted. Therefore, there are potential avenues for future research, which specifically looks to understand how control may relate to other types of very personal technologies.

Finally, relating back to the discussion and the comment made by Dahlén et al. (2004), if users still retain control over the advert through having the ability to ignore it, or not process it then an argument could be made that it is within the targeting stage whereby users feel most helpless. Future research could therefore look to assess whether changes to control have greater effects within different stages in a customer's advertising journey.

7.3.2   Further Investigation into the Antecedents of Perceived Control

This study looked to assess the effects of the main three and most commonly accepted antecedents of control, which are choice, information, and predictability (Skinner, 1996). However, as acknowledged by Skinner (1996), the perception of control has six antecedents, the remaining three which were not a focus of this study were warning signal, regulated administration, and decision. Due to resource restraints it was not possible to focus this study on all three, however given that the initial research has now been conducted in this field via this study, future research could look to incorporate these into the existing study design. As highlighted within the discussion chapter on the perception of control, an argument could be made that the reason for the weak findings could relate to only manipulating three of the six antecedents. As such it could be argued that not all the required manipulations of perceived

control were made. By incorporating all of the antecedents into one research design, this could provide a greater insight into the role that control plays within advertising interactions.

7.3.3 Further Investigation into the Dependent Variables

This research utilised Mobile Advertising Effectiveness, its dimension measures, and also Ad Recall as the dependent variables within the data analysis for this study. The logic behind this choice was based upon a variety of different elements as discussed within Section 2.5 of this thesis. As highlighted within the Table 2.1 which looks to outline the research on advertising effectiveness, there is a plethora of potential measures that could be utilised. Therefore, although not the focus of this research study, it may be interesting to consider other dependent variables that could be measured within this research. As highlighted by Mariani, Borghi, and Gretzel (2019) further elaboration on other measures is a useful means to further research, and therefore this research could look to elaborate on the measures used within this study. Research conducted by La Ferle and Choi (2005) developed the traditional Ad Attitude, Brand Attitude, and Purchase Intention model, by incorporating credibility within the context of celebrity endorsers. Therefore, future research could perhaps look to develop the existing model with specific focus on mobile advertising as opposed to celebrity endorsements. For example, the study conducted by Bacile et al. (2014) looked at attitude towards the communication as opposed to attitude towards the ad. This is particularly interesting as an individual may like an ad, but may not appreciate the means of communication, as such future research could look to incorporate this within the study design. The study conducted by Bacile et al. (2014) also utilised more specific measures such as coupon proneness, therefore it may be valuable to incorporate more specific measures in future research. This could prove useful for research which incorporates real brands, as the measures can be more relevant to their advertising objectives.

It may also be valuable to consider the incorporation of real behaviours, given the debate on hypothetical bias highlighted in Section 2.5, this could be done through the use of field experiments. As this was acknowledged as a potential limitation in Section 7.2.5, the researcher believes it would be valuable to actually measure behaviour in a follow up study in an attempt to generate data that can be compared. This would provide insight into whether within this context a meaningful difference exists between real and stated behaviours, which could provide insight into the debate on the use of hypothetical choices in marketing research which was discussed in Section 2.5 of this thesis. Future research may make it more feasible to measure actual behaviours due to the potential for funding and also greater ability to dictate time frames which will give the researcher more time to work more closely with the ethics board.

Finally, looking towards other supporting measures, measuring the perception of control within future research would also provide researchers with a greater understanding empirically as to

whether their manipulations have resulted in meaningful changes to the perception of control. This research, although made manipulations to the three of the antecedents of perceived control, there was no measure within the experiment to test the respective perceived control scores from participants. Pilot studies were undertaken to ensure that the manipulations were suitable, however empirically testing this as part of future research will further support this research and also help to understand more about how changes in the advertising interaction relate to changes in perceived control. It is also valid to note that individuals will have a different level of desire for control (Burger & Cooper, 1979), and as such future research could also look to see how differences in the desire for control impacts upon the results. For example, undertaking a regression analysis to ascertain whether the level of desire for control had a relationship with Mobile Advertising Effectiveness.

7.3.4   Further Investigation into the Confounding Variables

The findings from this study identified that within the Choice Condition, age was a statistically significant predictor of Mobile Advertising Effectiveness. As discussed within Chapter 6, this was an anomaly and therefore further research could look to clarify and understand why this happened. Running the experiment again would for example help to identify whether this was a consistent finding and as such identify whether there is something about choice in which has resulted in this finding.

Although not a focus within this research, as acknowledged by Jiménez and San-Martín (2017), Liu et al. (2012) and Mueller and Thomas (2001), differences have been found in relation to control and culture. Therefore, future research could look to do a comparison study across different countries in which Hofstede's cultural dimensions (Hofstede, 2011), acknowledge as diametrically opposed. This would provide a valuable insight to practitioners in regards to how control within advertising interactions differs across cultures. This will allow them to create best practices based upon the geographical locations in which they wish to succeed with mobile advertising.

7.3.5   Incorporation of the Qualitative Method for Future Research

This study has looked to empirically test whether increased levels of user control within a mobile advertising interaction relate to a change in Mobile Advertising Effectiveness. Although this research has generated valuable findings, as discussed throughout Chapter 6, these findings show a great level of complexity. Therefore, the researcher believes that it would be valuable to further understand the relationship that individuals have with mobile advertising. A suitable method of attaining this is through the use of a qualitative approach, utilising a triangulation method which improves research rigor (Farquhar, 2016). Given the complexity of the subject being studied, triangulation provides a useful opportunity to understand multiple perspectives of a phenomena and in doing so better understanding the subject at hand (Farquhar, 2016). This will allow the

researcher to develop the current theory developed in this study with rigor, by further understanding the intricacies of the role that control plays within the context of mobile advertising. By undertaking a qualitative approach, richer insights could be achieved and as such elaborations could be made to the conceptual models highlighted within this study. This would then create a greater understanding of how the theory created from this thesis could be further developed.

7.4 Accomplishment of Research Objectives

Within the introduction chapter of this thesis in Section 1.3, the researcher highlighted five objectives for this research. This section will therefore discuss the achievement of each of these research objectives as a means of identifying the successful completion of this study.

1. *To critically evaluate and clarify previous research on the concept of control and Mobile Advertising Effectiveness.*

The literature review chapter of this thesis highlighted and critically evaluated a wealth of literature across a variety of research domains such as; human behaviour, psychology, advertising, technology, and anthropology. In total the researcher has collected almost 700 sources of information which has contributed to the understanding, with the majority of these sources being presented within the literature review chapter. Two key sections looked to outline and evaluate the literature on control and Mobile Advertising Effectiveness, as such the researcher believes to have achieved the first objective set out within this thesis.

2. *Conceptualise and develop suitable hypotheses on the basis of a thorough review of relevant literature.*

From the extensive review of literature, the researcher developed the conceptual models for this study which are outlined in Chapter 3. From these conceptual models the researcher was able to identify the hypotheses for this study, these are also highlighted alongside the conceptual models in Chapter 3. Given that the hypotheses were successfully tested which resulted in meaningful insights, the researcher can feel confident in having achieved objective two.

3. *Outline suitable experimental and survey methods in which the research proposition can be addressed.*

The research proposition for this study is, '*Variations in Mobile Advertising Effectiveness will be associated with variations of control in the advertising conditions.*' In order to assess whether the experimental and survey method adopted was suitable, it is important that the methods adopted were critiqued. In Section 4.4.1 the researcher provided an in depth discussion in relation to the suitability of these methods. The result of this discussion was that given the aims of the research,

that this method was the only one suitable to address the research proposition and as such achieve objective 3.

4. *To critically examine the limitations and generalisability of the research findings.*

The researcher critically examined the limitations of the research findings, along with a discussion in relation to the external validity in this chapter in Section 7.2. Throughout this entire thesis the researcher has been critical of the approaches used, and also been very aware of the potential bias that may exist. Matched with the extensive limitation Section in 7.2, the researcher believes that objective five of this research has been successfully achieved.

5. *To make an original theoretical contribution to knowledge.*

As discussed throughout the contribution to knowledge section, with specific reference to Section 7.1.1 'Theoretical Contributions', the researcher has successfully contributed to theory. This was achieved by addressing a claim stated by researchers that has yet been empirically tested. In doing so the findings of this study challenged the claims made by researchers and in doing so identified the relationships that existed between the perception of control and Mobile Advertising Effectiveness.

7.5 Final Thoughts

This present study is the first to assess the impact that three main antecedents of perceived control, can have upon the effectiveness of a mobile advertising interaction. This research is cross disciplinary in nature, and has brought human behaviour theory into the realm of advertising research. The findings of this research indicate that control is a complex construct in which certain variations of Choice, Information, and Predictability has the potential to improve upon Mobile Advertising Effectiveness. Other variations on the contrary have shown the potential to reduce the levels of Mobile Advertising Effectiveness. The insights generated from this study provide academics with an understanding of how control performs within the context of a mobile advertising interaction, which further extends the knowledge on which situations result in positive and negative outcomes. This study also highlights for practitioners the effect that simple manipulations to user control, may have upon the effectiveness of their mobile advertising efforts. Ultimately this study is the first of its kind to address the consistent theme acknowledged by academics, that control is at the heart of the mobile advertising issue.

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Appendices

Appendix 1 – Deductive Based Research Model
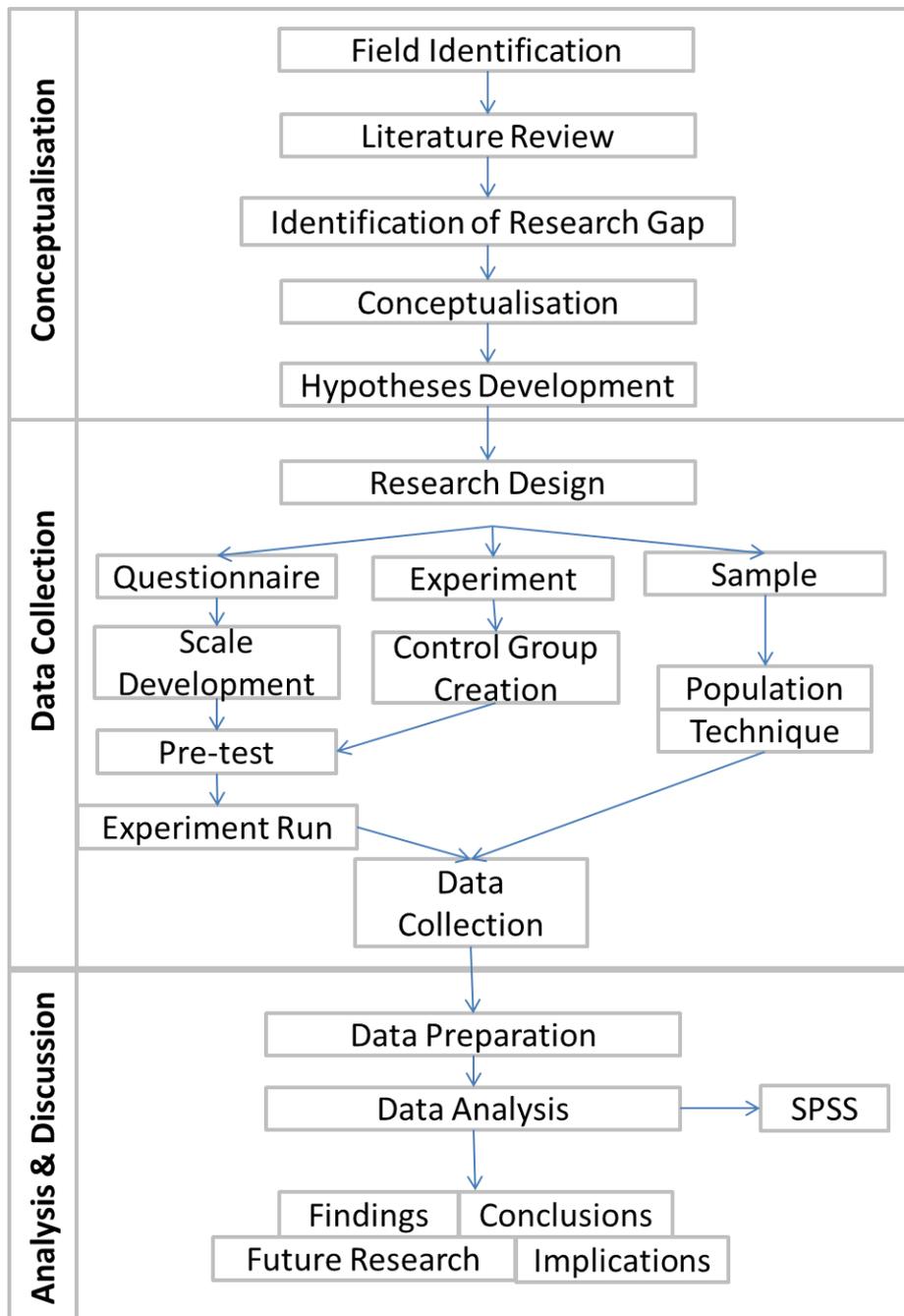
Appendix 2 – Reviewers of Research

Reviewer(s)	Specialism
PhD Thesis Supervisors (Giampaolo Viglia, Lillian Clark, Andrew Williams, Andrew Parsons)	Experimental design, consumer research, advertising research, digital marketing
Dr Judy Rich	Field experiments in business research
University of Portsmouth Research & Innovation Conference 2017 – 3 Minute PhD Competition	Business studies
Academy of Marketing Conference 2016	Marketing & Digital Marketing
University of Portsmouth Research & Innovation Conference 2016 – Poster Submission	Business Studies

Appendix 3 – Womens Health Advert

Appendix 4 – Spoon University Advert

Appendix 5 – 4oD Advert

Mobile Activity	Advert Placement	Misc.
Pic Stitch App – allows you to create picture collages (Freemium)	Once you go to export the photo to your photo album an advert was loaded before the image saved.	• Video advert for Johnson & Johnsons • No ability to click off so had to watch the entire add • If you leave the app before watching the entire video the image you created is not saved
My Fitness Pal App – Allows you to track food and activity (Freemium)	Placed throughout the diary content.	• Cleverly placed so that you accidentally press the advert which then takes you to a separate webpage/app store
Photo Vault App – Allows you to save photos with a pass code required (Freemium)	Banner adverts placed at the bottom.	• Ability to hide the ads for free • Ability to get rid of the ads completely if upgraded to the paid version
Wittyfeed.com – Share random life hack stories which are typically shared on Social Media	Banner adverts prevalent throughout the design, and advert placed between pages loading.	• Content is littered with advertisements and is easy to accidentally click and be directed elsewhere • Adverts places between pages being loaded and multiple pages have been created for this purpose
Metro.com – Linked through by Facebook	Banner adverts between the actual relevant news story content.	• Easy to confused as part of the content

Appendix 7 – Initial Workflow – Control/Constant

Homepage | Page 2 | Advert Popup | About Loop Page

Closes advert popup
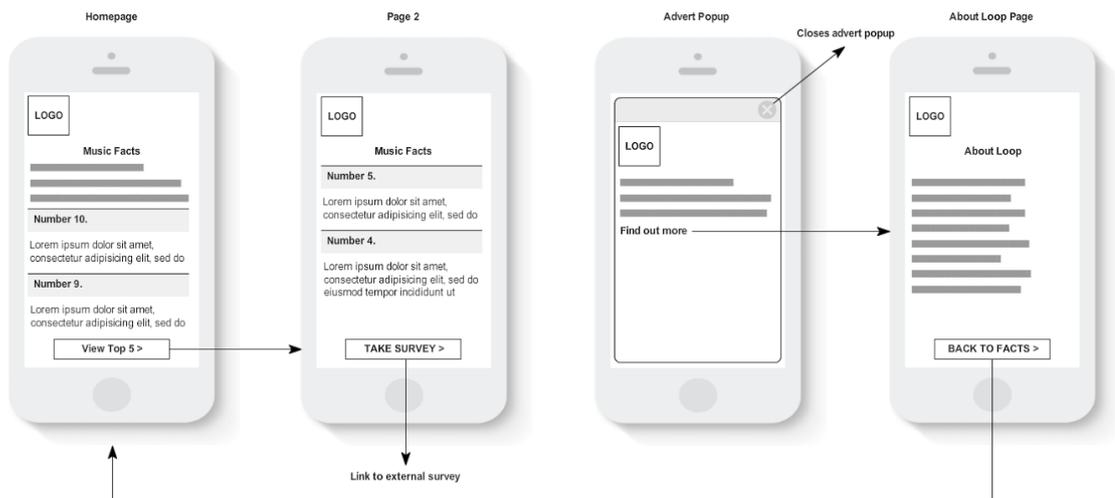
Control Group 1 - Low/No Control
- Advert timed to show up 10 seconds after the homepage has loaded
- Cross off button on the advert is less visible
- Find out more option is hidden within the text
- Information provided is minimal

Link to external survey

Appendix 8 – Initial Workflow – Choice

Homepage | Page 2 | Advert Popup | About Loop Page

Closes advert popup
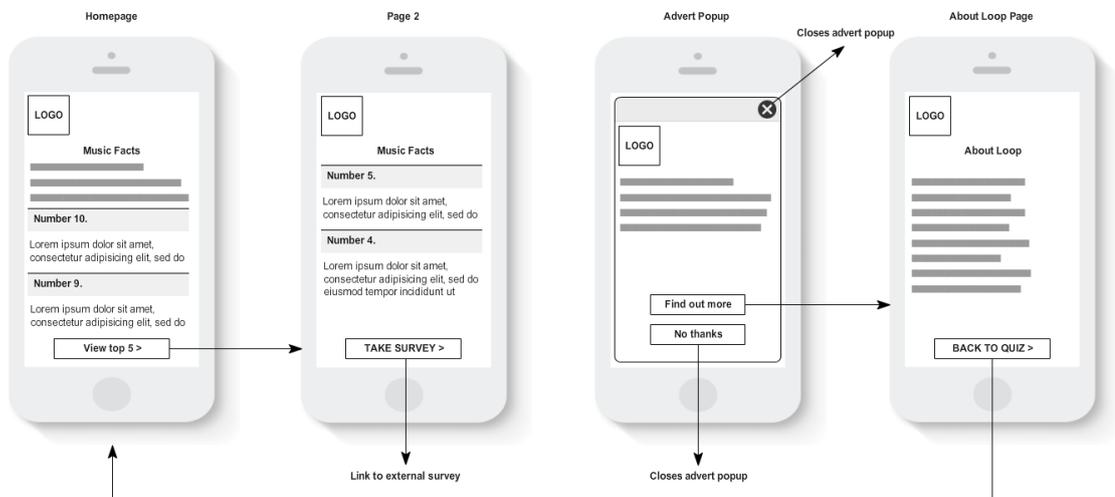
Control Group 2 - Choice
- 'Find out more button' and a 'No thanks' button are provided to give the user choice

Link to external survey

Closes advert popup

Appendix 9 – Initial Workflow – Information

Homepage   Page 2   Advert Popup   About Loop Page
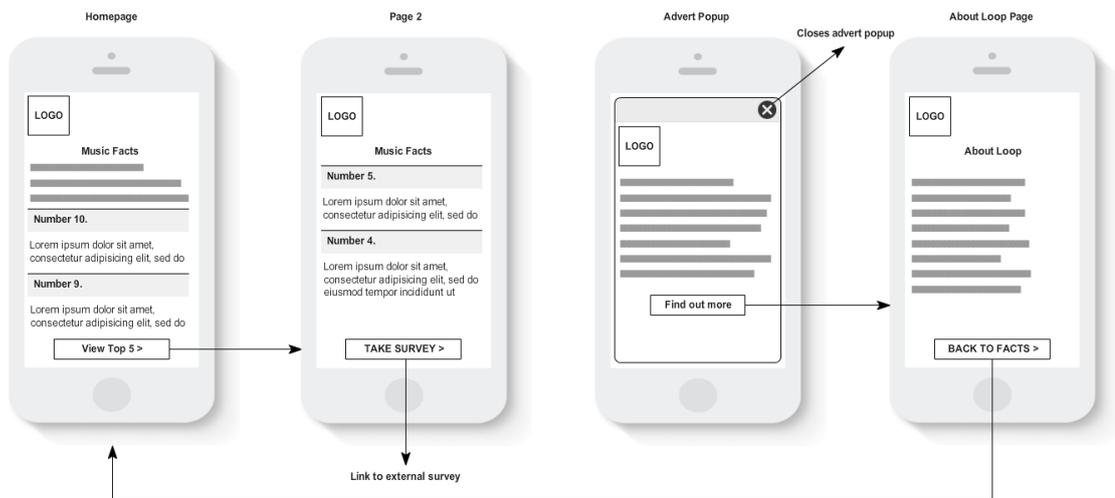
Control Group 3 - Information
- More information is provided to the user in regards to where the user is being sent
- More relevant information in terms of the product offering, price and reviews

Appendix 10 – Initial Workflow – Predictability

Homepage   Results Page   Advert Popup   About Loop Page
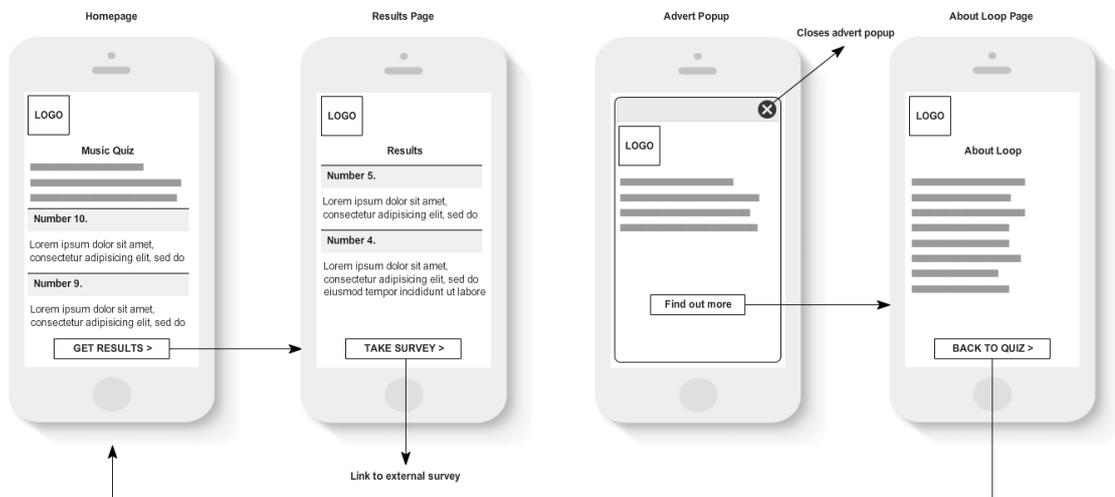
Control Group 4 - Predictability
- Advert will load between the homepage and page 2 when a user has clicked 'get results'

257

Homepage

Page 2

Advert Popup

About Loop Page

LOGO

Music Facts

Number 10.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do

Number 9.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do

View top 5 >

LOGO

Music Facts

Number 5.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do

Number 4.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore

TAKE SURVEY >

Closes advert popup

LOGO

Find out more

No thanks

LOGO

About Loop

BACK TO QUIZ >

Link to external survey

Closes advert popup

Control Group 5 - High/All Control

- 'Find out more button' and a 'No thanks' button are provided to give the user choice
- More information is provided to the user in regards to where the user is being sent
- More relevant information in terms of the product offering, price and reviews
- Advert will load between the homepage and page 2 when a user has clicked 'get results'

Appendix 12 – Study Questionnaire

General Profiling Questions:

1. *What is your gender?*
   - o   Male
   - o   Female
   - o   Prefer not to say

2. *What is your age? (Dialogue box)*

Ad Attitude Measures:

3. I strongly disapprove of the Loop advert/I strongly approve of the Loop advert
4. I really disliked the Loop advert/I really liked the Loop advert
5. I found the Loop advert to be very irritating/I found the Loop advert to be very pleasing
6. I found the Loop advert very uninteresting/I found the Loop advert very interesting

Brand Attitude Measures:

7. I hold very bad attitudes towards the Loop brand/I hold very good attitudes towards the Loop brand
8. I hold very unfavourable attitudes towards the Loop brand/I hold very favourable attitudes towards the Loop brand
9. I feel very negative about the Loop brand/I feel very positive about the Loop brand

Purchase Intention Measures:

10. It is very unlikely that I will pay for the Loop music streaming service/It is very likely that I will pay for the Loop music streaming service
11. I definitely will not pay for Loop next time I am looking for a music streaming service/I definitely will pay for Loop next time I am looking for a music streaming service
12. I definitely will not try the Loop music streaming service/I definitely will try the Loop music streaming service

Appendix 13 – Overall Study Workflow

Initial Experiment Page	Experiment Page 1	Experiment Page 2	Survey Page
This is the first page that participants will arrive at. This page will outline the experiment and will provide users with a 'start experiment' button. This button will randomly assign participants to conditions.	Participants start the experiment by reading the first page of the music blog. Participants will then click to view the second page of the music blog.	Participants continue to experiment by reading the second page of the music blog. Participants will then be sent to the survey.	Participants will arrive at the Google form in which the questionnaire measures the dependant variable for this study.

Predictability Questionnaire

"An event is predictable when I am able to pre-empt its occurrence."

On a scale of 1-7 with 1 being strongly disagree and 7 being strongly agree, to what extent do you agree with the above statement?

If you scored yourself a 3 or below on the above scale, please use the box below to state why you disagree with the above statement.

OPEN ENDED DIALOGUE BOX

"I make predictions about events in my life based on my previous experiences"

On a scale of 1 – strongly disagree to 7 – strongly agree, to what extent do you agree with the above statement?

If you scored yourself a 3 or below on the above scale, please use the box below to state why you disagree with the above statement.

OPEN ENDED DIALOGUE BOX

I can predict when I will see an advert on my mobile phone due to my previous experiences using mobile apps and mobile websites.

On a scale of 1 – strongly disagree to 7 – strongly agree, to what extent do you agree with the above statement?

If you scored yourself a 3 or below on the above scale, please use the box below to state why you disagree with the above statement.

OPEN ENDED DIALOGUE BOX

Please rank the following in order of their predictability (1 being most predictable and 4 being the least predictable;

- An advert loads at a sequential point in a task e.g. during a break in a game
- An advert loads whilst I am part way through my task e.g. halfway through reading an article
- An advert loads when I take some form of action e.g. click to read more on an article
- An advert loads first as soon as I open an app, or click on a link

Appendix 15 – Improved Overall Study Workflow

Initial Experiment Page

This is the first page that participants will arrive at. This page will outline the experiment and will provide users with a 'start experiment' button. This button will randomly assign participants to conditions.

Experiment Page 1

Participants start the experiment by reading the first page of the music blog. Participants will then click to view the second page of the music blog.

Experiment Page 2

Participants continue to experiment by reading the second page of the music blog. Participants will then finish the experimental task by clicking to the next page.

Pre-Survey Page

Participants will be debriefed on the task and told to exit if they no longer wish to take part in the experiment. Participants that wish to continue will click the 'take survey' button.

Survey Page

Participants will arrive at the Google form in which the questionnaire measures the dependant variable for this study.

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

Number 9.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut

Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

Find out more about Loop

About Loop Page

LOGO

About Loop

BACK TO FACTS >

Condition 1

- Advert pops up on Fact Page 1
- Advert pops up 10 seconds after the page has loaded
- Advert has no IV and is considered the control condition

Appendix 17 – Final Choice Workflow

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

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Number 9.

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View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

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Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

Find out more about Loop

No thanks! Take me back to…

About Loop Page

LOGO

About Loop

BACK TO FACTS »

Condition 2

- Advert pops up on Fact Page 1
- Advert pops up 10 seconds after the page has loaded
- Advert provides choice by giving the user two options

265

Appendix 18 – Final Information Workflow

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

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Number 9.

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View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

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Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

☆☆☆☆☆

Find out more about Loop

About Loop Page

LOGO

About Loop

BACK TO FACTS »

Condition 3

- Advert pops up on Fact Page 1
- Advert pops up 10 seconds after the page has loaded
- Advert provided more information

266

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

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Number 9.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

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Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

Find out more about Loop

About Loop Page

LOGO

About Loop

BACK TO FACTS >

Condition 4

- Advert pops up on Fact Page 2
- Advert pops up immediately on Fact Page 2
- Advert provides predictability by popping up at a sequential point in the task

267

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

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Number 9.

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View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

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Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

☆☆☆☆☆

Find out more about Loop

No thanks! Take me back to...

About Loop Page

LOGO

About Loop

BACK TO FACTS >

Condition 6

- Advert pops up on Fact Page 1
- Advert pops up after 10 seconds
- Advert provides functionality found in conditions 2 and 3

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

Number 9.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut

Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

Find out more about Loop

No thanks! Take me back to...

About Loop Page

LOGO

About Loop

BACK TO FACTS >

Condition 7

- Advert pops up on Fact Page 2
- Advert pops up immediately on Fact Page 2
- Advert provides functionality found in conditions 2 and 4

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

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Number 9.

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View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

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Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

☆☆☆☆☆

Find out more about Loop

About Loop Page

LOGO

About Loop

BACK TO FACTS >

Condition 8

- Advert pops up on Fact Page 2
- Advert pops up immediately on Fact Page 2
- Advert provides functionality found in conditions 3 and 4

Initial Experiment Page

Welcome

Start Experiment

Fact Page 1

LOGO

Music Facts

Number 10.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

Number 9.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed

View Top 5

Fact Page 2

LOGO

Music Facts

Number 2.

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Number 1.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut

Continue Experiment

Pre-Survey Page

Take Survey

Advert Popup

LOGO

☆☆☆☆☆

Find out more about Loop

No thanks! Take me back to...

About Loop Page

LOGO

About Loop

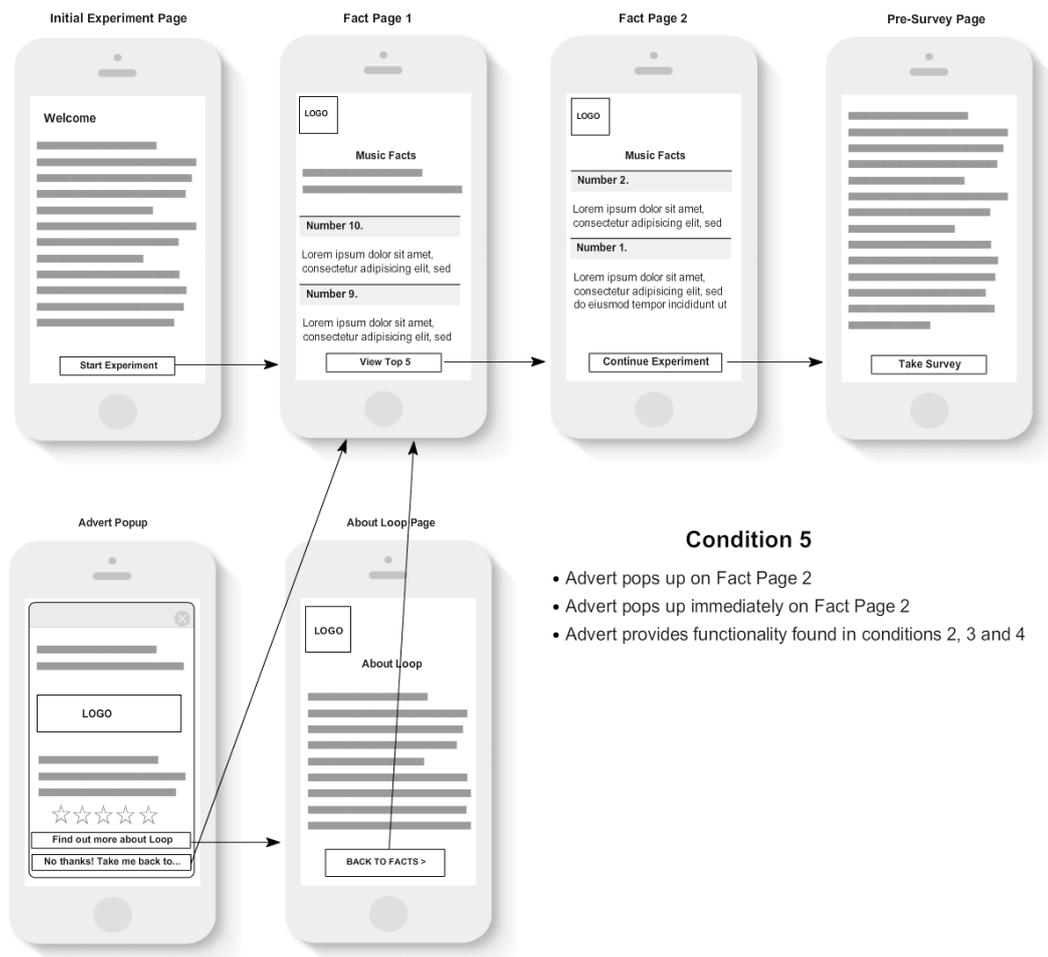BACK TO FACTS >

Condition 5

- Advert pops up on Fact Page 2
- Advert pops up immediately on Fact Page 2
- Advert provides functionality found in conditions 2, 3 and 4

Strategy	Cost/Issue
Email	Medium cost – could incur costs from purchased email lists and also email marketing providers.
SMS	High cost unless a third party app is used for data messages e.g. WhatsApp. However, this can be seen as intrusive by the user and also a list of phone numbers would need to be obtained at a cost.
QR Codes	High cost due to design and distribution and placement. As highlighted the need for a QR to be designed to avoid advertising overlays would be high. Also depending on the distribution and placement strategy of the QR codes, this may become even more expensive.
Forum Posts	Free - forum posts are an effective way of sharing research online, it would be important for the researcher to create an actual forum strategy in order to target group in which fits the sample population.
Social Media (Peer Referral)	Free – however will take the researcher's time. Social media is an effective way of achieving quick responses along with peer referral incurring no financial cost.
Paid Advertising	High cost due to the cost per click basis. Given the broad sample population it is unlikely that a paid campaign would yield the results needed by the researcher.
Students	Free - ethical issues arise when considering utilisation of students in research. However, by going through the process of ethical approval these issues will be eliminated.
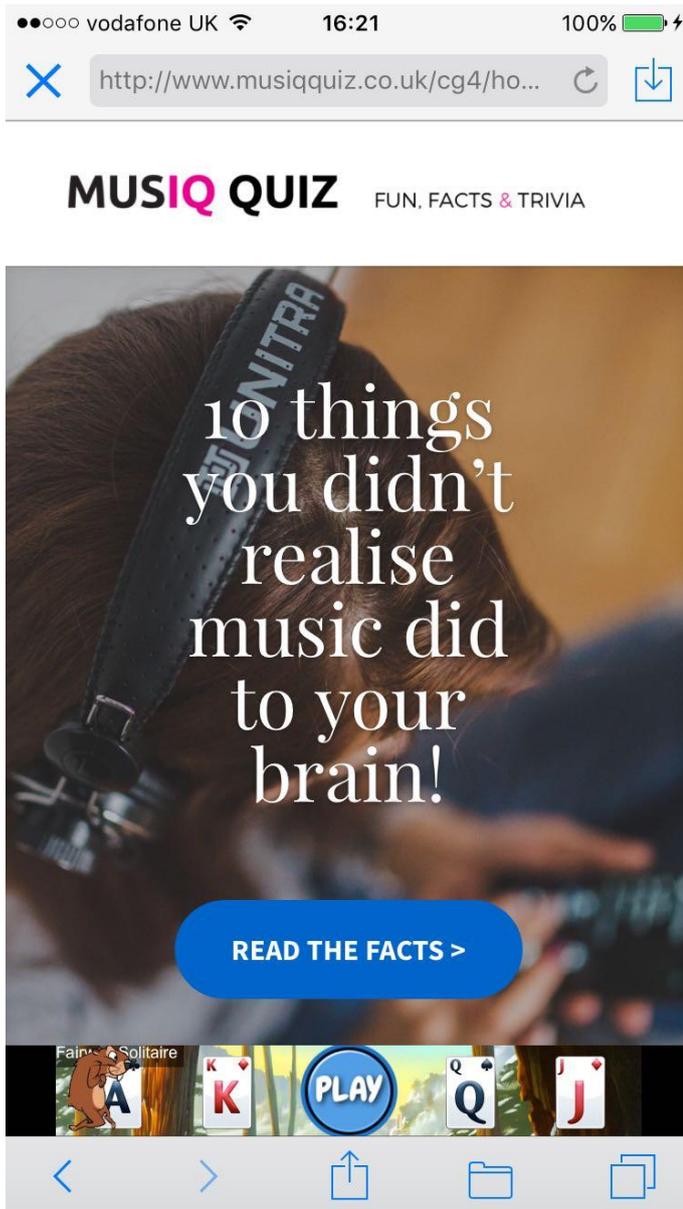
Appendix 26 – SPSS Log

Case#	Data Set/Condition	Comment	Solution	Noted?
1	Control/Constant	1 case too old	Removed *male - 68	No Note Made
2	Choice	1 case too old	Removed *male - 37	No Note Made
3	C*I*P	2 cases too old	Removed *prefer not to say - 54 and *female - 37	No Note Made
4	C*I*P	1 case entered 23.5 in age category (only need whole numbers)	Altered *male - 23.5 to 23	Highlighted in green and note made to check log
5	Information	1 case too old	Removed *female - 62	No Note Made
6	Predictability	1 case entered male in age category	Altered *male - male to (average age for data set 21)	Highlighted in green and note made to check log
7	C*I	1 case too old	Removed *male - 42	No Note Made

FORM UPR16
Research Ethics Review Checklist

Please include this completed form as an appendix to your thesis (see the
Postgraduate Research Student Handbook for more information

University of
Portsmouth

Postgraduate Research Student (PGRS) Information		Student ID:	417143
PGRS Name:	Victoria Broadbridge		
Department:	Marketing & Sales	**First Supervisor:**	Dr Giampaolo Viglia
Start Date: (or progression date for Prof Doc students)	01/10/2014		

Study Mode and Route:	Part-time	☐	MPhil	☐	MD	☐
	Full-time	☒	PhD	☒	Professional Doctorate	☐

Title of Thesis:	The role of user control on the effectiveness of mobile advertising: Theoretical and experimental evidence
Thesis Word Count: (excluding ancillary data)	81,560

If you are unsure about any of the following, please contact the local representative on your Faculty Ethics Committee for advice. Please note that it is your responsibility to follow the University's Ethics Policy and any relevant University, academic or professional guidelines in the conduct of your study

Although the Ethics Committee may have given your study a favourable opinion, the final responsibility for the ethical conduct of this work lies with the researcher(s).

UKRIO Finished Research Checklist:
(If you would like to know more about the checklist, please see your Faculty or Departmental Ethics Committee rep or see the online version of the full checklist at: http://www.ukrio.org/what-we-do/code-of-practice-for-research/)

|		
a) Have all of your research and findings been reported accurately, honestly and within a reasonable time frame?	YES ☒ NO ☐
b) Have all contributions to knowledge been acknowledged?	YES ☒ NO ☐
c) Have you complied with all agreements relating to intellectual property, publication and authorship?	YES ☒ NO ☐
d) Has your research data been retained in a secure and accessible form and will it remain so for the required duration?	YES ☒ NO ☐
e) Does your research comply with all legal, ethical, and contractual requirements?	YES ☒ NO ☐

Candidate Statement:

I have considered the ethical dimensions of the above named research project, and have successfully obtained the necessary ethical approval(s)

Ethical review number(s) from Faculty Ethics Committee (or from NRES/SCREC):	E412

If you have *not* submitted your work for ethical review, and/or you have answered 'No' to one or more of questions a) to e), please explain below why this is so:

Signed (PGRS):	Broadbridge	Date: 23/09/2018
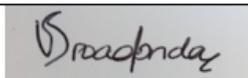
University of Portsmouth — Business School

Portsmouth Business School
University of Portsmouth
Richmond Building
Portland Street
Portsmouth
United Kingdom
PO1 3DE

T: +44 (0)23 9284 8484
W: www.port.ac.uk/pbs

28 February 2017

Victoria Broadbridge
PhD student
Portsmouth Business School

Dear Victoria

Study Title:	An experimental UK based study to identify whether the level of user control within a mobile advertising interaction, influences the effectiveness of the mobile advertisement : Substantial Amendment
Ethics Committee reference:	E412

Thank you for submitting your documents for ethical review. The Ethics Committee was content to grant a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, revised in the light of any conditions set, subject to the general conditions set out in the attached document, and with the following stipulation:

The favourable opinion of the EC does not grant permission or approval to undertake the research. Management permission or approval must be obtained from any host organisation, including University of Portsmouth, prior to the start of the study.

Summary of any ethical considerations:

Documents reviewed

The documents reviewed by Judith Fletcher-Brown [LCM] + PBS Ethics Committee

Document	Version	Date
Ethical Review application	6	7 Feb 17
Notice of Substantial Amendment	2	7 Feb 17

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements set out by the University of Portsmouth.

After ethical review

Reporting and other requirements

The attached document acts as a reminder that research should be conducted with integrity and gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Notification of serious breaches of the protocol
- Progress reports
- Notifying the end of the study

<u>Feedback</u>

You are invited to give your view of the service that you have received from the Faculty Ethics Committee. If you wish to make your views known please contact the administrator, Christopher Martin.

Please quote this number on all correspondence: E412

Yours sincerely and wishing you every success in your research

Chair
Email:

Enclosures:	*"After ethical review – guidance for researchers"*
Copy to: Dr Sianne Gordon-Wilson	

Appendix 1

After ethical review – guidance for researchers

This document sets out important guidance for researchers with a favourable opinion from a University of Portsmouth Ethics Committee. Please read the guidance carefully. A failure to follow the guidance could lead to the committee reviewing and possibly revoking its opinion on the research.

It is assumed that the research will commence within 3 months of the date of the favourable ethical opinion or the start date stated in the application, whichever is the latest.

The research must not commence until the researcher has obtained any necessary management permissions or approvals – this is particularly pertinent in cases of research hosted by external organisations. The appropriate head of department should be aware of a member of staff's research plans.

If it is proposed to extend the duration of the study beyond that stated in the application, the Ethics Committee must be informed.

If the research extends beyond a year then an annual progress report must be submitted to the Ethics Committee.

When the study has been completed the Ethics Committee must be notified.

Any proposed substantial amendments must be submitted to the Ethics Committee for review. A substantial amendment is any amendment to the terms of the application for ethical review, or to the protocol or other supporting documentation approved by the Committee that is likely to affect to a significant degree:

(a) the safety or physical or mental integrity of participants
(b) the scientific value of the study
(c) the conduct or management of the study.

A substantial amendment should not be implemented until a favourable ethical opinion has been given by the Committee.

Researchers are reminded of the University's commitments as stated in the Concordat to Support Research Integrity viz:

- maintaining the highest standards of rigour and integrity in all aspects of research
- ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards
- supporting a research environment that is underpinned by a culture of integrity and based on good governance, best practice and support for the development of researchers
- using transparent, robust and fair processes to deal with allegations of research misconduct should they arise
- working together to strengthen the integrity of research and to reviewing progress regularly and openly

In ensuring that it meets these commitments the University has adopted the UKRIO Code of Practice for Research. Any breach of this code may be considered as misconduct and may be investigated following the University Procedure for the Investigation of Allegations of Misconduct in Research.

Researchers are advised to use the UKRIO checklist as a simple guide to integrity.