Wireless Advertising Effectiveness

Evaluation of an SMS Advertising Trial

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Executive Summary

Wireless advertising is a new, exciting marketing channel with unique features, still in its infancy. The ability to send out targeted, customised information directly to the pockets of the consumers is a very appealing concept to most advertisers. The predictions of future industry growth are skyrocketing and many players are eager to invest. However, many hesitate and some are even sceptical to the idea. The main concerns are consumer acceptance and the effectiveness of the medium as a channel for advertising purposes. The need for increased knowledge in these two areas is therefore substantial. Before companies commit to this industry they want evidence of acceptance and effectiveness.

This study aims to estimate and explore the effectiveness of an SMS advertising campaign. This has been done by first evaluating its effectiveness on traditional communication effect measures. The measures are Ad Awareness, Brand Awareness and Attitude, Purchase Intention and Search for more information. Secondly, possible mediators of advertising effectiveness have been investigated, i.e. ad specific and medium specific factors that have impacts on the evaluation measures.

The study is based on a trial conducted in Sweden in September 2000. The end-users had signed up for an advertising-financed news service on SMS (Short Message Service). The messages started with a short news update and ended with a 50-character long advertisement. The individual end-user received 2-7 messages in total during a two-week period. The results were obtained from a quantitative survey, with the use of a questionnaire. The study compares the results of two groups; a test group of 337 respondents that were exposed to the campaign, and a control group of 109 respondents that were not.

The evaluation of the SMS advertising campaign showed that the campaign was effective on all evaluation measures except for Brand Attitude. Therefore the campaign did have a positive impact on Brand Awareness and Purchase Intention. Ad Awareness varied from 22 to 82% depending on the number of exposures. 12,8% of the target population searched for more information, a measure that could be defined as the mobile Internet "click-through" rate. Measured on the number of individuals stating Ad Awareness, the number was 25%. All the results were statistically significant.

The *relevance*, the *credibility* and the *level of entertainment* in the advertisements were proven to play an important role as mediators of effects on evaluation measures. These aspects should therefore be carefully considered when designing a campaign. Four factors concerning wireless advertising in general were highlighted by the end-users. The majority of the respondents wanted to *receive something valuable in exchange*, and *receiving free SMS-service in exchange for advertising* seemed to be a strong alternative. They also thought that *advertising based on the personal user-profile* could be a good idea, but the most important factor seemed to be *the ability to influence what kind of advertising they were being sent*.

The results from this early study show that this vehicle can work with merit as an effective advertising channel.

Foreword

This thesis has been made possible through the generous support from Ericsson Mobile Applications. It has truly been a pleasure to work in such an exciting and inspiring environment. Firstly we would like to thank Mats Eriksson, for giving us the assignment to conduct the study, for acting as a door opener and helping us with a lot of practical matters. A special thanks also to Börje Persson for his commitment and his never-ending sources of information. In addition, we would like to thank Erik Jansson, Jacob Key and Peter Laurin at Mediatude, for their willingness to include us in the trial. We direct a special thanks to Erik for his helpful assistance along the way.

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This thesis is the result of a three-month study. If you have any comments or questions regarding this thesis, please do not hesitate to contact us.

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This is a public version of the thesis and some confidential information in the appendix have been excluded.

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1 Introduction

1.1. Background to the Subject

"The trade of advertising is now so near to perfection that it is not easy to propose any improvement" [1], are words written by the famous Dr. Samuel Johnson in 1759. Little did he know, that today 250 years later, it is possible to reach a customer with a personal message, customised to fit that unique individuals' needs and interests, at a pre-determined point in time and at a pre-determined physical location. We have reached a point where it is possible to distribute targeted advertising to wireless devices.

Wireless advertising, i.e. commercial messaging to wireless devices, is a brand new phenomenon. Wireless devices, as channels for advertising, have many new features and therefore opportunities in comparison with traditional media, and many players are looking to benefit from them.

The market of wireless advertising is under construction; as yet there are no standards concerning formats and other issues.[2] In the future, with the use of WAP (Wireless Application Protocol), advertisements will be based on voice, text, graphics and music. Today, mobile advertising is carried out mainly using SMS (Short Message Service).

The high and increasing mobile penetration in many countries is a great market driver, as well as the soaring figures of SMS-usage. In Sweden today the mobile penetration is 70%[3]. During 1999, 150 million SMS were sent in Sweden. Until May this year the number was 175 million, with no sign of any decrease. SMS can already be categorised as a mass medium and the market for SMS-services is developing rapidly together with the potential of advertising via this medium[4].

However, many players hesitate and some are even sceptical to the idea of wireless advertising. The main concerns are the consumer acceptance and the effectiveness of the medium as a channel for advertising purposes. Customer's fear is the big-brother phenomenon[5], i.e. being tracked whenever and wherever by their mobile phone, or being spammed with mobile ads. Little research has been done yet and the need for increased knowledge in these two areas is therefore substantial. Before companies commit to this industry they want evidence of acceptance and effectiveness.

Ericsson's Perspective

Ericsson Radio System AB's department for Mobile Internet Applications have developed a product called Mobile Advertiser. This product is a part of Ericsson's mobile Internet applications portfolio. The Mobile Advertiser is based on push-technology that allows targeted advertising or personalised messaging on both fixed and mobile Internet. Ericsson has partnered[6] with Mediatude who has invested in the Mobile Advertiser, and who is currently implementing the product for usage in mobile networks[7].

Mediatude provides a carrier-grade Business-to-Business platform that works as a marketing tool. Mediatude's customers are mainly advertisers, mobile operators and other service providers.

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[1] Lavidge, (1999)
[2] Nelson, (2000)
[3] PTS, Post och Telestyrelsen
[4] Examples of SMS-services are news updates and entertainment messages
[5] France, Bergman, (2000)
[6] Ericsson Business Innovation bought a 29 per cent stake in Mediatude 22 August 2000.
[7] www.mediatude.com

Together with the publishers ITDirekt, Tjohoo and Voxway, Mediatude conducted a pilot test of advertising-financed SMS services in September 2000. We were asked to participate in the study and to focus on the effectiveness of the advertising campaign.

1.2 Aim of the Thesis

The aim of this thesis is to estimate and explore the effectiveness of an SMS advertising campaign. We have approached this from two aspects. Firstly, through evaluating the effectiveness using traditional evaluation measures. Our main question number one is:

1. Is the SMS advertising effective? More specifically, does it have positive communication effects?

Secondly, we explore possible mediators of advertising effectiveness, i.e. identify factors which have a positive impact on the evaluation measures. The remaining main questions are:

2. Does Ad Attitude affect the evaluation measures in SMS advertising?
3. If so, what factors are important to the end-user in determining Ad Attitude?
4. Does attitude towards wireless advertising affect the evaluation measures in SMS advertising?
5. If so, what factors are important to the end-user in determining attitude towards wireless advertising?

1.3 Scope

Wireless advertising cannot yet be defined as an established type of advertising and therefore we had to study a campaign in a constructed trial. As a result we have not been able to base our study on a population corresponding with the average SMS-user. Instead we had to focus on individuals who had signed up for a pilot test of advertising financed IT-news, sent via SMS, by the publisher and service-provider ITDirekt.

The trial consisted of three different campaigns for different products. Our study, however, is limited to evaluate one single campaign concerning one advertised product: JM Intelligent Houses[8]. There were two reasons for this. First of all, in September when the JM campaign was launched, there was too much uncertainty regarding when other campaigns would be realised. Secondly, the amount of work needed in order to obtain comparable control groups would have been extensive.

When evaluating advertising effectiveness, the focus is on the intermediate variables leading to profits for the advertiser according to theory. The effectiveness of a campaign normally differs depending on the target group, the individual advertisement, the type of product, the medium etc. Therefore we do not compare the effectiveness in this medium with the effectiveness in other media, since comparable data is practically impossible to find. Instead, we compare with some of the very few data that are available in the industry from previous wireless advertising trials.

This is the overall scope, but some further limitations are described in the thesis.

[8] Intelligent Houses is a relatively new category of housing, using IT for enhancing safety and comfort. (For more information, go to www.jm.se)

1.4 Structure of the Thesis

Chapter two gives a presentation of wireless advertising background, with focus on the characteristics of the medium based on prevailing facts and expectations.

Chapter three presents relevant theories, which cover advertising effectiveness measurement as well as mediators of effects. These theories constitute the base for the research questions and the generated hypotheses in chapter four.

Chapter five gives a presentation of the method used to conduct this study. Chapter six presents the empirical findings, the analysis and the summary answering the five main questions stated above. Finally, our results are discussed in chapter seven.

In order to facilitate for the reader and avoid misunderstandings a glossary is to be found in the appendix.

1.5 Abbreviations

The following abbreviations are widely used throughout the thesis. For explanations in detail we refer to chapter three. Other explanations can be found in the glossary in appendix 4.

General abbreviations:	**Evaluation measures:**
Ad = The individual advertisement	Ad_{AW} =Ad Awareness
Ad Value = Advertising Value	B_{AW} = Brand Awareness
Ad_{ATT} = Ad Attitude	B_{ATT} = Brand Attitude
WA_{ATT} = Wireless Advertising Attitude	PI = Purchase Intention
SMS = Short Message Service	Search for more information

Table 1: Abbreviations of general key variables and evaluation measures

2 Wireless Advertising - Background

With this background we will present an overview of the industry and the characteristics of the medium as an advertising channel. We will also briefly give a picture of the wireless advertising industry from a telecommunications- and media industry perspective.

2.1 The Wireless Advertising Industry

There are several possible technologies or platforms available for wireless advertising. The Wireless Advertising Association (WAA) divides these into five groups; SMS and pagers, WAP and i-mode, PDA:s, voice/speech, and location-based technologies[9]. The market is immature and most players are at the experimental stage. The value chain includes systems suppliers, network operators, service providers, content providers, media brokers, advertising agencies and advertisers. Device manufacturers and technology solution providers could also be said to be included in the chain. Some companies operate at more than one stage. Ericsson, for example is a systems supplier, a service provider, a device manufacturer and a technology solutions provider.

2.1.1 Different Types of Wireless Advertising

At this experimental stage, many different types of players are testing many different types of advertising. Here are just a few examples:

Virtual Shopping Malls/Shopping Streets

The consumer signs up to receive alerts or offers on their phone from the shops or restaurants that they are interested in on a special street or in a special mall. Tests have been carried out for example outside New York City by GeePS.com, by SkyGo in Boulder Colorado and in Luleå, Sweden by several co-operating companies with a project called E-Street. There are also other projects like this using positioning technology.

Financed/Sponsored Services

Another genre is advertising financed services. The end-user receives free services, for example news updates or voicemail in exchange for advertising. An example of such a player is Mediatude. One popular field in financed services is so-called event sponsoring. Here the end-user subscribes to information from a particular event, such as a sports event, and advertisers get to be the sender of the news updates or score results. Examples of this are Goyada, who offered a service with results from the Olympics, and Quios/Engage, whose service centred on the Euro 2000 Football Tournament[10].

Other

There are several other interesting examples of wireless advertising. When Madonna was about to launch her new album, several operators and wireless portals offered the possibility to download a picture of her on to their phone screens and also some tunes from her single as a ringing signal. A similar campaign, which was aimed for teenagers, was designed for the launch of the Nintendo game "The Legend of Zelda: Majora's Mask". Mypoints.com is a company which offers coupon

[9] WAA is a global organisation with company members from the wireless arena. SMS is a GSM supported text message service that enables short messages of 140-160 characters to and from cell phones. Paging is a communications service evolving from a one-way beeper service to a two-way text and voice service. WAP (Wireless Application Protocol) is a standard for providing cellular phones, pagers and other handheld devices with secure access to e-mail and text-based Web pages. i-mode is a packet-based information service for mobile phones from NTT DoCoMo (Japan). i-mode provides Web browsing, e-mail, calendar, chat, games and customised news. Location-based technology has the ability to pinpoint the location of a caller in a mobile communications system. There are several techniques of which one example is GPS (Global Positioning System).

[10] Quios/Engage study (2000)

convertible points to subscribers for reading and responding to targeted e-mail, answering surveys and shopping online from their wireless devices. AvantGo is a company testing to send out discount coupons with bar codes for shops on mobile devices.

2.1.2 Wireless Advertising Association

The wireless advertising industry is currently struggling to grow. The Wireless Advertising Association (WAA) was founded in order to assist in that struggle. WAA is the fruit of a merger between the Internet Advertising Bureau's Wireless Ad Council and the Wireless Advertising Industry Association announced on May 18 2000[11]. Examples of member companies are Sprint, Nokia, AT&T, DoubleClick, AdForce and Omnisky. The purpose of WAA is to address major challenges facing the wireless advertising industry including technical, business, creative, measurement and privacy issues. They also work to promote the value of wireless advertising to advertisers and consumers. Their most recent activity has been the development of industry guidelines on privacy and spam presented in November. It is noteworthy that the founders of this association were the major players on the market. They had, and still have, interests to protect their market shares and to keep track of competitors.

2.2 What Characterises the Wireless Medium?

2.2.1 Strengths

The wireless advertising medium is an exceptionally personal channel, since most end-users carry their mobile phones with them wherever they go. They are also mostly tied to one specific individual, which is not always the case with regular phones or computers that are often tied to an entire family. This makes it possible to adapt messages for the particular individual i.e. personalisation. This enables targeted communication and the immediate attention of the end-user. It is also place- and time independent which can permit the advertiser to reach a person when it is most appropriate. Another strength is the flexibility in production – it is very easy to produce and deliver a message quickly and also to change it. Even "mass-customisation" is possible to a low price. In general, production costs are very low in comparison with other media.

2.2.2 Weaknesses

Given its very personal nature, the mobile is an extremely sensitive channel. This places great demands on the embryonic wireless advertising industry in terms of when, where and how to advertise. The medium is also limited both in terms of graphics and exposure opportunities. In general there is a maximum limit of 160 characters whereas for advertising financed SMS-services which also include a news message, the limit could be only 50 characters[12]. The current wireless advertising messages could be seen as static in the sense of message design but dynamic in the sense of variation and real time changes.

The prevailing uncertainties regarding end-user acceptance and advertising effectiveness throw spanners in the works. Another constraint is the lack of ad standards and accepted metrics for measuring ad delivery and consumer responses.

[11] The Internet Advertising Bureau (IAB) is the leading online global advertising industry trade association, founded in 1996. The Wireless Advertising Industry Association (WAIA) was focusing on uniting companies involved in wireless advertising in order to discuss and resolve issues in the evolution the industry.
[12] This is the case in the Mediatude trial.

2.2.3 Opportunities

The penetration level for mobile devices is high in most western countries and it is also growing very fast in many other countries. This implies opportunities for industry growth by the increase in potential exposure points. The trend of convergence between the Internet and mobility is also promising since it opens up for more content and more services that can be financed or combined with advertising.

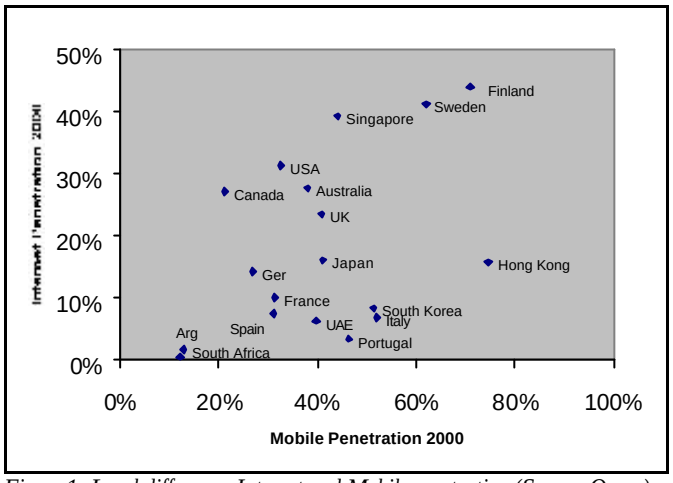

Figure 1: Local differences Internet and Mobile penetration (Source: Ovum)

The high-speed technical development for many technologies related to wireless advertising offers great potential. It implies improvement of advertisement appearance and an opportunity to deliver high impression messages. The delivery speed and quality is affected which greatly improves the possibility for an interactive relation with the end-user. Many new systems also focus on follow-up and gathering statistics about end-users behaviour, which enables data to be used for customer relations management and marketing intelligence. The development also offers new ways of advertising using highly sophisticated targeting and location-based techniques. This allows for additional opportunities for advertisers, for example, who would only need to pay for reaching the individuals they want to reach. For the end-user, it could mean value added when they do not have to search for or miss out on offers of special interest to them.

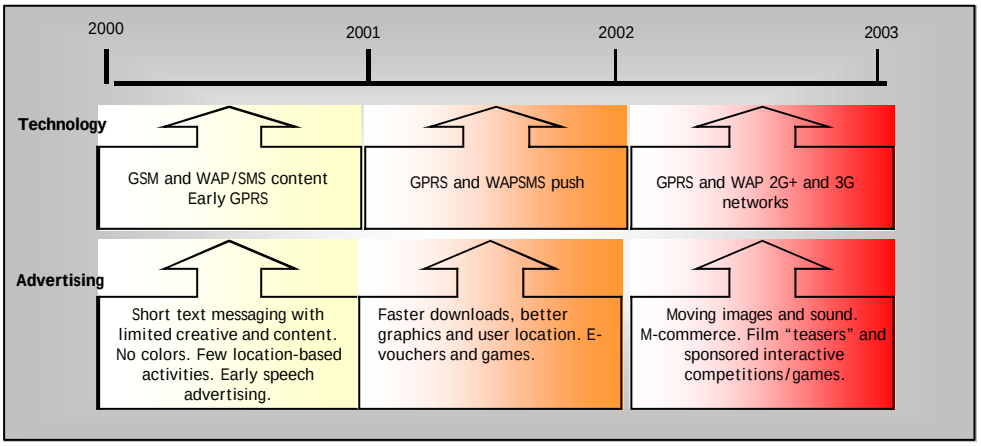

Figure 2. What types of advertisements will be delivered, and when? (Source: Mobile@Ovum June 2000)

Many analysts believe in a fast growth for the mobile device industry and other related industries. Some estimates of the market growth for wireless advertising are indeed very generous. The mere expectation of growth is a powerful driving force at this stage.

Here are some of the predictions:

- "…by 2005, one-quarter of all data will be transmitted over mobile devices (compared with less than 2.5 per cent at the end of 1999)…" (*Crédit Lyonnais*)
- "…over the next five years, more than 600 million Internet-enabled mobile phones will be shipped…" (*Allied Business Intelligence*)
- " By 2005, Ovum forecasts that mobile advertising will be worth more than $16 billion and will comprise 20% of overall Internet advertising spend" (Mobile@Ovum)[13]

2.2.4 Threats

There are mainly three threats for wireless advertising. Firstly, the *reluctance among end-users* due to privacy fears or fear of being spammed with advertising[14]. Secondly, initial *misuse of the channel* could threaten to close it. Misuse could be in the form of spam, but also unauthorised use of personal information. In addition too many companies with too little knowledge of marketing practises could discourage both end-users and advertisers. Finally there is the risk of the *WAP-effect*, i.e. too many expectations in the early stages which will slow down industry development[15]. The medium is still restricted regarding space, colours, graphics, and movement. If there are too many performance promises that will not be fulfilled, many stakeholders will be disappointed.

2.3 Telecommunications Industry Perspective

The network operators' profit margins are shrinking. One of the reasons for this is the massive deregulation in the industry and the following increased competition. Also, they are investing heavily in building new networks such as GPRS and 3G[16]. As a result they are looking to create new revenue streams and to secure a high demand for capacity in both today's and tomorrow's networks. Since competition is driving down tariffs, many companies have pinned their hopes on services. Examples of such services are directory services, entertainment services, banking or m-commerce. What is needed for the service area to take off is partly better network capacity and secure networks, but the most important factor is obviously demand. Demand needs to grow relatively fast for the investments to be paid off within the set time frame. This might be difficult to achieve since most of these new services will be too expensive to the end-user. One way of bringing down the costs for these services would be to offer advertising subsidised services. However, insecurity prevails about end-user acceptance and the effectiveness of wireless advertising. For the operators, who worry constantly about their churn rates, it is of the utmost importance that they do not irritate their customers[17]. Therefore acceptance of wireless advertising from the end-user is very critical. The other prerequisite, the effectiveness of wireless advertising, is of course necessary for engaging the interest of advertisers. The advertising has to be effective, i.e. end-users have to perceive the advertisements, react and respond to them.

[13] Nelson, (2000)
[14] Spamming occurs when end-users get unsolicited messages to their mobile phones.
[15] Lefebre, (2000)
[16] GPRS (General Packet Radio Service) is an enhancement to the GSM mobile communications system that supports data packets. 3G (Third Generation of mobile communications systems) is designed for high-speed multimedia data and voice.
[17] Churn occurs when operators lose their customers to competitors.

2.4 Media Industry Perspective

There are two trends affecting the media industry that work as driving forces for wireless advertising.

Firstly there is a development towards broader *use of new media vehicles at the expense of traditional media* such as television and newspapers. Examples of new media are digital posters, streaming media, and concept stores as well as wireless advertising. There are several reasons for this development. Technical development offers new possibilities, and the globalisation and deregulation of governmental monopolies, which implies tougher competition, further promotes this trend[18]. Structural changes in the media industry itself have also contributed to the broader use of new media vehicles. Previously in the Swedish media industry, the media agencies got commission directly from TV, Radio and Newspapers and so on for the amount of advertising space they sold and also for the numbers of times their advertisements were shown in the particular media vehicle[19]. In 1999, a new system went into force without agency commission. The new system forces the media agency into becoming advisors and experts on vehicle choice[20]. Accordingly, the will to try out alternative channels increases.

The other trend is the *increased difficulty in reaching the consumer*. Information overflow and the ensuing advertising fatigue is one part of this. The other part is social trends like cultural differences and so-called "tribalisation". This implies an increased number of market niches and better-informed consumers that makes it more difficult to reach them and adapt the communication[21]. Advertisers are looking for new ways of reaching the consumer. They visualise one-to-one communication and an interactive relation with the customer[22]. Wireless advertising is then of course of interest to them.

[18] Jedbratt (1999)
[19] Anders Ericson, CEO, Association of Swedish Advertisers
[20] Annual report 1999, Association of Swedish Advertisers.
[21] Anders Ericsson speaker's notes. Tribalisation refers to changes in the population towards a greater number of life styles, values, subcultures, leisure interests and ethnic groups.
[22] Jedbratt (1999)

3 Theory

This chapter aims to give a presentation of theories relevant for the aim of the study. These theories constitute the base that we refer to when generating research questions and hypotheses in chapter four. This chapter is divided into four parts: the first part focuses on advertising effectiveness, the second treats the evaluation measures and the third gives a presentation of mediators of advertising effectiveness. Finally, the theory frame of reference will be presented.

3.1 Advertising Effectiveness

3.1.1 Definition of Advertising Effectiveness

Controversy prevails regarding the definition of advertising effectiveness[23]. Depending on if you are a practitioner or an academic you have a different opinion on what a relevant and correct measurement should be. Many researchers are of the opinion that effectiveness refers to whether the cost of advertising is returned back to the advertiser in the form of current or potential sales revenue, thus focusing on sales. However, several academics claim that additional variables serve as channels or barriers between message and purchase, and therefore argue that consumer knowledge and beliefs are more truthful indicators. Moreover, others assert that you have to consider the role of competitors and that share of market to market voice ratio (SOM/SOV) determines the effectiveness of advertising communication activities[24].

Advertising has one ultimate desired effect though – to contribute to company profits. However, profit can be very broadly defined. It can be measured in monetary terms, such as an increased net profit or a higher stock price, but it can also be measured in human terms such as less automobile accidents after an anti-drink-and-drive campaign[25].

There are generally three fundamental ways for a company to make profits; by increasing selling price, by lowering costs or by increasing sales volume[26]. Even though advertising is perhaps normally associated with increasing sales volume, it can influence all of these three factors. Hence, advertising that increases the profits of an advertiser by increasing sales volume, increasing the consumer's willingness to pay or reducing costs associated with the product may be regarded as effective advertising[27].

The relationship between advertising and profits is in most cases very complex, though. The reason for this is predominantly related to three characteristics of advertising and its effects[28]:

- Advertising often involves *multiple objectives*.
- There is a *short- and long term perspective* in most advertising campaigns. Some campaigns are aimed at triggering an immediate sales increase, while others seek to affect long-term profits by building your brand. Most advertisers hope for a little of both.
- There is often an *indirect link* between advertising and sales.

Evaluating advertising effectiveness based solely on the three fundamental ways to make profits could sometimes be not only difficult but also misleading, depending on when you perform the

[23] Wells, William D. (1997), p. 13

[24] SOV (share of voice) is defined as the brand's advertising expenditure as a percentage of the total product category expenditure. SOM (share of market) is defined as the brand's sales unit as a percentage of the total product category sales units.

[25] Rossiter & Percy, (1998), p. 26

[26] Ibid.

[27] Bergkvist, Lars,(1998), p. 2

[28] Wells, William D. (1997), p. 6

assessment. To facilitate the practice of evaluation and to enable the consideration of other relevant factors a different view and a different working definition of advertising effectiveness is required.

Advertising rarely works directly on sales, but rather indirectly through a set of intermediate variables. These variables are grouped in processes and outcomes (see table 2 below). In a recent dissertation at Stockholm School of Economics, PhD Lars Bergkvist proposes the idea that if these intermediate variables have proven links to profit contribution of some kind then they could be of help when estimating advertising effectiveness[29].

" … advertising effectiveness is regarded as changes in intermediate variables related to the profits of the advertiser. These changes can occur in the short term or in the long term and their impacts on profits can be positive or negative. The view is also taken that advertising effectiveness is not dichotomous, but continuous, i.e. that there are degrees of advertising effectiveness."

This theory constitutes the preferred idea of advertising effectiveness in this thesis.

Accordingly, there is a need for a link or so-called *chain of evidence* to be established in order to demonstrate the indirect connection between advertising, its expected impact, and the expected business outcome[30]. Researchers have proposed a number of models for describing the effects of advertising as intermediate stages in a hierarchy of events ranging from ad exposure to purchase[31]. The difficulty is that there is seldom one unique sequence of effects that is applicable to all types of products at all times.

3.1.2 The Hierarchy of Effects

Advertising exposures can give rise to many effects among consumers. These effects are grouped as either processes or as outcomes[32]. Outcomes are more tangible and easy to observe and measure. Examples of measures are product trial (purchase) or market share variation. These effects are closely related to the previous definition of advertising effectiveness as a marketing act directly contributing to company profits. Processes, on the other hand, are measures of mental activities that occur in between exposure and consumer behaviour.

EFFECTS	TYPE	KEY MEASURES
PROCESSES	Cognitive	Recall, recognition
	Affective	Warmth, liking, attitude
	Conative	Persuasion, Purchase Intention
OUTCOMES	Brand choice	Trial, switching, repurchase
	Purchase intensity	Timing, frequency, quantity
	Market	Market share
	Accounting	Unit sales, revenues, profits

Table 2. Advertising effects / Intermediate variables

Processes are intangible and more difficult to appraise, but they are important for several reasons. For example, outcomes are more often affected by a number of variables besides advertising, such as price and promotion. Process effects might therefore be more truthful indicators of effectiveness. Furthermore, processes can tell us why, how and where advertising is effective or ineffective.

For an advertiser, as well as for a researcher, it is interesting to know whether the effects of advertising are related in a sequential chain so that a change in one variable leads to a predictable reaction in another one. If the hierarchy of effects for a product can be determined it is easier to adjust the campaign and to emphasise different stages in the buying process.

[29] Bergkvist, Lars, (2000), p. 15
[30] Wells, William D., (1997), p. 6
[31] Tellis J. Gerard, (1998), p. 306
[32] Ibid.

A generic model that shows how advertising communications work and that points out the inherent processes is the *six-step effects sequence model*[33].

3.1.3 The Six-step Effects Sequence

A series of prior effects must be successfully accomplished before profits can occur after an advertising campaign. One frequently used model for describing this development is the six-step effects sequence that can also be used to derive methods for evaluating advertising effectiveness (figure 3 below).

Advertising effects are here referred to as impacts on certain variables such as for example Brand Attitude or Purchase Intentions.

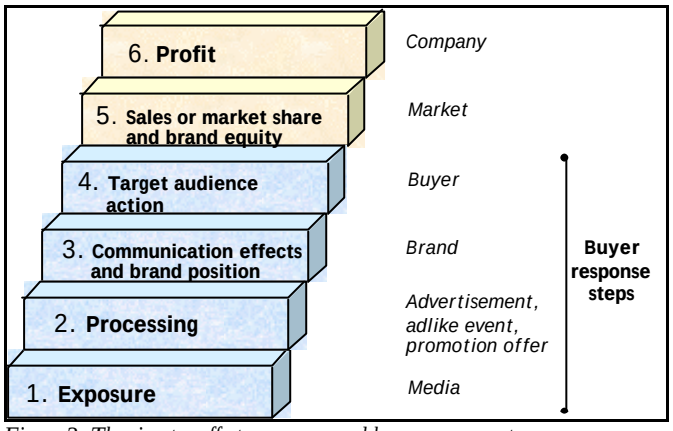

Figure 3. The six-step effects sequence and buyer response steps

This model above describes the steps from the moment when the consumer is exposed to an advertisement to the actual economic outcome for the company. For each of these steps, one or several processes are taking place, most of them inside the head of the consumer. The first four steps are called *buyer response steps*, and all advertising is aimed at influencing this particular sequence. As we can see, the buyer response steps are all constituted of so-called process effects mentioned earlier.

3.2 Advertising Evaluation Measures

When evaluating an advertising campaign, the variables that are predominantly looked at are the ones that are measuring the effects of the buyer response steps. These variables are processing measures and communication effect measures. Rossiter and Percy discuss several measures in each of these groups. Most of the measurements in focus here will be used in this thesis.

3.2.1 Processing Measure

Following from the six-step effects sequence model, the first step after the actual exposure of the campaign is the processing procedure. This is the phase where the individual exposed to the advertisement processes or somehow responds to the message. The phase normally involves the attention, learning and memory of the individual.

Ad Awareness

Ad Awareness (Ad_{AW}) is a commonly used intermediate advertising effectiveness measure. It has been argued that it cannot only tell us something about the customers' memory of the advertising,

[33] Rossiter & Percy, (1998), p. 11

but also that the measure reflects other mental states such as interest in ads[34]. Ad_{AW} can be measured in two different ways: ad recognition and ad recall. Recognition requires simple identification of a previously seen object, whereas recall usually requires reproduction of an object without any external aid. The latter form can be divided into aided and unaided ad recall. For measuring aided ad recall the respondent is provided with descriptions of all or some aspects of the original events and thus helps in minimising omission[35].

3.2.2 Communication Effects

When planning an advertising campaign the manager must specify the desired communication effects. There are five communication objectives that can be caused of any form of marketing communication: Category Need, Brand Awareness, Brand Attitude, Purchase Intention and Purchase facilitation. We look at number two, three and four due to the type of product and campaign objectives (see chapter four).

Brand Awareness

Brand Awareness (B_{AW}) is defined as the end-user's ability to identify the brand. It is regarded as a universal communication objective by Rossiter & Percy and therefore should be included in intermediate measures of advertising effectiveness[36]. In the same way as Ad_{AW}, B_{AW} is measured in two ways, recall and recognition. In turn recall can be aided or unaided.

Brand Attitude

Brand Attitude (B_{ATT}) is defined as the buyer's evaluation of the brand in terms of its perceived ability to meet a currently relevant motivation[37]. This measure is seen as an important construct since it is generally seen as an antecedent of both intention to purchase and the actual purchase. Many researchers view B_{ATT} as a universal communication objective of all advertising campaigns[38].

Purchase Intention

When evaluating advertising effectiveness many researchers as well as practitioners frequently use a measure of Purchase Intention (PI). According to Bergkvist some even use it as a measure of advertising effectiveness itself[39]. PI is defined as the buyer's self-instruction to purchase the product, or to take another relevant purchase-related action.

3.2.3 Click-through Measure

Previous research on banner advertising on the web has shown that click-though should be one of the campaign objectives in the case of high-involvement/informational products, (which normally require a complex and extensive buying process)[40]. A click-through is defined as the end-user responding to the ad (banner) through clicking on it and in so doing actively searching for more information. Marketing communication for high-involvement/informational products need to be informative, since for this type of product the customer is in need of rich and factual product claims in order to make a decision to invest. In these cases click-through is proved to have positive effects on the communication objectives B_{AW}, Ad_{AW}, B_{ATT} and PI, and is thereby a suitable evaluation measure.

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[34] Bergkvist, Lars, (2000), p. 38
[35] Tull, Donald S. (1993), p. 337-339 Tellis, J. Gerard (1998), p. 329
[36] Bergkvist, Lars , (2000), p. 71
[37] Rossiter & Percy, (1998), p. 120
[38] Bergkvist, Lars , (2000), p. 77
[39] Bergkvist, Lars, (2000), p. 82
[40] Dahlén et al. (1999) p.21 A high involvement/informational product refers to products which, on one hand, involves a perceived risk for the customer and on the other hand involves a process of gathering information about the product to be able to make a purchase decision. The risks could be economic-, emotional- or status related for example. Examples of this type of products are cars, insurance or housing.

3.3 Mediators of Advertising Effectiveness

Advertising effectiveness can be derived from different mediators. In this third part of the theory chapter we will give a presentation of theories pointing out different factors that have a positive or negative impact on advertising effectiveness. Examples are attitude towards the individual ad as well as attitude towards the advertising medium and advertising value.

3.3.1 Attitude as a Mediating Variable

It has been most common in advertising research to examine the effectiveness of the advertising by means of the attitude concept. Many researchers have found that attitude towards the ad as well as towards the medium are strongly associated with evaluation measures, such as Ad_{AW}, B_{ATT} and PI. Especially Fishbein's theoretical exposition of the causal basis of attitudes, have stimulated much of the attitude research in marketing and is frequently used[41]. Attitude is defined as "an individual's internal evaluation of an object". Fishbein's attitude theory proposes that an attitude towards any object is a function of an individuals' beliefs about the object and the evaluative aspects of those beliefs[42].

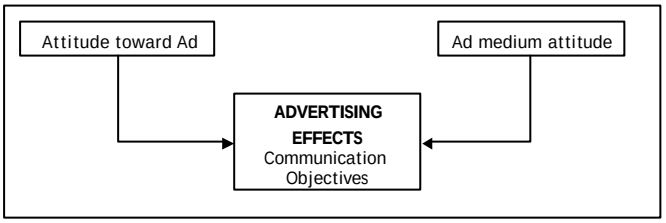

Figure 4. Causal relation between attitude and communication objectives

Beliefs are viewed as determinants of attitude and in turn, attitude triggers behavioural intentions[43]. According to this view, a marketing stimulus such as an advertisement exposure first affects consumers' beliefs. Then the salient beliefs mediate the marketing variable's effect on attitude. Attitude in turn mediates the subsequent effects on a specific behavioural intention such as buying a product.

Many advertising researchers have proved the positive relation between attitude towards the individual ad and hierarchy of effects[44]. Attitude toward the ad can be defined as a "predisposition to respond in a favourable or unfavourable manner to a particular advertising stimulus during a particular exposure occasion"[45]. Referring to Brown and Stayman (1992), one of the most common sets of relationships is that attitude towards the ad tends to have a strong direct impact on attitude towards the brand, which in turn tends to have a strong positive effect on PI.

Previous research also shows that the attitude towards the ad is partly explained by attitude to the context in which the advertising is processed. This has been stated both from research on television-based advertising and web-based advertising[46]. Results show that the more positive an individual's reaction to the TV program in which the commercial is run, the more positive the impact on the advertising-hierarchy-of-effects[47]. Likewise, positive attitude towards a web site is shown to have a strong positive relation to the hierarchy-of-effects[48]. Thus, the more favourable the individual is to

[41] MacKenzie, Lutz and Belch (1986), Mitchell and Olson (1981), Ducoffe (1996), Sukpanich and Chen (1997)
[42] Fishbein, (1967) p. 478, 491
[43] Fishbein, (1967), p. 478, 491
[44] Bruner & Kumar, (2000)
[45] Lutz, (1985)
[46] Bruner and Kumar, (2000)
[47] Lord, Lee and Sauer, (1994)
[48] Bruner and Kumar, 2000

the context in which the advertising is processed, the more it helps improve the key variables that are of concern to advertisers. Since attitude has been shown to have an impact on advertising effects, research has been done on which the value creating factors are.

3.3.2 Exchange – a Theoretical Hub and Value Creator

Exchange is a central phenomenon in marketing theories. Ducoffe's approach for understanding advertising effectiveness is based on the view that advertising messages are potential communication exchanges between marketing advertisers and consumers. For exchanges to be achieved and have effect, "each party to the exchange both gives and receives value" [49]. The value of any advertisement from an advertiser's point of view, whose aim is to affect attitudes and behaviour in order to cause sale, is judged against these criteria. On the other hand, to the customer, a satisfactory exchange is proposed as one in which the value of the advertising itself is considered to meet or exceed their expectations. Advertising value is thus understood as an "overall representation of the worth of advertising to consumers"[50].

3.3.3 Causes and Consequences of Advertising Value

To understand what makes advertising valuable, the benefits and costs, that the consumer experiences from the advertising stimulus, and the communication environment must be derived[51]. The advertising stimulus comprises the ad message and the medium, both of which have an impact on the advertising response process. The advertising response process starts with advertising exposure, which catches the receiver's attention and leads to processing[52].

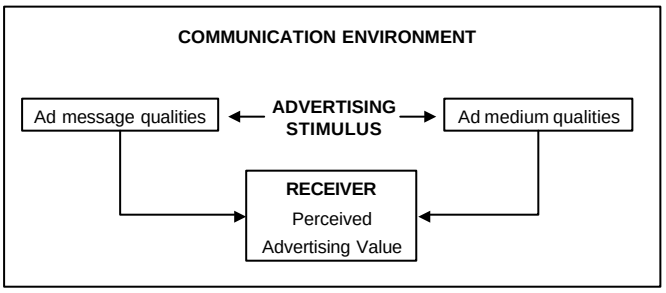

Figure 5. Determinants of advertising value

Ad Messages Qualities

The qualities of the ad perceived from the receiver's point of view affect the advertising value. What, then, are the qualities that make the advertising stimulus more or less exceptional? Voukko argues that the message should be relevant, important and salient to the receiver so that it offers something to think about[53]. Common main factors that have been proved to be statistically significant predictors of the value of individual ads on the web are informativeness, irritation and entertainment[54]. Hence, the predictors of Ad Value are not necessarily the same for all advertisements.

The results from a study done by Copytest services shows that up to 80% of an ad's score on recall and/or persuasion measures is a function of background variables such as whether or not the people are interested in the product category[55]. This example proved that exchange of valuable information creates Ad Value and consequently mediates advertising effects.

[49] Houston and Gassenheimer, (1987)
[50] Ducoff, (1996)
[51] Ducoff, (1995) and Wells (1997), p. 242
[52] Wells (1997), p. 242
[53] Voukko, in Wells (1997), p. 245
[54] Ducoff, (1996)
[55] Aaker, Batra and Meyers, (1992)

Ad Medium Qualities

The qualitative value of a medium consists of the factors contributing to the advertising value and the advertising effects. The medium-specific factors increasing the value of ad stimulus can be medium image, medium environment or editorial/programming environment and medium involvement (i.e. the importance and relevance of the medium to a receiver)[56]. Accordingly, a positive medium image, an appropriate medium environment for the message, and high medium involvement create favourable conditions for a message to get through the attention and processing stages by supporting and reinforcing the advertising message.

Comparisons made in traditional media have shown that a match between the content provided, interest of the audience and the ad gives a higher breakthrough. That is to say: when ads are matched to content e.g. in newspapers and magazines, readers are more likely to have specific interest in the ads and therefor not see them as clutter[57]. Effective targeting in terms of interest of consumer and matched content should hence reduce the perception of clutter, create Ad Value and make the communication channel more efficient.

Previous research shows that the value-creating factors differ between different media. It has been shown that newspapers carry the most informative, reliable and believable advertising while radio and television measure lower on these attributes. Television advertising though, is reportedly the most entertaining[58]. Advertising that is closely linked with the editorial environment may be of greater value for individuals who actively select a particular media vehicle because it addresses their particular interests[59]. The nature of the medium may hence determine which the value creating factors are and should be considered when designing the advertising.

Communication Environment

In the communication environment there are factors creating favourable or unfavourable conditions for advertising. Examples of those are noise (amount of and nature of competitors' messages) and public atmosphere (positive publicity surrounding)[60]. Certain media environments may vary in compatibility with the brand's advertising and thus make it vary in effectiveness, but these effects are very small[61]. Voukko still argues that if the communication environment is favourable, the appeals of the ad messages are stronger. Even though this is a factor that might be of importance, the subject is out of our scope.

Ad Value as a Useful Measurement

Advertising value is seen as a useful measure for evaluating advertising effects of advertising run in traditional media as well as in the case of the Web[62]. Advertising value is proved to be a distinctive and important antecedent of consumers' overall attitudes[63]. Consumer attitude toward the individual ad as well as attitude toward advertising, in turn, is showed to be a useful construct explaining the effects of ad exposure upon the consumer brand beliefs, B_{ATT} and PI[64]. Hence, an advertisement creating Ad Value is likely to have a positive effect on attitude towards the ad, which in turn has a positive impact on the traditional communication objectives of the campaign. Accordingly, both Ad Value creating factors and attitude are mediators of advertising effects.

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[56] Voukko, in Wells (1997), p. 245
[57] Elliot, Speck, (1998)
[58] Larkin, 1979
[59] Aaker and Brown, 1972
[60] Ducoffe (1995), Voukko, in Wells (1997), p. 247
[61] Rossiter & Percy (1998), p. 481
[62] Ducoffe, (1996)
[63] Ducoff, (1995)
[64] Mitchell and Olson, (1981)

3.4 Frame of Reference

According to our chosen definition of advertising effectiveness, our principal area of interest was the changes in intermediate variables leading to profits for the advertiser.

The intermediate variables could be divided into processes and outcomes. Since we are evaluating the effects of a wireless advertising campaign for a new product we have chosen to focus on the process variables, i.e. processing measures, communication effect measures and click-through measure. These are included in the three first steps in the six-step effects sequence model and hence relevant when evaluating advertising effectiveness. The excluded three last steps are target audience action, sales/market share and profit, which were not of current interest to measure in this case. This was due to the fact that these were not appropriate for this type of product at this stage of the product life cycle.

The theories used in this thesis are brought together in the following model. The relations show the proposed mediators of advertising effects that we aim to investigate when evaluating and analysing the effectiveness of the JM advertising campaign.

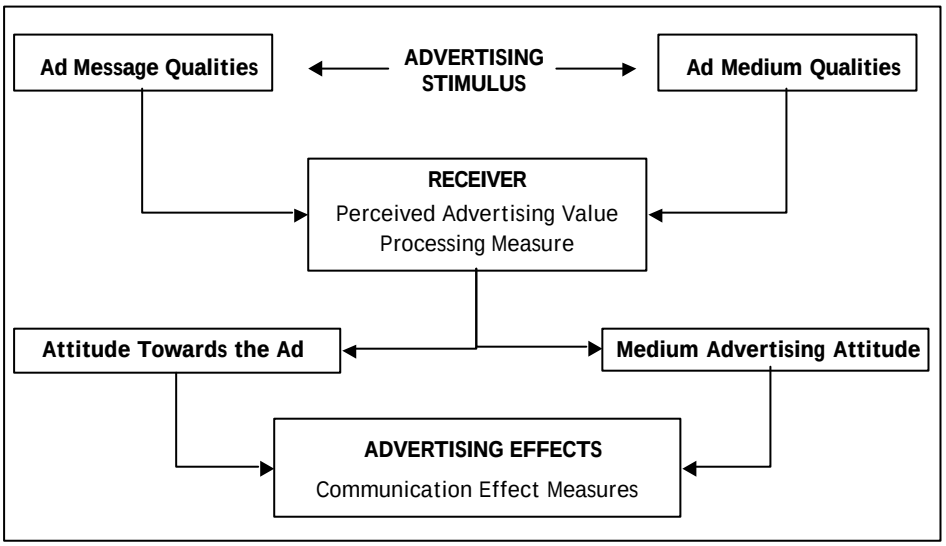

Figure 6. Frame of reference - advertising effects and proposed mediators

4 Research Questions and Generated Hypotheses

This chapter aims to explain the reason for the chosen research questions and related hypotheses. The first part considers evaluation of advertising effectiveness; the second part treats the investigation of effectiveness mediators.

4.1 Evaluation Measures

When estimating the effectiveness of any campaign, the starting point must be the aim of the campaign itself. What was important to our advertiser with this campaign was to introduce their product Intelligent Houses. The focus was on the product and not on the company itself. This product is a typical so-called high involvement/informational product, which means that it involves economical risks and it normally takes a lot of time and information about the product for the customer to make a decision to invest[65]. Because of the restraints of the medium to provide the customer with information in order to buy, the aim of using the mobile in this case was to make him or her aware of the product and curious enough to want to find out more.

Due to the very long purchasing cycles of this type of product, it is very difficult to evaluate the advertisement's success based on increased sales. Rather the aim is to create awareness of the product and hopefully evoke enough interest to find out more about it. This makes it possible to direct interested individuals to other sources of information more suitable for correctly presenting the product.

In summary, the main objectives with the JM Intelligent Houses campaign was to have an effect on Ad_{AW}, B_{AW} and also to make the user search for more information. However, B_{AW} is always influenced of B_{ATT}, why this measure also is included in the evaluation. As with all campaigns the advertiser also hoped to have an impact on B_{ATT} and PI but as this was only an introductory campaign for the product this was not the primary focus. Even though we did not expect a great impact on these objectives they were still interesting to look at because of their traditionally theoretical weight.

In order to evaluate the effectiveness of the campaign and to be able to achieve the main purpose in this thesis, question number one and the five following hypotheses were generated. These hypotheses incorporate our main evaluation measures.

1. Is the SMS advertising effective? More specifically, does it have positive communication effects?

H1: Among the individuals being exposed to the campaign, the Ad_{AW} is at least 40%.

H2: An individual exposed to the campaign has a higher B_{AW} than an individual not exposed to the campaign.

H3: An individual exposed to the campaign has a higher B_{ATT} than an individual not exposed to the campaign.

H4: An individual exposed to the campaign has a higher *PI* than an individual not exposed to the campaign.

H5: At least 8 % of the individuals exposed to the campaign did *search for more information.*

[65] Rossiter & Percy (1998) p. 213

When evaluation the effectiveness of an advertising campaign, it is helpful to have some figures to relate to. It is practically impossible to find acceptable figures to compare our results with since the effects of a campaign depend on many factors working together. The result varies depending on the type of product, the target population, the design of the advertisement, the amount of advertisements, the medium or the use of several different media in an integrated campaign. The figures we have compared with (40% Ad_{AW} and 8% Search for more information) were derived while considering previous results for wireless campaigns.

The figure of 40% as the expected level of Ad_{AW} in H1 is based on previous wireless trial results done by Engage[66]. With an average of 24[67] ad repetitions per individual they obtained an Ad_{AW} of 64 % at best. We had on average 6 ads sent per person[68]. Experience shows that repetition of ads increase awareness. Also, in our campaign the messages varied from one exposure to another, while the Engage advertisement remained the same. This could also have an influence on the so-called Aided Ad Recall, which is our measure of Ad_{AW}[69]. Since this medium is said to be highly effective in terms of attention ratings compared to many other media we thought it would be reasonable to expect an Ad_{AW} of at least 2/3 of the Engage result. Hence, we expected the Ad_{AW} for this trial to be approximately 40%.

An estimate of what is to be expected from a new medium such as this, in terms of percentage of people looking for more information, calls for comparable data. However, very few wireless advertising campaigns has been conducted, much less have the evaluation results been published. The only campaign that we have come over, was conducted in Sweden this summer by Goyada. Their trial with 20.000 end-users resulted in a "click-through" of 7,5%[70]. For these end-users there was an economic incentive to respond to the offer in the ad, which could have raised the number of "click-trough's". The JM ads did not have an economic incentive but it did have a better match with the news content provided[71] than Goyada had. In addition the JM campaign had 2-7 exposures per end-users (Goyada had one single exposure.) These two factors argue for a high click-through. Therefore we found it reasonable to expect a click-through rate higher than 7,5% for the JM campaign.

4.2 Effect Mediators

The causal influences of advertising effectiveness are of critical importance in order to find the reasons for an ad's success or failure. These influences would also help in the understanding of how wireless advertising in general works.

In order to do a thorough evaluation of this campaign and explore the mediators of its effects, it was first of all interesting to know whether or not it was of importance that the end-user liked the ad. Hence, we found it highly relevant to start by investigating the relation between attitude toward the ad and communication objectives desired. Consequently, main question number two with following hypotheses were formulated:

2. Does Ad Attitude affect the evaluation measures in SMS advertising?

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[66] Quios/Engage (2000)
[67] 24 message repetitions may be more than necessary in order to guarantee effects. Wells, (1997) p.239
[68] The total number of ads that was sent out to the test group was 2101. Divided with the 337 individuals in the test group this gives an average of approximately 6,23 messages per person.
[69] Tellis, (1998)
[70] One SMS-message with sport-event news was sent out together with an offer from a telecom operator. Out of 20.000 individuals who got the message, there were 1500 who called the number in the advertisement. The study was presented at the Marketing Week 2000 in Stockholm.
[71] See appendix 1

H6: Ad_{ATT} is positively related to B_{ATT}.

H7: Ad_{ATT} is positively related to *PI*.

H8: Ad_{ATT} is positively related to the *propensity to search for more information*.

All the respondents having answered the question concerning Ad_{ATT} also had Ad_{AW}. Only the respondents who had stated B_{AW} could by in-built logic in the questionnaire answer the question concerning Ad_{AW}[72]. This explains why the relations investigated are limited to B_{ATT}, PI and the propensity to search for more information.

On condition that the hypotheses above are accepted, the next logical step is to discern the value creating factors, i.e. factors describing positive or negative attitude towards the ad. This is valuable not only in terms of the campaign evaluation. The results could also indicate some of the critical success factors in order to use this new medium effectively; information relevant for advertisers, operators, service and content-providers among others. Hence, main question number three:

3. If so, what factors are important to the end-user in determining Ad Attitude?

As described in the preceding chapter, the attitude concept also includes attitude toward the medium as an advertising channel. Positive attitude towards advertising in general in a medium has been shown to have a positive impact on the advertising effects. Since this is a new way to use the wireless medium it was interesting to investigate whether or not it would be possible to establish this relation for the wireless medium as well. Hence, the relations in main question number four with following hypotheses are expected.

4. Does attitude towards wireless advertising affect the evaluation measures in SMS advertising?

H9: WA_{ATT} is positively associated with Ad_{AW}.

H10: WA_{ATT} is positively associated with B_{AW}.

H11: WA_{ATT} is positively associated with B_{ATT}.

H12: WA_{ATT} is positively associated with PI.

H13: WA_{ATT} is positively associated with the propensity to *search for more information*.

It was expected that the hypotheses above would be accepted for more than one reason. Firstly, these relations are supported by previous research. Secondly and predominately, since wireless advertising is a new medium and a quite controversial one it should have a strong attitude-creating impact, both concerning the advertising and the medium as an advertising channel. A strong attitude should in consequence be associated with evaluation measures.

If the relations above (H9-H13) should hold, it would be relevant to further investigate the medium specific value creating factors. The risk of end-users lacking or losing interest for wireless advertising is evident, if areas of importance to the consumer are neglected. The factors emphasised by the end-users themselves have a strong influence. These are hence extremely important to learn from in order to gain the consumers' confidence and make them accept using mobile devices as advertising channels. Hence, the last question is:

5. If so, what factors are important to the end-user in determining attitude towards wireless advertising?

[72] See questionnaire, appendix 2

5 Methodology

This chapter describes the methodology used that has resulted in this thesis. We will describe the chosen research approach and research process, as well as a discussion of the trustworthiness of the study.

5.1 Choice of Research Design

A research design is a framework for conducting the research project. There are two major types of research designs: exploratory (inductive) and conclusive (deductive)[73]. This study takes a conclusive approach, since the objective is to test specific hypotheses and examine relationships rather than generate new theories and understandings. The information used is clearly defined and the research process is formal and structured. The data gained from a large and representative sample are subjected to quantitative analysis.

Our choice of research design can be further refined as a combined descriptive and causal research conducted with a Post test-Only Control Group design, which is a two group true experimental design.[74] This is a quantitative survey design (for details see below). The reason for the descriptive research approach is to determine the perceptions of wireless advertising and the degree to which advertising variables are associated. With the causal research approach we can define the effects of advertising exposure.

We base our study on two groups of respondents: a test group that was exposed to the campaign, and a control group that was not. Measurements on both groups were made only after the treatment and test units were assigned at random. The post-test measure of various advertising variables was obtained and collected through an electronic Internet-based questionnaire, distributed by email to both groups. This survey-tool is very appropriate for this kind of studies. It brings significant advantages in terms of time- and cost efficiency and sample size requirements. [75] It is also very convenient for the respondent who may answer whenever s/he feels s/he has the time. Lack of time in front of the computer might on the other hand be a weakness of this survey-tool.

5.2 The Research Process

This section will explain the process of the research. We will describe how the collection of data was conducted, design of the questionnaire, measurement and scaling, handling of nonresponse, data preparation and finally give a description of the samples.

5.2.1 Secondary Data and Qualitative Research

In order to understand the environmental context of wireless advertising and get a picture of the empirical background, we have researched thoroughly the available secondary data, conducted in-depth interviews with a number of key persons, as well as attending a number of related seminars.

The secondary data consists of relevant internal material (i.e. Ericsson information such as product documentation and market analysis), as well as external data (e.g. articles, reports and previous research)[76]. Since mobile Internet in general and wireless advertising in particular is such a new area there are not yet many relevant books written. In order to obtain relevant information we looked at articles related to the subject. The main sources for these were advertising research journals and Internet newsletters (Computer Sweden and Internet Advertising Report seemed to be the most

[73] Malhotra (1999), p. 82-85
[74] Malhotra, (1999), p. 227
[75] Malhotra, (1999), p. 227
[76] Malhotra, (1999), p. 117

qualitative). Reports treating forecasts and trends and other masters' theses focusing on mobile Internet and web marketing have also been valuable sources of information.

The qualitative research consisted of ten interviews[77]. The interviewees all had different experiences relating to wireless advertising, which gave contributing aspects. However, the information they gave concerning wireless advertising was inevitably often from a personal, predictive point of view.

The search, collection and analysis of secondary data were mainly made in the first stage of the research period. However, since the development of mobile Internet is fast and continuos, we continued to search for further information throughout the whole research period in order to stay up to date.

5.2.2 Primary Data Selection

Primary data is data collected by a researcher for a specific purpose, addressing the research problem[78]. Our primary data consists of responses from our target population, which is the collection of elements or objects that possess the information sought by the researcher and about which inferences are to be made[79]. In our case we are interested in the effects of a particular advertising campaign and therefore we define our target population of the test group as follows:

Elements: Individuals that had signed up for ITDirekt.com's SMS-service with IT- Data or Telecom news and that had been exposed to the campaign JM Intelligent Houses.

Our target population consisted of approximately 2500 individuals. Using a simple random sampling technique, 500 of these were identified and contacted via e-mail[80]. 337 respondents answered and they constituted the final sample size. We thereby had a response rate of 67,4%, which can be considered as a relatively high rate[81].

In order to be able to make some inferences about the effects of the campaign it was also interesting to find a similar group of individuals that had not been exposed to the campaign. The initial idea was to use individuals that were subscribers to the same service at ITDirekt.com but that had not been exposed to the campaign. However, since the campaign for JM Intelligent Houses was the first campaign run through this publisher it turned out to be an insignificant number of subscribers (with the same type of interests) that had not been exposed to the campaign. Moreover, the subscribers of the other two publishers included in the total test conducted by Mediatude would not get the same questionnaire. The cost for expanding these questionnaires, with the campaign-specific questions of JM, and the administration of it was prohibitive. Hence, when this was not possible to achieve as planned, our target population for the control group became difficult to specify. What we needed was a group that was as close to identical with our test group but that had not been exposed to the advertising campaign. Instead this group would have been receiving the so-called current level of marketing activity[82]. Our target population for this control group is defined accordingly:

Elements: Individuals who own a mobile phone and use SMS, demographically similar to the test group. They should also have an interest for IT- Data or Telecom news.

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[77] See Appendix 1
[78] Malhotra, (1999), p. 40
[79] Malhotra, (1999), p. 330
[80] Malhotra, (1999), p. 338
[81] According to Malhotra weighted average response rates of telephone surveys are 72,3% and mail surveys 47.3%. He claims that e-mail normally has lower response rates than this and that Internet surveys have the poorest of them all. Malhotra, (1999), p. 192
[82] Malhotra, (1999), p. 225

It was practically impossible to estimate the size of this target population. We focused on having a spread both when it came to occupation and geography. We used the networks we had at our disposal and finally distributed the questionnaire to individuals within Ericsson, within AIESEC-Sweden, which is a national student organisation, and two universities: Kalmar University and Stockholm School of Economics. In total we sent out 430 questionnaires and received 210 responses. This gave a response rate of 48,8%, which is quite good according to Malhotra, but quite low in comparison with the test group.

5.2.3 Design of the Campaign

The campaign for JM Intelligent Houses consisted of six different messages, which are presented in appendix 1. For each message with IT-Data or Telecom news sent by ITDirekt, one of them was presented and placed last in the message. The ads where limited to a number of 50 characters. They all ended with a reference to the JM web site.

The campaign lasted for two weeks (September 12-22). The individuals in the trial got 1-4 messages per week with the JM campaign ads, depending on if they had signed up for both of the SMS-news services.

5.2.4 Design of the Questionnaire

The questionnaire for the test group had three stakeholders that wanted to obtain different kinds of information. First ITDirekt.com wanted to find out as much information about their subscribers as possible since it is on the basis of personal profiles that messages are distributed and that services can be personalised. Mediatude, who had assigned Netsurvey to perform the survey, was mainly interested in the attitude and acceptance of the medium as such but also in the difference in effects on certain variables depending on the number of messages sent out. Finally, we were interested in the effectiveness of the campaign with regards to the brand and the product figuring in the advertisements. Accordingly, all three stakeholders had many questions they wanted to ask but there was room for only a limited number of questions.

Following from the above conditions the design of the questionnaire was not an easy task. According to Malhotra a questionnaire should be divided into several parts with smooth transitions, and questions should be asked in a logical order[83]. Our questionnaire was divided into four parts. The first part consisted of general demographic questions and converged into the second part, which dealt with psychographic characteristics[84]. The third part concentrated on JM Intelligent Houses and the associated advertising campaign. The questionnaire finished with a part about wireless advertising in general and the SMS service in particular[85]. Unfortunately, we had no possibility of influencing the structure or order in the questionnaire[86]. The design of the questionnaire was managed by Netsurvey leaving us with limited possibilities of influence. We were allotted a certain amount of space in the questionnaire, and so decided on a few questions that we were allowed to include. The questions in the original questionnaire that we fully formulated ourselves were questions number 11, 14, 15, 17, 19 a-d, g-j and 20 a-d, h in the attached questionnaire in the appendix 2. Question 12, 13 and 21 were control questions and were therefore only included in the control group questionnaire.

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[83] Malhotra, (1999), p. 317

[84] See glossary, Appendix 4

[85] This part is not totally included in the questionnaire attached in the appendix, since it was not related to our study.

[86] One of many examples of structural changes we would have undertaken would have been to place the demographic questions in the end since they could be considered somewhat sensitive. Considering the content specific questions we would have wanted to focus more on the evaluation of and attitude towards the campaign. Unfortunately, no questions about Product Involvement, Ad Recognition/Recall and no Adjective Checklist (ACL) could be included. Bergkvist, (2000), p 37 ff

Processing Measure

Our chosen method for measuring Ad_{AW} was Aided Ad Recall, which can be used to check the effective reach of the campaign[87]. The respondent was asked, "Approximately how many ads for JM Intelligent Houses have you seen on your mobile phone?" The alternatives formulated by Netsurvey were; 0, 1, 2-3, 4-5, 6-10, 10 or more. Even though some information would get lost using this scale, Netsurvey argued that it would make it easier for the respondent to answer the question.

Communication Effects Measures

The main aim of JM was to introduce a new product concept in the market place. The core evaluation measures we identified were creating awareness of the product and the forming of an attitude towards this new type of housing.

The method for evaluating PI used in the questionnaire is Juster's 11-point probability scale[88]. This wording or scale is especially recommended for high-involvement Brand PI[89]. The question is "If you were to invest in a new house, what is the probability of you choosing an Intelligent House by JM?" The respondent could answer on a scale ranging from 0% probability, which was no chance or as good as no chance, and to 99% probability, which was positive or as good as positive. It does not consider the issue of timing, which perhaps would be difficult in view of the very long purchasing cycle for housing. However it does deal with the subject of probability level. This was the 17th question in our control group questionnaire. Due to limited space this is also the only question on PI included in the survey.

We measured awareness by asking the respondent "Do you know of JM's new venture Intelligent Houses?"[90] The alternatives were either Yes or No. The built-in logic in the computer program prevented respondents in the test group from going further to the brand specific questions without first answering this question. The same function was not possible with the questionnaire for the control group, and one criticism of the study could be that there was a risk, although no apparent reason, that the respondent would go back and change his or her answers.

Attitudes are generally regarded as the overall evaluation of an object, and in line with this brand, attitude is defined as an overall evaluation of a brand[91]. Following the recommendations of Rossiter & Percy, attitude towards the brand is measured with a single item, relative to the brand's competitors[92]. The respondent was asked, "What is your general opinion of JM Intelligent Houses compared to other types of housing?" The answer was a five-step scale ranging from "JM Intelligent Houses are best in the category" to "JM Intelligent Houses are worst in the category". Gardner also uses the same kind of formulation for evaluating B_{ATT}[93].

"Click-through"-rates on Internet are commonly used measurements for ad effectiveness. Since one of the aims with the campaign was to direct people to the web site of JM a corresponding measure was desirable here. We chose to measure this by asking the respondents, "After having seen the advertisement I searched for more information on Intelligent Houses".

Ad and Medium Specific Questions

It would have been very hard to include all factors influencing the respondent's attitude towards the ad and attitude towards wireless advertising. Since this is a new medium few proven theories exist on

[87] Tellis (1998)
[88] Rossiter & Percy (1998), p. 568
[89] Rossiter & Percy, (1998), p. 568
[90] Tellis (1998)
[91] Engel et al. (1995)
[92] Rossiter & Percy, (1998) p. 568
[93] Gardner, p. 192-198

what is relevant and important to the end user regarding wireless advertising, but on the other hand there has been a lot of guess work. Some theories concerning web advertising have been used in trying to estimate what factors might be relevant to include in the questionnaire. This was the case for most of the ad specific questions. For example, research has shown that advertising value can be derived from the evaluation of three factors, namely informativeness, irritation and entertainment[94]. All of these constructs are quite abstract and are therefore made up of several variables representing some aspect of the construct[95]. This relationship has also been tested on web advertising[96]. However, informativeness as it is defined in these tests cannot logically be given a high importance in this medium considering its current content limitations. The idea with this medium is not the amount or type of information that can be accessed, but rather the timeliness and relevance of the information that can be considered as valuable to the customer. The variables chosen have been used in previous studies regarding advertising effectiveness in other media[97]. In some of these studies multi-item scales have been used. This was not possible for us due to lack of space in the questionnaire, and due to this we have had to rely on single-item scales.

Other factors have been added on the basis of interviews with different representatives from the business and on the basis of secondary data about the industry[98]. This was the case for most of the medium specific questions. Some examples of issues being comprehensively debated right now are personal integrity and the use of Personal Identifiable Information (PII) for advertising purposes[99].

5.2.5 Measurement and Scaling

This section deals only with the questions we were fully able to influence ourselves.

Measurement means assigning numbers or other symbols to characteristics of objects according to certain pre-specified rules[100]. Scaling refers to the generation of a continuum on which measured objects are located. The measurement technique used depended on the type of question; the methods for measuring B_{AW}, Ad_{AW}, B_{ATT} and PI have already been described above. However for the other questions regarding the particular advertisement or wireless advertising in general we have used interval scales. On an interval scale the distance between all steps is equal and there is no fixed zero point. This technique allows more interesting statistical testing than for example nominal or ordinal scales.

There are two types of scaling techniques; comparative and noncomparative. The comparative technique involves a direct comparison of stimulus objects. The type of scaling technique we have used is noncomparative Likert scales[101]. This is a widely used measurement scale with five response categories ranging from "strongly disagree" to "strongly agree". It requires the respondent to indicate the degree of agreement or disagreement with each of a series of statements related to the stimulus object. Examples of statements in our questionnaire are "I found that the advertising message was relevant to me", regarding the advertisement and "I will recommend ad financed SMS-services to friends and acquaintances" regarding attitude towards wireless advertising in general.

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[94] Ducoffe, (1995), p. 1-18

[95] For example entertaining is made up of the following items; entertaining, enjoyable, pleasing, fun to use and exciting. Taken together these items represent a score on the "entertainment scale".

[96] Ducoffe, (1996), p. 23

[97] Bruner and Kumar (2000), Sukpanich and Chen (1997) and Ducoffe (1996)

[98] For example Ovum report

[99] For more information see www.iab.net and Wireless Advertising Association Guidelines for Privacy and Spam. PII is defined as data that can be used to identify or contact a person uniquely and reliably, including but not limited to name, address, telephone number, and e-mail address.

[100] Malhotra, (1999), p. 248

[101] Malhotra, (1999), p. 271

5.2.6 Methods for Improving the Response Rates

The risk for nonresponse was a very important consideration when designing the questionnaire. Since the questionnaire for collecting data from the test group had several stakeholders each of whom had different aims for their survey this was of paramount importance. For each question we considered whether the question was really necessary, if we were using words easy to understand, if it was possible for the respondent to answer and whether the information asked for would be sensitive. We also carefully reviewed context, logic and layout in co-operation with Netsurvey, who have substantial experience from conducting similar surveys.

For the test group we did not offer any incentives beyond stating that it would be possible for a respondent to influence the service in the future. However we did a follow-up four days after the initial e-mail. The follow-up was an exact copy of the initial e-mail with the only difference that it said REMINDER at the top of the message.

For the control group it took a little more work. We had the same type of questions with the exception of three questions regarding the SMS-service of particular interest to ITDirekt.com. However, we put in an incentive in the form of the possibility of winning tickets to the cinema. This reward was not considered too important to influence the sample in a negative way. Moreover, we sent out a reminder to the majority of the individuals that had been contacted.

Both our questionnaires were pre-tested on a number of people in order to avoid misunderstandings, further reducing the risk of nonresponse. Also, all respondents were given the promise of anonymity.

5.2.7 Handling of Nonresponse

According to Malhotra the primary causes of low response rates are refusals[102]. Refusals are a result of the unwillingness or inability of people included in the sample to participate, resulting in lower response rates and increased potential for nonresponse bias. In spite of the efforts taken to increase response rates, we could conclude quite a number of refusals, although much less in the test group.

The individuals that did not respond from the test group were not contacted due to ITDirekt.com's concern for its customer relationships. Thus, we could not determine their causes for not participating. Regarding the control group, one major explanation could be the relatively short time frame of five days the respondents were given to answer the questions. The short time frame was due to the risks associated with comparing the test group and the control group at different points in time.

We also contacted a number of students and Ericsson employees with the purpose of finding out their reasons for not participating. Some of the students reported that they were in the middle of an exam period and said they had not read their e-mail or blamed lack of time. Some Ericsson employees reported not having seen the e-mail. Overall, the Ericsson employees were better at responding than the students.

In summary, even though we had high response rates and even though we mostly received credible explanations for not responding, we do risk nonresponse bias in our samples[103]. It could be, for example, that people with a more negative attitude towards wireless advertising did not respond to the same extent. However, since very satisfied and very unsatisfied customers have a higher propensity to spread information than people with less strong attitudes, you could also argue that the responses would be balanced, especially since this communication channel is very personal and

[102] Malhotra, (1999), p. 369

[103] Nonresponse bias is present when the actual respondents differ from those who refuse to participate. Malhotra, (1999), p. 193

therefore very sensitive [104]. We did not make any technical adjustments in the analysis but will take this into consideration in the critique of the study.

5.2.8 Data Preparation

The test group data had been collected via a web site and a data program made sure that no incomplete questionnaires were processed. The data was transformed to Excel and we transferred it to the statistics program SPSS. The coding of the data was partly achieved using Netsurvey's programme but some adjustments were needed in order to facilitate treatment of data[105]. A variable representing urban or rural residence was computed based on the postal codes. The data was controlled for out of range values and some tests were carried out to ensure consistency. For example we tested how many of the respondents who had seen the ad had also reported awareness for the product and found that all except one had done so. This respondent was discarded. Another example was comparing age with occupation, income and marital status and looking for mismatches. This would imply good internal validity for the test group data.

In the control group the data preparation has been done manually. Each questionnaire was revised for accuracy and consistency before data registration in SPSS. Eight incomplete questionnaires were discarded, with the result of 202 registered forms. The next step was to control for the specific criteria that needed to be fulfilled in order to constitute a test unit in the control group. According to the definition of our target population for the control group the respondent had to own a mobile phone and use SMS services. He or she also needed to have an interest for Tele- Data or Telecom news as the test group did. An extra question (number 21) was added to exclude people working for Ericsson and being familiar with the research project. The respondents were not asked if they knew about the trial or the survey, but rather if they knew about the products within the department we were working for. The total number of respondents excluded was 89 leaving us with a sample size of 109 individuals.

The control group was also exposed to most of the same consistency and quality tests as the test group. Tests regarding Ad_{AW} and the like were not relevant here. On the contrary, internal nonresponse was checked. Individuals that did not know of JM Intelligent Houses but had still answered some questions about the product were discarded. All these measures were in order to ensure internal validity.

5.2.9 Describing the Samples

Scarce information on the profile on the target population was available since the only information recorded as a user of ITDirekt's services was your e-mail address, mobile phone number, sex, age and postal code. However, from this information we could conclude that our test group was a representative sample of the target population. In appendix 3 a description of the target population and the test group is presented.

When comparing the test group with the control group, we could identify some difference between the two populations. Appendix 3 presents a detailed description of the two groups.

The two groups had similar distributions when it came to age, income, marital status and occupation. The variations between subgroups of the samples ranged from 0,2% up to 12,1%. There was a larger representation of female respondents in the control group in compared to the test group. The control group also had a higher rate of people living in urban areas and a higher proportion with higher education compared with the test group.

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[104] Söderlund, (1997), p.130

[105] For example, for some questions the code for Do not know / No answer was changed from 7 to 0 in order to do proper correlations and regressions.

From this we can conclude that the control group is suffering from selection bias[106]. This was expected, since the designated method for collecting the control data could not be used. It was therefore important to investigate whether this selection bias could have any effects on the test results. In order to do that both groups were further analysed.

By comparing means between groups we tested if the men and women differed in ratings on any of the variables we were interested in. The variables tested were Ad_{AW}, B_{AW}, B_{ATT} and PI. We could see that some differences existed but they were too small to be significant[107]. Using the same test we also looked into possible differences between people living in the urban areas, that is within the postal code area of Stockholm, Göteborg or Malmö, and people living in smaller cities or rural areas. Here, the differences were negligible when it came to B_{ATT} and PI. (Sig. 0,476 and 0,972 respectively). However, evidence was found that respondents in urban areas were, to a greater extent, aware of the product than others. The difference was significant at the 5% level. (Sig. 0,016) This could perhaps be explained by the fact that JM Intelligent Houses so far has been Stockholm based. The company headquarters is situated there and the first completed examples of intelligent homes are to be found in one of the suburbs.

To test whether any major differences existed depending on educational level we used ANOVA[108] tests for comparing means between subgroups. We tested if the level of education could have any effects and differences could be discerned, but they were not large enough to require adjustments in the control group[109].

Since our control group had a large representation of urban respondents our results from comparing the groups could possibly imply that we would have a bias towards people who were aware of the product to a greater degree than our target population. This, in turn, would mean that the real amount of B_{AW} would have been lower in the control group if we had had a more representative sample. This was further taken under consideration in the analysis.

5.3 The Trustworthiness of the Study

The trustworthiness of the study affects the risk for false measurements in the study. False measurements due to deficiencies in the design of measure tool and the use of it exists in two kinds: validity and reliability.

5.3.1 Validity

The validity tells us if the measurement method measures the intended characteristics. "A measure is valid when the difference in observed scores reflects true differences in the characteristics one is attempting to measure and nothing else."[110] Validity concepts of relevance in this case are content, construct, internal and external validity.

Content and Construct Validity

The content validity, often referred to as face validity, concerns establishing correct operational measures for the concepts being studied[111]. Construct validity is obtained by understanding the factors that underlie the obtained measurement[112].

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[106] Selection bias refers to the improper assignment of test units to treatment conditions. Malhotra, (1999), p. 221
[107] The highest significance we could obtain was 0,333
[108] Test to compare the differences of mean values between more than two groups.
[109] The highest significance was for Brand Attitude at sig. 0,217.
[110] Churchill, Gilbert A., p. 65
[111] Tull & Hawkins, (1993), p. 317
[112] Malhotra, (1999), p. 283

In order to obtain face validity we obtained "nonexpert" judgements from a number of people completing the questionnaire and also approved its use, before sending it out to the test group.

The construct validity concept is a necessary condition for theory development and testing.[113] It is the most complex form of validity and very difficult to measure[114]. Previous research in marketing from traditional media and on the web shows that the relations between the questions and the theoretical reasoning hold, which supports the construct validity.

Internal and External Validity

When conducting an experiment there are two main goals: firstly to draw valid conclusions about the effects of independent variables on the study group, and secondly to make valid generalisations on a larger population of interest. The first goal relates to internal validity whereas the second relates to external validity.[115]

Internal validity is a necessary condition before any conclusions about the effects of a treatment can be made. The fact that we have a randomised sample with a required size and a high response rate confirms a high internal validity[116]. Disturbances can be eliminated since the survey design allows a good control of incoming variables and hence it is possible to come to more reliable conclusions. Further more, since there was no other parallel advertising, this made the measured effects of advertising isolated and no elimination of external disturbances as such had to be made.

This study cannot be said to have external validity since this is one of the first trials done in this medium and the evaluation concerns only a single campaign. The study needs to be repeated in order to make reliable generalisations if the results converge around the same conclusions. However, since Sweden has a reputation of being very strong on mobile Internet and also has one of the highest penetrations of mobile phones and SMS-experienced users it is an appropriate area to conduct this type of early study[117]. Since this is a field experiment with results supporting existing theories, this should indicate external validity to some extent. Nevertheless, research process does not require external validity for any single item research study – the results should be seen as valuable until they have been disproved[118].

5.3.2 Reliability

A necessary but not sufficient condition for validity of measures is that they are reliable. Reliability is defined as "the extent to which a measurement is free from variable errors."[119] This implies that the measures are reliable if repetition of an exact study resulted in the same conclusions as this study.

We did not have the possibility to redo the test. However, specific factors often cause high reliability[120]. The strongest indicator of a high reliability of this study is that the scales applied are frequently used scales of prominent researchers with a professional purpose. We did not have multi-item questions, however the majority of questions used have an anchorage in prior marketing research with the same aim. Finally the big sample size and thorough preparation of data, e.g. weighted for demographically discrepancies between test and control group, speaks for reliable statistics[121].

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[113] Peter, (1981)
[114] Tull & Hawkins, (1993), p. 318
[115] Malhotra, (1999), p. 219
[116] Malhotra, (1999), p. 332
[117] Red Herring, Newsweek, Die Welt and Financial Times among other media has written about Stockholm on the same theme.
[118] Calder et al., 1982
[119] Tull &Hawkins, (1993), p. 314
[120] Lekwall & Walbin, (1993), p. 213
[121] See section 6.1.2

6 Empirical Findings and Analysis

The aim of this chapter is to analyse the test data and present the results obtained. The analysis will be based on the generated research questions and the hypotheses in chapter four. The first part of the analysis is dedicated to the process of evaluating the SMS advertising campaign. In the second part we try to identity and explore the mediators of advertising effectiveness in this particular campaign.

6.1 Campaign Evaluation

Our first main question was "Is the SMS advertising effective? More specifically, does it have positive communication effects?" In this first section of the analysis we will look at the evaluation measures selected in order to answer this question.

6.1.1 Processing Measure

Ad Awareness

H1: Among the individuals exposed to the campaign, Ad_{AW} is at least 40%

Our only processing measure is Ad_{AW} and this is a figure that can tell us something about the effective reach of the campaign. The Ad_{AW} measure shows how many of the respondents that were exposed to the ad actually remembered seeing at least one of the ads on their mobile phone[122]. The measure used was the so-called aided ad recall, which is suitable for this type of product[123]. It is here important to note that only the individuals who had B_{AW} were able to answer the Ad_{AW} question. We thus assumed that respondents that had Ad_{AW} also knew about the brand.

Using a sample frequency test we concluded that 173 individuals in the test group admitted to having seen at least one advertisement for JM Intelligent Houses. Dividing this figure with the total test group of 337 individuals we found that the overall Ad_{AW} was 51%. The average number of exposures was 6,2 i.e. 6 messages per individual.

We also looked into the effects of the number of exposures upon Ad_{AW}. The respondents were sent two, five or seven messages during a period of 2 weeks.

Ad Awareness Depending on the Number of Exposures				
Number of exposures	2 messages	5 messages	7 messages	Tot. No.
No. of individuals in the sample	18	84	235	N = 337
Share of individuals w. Ad_{AW}	27.8%	48.8%	54.0%	N = 173

Table 3. Comparison of Ad Awareness depending of the number of exposures.

Here we could conclude that the Ad_{AW} increased with the number of exposures. In order to be sure that there were significant differences between the groups we performed a nonparametric Kruskal-Wallis test[124]. The test showed that differences between the group were significant at the 1% level (Sig.0,01). From here on in the analysis we will not look at the effects of additional exposures on variables.

[122] Question number 18 in the questionnaire.

[123] As previously mentioned housing is a high involvement/informational product. For further information see section 3.2.3

[124] This test compares two or more groups of cases for one variable. The means of the dependent variable in the different groups are compared with each other and the differences are tested. Kruskal-Wallis test is used when we can not assume that the groups are normally distributed and we have few observations, as is the case for the "2 messages group" with 18 observations.

- We could conclude that overall Ad_{AW} of 51% exceeded our expectations of at least 40%, which means that our hypothesis number one is accepted.

6.1.2 Communication Effects Measures

Brand Awareness

H2: An individual exposed to the campaign has a higher B_{AW} than an individual not exposed to the campaign.

In order to see if there are differences between the test group and the control group regarding B_{AW} we have computed percentage proportion for each group. However, since B_{AW} was one of the variables that were significantly affected by an individual's area of residence, we first had to adjust the control group to make its distribution more similar to the test group. We chose to make this adjustment by weighting each case. The weights were computed in the following manner:

Weighting Cases			
Residence	Control group	Test group	Weight
Urban	88.10%	24.50%	0.28
Rural	11.90%	75.50%	6.34

Table 4. Computation of weights in order to adjust control group distribution.

Since the control group had a smaller representation of rural residents than the test group we had to make the rural residents' answers weigh more than the urban residents' answers in this group. As we wanted the same distribution for the two groups we computed the weight accordingly by simply dividing the test group's percentages with the control groups percentages. The weights we obtained are shown in the right hand column in table 4.

To find the percentage proportion of B_{AW} in the test group and the control group we used sample frequency tests. Then we tested the significance of the difference in proportions between the groups using a chi-square test[125]. We display the result with weights and without weights in figure 7 below. B_{AW} here refers to the individuals who answered positively to the question "Do you know of JM's new venture Intelligent Houses?"

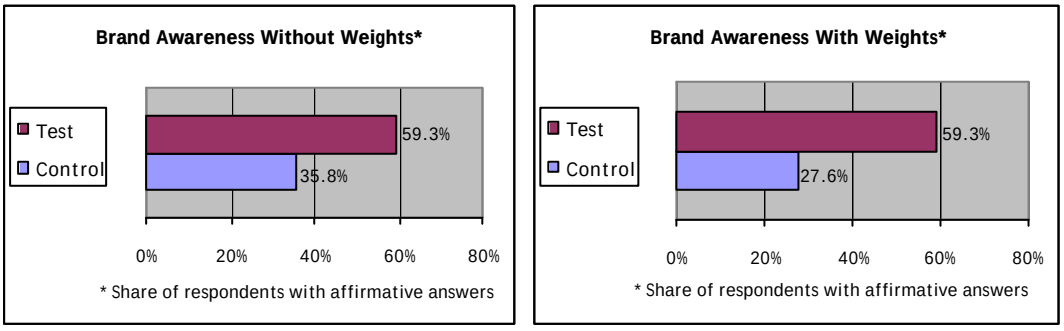


Figure 7 a) Difference in B_{Aw} without weighted cases *b) Difference in B_{Aw}, with weighted cases*

The chi-square test told us that both these differences were significant at the 5% level (Sig. 0,000). When looking at these figures we can see a considerable difference in terms of B_{AW}. If looking at the results after weighting, after being exposed to the mobile advertising campaign average B_{AW} had increased from 27,6% to 59.3% which represents a total change of 114,9%[126].

[125] This test is suitable for testing the difference in sample proportions between two groups for nonparametric tests.
[126] Calculation of total change in Brand Awareness: (59,3-27,6)/27,6=1,1485

- There is enough evidence found in the tests to support our hypothesis number two that an individual exposed to the campaign has a higher B_{AW} than an individual that had not been exposed to the campaign.

Brand Attitude

H3: An individual exposed to the campaign has a higher B_{ATT} than an individual not exposed to the campaign.

When investigating the differences in attitude towards the brand we compared the respondent's view of the brand relative to other brands. The respondent was asked to rate JM's Intelligent Houses on a 5-step scale ranging from "best in the category" to "worst in the category". When comparing the numbers in the figure 8 we only look at respondents giving JM's Intelligent Houses a 4 or a 5. 5 is the highest score (best in the category) and 4 is in between the neutral step 3 and step 5, which indicated a positive attitude towards the brand. The following results were obtained:

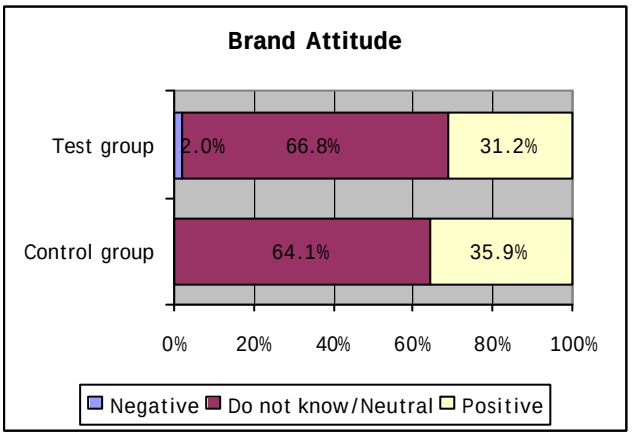


Figure 8. Difference in Brand Attitude between groups

A T-test for independent samples told us that the mean difference was significant at the 5% level (sig.=0,039) The mean values are displayed in table 5.

Brand Attitude				
	Total No. of individuals	Mean	Std. Dev	Sig.
Test group I	202	2.10	1.90	0.039
Control group	30	3.57	0.68	

Table 5. Brand Attitude mean values – comparison between groups.

We could not find evidence to support our hypothesis. The individuals in the test group were more insecure about their attitude towards the product and thus had an overall more negative B_{ATT} than the control group. The product had not yet appeared in any other advertising campaign. Therefore people without a special interest in the product category or a special relation to it would very likely not know about it. Having a special interest for something might affect one's attitude and thus the mean value.

In addition to these tests we used the weighted cases for testing B_{ATT} but with only marginal differences and no changes in the significance level. This was expected since B_{ATT} was not one of the variables affected by residence.

- We could not find evidence to support the hypothesis number three that individuals exposed to the campaign had a better attitude towards the brand than individuals not exposed to the campaign.

Purchase Intention

H4: An individual exposed to the campaign has a stronger PI than an individual not exposed to the campaign.

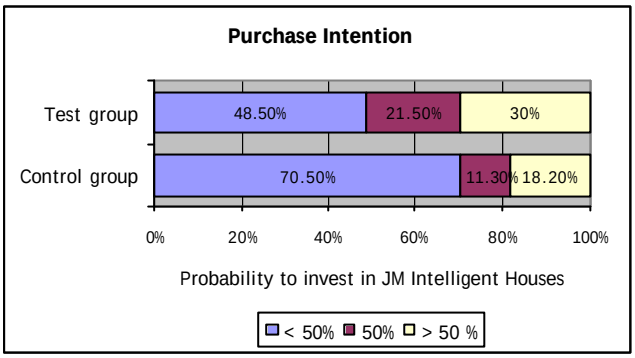


Figure 9. Difference for Purchase Intention between groups

The diagram shows the answer distribution of each group for the question measuring PI, "If you were to invest in a new house, what is the probability of you choosing an Intelligent House by JM?". As it was not possible for the respondent to answer "Do not know", all respondents had to chose one step in the scale. The difference in mean values between the test group and the control group was tested with a T-test. The result indicated that the difference was significant at the 10% level (Sig. 0,069).

Purchase Intention				
	Number	Mean	Std. Dev	Sig.
Test group	200	5.34	2.45	0.069
Control group	39	4.80	2.39	

Table 6. Comparison of Purchase Intention mean values between groups.

Considering the strong positive results for PI, we wanted to see if the individuals who were more positive to the thought of investing in JM-Intelligent Houses had searched for further information to a greater extent than the individuals who were a little less likely to buy the product. For this question we could only look at the test group since the control group could not answer "Search for more information". It turned out that 30% of the positive individuals in the test group had searched for information compared to 12% of the less positive. The difference in sample proportion was tested with a chi-square test and it turned out to be significant at the 5% level (chi-square 0,05). The fact that many respondents who had a somewhat stronger PI had searched for information to a greater extent than the other group further strengthens the credibility of the results from the first test.

- From our tests we have found support for the hypothesis number four that individuals exposed to the campaign had stronger PI than individuals not exposed to the campaign.

6.1.3 Click-through

Search for More Information

H5: At least 8 % of the individuals exposed to the campaign did *search for more information.*

When investigating how many individuals in the test group had searched for more information after being exposed to the campaign we used a sample frequency test. The respondents had to agree or not agree to the statement "After having received the advertisements I searched for more information on JM-Intelligent Houses." on a five-step scale. We interpreted the question so that answers four and five meant that the respondent agreed to the statement. The results were that 12.8% of all the respondents in the sample stated that they had searched for more information, a measure that we define as click-through. It is also interesting to see how many of the respondents who had actually seen the ads that searched for more information. Here the number was 25%.

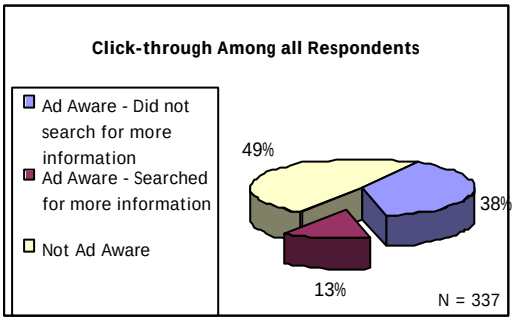
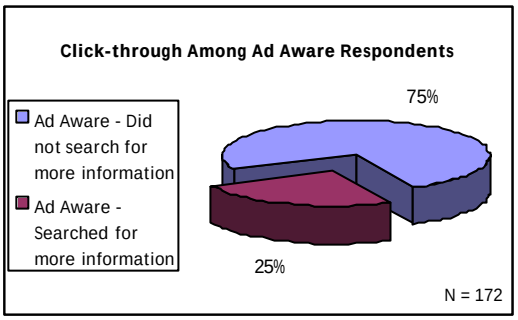


Figure 10. a) Share of test group respondents who searched for more information (rounded figures)



b) Share of ad aware respondents who searched for more information (rounded figures)

It was also interesting to see if the individuals who had searched for more information, and individuals who had not, differed from each other in terms of B_{ATT} and PI. We divided the whole sample into two groups; one containing respondents who stated that they had searched for more information and the other containing respondents who answered that they had not or "Do not know". Then we compared the two groups with each other for B_{ATT} and PI using a T-test for independent samples. The results are displayed in table 7 where the row marked with a "Yes" represents respondents who searched for more information.

Did Search for More Information						
	B_{ATT} Mean	Std. Dev	Sig.	PI Mean	Std. Dev	Sig.
Yes	2.72	1.93	0.02	6.33	2.21	0.00
No	1.95	1.85		4.98	2.48	

Table 7. Comparison of Brand Attitude and Purchase Intention mean values related to group that searched for more information.

Correlation tests were also performed in order to see if there was a relation between the variables "Search for more information" and B_{ATT} and PI. The correlation between the variables was positive and significant at the 1% level[127]. Hence, we can conclude that searching for more information is positively related to both B_{ATT} and PI.

[127] Correlation tests are used when you want to find the degree of a relation between variables. Pearson's correlation between Search for information and B_{ATT} was 0,272 with a 0,00 significance level. Pearson's correlation between Search for information and PI was 0,236 with a 0,00 significance level.

- From the test results we could conclude that at least 8% of the individuals exposed to the campaign searched for more information, which means that our hypothesis number five is accepted.

6.2 Exploration of Effect Mediators

This section aims to explore some relationships between factors mediating communication effects. It also highlights some important findings on what might be determinants of success when using this medium for advertising purposes. This involves answering the rest of the research questions, i.e. questions two to five.

6.2.1 The Relation Between Ad_{ATT} and Evaluation Measures

H6: Ad_{ATT} is positively related to B_{ATT}.

H7: Ad_{ATT} is positively related to *PI*.

H8: Ad_{ATT} is positively related to the *propensity to search for more information*.

The first research question was, "Does Ad Attitude (Ad_{ATT}) affect the evaluation measures in SMS advertising?" In order to test if there is a relation between Ad_{ATT} and the above evaluation measures we compared the Ad_{ATT} of individuals who liked the campaign with the Ad_{ATT} of individuals who did not like it as much. The statement in the questionnaire was, "I thought it was a good advertising campaign." Individuals who answered a four or a five on the scale were considered as the ones who did like the campaign and the others were regarded as not liking the campaign. We then performed sample frequency tests and tested the difference between the groups with a T-test for independent samples for H6 and H7, and with a chi-square test for H8. The test results are displayed in table 8 below.

Attitude Towards the Ad – I thought it was a good advertising campaign									
	B_{ATT} Mean	Std. Div	Sig.	PI Mean	Std. Div	Sig.	Search Mean	Std. Div	Sig.
Yes	2.87	1.92	0.01	6.15	2.29	0.01	2.67	1.68	0.03
No	2.00	1.89		5.09	2.59		2.02	1.59	

Table 8. Ad Attitude - comparison of mean values between groups.

We could clearly see that individuals who liked the campaign also had much higher average scores on the variables measuring B_{ATT}, PI and Search for more information. All three differences were significant at the 5% level.

To test the hypothesis we performed correlation tests between Ad_{ATT} and the three variables B_{ATT}, PI and Search for more information. We found significant and exclusively positive correlations between how much the respondents liked the campaign and the three variables that constituted important desired campaign outcomes[128].

- We have concluded from our tests that there was enough evidence to support our hypotheses number six, seven and eight, that Ad_{ATT} was positively related to B_{ATT}, PI and Search for more information. The assumed relation between Ad_{ATT} and the evaluation measures was thereby confirmed.

[128] Correlation coefficients for B_{ATT} were 0,297 (Sig. 0,00), for PI 0,265 (Sig. 0,00) and for Search for information 0,388 (Sig. 0,00).

6.2.2 Factors Important in Determining Ad_{ATT}

Ad Message Qualities

The variables that constitute ad message qualities derive from the different factors included in question number 19 in the questionnaire. The answer distributions of the questions presenting the end-users salient beliefs are displayed in figure 11 below.

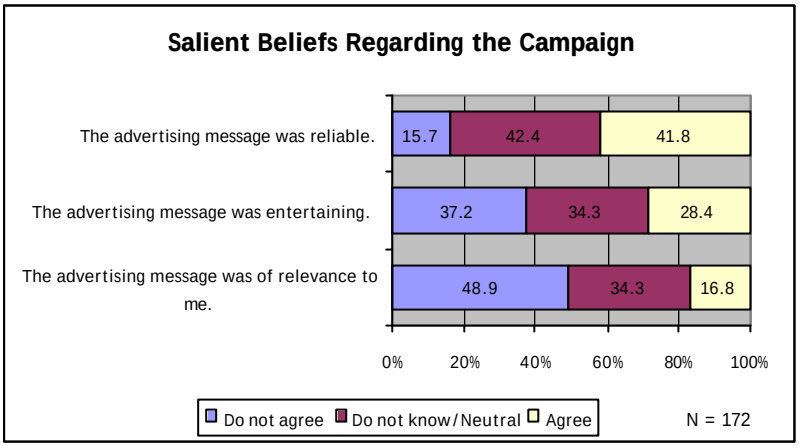


Figure 11. Consumer judgements of the campaign

In testing which of the factors in question 19 that were important determinants of Ad_{ATT} we used a linear regression test with Ad_{ATT} as the dependent variable[129].

Ad Specific Factors Creating Ad Value					
	Adjusted R^2	Beta	t-values	Sig.	Tolerance
Ad_{ATT}	0.554				
Entertaining		0.306	4.066	0.000	0.478
Credible		0.304	4.110	0.000	0.461
Relevant		0.226	3.425	0.010	0.596
WA_{ATT}		0.104	1.995	0.048	0.956

Table 9. Campaign specific factors that created Ad Value

The linear regression showed us that the three factors that were strongest in explaining Ad_{ATT} were: *relevance*, *credibility* and *entertainment*. The variable WA_{ATT} was also significant but with a weaker influence on the dependent variable Ad_{ATT}. The model fit (adjusted R square) was 0,554 which means that 55,4% of the dependent variable is explained by those four independent variables. This is statistically quite good for this type of test. We also did a collinearity diagnosis and a test to control for heteroscedasticity[130]. These tests concluded that we had a good model fit and that there was little chance of any problematic internal relations between the variables included.

- You could thus interpret from this test that the *relevance*, the *credibility* and the level of *entertainment* in the message were strong factors in determining a respondent's attitude to this particular

[129] A linear regression is suitable when we want to find a causal relation between variables, i.e. explain one variable with the help of other variables. The computation of the regression results in a number of coefficients that tells us how the dependent variable (A_{ATT}) is affected by the independent variables (Ad Value factors).

[130] Test for multicollinearity: Condition index = 7,82. According to Edlund 1995 s. 89, a condition index below 10 is considered weak, 10-30 is moderate to strong. Test for heteroscedasticity: Spearman correlation test = Sig. 0,11; correlation coefficient = -0,123. Significance and a coefficient larger than 0,3 indicate bad model fit.

advertising campaign. They thereby constituted important ad message qualities. The fact that the individual had a positive or negative attitude to wireless advertising in general also had an effect on Ad_{ATT}, but it could not be said to play an important part in explaining it statistically.

Ad Medium Quality

To test ad medium quality factors we used sample frequency tests and correlation tests. We measured the satisfaction with the SMS-service with the question: "Viewed on the whole, how well do you think the SMS-service with information on the mobile works?"[131]. We considered that the individuals who answered "Good" or "Very good" were satisfied with the service. These have been marked with "Yes" in the table. The "No" group consisted of individuals who were ambiguous or who answered "Bad" or "Very Bad". We could conclude that the majority of the respondents (140 out of 172) were satisfied with the service. We could also conclude that the respondents who were satisfied liked the ads to a greater extent than the ones who were not satisfied with the service. In order to be sure that there actually was a difference in mean values we did a T-test for independent samples. The low significance level we obtained, shown in table 10 below, indicated that there was such a difference.

Satisfaction with the SMS-service				
	Number	Ad_{ATT} Mean	Std. Dev	Sig.
Yes	140	3.00	1.53	0.00
No	32	1.50	1.27	

Table 10. Satisfied or not with the SMS service – comparing mean values

We also performed a correlation test to find the degree of correlation between these two variables. The results were that the two variables were positively correlated with each other (Pearson's correlation coefficient 0,342) and that the significance level was very low (Sig. 0,00).

- The test results show that Ad_{ATT} is positively related to overall satisfaction with the SMS-service. The result indicates that satisfaction with the service could work as a mediator of advertising effectiveness.

6.2.3 The Relation Between WA_{ATT} and the Evaluation Measures

H9: WA_{ATT} is positively associated with Ad_{AW}.

H10: WA_{ATT} is positively associated with B_{AW}.

H11: WA_{ATT} is positively associated with B_{ATT}.

H12: WA_{ATT} is positively associated with PI.

H13: WA_{ATT} is positively associated with the propensity to *search for more information.*

We tested the assumed importance of attitude towards wireless advertising on the evaluation measures selected using sample frequency and correlation tests. First we divided the respondents into two groups. One group had stated that they were in favour of receiving advertising on their mobile phone and therefore had a positive attitude towards wireless advertising. The other group was ambiguous or negative to the idea. Then we compared the mean values and the proportions of these two groups for the communication objective variables. A thorough description of the results can be found in appendix 3. We could conclude significant differences between the groups for all factors except for Ad_{AW}. The significance level was 0,05 for all tests except for B_{ATT} where the significance was 0,10, which can still be considered as significant.

[131] This is however not the ideal formulation for measuring satisfaction with the service but we find it credible that an individual who is satisfied with the service would reply positively to this question.

This means that the individuals who had a better acceptance for wireless advertising were more receptive to the advertisements and had a more positive attitude towards both the advertisements and the brand. They also had a stronger PI and a higher propensity to search for more information about the brand.

When investigating the nature of the relation between the variables we performed correlation tests. The results were that B_{AW}, PI and Search for more information had a significantly positive correlation with WA_{ATT}[132]. These results are also presented in appendix 3.

- Thereby there was enough evidence to support our hypotheses 10, 12 and 13. The hypotheses number 9 and 11 are on the contrary rejected.

The results tell us that there is a strong relation between the individual's attitude towards advertising in general in this medium and several of the most important evaluation measures. The WA_{ATT} has a connection to their awareness of the advertised product, to their propensity to search for more information about the product and also to their expressed intention to buy it. In order to succeed with advertising in this medium it is thus very important to do your best to try to influence the general attitude towards advertising communication via this channel. Therefore we intended, as a next step, to see what factors were emphasised by the consumers themselves regarding wireless advertising.

6.2.4 Factors Important to the Consumer Regarding WA_{ATT}

Ad Message and Ad Medium Qualities

The relation between ad message- and ad medium qualities and WA_{ATT} was investigated. The medium specific qualities were based on different factors included in question number 20 in the questionnaire. The answer distributions for the questions presenting salient beliefs are displayed in figure 12 below.

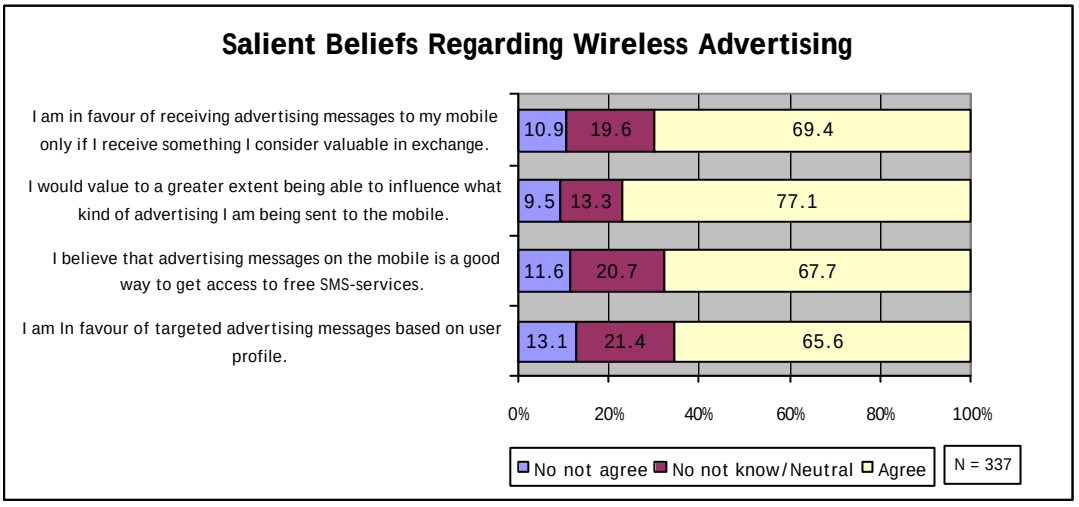


Figure 12: Customer responses regarding wireless advertising

In testing which were the Ad Value creating factors that had an impact on WA_{ATT}, we did a linear regression test with WA_{ATT} as the dependent variable. All factors in question 19 and 20 were

[132] Correlation tests: B_{AW} had a correlation of (0,15 Sig. 0,01), B_{ATT} (0,08 Sig. 0,26), PI (0,21 Sig. 0,00), Search for more information (0,19 Sig. 0,01).

classified as independent. WA_{ATT} is measured with the statement "I am in favour of receiving advertising messages on my mobile", where the respondent has to answer on a five-step scale.

Medium Specific Factors Creating Ad Value					
	Adjusted R^2	Beta	t-values	Sig.	Tolerance
WA_{ATT}	0.269				
Free SMS		0.327	6.38	0.000	0.830
Profile		0.296	5.77	0.000	0.830

Table 11. Wireless advertising specific factors creating Ad Value.

The linear regression showed us that only "getting free SMS-service in exchange" and "advertising based on the user profile" were significant. The results are presented in table 11. The model fit (adjusted R square) was 0,269 implying that 26,9% of the dependent variable is explained by those two independent variables. Unfortunately the value was too low to be able to draw any conclusions. We also did a collinearity diagnosis, tested for serial correlation of the residuals and for heteroscedasticity[133]. These two tests indicated that we had a good model fit and that there was little chance of any problematic internal relations between the variables included. Still, the explaining values were insufficient, and the two variables could thereby not be said to constitute strong determinants of WA_{ATT}.

The lack of explanatory variables in the linear regression could be due to two factors. Firstly, some variables that were important determinants were not included in the questionnaire. The second factor could be that the questions included in the questionnaire could possibly not have the ideal formulation. The main reason for that would be the limited amount of research existing on how the attitude towards a medium affects campaign outcomes. Also, we did not fully control all formulations ourselves. However, we still believed that these factors were important for the acceptance of the medium since this medium is highly sensitive. Therefore we found it appropriate to take on an explorative approach when trying to answer the last question in the analysis. Consequently, we looked at the answer distribution in order to find the factors that were emphasised by the end-users themselves. These factors were then included in a correlation test together with the WA_{ATT} variable.

From the answer distribution we could identify four factors that were important to the end-users; *to receive something valuable in exchange, free SMS-service, advertising based on the personal user-profile* and *the ability to influence what kind of advertising they receive*. The correlation test told us that all the first three variables had a positive correlation with WA_{ATT}[134]. These results tell us firstly that these are the factors underlined by the end-users. They also tell us that the first three factors have strong relations with the WA_{ATT}. The fact that the ability to influence did not have a significant correlation does not mean that this factor is not as important. Instead it means that this factor is underlined no matter what WA_{ATT} the end-user has. They can thereby be interpreted as important ad medium qualities that mediate advertising effectiveness.

[133] Test for multicollinearity: Condition index = 6,28. According to Edlund (1995) p. 89, a condition index below 10 is considered weak, 10-30 is moderate to strong. Test for heteroscedasticity: Spearman correlation test = Sig. 0,434; correlation coefficient = -0,043. Significance and a coefficient larger than 0,3 indicate bad model fit. This is clearly not the case here.

[134] The correlation coefficients and significance levels were (in order of appearance): 0,204, sig. 0,00; 0,449, sig. 0,00; 0,430, sig. 0,00; 0,043, sig. 0,432.

6.3 Summary and Comments

6.3.1 Evaluation Section[135]

The first part of this chapter dealt with the evaluation of the SMS advertising campaign. The **Ad_{AW}** in the test group was 51%, which was higher than expected. Moreover, the level of Ad_{AW} increased with an increase in the number of exposures. This means that individuals with a greater number of exposures had significantly higher awareness of the advertisements than individuals with a lower number of exposures. This could perhaps partly be explained by the design of the campaign with six different messages, which prevented attention wearout[136].

To find the effect on **B_{AW}**, we compared the test group, i.e. individuals exposed to the campaign, with the control group which had not seen the campaign. Here we found a B_{AW} of 59,3% in the test group, which was significantly higher than in the control group.

The same did not hold for **B_{ATT}** though, where the control group had a slightly higher score. Many individuals in the test group were uncertain which brought down the mean value for this group. These results were a bit confusing though since B_{AW}, where we got good results theoretically is connected to B_{ATT}. One possible explanation though is that the product category very new and not yet widely known. The measure for B_{ATT} was relative to other products in the same category, which could be difficult if the end-user did not know much about the category as such. Perhaps an absolute measure of the attitude would have been more suitable in this case. Still, the conclusion must be that the SMS campaign was not effective in changing the end-users' attitude towards the advertised product. Given the nature of the medium today, a high impact on this variable was not expected either. Neither was it a main objective of the campaign.

Looking at **PI**, we could conclude a significantly higher mean value for the individuals in the test group. The individuals with high PI had also stated that they had searched for information about the advertised product, to a greater extent than individuals with low PI. The high results for the PI was a bit surprising and they were not expected. The fact that rather many individuals that were positive to the thought of investing had searched for more information tells us that other information sources but the campaign lay behind their opinions.

Finally we could conclude that the amount of individuals that had **searched for more information (click-through)** about the product was 12,8%, which was more than the expected minimum level of 8%. The results indicate that this campaign got better results than the Goyada trial. Since this was the only figure to compare with we could conclude that this campaign was more effective from that perspective. Click-through based on the number of individuals having seen the ad was 25%.

From the evaluation section of the analysis we could conclude that the SMS advertising campaign did have positive effects on all evaluation measures except for B_{ATT}. Following from our definition of advertising effectiveness and the theoretical framework, these effects were examples of changes in intermediate variables leading to profits for the advertiser. Therefore the campaign could be said to be effective.

6.3.2 Exploration Section

The second part of this chapter was dedicated to exploring some relations between the variables that had an impact on the desired effects. The intention was also to find variables that were important in determining attitudes of the end-users.

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[135] For a recap on the abbreviations, please see section 1.3!
[136] Rossiter & Percy, (1998), p. 602

First we found evidence than **Ad_{ATT}** had a strong association with some of the evaluation measures. This means that the end-users attitude towards the advertisements had impact on the effectiveness of the campaign. This made it interesting to go further and see what factors were most important in determining Ad_{ATT}. The tests told us that the *relevance*, the *credibility* and the level of e*ntertainment* in the message were most important. In addition, the level of satisfaction with the SMS-service had a relation with the individuals Ad_{ATT}. That meant that our results agreed with the theory that a match between the interest of the consumer, the content of the medium and the advertising message were positive in terms of Ad_{ATT}. This implies that an advertiser wanting to optimise the campaign effects should try to target a service that has a rather close connection with the product or service he or she wants to market.

Furthermore, the **WA_{ATT}** was found to be strongly associated with the evaluation measures B_{AW}, PI and Search for more information. This made it interesting to investigate the factors that were important to the end-users regarding their attitudes towards wireless advertising in general. The tests told us that there were four factors that were most important to the consumer. They wanted to *receive something valuable in exchange*, and *receiving free SMS-service in exchange for advertising* seemed to be a strong alternative. *Advertising based on the personal user-profile* would also be a good alternative, but the most important factor seemed to be *the ability to influence what kind of advertising they were being sent.*

An overview of the results of investigated questions and tested hypotheses are to be found in figure 13 below.

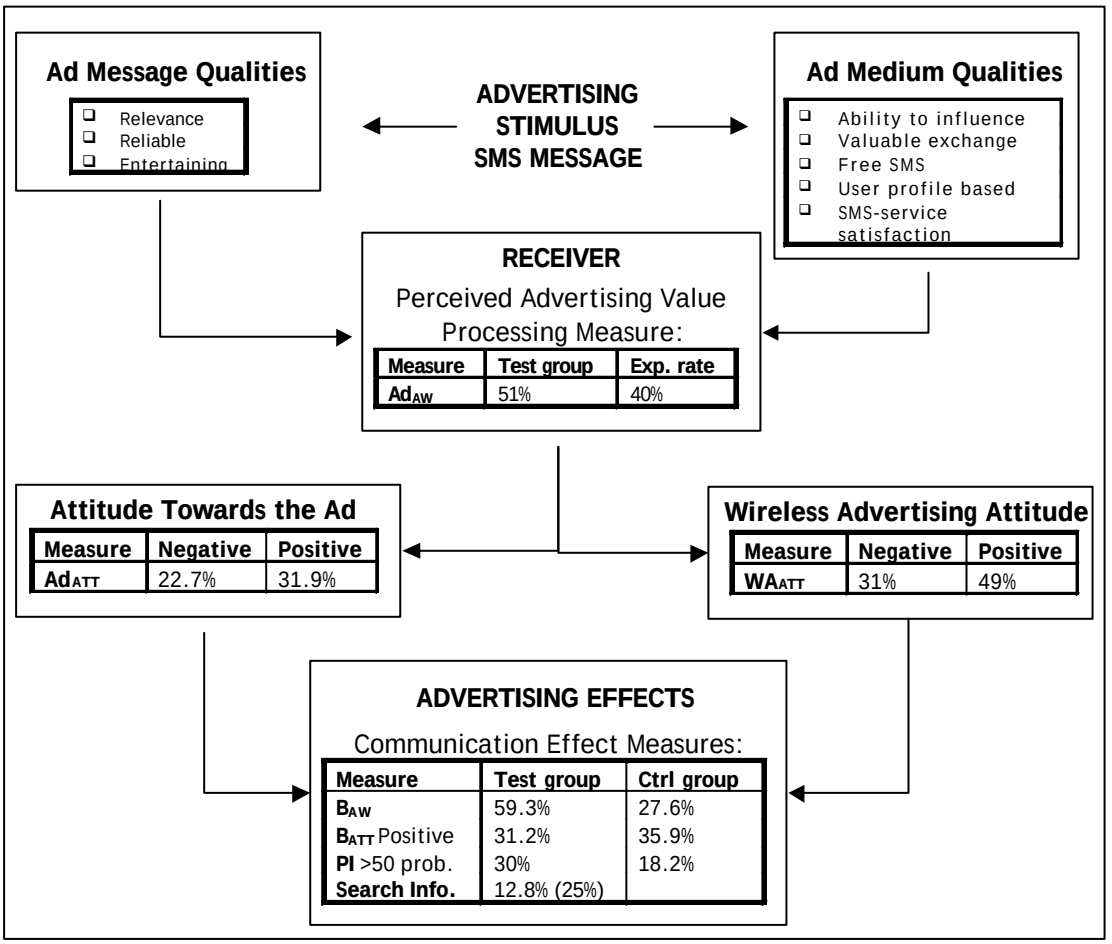

Figure 13. Overview mediators and advertising effects

7 Epilogue

7.1 Discussion

7.1.1 Important Campaign Characteristics

The results from this early study show that this vehicle can work with merit as an effective advertising channel. To a great extent, end-users pay attention to the message, remember them and respond to them by searching for more information about the advertised product. Nevertheless, we do have to keep in mind that the test group participants had some very important characteristics. This influences the extent to which the results of the study can be generalised.

First of all they had signed up for the service, meaning that the advertising was permission-based. This means that they most certainly were aware that they would receive advertising and were expecting it. It is difficult to make out what effect this might have had. It could mean that they were more attentive than they would have been if they were not prepared. Yet, you could also argue that they would know when "not to look" and that the valuable surprising effect is lost. The figures for A_{AW} and B_{AW} speak against the first argument. What is the most important point we want to make here though is that a permission-based procedure is most likely a prerequisite for a successful wireless advertising activity.

Secondly, the individuals had signed up for IT, data or telecom news, which implicated that they most likely had a special interest in one or more of these areas. The advertised product had several ties to at least two of them. This could mean that the chosen target population would be more receptive to the particular advertising campaign than would individuals chosen at random. This is however one of the main points of using this medium; you can target those individuals that are of special interest to you. This characterises this particular campaign, as well as it will probably characterise any successful wireless advertising campaign in the future. Also, the individuals in the control group also had an interest for this type of news, which indicates that the figures are comparable between these two groups.

Thirdly, as subscribers to an SMS news service which is a quite new phenomenon they could be considered as so-called early adopters for this type of services. This means that there is a possibility that the number of identical individuals in the rest of the population is relatively small. In turn that tells us that the chances that the total population would today respond in the same way to wireless advertising could be moderate. However this does not mean that the results of this trial are not interesting. On the contrary, early adopters are often used as indicators of what is coming when the rest of the population catches up. Information on what works and what is important to early adopters often indicates what will work and what will be important to the coming end-users.

Still, any conclusions we draw in this thesis could only be regarding the individuals in our target population (the statistical target population). It can also be argued that the same results would hold for individuals that are similar to the test population (the analytical target population).

7.1.2 General Implications of the Results

A number of findings in chapter six tell us that the old laws in terms of advertising effects still prevail. This is in terms of the influences of attitude towards the ad and towards the medium on communication effects. The results of the study also indicate that certain areas might be of special importance in this medium. This section discusses some of the implications of our results. The

discussion is complemented with input from other sources of information, such as interviews and findings from other studies.

The Medium

The fact that the majority of the individuals who took part of the trial were positive towards wireless advertising in general indicates that there is a potential market. The fact that the campaign had a successful outcome tells us that this is a channel that can work for advertising purposes. However, a lot can be learnt about what sort of communication is suitable in this channel and about what is needed for improving the acceptance of wireless advertising in general.

Use the Strengths of the Wireless Channel

The results indicated that the medium was successful in affecting end-users awareness and interest of the product. It also made them search for more information, which increased their knowledge about the product. This would suggest that if wireless advertising would be suitable for introducing a new product or service and for creating an interest for a product or a certain event within a well-defined customer segment. It is likely that informational products would be suitable instead of transformational since it is not very likely that 50 characters would affect emotions. However, if the wireless channel is complemented with other media such as a web site, it is possible to try to affect other steps in the buyer process there. The chances of changing the BATT will probably improve with the coming of 3G when the nature of wireless advertising is not as limited.

Empower the End-User

The end-user must approve of receiving advertisement messages; i.e. it must be permission-based. Companies that do not apply this method will not succeed in the long run in the market. They will not likely succeed with their campaigns and also cause a lot of irritation. The end-user must also be able to "own" his or her own profile, i.e. have the ability to decide who knows what about them. This is important both for the trust in the relation with the service provider or the operator (depending on who has the specific relation) and for sending out accurate advertisements. For the latter to be fulfilled, the profile must be updated. There is therefore a need for a solution with a dynamic database that makes it simple and in the interest of the consumer to update the data being stored. The ideal would be that the end-user had a direct incentive to do it. Finally, the results suggested that the end-user should be receiving something that they consider valuable in exchange for the advertising. One way of doing that is to offer the possibility to chose what sort of compensation they want; 20% off of the phone bill, free SMS-services or points to buy products for are examples of such a compensation.

The Message

A successful campaign is relevant, credible and entertaining

The results from this study indicate that it is important that the receivers like the campaign in order to have desired effects. The respondents who did not like the campaign did not either search for more information. This indicates that in this medium liking the ad is important which in the prolongation demands a lot from the design of the campaign.

Ad message qualities do by experience differ among different media types. The three main factors for this particular campaign: relevance, credibility and entertainment might be as important for other WA as well. The characteristic of a relevant ad is well targeted and thus has a strong connection with the person's profile and/or interest. The need for the dynamic database and incentives to up-date the profiles are here emphasised further. How to interpret the need for credibility is not obvious. Here there is a need for further research. Previous research highlights the importance of familiarity with the brand and that it is a legible sender of the message[137]. Other research suggests that credibility is

[137] Internal Ericsson study performed by Division Internet Applications, USA in March 2000.

one of the most important factors for the attitude towards advertising on the Internet today which might indicate suggest that this factor is likely to be even more important if the content in the so-called mobile-internet will increase[138]. What makes an advertisement entertaining is subjective, which tell us that there is a need for further research in this area as well. An interesting reflection is that entertainment services have been the driving force in the success story with I-mode in Japan, and many believe that entertainment will be a strong driving force for in the development of mobile data services in the near future[139]. It is reasonable to believe that this factor will be of great importance for the success of future wireless campaigns.

Other Considerations

Make it Simple and Cheap for the End-User to Respond
It is important to try to facilitate and encourage any action the end-user might take as a response to the advertisement. This includes costs both in terms of the efforts needed from the consumer and in terms of economic costs.

In the case of current wireless advertising, there is a much bigger effort needed to "click-through" than for example on the web. The receivers in the study who found the ad interesting and wanted to find out more did actually have to go to another medium, the computer or the phone, to search for further information. With a WAP-phone, the end-user has to pay to download sites and this could be an effective brake on click-through rates. Depending on the objective of the campaign this will have to be considered.

As an advertiser it is of great importance having considered what the aim with the campaign is and having set resources free in order to meet the responses from the end-users. These could be e.g. in terms of product information, updated home page, and FAQ or/and a call-centre (in the case when the source for more information is a telephone number instead of a web site address.) Not having prepared all relevant information or the expensive telephone fees of being connected implies a risk of loosing a potential customer. An effective way to prevent this could be to have a call-back service on the homepage, i.e. customer services would call back if the end-user inserts his or her number or send an SMS. Another way of making it simple for the end-user is to have a complementing feature on the web site with campaign relevant information making it easy for the end-user to find the information he or she wants, order complementary information or contact the right people directly.

7.1.3 General Implication for the Telecommunications and the Media Industry

For the telecommunications industry these indications of potential possibilities with wireless advertising should be of great interest. It could create new sources of revenue for the operators. It could contribute to more traffic in the systems, which is interesting both for operators and systems suppliers. It could also provide a new means for creating demand for more expensive sophisticated services, which would have important implications for service providers, content providers and others.

For the media industry it offers opportunities as well. This new channel constitutes an interesting offer to advertisers and provides media agencies with a new effective tool, allowing for highly targeted messages and interesting, somewhat different campaigns. Looking at the production costs, it is still a very cheap channel, and if its strengths are used correctly there are opportunities for high margins.

[138] Sukpanich (1998)
[139] Strategy Analytics, (2000) Wireless content: Winning the Fight for Mindshare

7.2 Critique of the Study

The Possibility to Generalise the Results

The fact that we are only looking at one single campaign makes it difficult to generalise the results of the study. We cannot say that wireless advertising in general is effective, but we merely claim that it has been in this campaign. There is a need for further research using other types of services and other products in order to say something about the medium as a whole. The more such studies that can be performed, the more can be said about the medium as a whole.

Bias of the Control Group

When comparing the demographic distribution of the test group and the control group, there are some variables for which the groups are different from each other. This could reduce the reliability of the test results obtained. However, only one of the bias variables showed to have any significant impact on the evaluation measures, and this one was adjusted for in the test using weighted cases. Still, we cannot be sure that the bias might have some influence on the results.

The Influence of Nonresponse

Even though we had satisfactory response rates, we cannot ignore the risks of nonresponse bias. This means that there could be a chance that we have tested individuals that were relatively more positive towards wireless advertising than what was the average in the target population. Still, what these individuals think about what is important regarding wireless advertising would be more interesting to know than the individuals who are negative. The individuals that are negative will probably not be an interesting or even a possible target group for the industry in the near future. The distribution of individuals was that were positive indicated that we did have a large representation of people that were negative too.

7.3 Suggestions for Further Research

"The information revolution that we are about to explore requires new research procedures, which makes this the most challenging, most exciting time in the history of advertising research"[140]. We cannot do other than agree that there are many possible suggestions for further research. Very little has been done in this field so far and there is a great need for that for the success of the wireless advertising industry. We wanted to suggest the following:

- Focus on the targeting aspect of the medium.

One major opportunity with this medium is the ability to send out targeted messages. However, there are different definitions of what can be considered as targeted and practically no evidence of an increased value of an opportunity to target individuals.

- Focus on the privacy-aspect of the medium.

This medium theoretically makes it possible to a large extent to track the end-users responses and actions upon advertising. This can then be used for better targeting the marketing communication to customers' interests, needs and even behaviour. This is an area under great debate in the industry and the need for further research is substantial.

The most obvious suggestion for further research though, is simply to just evaluate more campaigns. The more evaluations and research that is being conducted, the more certain can you be about the potential of the medium.

[140] Lavidge, (1999)

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8.2 Internet

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8.3 Interviews

Anna Carlberg, Synergy Interactive, 19 October 2000
Anders Ericson, VD, Annonsörföreningen, 31 October 2000
Mats Ericsson, Product Business Manager Interactive Communication, Ericsson, 6 July 2000, 22 August 2000
Patrik Granholm, System Developer, Ericsson, 22 August 2000
Kristofer Gronowski, System Manager, Ericsson, 22 August 2000
Alexandra Ihre, Media & Digital Marketing Director, Ericsson, 17 November 2000
Börje Persson, Product Manager, Ericsson, 17 November, 2000
Göran Tamm, VD, Marknadsanalys AB, 23 October 2000
Henrik Sandström, Ericsson, 24 October 2000
Johanna Sundh, Cap Gemini Ernst and Young, 24 October 2000

8.4 Seminars and Lectures

A Glorious Day for Wireless Communication, Cirkus. Stockholm, 12 September 2000
Pål Fevang , ansvarig mCommerce Andersen Consulting Scandinavia - *The mCommerce Revolution – vad är annorlunda*
Per Björklund, Investment Manager startupfactory – *I huvudet på en riskkapitalist*
Theodor Bergquist, Managing Director Jupiter Communication Scandinavia – *Den trådlösa ekonomin – en översikt*
Bo Albertsson, Marketing Director Ericsson Mobile Communications AB – *Young and free*

Marketing Week: Sign 2000, Stokholmsmässan, 27-29 September 2000
Charlotte Axelsson och Andreas Everts, Goyada
– *Mobilen – ett outforskat marknadsföringsverktyg*

8.5 Mobile Advertiser Documentation

Mobile Advertiser Ad Brokers Guide
Mobile Advertiser 2.0 Function Specification 2000-07-04
Mobile Advertiser 2.0 Preparation Guide 2000-06-27
Mobile Advertiser System Overview, 2000-07-11

9 Appendix

9.1 Appendix 1: JM advertising campaign SMS-messages sent

1. 12-09-00 From: 9020 ITDIREKT: LYCOS.SE The Portal Lycos invest extensively in Sweden, and re-launch their Swedish site www.lycos.se. Ad: Simple Secure Convenient www.jm.se/intelligentahus
2. 13-09-00 From: 9020 ITDIREKT: SMS-CHAT Nokia develop chat via SMS. They have launched a new system for telecom operators. www.nokia.se. Ad: Time for other things! www.jm.se/intelligentahus
3. 14-09-00 From: 9020 ITDIREKT: NEW TELEPHONY The broadband operator UPC does try offering telephony via the cabel tv network. www.upc.se. Ad: Beauty & Intelligence www.jm.se/intelligentahus
4. 19-09-00 From: 9020 ITDIREKT: MOBILE OG Aftonbladet and SVT give you the Olympic results to your mobile. Ad: Lock the house your finger www.jm.se/intelligentahus
5. 21-09-00 From: 9020 ITDIREKT: SPRAY Lycos Europe buy the Internet portal Spray, the deal costs Lycos 5,4 billions SEK. Ad: Start the coffee maker from bed! www.jm.se
6. 22-09-00 From ITDIREKT: COMDEX Comdex to Sweden, if every thing works out the Comdex-exhibition will come to Sweden autumn 2001. Ad: The grass is cut! Regards the house www.jm.se

9.2 Appendix 2: Questionnaire - Advertising through SMS[141]

1. – 10. Confidential*

11. How long have you been a regular user of SMS? Chose below Less than 1 month/1-6 months/6 months-1 year/1-2 years/more than 2 years/I do not use SMS

12. Have you ever received advertising through SMS?* Chose below Yes/No

13. Do you have an interest in IT/Telecom or computer news?* Chose below Yes/No

14. Do you know of JM's new venture Intelligent Houses? Chose below Yes/No

If no, please go to question number 20.

15. What is your general opinion of JM Intelligent Houses compared to other types of housing?

	1	2	3	4	5		0
JM Intelligent Houses is **worst** in the housing category.	☐	☐	☐	☐	☐	JM Intelligent Houses is **best** in the housing category.	Do not know ☐

16. How did you receive information about JM Intelligent Houses?

☐ Advertising on TV
☐ Advertising on the radio
☐ Advertising in newspaper and journals
☐ Advertising through e-mail
☐ Advertising via SMS -messages
☐ Advertising on Internet
Other…

17. If you were to invest in a new house, what is the probability of you choosing an Intelligent House by JM?
Chose an alternative in the list: Chose below 99%/90/80/70/60/50/40/30/20/10/0%

18. Approximately how many ads for JM Intelligent Houses have you seen on your mobile phone?
Chose below 0, 1, 2-3, 4-5, 6-10, 10 or more
If 0 times, please go to question number 20

19. To what extent do you agree in the following statements concerning the SMS advertising campaign of JM Intelligent Houses?

➢ A) – J) **Confidential**

	1	2	3	4	5		
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree	Do not know 0 ☐

20. To what extent do you agree in the following statements concerning SMS advertising?

➢ A) –H) **Confidential**

	1	2	3	4	5		
Strongly disagree	☐	☐	☐	☐	☐	Strongly agree	Do not know 0 ☐

21. Do you know of the products within Ericsson Radio Systems department PLIC (Product Line for Interactive Communication)?* Chose below Yes/No

THANK YOU FOR YOUR PARTICIPATION! We hope that you will win a ticket to the cinema!
Please return this compiled questionnaire to johanna.n.nilsson@era.ericsson.se.

- These questions are confidential and excluded from the questionnaire.
- **These (question 12, 13 and 21) are specific control group questions, which were added in order to guarantee that our control group were as close as identical to our test group.

[141] Translated from the Swedish original.

9.3 Appendix 3: Compilations of Statistical Results

This section is unfortunately excluded from this version of the thesis because of the sensitivity of the information to Mediatude and ITDirekt.

9.4 Appendix 4: Glossary

Advertising: "Any paid form of non-personal communication about an organisation, product, service, or idea by an identified sponsor"[142].

Mobile/Wireless advertising: Commercial messaging to wireless devices such as a mobile phone.

Banner: A banner is an advertisement in the form of a graphic image that typically runs across a Web page or is positioned in a margin or other space reserved for ads. Banner ads are usually Graphics Interchange Format images. In addition to adhering to size, many Web sites limit the size of the file to a certain number of bytes so that the file will display quickly. Most ads are animated GIF since animation has been shown to attract a larger percentage of user clicks. The most common larger banner ad is 468 pixel wide by 60 pixels high. Smaller sizes include 125 by 125 and 120 by 90 pixels. These and other banner sizes have been established as standard sizes by the Internet Advertising Bureau (IAB).

Click through: A click through is what is counted by the sponsoring site as a result of an ad click. A click through, however, seems to imply that the user actually received the page. Some advertisers are willing to pay only for click through's rather than for ad impressions. The term click-through is sometimes used for the mobile Internet too, but there is no established definition yet. See www.iab.net (WAA) for further information.

CPM: CPM is "cost per thousand" ad impressions, an industry standard measure for selling ads on Web sites. This measure is taken from print advertising. The "M" has nothing to do with "mega" or million. It's taken from the Roman numeral for "thousand."

Mediator: In this thesis referred to a factor having an influence on advertising effects.

Psychographic characteristics: This is a term for personal interest information that is gathered by requesting it from users. For example, a Web site could ask users to list the Web sites that they visit most often. Advertisers could use this data to help create a demographic profile for that site.

Push: Push (or "server-push") is the delivery of information on the Web that is initiated by the information server rather than by the information user or client, as it usually is. The **push technology** is based on the principle that the information seeks out the browser of anyone who has installed software from one of the Internet's ever-increasing "push" services.

Spam: Electronic junk mail or junk newsgroup postings. Some people define spam even more generally as any unsolicited e-mail.

Targeting: Targeting is purchasing ad space on Web sites that match audience and campaign objective requirements.

Wireless Application Protocol (WAP): WAP is a standard for providing cellular phones, pagers and other handheld devices with secure access to e-mail and text-based Web pages.

The World Wide Web (WWW/Web): Internet

[142] Kotler (1997), p. 604