

M-Advertising

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INTRODUCTION

According to our comprehension, mobile advertising (also called “wireless advertising” or “mobile marketing”) is the presentation of advertising information on mobile handheld devices with a wireless data link like cellular phones, personal digital assistants and smartphones; however notebooks/laptops and tablet PCs are not considered as mobile devices in this sense, because they are used like stationary devices at different locations. For example SMS-messages with product offers would be a simple form of m-advertising. In this article we discuss the special features of m-advertising, but also the problems involved. Afterwards we name basic methods of m-advertising and compare their general strengths and weaknesses using a set of criteria.

M-ADVERTISING COMPARED TO TRADITIONAL FORMS OF ADVERTISING AND INTERNET-BASED ADVERTISING

Conventional media for advertising are newspapers, advertising pillars, TV and radio commercials. Relative new media for advertising are the Internet and mobile devices. Both have some features in common:

- **Individually Addressable:** The user can be addressed individually, so a high degree of personalization is possible: it is possible to tailor the content of each advert according to the profile of the consumer (mass customization).
- **Interactive:** if end users receive an advert, they can immediately request further information, participate in a sweepstake or forward an advert to friends. The last one is especially interesting in terms of “viral marketing.”
- **Multimedia-Capable:** Multimedia elements (e.g., pictures, movies, jingles, tunes, sounds) are important to realize entertaining adverts and to generate brand awareness.
- **Countable:** Each impression of an ad can be counted; for most conventional methods of advertising like TV/radio/cinema commercials or adverts in print media this can not be done and thus the advertisers

are billed according to a rough estimate of the number of generated contacts.

But there are additional features of m-advertising [see also Barnes (2002)]:

- **Context:** In the sense of mobile computing, context is “[...] any information that can be used to characterize the situation of an entity” (Dey, 2001). This information helps to support a user during an interaction with an application. For mobile terminals with their limited user interface context-awareness is especially important. The most prominent example of context is the location of a user, because it changes often and there are a lot of useful scenarios of how to exploit that information. The location information for these “location-based services” can be retrieved based on the position of the currently used base station, the runtime difference when using more than two base stations (TDOA: Time Differential of Arrival) or using a GPS-receiver (Zeimpekis, Giaglis, & Lekakos, 2003). Other examples of context information also used for m-advertising are “weather” and “time” (Salo & Tähtinen, 2005).
- **Reachability:** People carry their mobile terminal along with them most of the day and rarely lend it away or share it with other people, because it is a personal device. Therefore marketers can reach people almost anywhere and anytime.
- **Convenience:** Mobile terminals are much simpler to handle than personal computers because they are preconfigured by the mobile network operator and have no boot-up time, so they are a medium for electronic advertising to reach people who don’t want to use a computer.
- **Penetration Rates:** Mobile terminals—especially cellular phones—have very high penetration rates, which exceed those of fixed line telephones and personal computers. Mobile terminals are more popular than PCs because they are more affordable and simpler to handle. The current global number of cellular phones is beyond one billion, there are even countries with penetration rates over 100 % (Netsize, 2005).

At first glance, m-advertising seems to be a direct continuation of Internet-based advertising: instead of a fixed

computer with a wired data link a mobile terminal with wireless data link is used. But most forms of advertising in the Internet are based on the idea of showing additional advertising information on the user interface (banners on Web pages, sponsored links in search engines). Due to the limited display size of mobile terminals these forms of advertising can't be used for m-advertising, so new methods have to be developed.

Mobile terminals are much more personal devices than personal computers, so a higher degree of personalization can be obtained than with Internet advertising, which leads to better response rates than with other forms of direct marketing (Kavassalis et al., 2003).

CHALLENGES

As shown in the last section, m-advertising has some unique advantages when compared to other forms of advertising. But one shouldn't conceal the challenges associated with it:

- **Unsolicited Messages:** Unsolicited mass-mailing with commercial intention ("Spam") as well as malware (viruses, trojan horses, spyware, etc.) are a great worriment in the fixed-line Internet; the portion of spam messages in e-mail communication exceeds the 50% mark by far. Unsolicited messages on mobile terminals are a much bigger problem, because mobile terminals have limited resources to handle them and are personal devices.
- **Limited Usability:** Due to the limited dimensions of mobile terminals they have only a small display and no real keyboard. This has to be considered when designing adverts for mobile terminals. One cannot ask the user for extensive data input, for example, about his/her fields of interests or socio-demographic particulars.
- **Limited Resources:** Mobile terminals have very limited resources, for example, memory, CPU-power and available bandwidth. These have to be considered when designing adverts for mobile terminals, for example, transmission of adverts with a lot of data volume is not adequate.
- **Privacy Concerns:** As already mentioned, mobile terminals are personal devices with personal data stored on them; it is also possible to track the location of the users.
- **Cost of Mobile Data Communication:** Mobile data communication is still very expensive in some regions, so no consumer wants to cover the costs caused by the transmission of adverts.
- **Technical Heterogeneity:** The underlying network infrastructure and the capabilities of mobile terminals are much more heterogeneous than for ordinary

fixed-line computers: one advert might look great on one type of terminal, but isn't displayable on another one. It might cause significant costs when the creator of an m-advertising campaign has to consider many different types of mobile terminals.

Due to the problems with unsolicited e-mails and telephone calls "permission-based marketing" is a generally accepted principle when designing systems and campaigns for m-advertising (Barwise & Strong, 2002): A consumer will only receive advertising-messages on his mobile device if he explicitly gave his permission. The adverts sent to a user will be chosen according to the profile of interests of the user. But there is one problem with this principle: a consumer has to know about an m-advertising campaign or system to give his explicit agreement, so one has to "advertise for m-advertising." Because of this m-advertising is very often integrated into bigger campaigns along with traditional media, see Kavassalis et al. (2003) for examples.

DIFFERENT APPROACHES FOR M-ADVERTISING

We distinguish different approaches for m-advertising by the underlying mode of wireless communication used:

- When using broadcast communication, messages are sent to all ready-to-receive terminals in the area covered by the radio waves according to their natural propagation. If the area covered is rather restricted we talk about a local broadcast, which allows realizing a certain degree of location-aware adoption; the opposite case is global broadcast. Examples: cell-broadcast to all terminals in a certain network-cell (local broadcast) or digital television standards like DVB-H or DMB (global broadcast).
- Mobile ad-hoc networks (MANETs) are wireless networks without a dedicated infrastructure or a central administration (Murthy & Manoj, 2004). Two terminals of such a network exchange messages when the distance between them is short enough, a message can also be routed via several terminals to the recipient (multi-hop).
- Unicast communication provides a dedicated point-to-point connection between a base station and a mobile terminal in an infrastructure-based network like GSM, WLAN or UMTS.

To compare different advertising approaches based on these modes we apply the following set of criteria:

- Which degree of personalization and location-aware adoption can be achieved?

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