

Next-Generation Mobile Marketing: How Young Consumers React to Bluetooth-Enabled Advertising

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Mobile devices are attractive media for directly communicating with consumers who have become busier and more difficult to reach. While SMS (short message service) advertising has received some attention in the literature, Bluetooth-enabled advertising is still unexplored. This research aims to investigate younger consumers' acceptance of Bluetooth-delivered advertising. Although the majority of the respondents were willing to accept this form of advertising, they needed both to be in control of the frequency with which they receive messages and also to be reassured that the medium could ensure privacy and security. The research further indicated that peers influence the acceptance of Bluetooth-driven advertising.

INTRODUCTION

The on-the-go lifestyles of today's consumers make them harder than ever to reach. But new ways to reach target audiences are evolving to stand up to the challenge. In particular, mobile penetration is approaching nearly 100 percent—one mobile phone for every individual in most Western countries (*The Economist*, 2005). With such market penetration, "always-on-always-with-you" mobile devices present marketers with new advertising opportunities (DMA, 2005). Besides their unprecedented reach, mobiles represent an exemplary medium for direct-response advertising (Schofield, 1994; Woodside and Motes, 1980; Woodside and Soni, 1991) by allowing advertisers to elicit an immediate and direct consumer response. Direct marketing is most effective when it is possible to accurately track effectiveness and thereby justify the investment in its sendees—a benefit that becomes more important in light of recent pressures on marketers to be financially accountable (Gupta, Lehmann, and Stuart, 2004; Rust, Lemon, and Zeithaml, 2004).

Some have predicted that worldwide mobile advertising will surge from \$1.5 billion in 2007 to \$11 billion in 2011, driven by such factors as the declining cost of high-quality multimedia hand-

sets and the steady rollout of high-speed networks. If those forecasts prove correct, mobile advertising will become the fastest growing promotional channel (Walton, 2006). Along with the hardware and software, mobile's audience is expanding, too. By 2011, analysts predict that the number of mobile subscribers worldwide will reach 4 billion.

JupiterResearch recently reported that about 22 percent of companies that advertise online have also tried mobile marketing (Ask, 2006). Early adopters of the new marketing medium notably have included wireless providers, media enterprises, and companies within the automotive, financial services, food services, and consumer-packaged-goods industries. The same study reports that mobile advertisements tend to target younger audiences—people who are more likely to be innovators as well as early adopters of new information technologies (e.g., Danko and MacLachlan, 1983; Labay and Kinnear, 1981; Venkatraman, 1991).

Short message service (SMS) advertising has received considerable attention in marketing literature (Carroll, Barnes, Scornavacca, and Fletcher, 2007; Drossos et al., 2007; Okazaki and Taylor, 2007; Rettie, Grandcolas, and Deakins, 2005). By contrast, however, academic circles have largely

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ignored Bluetooth-enabled advertising, despite its recognition by advertisers as an effective advertising tool.

The difference in technologies—and the reason Bluetooth deserves more attention from researchers—is simple: Bluetooth mobile technology offers marketers a unique opportunity to reach people in location-specific areas with rich content, but without the cost and complexity of the mobile networks' SMS and multimedia message service (MMS) technology. Any user of a Bluetooth-enabled mobile device can instantly receive such rich content as video, graphics, text, sound, ringtones, wallpaper, and software.

One of the largest recent Bluetooth-based marketing campaigns promoted a new CD by the rock group Coldplay. Television screens were erected in several train stations in London inviting commuters to activate their Bluetooth-enabled devices to receive free content that included music clips, interviews, and still images of the band (Tsiantar, 2006). In another campaign, Lancorne used Bluetooth-driven advertising to generate awareness and induce trial of a new fragrance (Tsiantar, 2006). Bluetooth transmitters were incorporated into bus-stop posters in Paris and passersby could download coupons for a free sample.

The reported research is exploratory and provides a step in the direction of filling the identified gap in the literature by examining the willingness of young consumers to accept advertising enabled by Bluetooth technology. This article opens by reviewing the relevant literature on both mobile and Bluetooth-driven marketing. A discussion of the methodology used in analyzing acceptance by young consumers follows. Primary data analysis and findings are then considered in light of the extant literature. Implications for managers and directions for future research are also identified.

LITERATURE REVIEW

Benefits of Bluetooth advertising

Bluetooth is a short-range wireless communication technology that operates in the 2.4 GHz license exempt band (Ofcom, 2006). According to a recent survey (Bluetooth SIG, 2007), the percentage of mobile phones with Bluetooth technology in North America and Western Europe has reached over 60 percent and 70 percent, respectively. While personal Bluetooth-enabled devices have an approximate 10 m range for receiving and exchanging data, high-powered Bluetooth transmitters used for marketing campaigns have a wider range of about 100 m/300 ft.

Bluetooth has a number of attractive technological benefits. It can be incorporated into a range of devices, including mobile phones, laptops, and personal digital assistants (PDAs). Many of these devices are rarely separated from their users (Ferris, 2007), who often become deeply reliant upon their mobiles (Kleine and Baker, 2004; Wehmeyer, 2007). Bluetooth requires no fixed infrastructure and is easy for companies to utilize in their marketing communications.

In addition, Bluetooth has a number of advantages over SMS. Although mobile phone networks offer the latter on a cost-per-message basis, Bluetooth transfer is free of cost for both the transmitter and recipient. Furthermore, SMS does not support pictures. MMS, which can deliver multimedia files, is costly and is not supported by all mobile phones and/or networks. Another limitation faced by SMS/MMS is that they do not recognise the user's location (Kolmel and Alexakis, 2002).

As only Bluetooth is a location-based advertising technology (Bruner and Kumar, 2007), it represents the mobile medium's greatest strength and greatest weakness: It can be used to enable location-specific targeting that allows advertisers to target their audience based on specific venues (for example, in a supermarket) and deliver relevant and real time promotions. The downside of Bluetooth, however, is that—unlike SMS and MMS—it only can operate within a limited range.

Acceptance of Bluetooth-enabled mobile advertising

Various studies have examined those characteristics that determine consumers' willingness to adopt such new technologies as mobile advertising. For instance, one study demonstrated that females were slower to embrace the internet than their male counterparts. Moreover, once they

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understood the internet, they were found to use it less frequently than males and for a smaller variety of tasks (Thompson, Lim, and Lai, 1999). More specifically, in mobile media, research showed that men were more likely to receive sports information, access adult entertainment, place bets, and play online games than females (Sullivan Mort and Drennan, 2005).

Younger people have been found to be the quickest to adopt new technology. Research also has found that they tend use IT for longer periods of time and for a wider variety of tasks than older people (Sultan and Rohm, 2005; Thompson, Lim, and Lai, 1999). It is not surprising, then, that the age group with the highest mobile-phone use is the 18-29 year olds. Forty-five percent of that 18-29 age group also are willing to accept mobile marketing communications (*e-marketer*, 2005).

In the *Journal of Interactive Marketing* in 2002, P. Barwise and C. Strong studied SMS as a potential advertising medium for young people. The authors found that 51 percent were very satisfied with a service that was tailored to only receive messages relevant to them. In addition, 84 percent said they would recommend such a service to a friend. The vast majority (81 percent) did not delete the messages with-

out reading them, 74 percent read the message in full, and 63 percent claimed to have either replied or taken action as a result of receiving an advertisement. Seventeen percent retained or forwarded a message.

This age group's willingness to receive relevant messages is a strong indicator that they would also be comfortable with Bluetooth-enabled advertisements, creating an attractive opportunity for marketers looking for new ways to reach the elusive 18-29 market.

Another study analyzed the acceptance of 26 different SMS advertising campaigns (Rettie, Grandcolas, and Deakins, 2005). Overall acceptance of SMS advertising was 44 percent. Campaign, interest, and relevance as well as monetary incentives all encouraged consumer approval. A more recent study (Merisavo et al., 2007) developed a structural-equation model to test five drivers of consumer acceptance of SMS advertising: utility, context, control, sacrifice, and trust. The findings suggested that perceived utility and context were the strongest positive drivers of consumer acceptance of SMS advertising. Perceived control of mobile advertising was not found to be a strong contributor to consumers' willing-

ness to adopt mobile advertising (possibly because consumers assumed that marketers would not engage in mobile advertising without their permission). Perceived sacrifice was negatively related to the adoption of mobile advertising, implying that marketers should be extremely careful with their targeting.

Despite mounting consumer concerns about privacy and security, a 2007 study (Merisavo et al., 2007) found trust for the mobile operator and marketer a relatively weak antecedent of consumer acceptance of SMS advertising. These results partially contradict another report (Carroll, Barnes, Scornavacca, and Fletcher, 2007) that identified permission, control, content, and delivery as determinants of consumer acceptance of SMS advertising.

In a 2007 contribution to the *Journal of Business Research*, S. Okazaki and C. R. Taylor extended the study of SMS advertising research from consumers to multinational corporations. They found that the perceived ability to build the brand was the single factor most correlated with intention to adopt. The other factors found to influence a multinational corporation's decision to adopt SMS advertising included the ability to use location-based advertising, the perceptions of how well consumers accept SMS advertising, and the perceptions of the technological infrastructure. Within Europe, there also are different levels of company adoption of technology that may translate to acceptance of mobile advertising. Specifically, Okazaki (2005) found that companies in Scandinavian countries and in the Netherlands were more likely to embrace new technology than organizations in France and Italy.

Besides consumer acceptance and corporate adoption, research on SMS advertising also has probed the factors associated with effective SMS campaigns. One study of students (Drossos et al.,

2007) found incentive, interactivity, appeal, product involvement, and attitude toward SMS advertising influenced attitudes toward the advertisement as well as attitude toward the brand and purchase intention. In another piece of research (Okazaki and Taylor, 2007), a mobile campaign's memorability was found to be determined by perceptions of both the medium and the advertised content. The study also noted a strong relationship between mobile-advertising trust and attitudes toward mobile advertising.

Consumer security and privacy concerns

Although penetration of mobile devices is increasing throughout the developed world, consumer acceptance of mobile advertising is not an assumed corollary of that popularity. Wireless devices are less secure than fixed-line signal carriers, and some mobile users express concern over security. There also are issues of privacy: The ability to connect with consumers at anytime of the day may be perceived as an intrusion into public and private space. Privacy laws vary across the globe, as do attitudes to privacy. South Korean consumers, for instance, seem more tolerant of receiving unsolicited messages than Americans and Europeans (Sultan and Rohm, 2005).

The concept of "permission marketing" (Tezinde, Smith, and Murphy, 2002) addresses the problem of unsolicited communications by demanding the explicit agreement of the addressee before the receipt of marketing information. This approach recognizes that the majority of people do not like to receive mass-marketing communications. If commercial messages are personalized, they are more likely to be perceived as a valuable information service (Barnes and Scornovacca, 2004). Customization furthermore reduces the likelihood of a negative con-

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sumer reaction (Barnes and Scornovacca, 2004).

The advantage of Bluetooth is that it is considered more secure than any other wireless technology. Not only does it use adaptive frequency hopping—limiting interference from other frequencies—but it also has built-in security in the form of encryption and PIN code authentication. For consumers who have concern over security and privacy, Bluetooth service providers need to give reassurance that transmission of their details is safe.

RESEARCH OBJECTIVES

Most research on mobile advertising has focused on SMS advertising. The literature review revealed that there has been very little academic research in the area of Bluetooth-supported advertising, despite its potential as an attractive option for marketers as mobile media become more pervasive. This research aims to investigate the acceptance of Bluetooth-delivered advertising among young consumers—an audience that is more likely to adopt innovative technologies.

METHODOLOGY

The research methodology consisted of interview-administered questionnaires.

Questionnaire design

The first section investigated the respondents' awareness of Bluetooth marketing. More specifically, it asked if they had a Bluetooth-enabled mobile phone, whether they used the application, what they used it for, whether they had experienced its use for marketing, and their reactions to (and preferences for) marketing media. The second section investigated the respondents' attitudes toward mobile advertising, their attitudes toward the privacy and security issues, and their perception of the usefulness of Bluetooth. It also studied the influence of peers as well as the respondents' behavioral intentions. For all of these items, the respondents were asked to indicate their level of agreement or disagreement on a 5-point scale. The third section requested personal data regarding the respondent's gender, age, educational level, occupation, and income.

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Sample

The target population was 18-29 year olds—the largest group of mobile phone users and the age group most likely to use new technology (Sultan and Rohm, 2005; Thompson, Lim, and Lai, 1999). Mall intercept was used to obtain the respondents. Participants were recruited in Birmingham, England. As the study was carried out in only one geographical location, generalizations must be exercised with caution.

RESULTS

Sample characteristics

The sample consisted of 210 respondents, with an equal number of male and female participants. The respondents were aged between 18 and 29 years. The majority of the sample consisted of students (54 percent), 44 percent were employed and 2 percent were unemployed. All of the participants had the Bluetooth application on their mobile handset.

Awareness and usage of Bluetooth and Bluetooth-supported marketing

In a sample of 210 respondents, 39 percent ($n = 81$) had never used a Bluetooth

application. Of the 61 percent ($n = 129$) that used Bluetooth, the majority (79 percent) used it for transferring files, 15 percent used it as a pairing device (for example to transfer conversation from a mobile phone to a hands-free headset), and 6 percent used it for commercial reasons. In terms of frequency of use, 13.8 percent of respondents used Bluetooth five to seven times a week, another 13.8 percent used it two to four times a week, and 14.3 percent used it once a week. The remaining respondents used Bluetooth once every 2 weeks or less (20 percent).

Ninety-four percent of the sample was aware of mobile marketing, but only 37 percent ($n = 78$) had heard about mobile marketing via the Bluetooth application. Very few respondents (8 percent) did not want to receive marketing messages at all, but only 9 percent were willing to receive messages daily. Nearly half (46.7 percent) of the respondents, however, were willing to receive messages once a week. When the respondents do receive messages, they reported that 51 percent read them immediately, 33 percent read them only when they had time, 8 percent read

them after they had accumulated, and 8 percent completely ignored the messages.

Willingness to accept mobile and Bluetooth-supported advertising

The majority of the respondents (58 percent) liked receiving advertisements on their mobile phones and viewed mobile advertisements as common (see Table 1). Forty-eight percent of the respondents perceived them as neither enjoyable nor unenjoyable to receive, but 36 percent found receiving mobile advertisements enjoyable and entertaining.

Most of the young people in the study had concerns about mobile advertising. Eighty-nine percent was concerned about being readily able to opt-in and opt-out of receiving advertisements, and 82 percent felt there was a risk of personal information being used by unauthorized parties. Just over half (54.3 percent) thought Bluetooth was safer than other technologies, but a substantial number (26.6 percent) disagreed. Fifty-four percent agreed that they take into consideration the brand and reputation of a mobile advertiser.

Sixty percent stated that sales promotions encourage them to opt in to Bluetooth-enabled advertising. Despite concerns, more than 81 percent of the respondents agreed that personalized messages are both fun and useful. Forty-eight percent agreed that Bluetooth was easy to use, while 25 percent were neutral and 27 percent disagreed. Half of the respondents were unsure as to whether they could send or receive any form of messages using Bluetooth; 19 percent did not think such transmission was possible, and less than a third were certain that they could send and receive any type of message. No-cost messaging was an important positive consideration for 65.3 percent of the respondents who had decided to opt into receiving advertising messages.

TABLE 1**Consumers' Acceptance of Mobile and Bluetooth-Enabled Advertising**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
I like receiving advertisements on my mobile phone.	1.4	9.0	31.4	41.0	17.1	3.63 (920)
Mobile advertisements are common.	8.6	13.8	19.5	38.1	20.0	3.47 (1.20)
Receiving mobile advertisements is enjoyable and entertaining.	4.8	11.4	48.1	26.2	9.5	3.24 (945)
The ability to accept or cancel advertising anytime is a factor I consider. (RS) ^a	0.0	1.0	15.2	50.0	33.8	1.84 (744)
There is a risk of personal information being used by unauthorized parties. (RS)	0.0	0.0	18.1	50.5	31.4	1.87 (693)
Bluetooth is safer than other mobile marketing e.g., short messages.	7.6	19.0	20.5	31.0	21.9	3.40 (1.24)
The brand name and reputation of the advertiser is important in encouraging me to receive Bluetooth advertising. (RS)	1.9	12.9	31.0	38.1	16.2	2.37 (915)
Sales promotions such as discount vouchers are important factors when deciding to receive Bluetooth marketing. (RS)	0.5	10.0	29.0	41.4	19.0	2.37 (915)
The ability to receive only the personalized content is fun.	0.5	0.0	18.6	52.9	28.1	4.08 (711)
The ability to receive only the personalized message is useful.	0.5	1.0	17.1	56.7	24.8	4.04 (707)
I think Bluetooth is easy to use.	7.6	19.5	25.2	35.7	11.9	3.25 (1.13)
I can send/receive any forms of messages.	4.8	14.3	50.0	25.2	5.7	3.13 (895)
I receive Bluetooth messages because it is free of charge.	1.4	2.4	31.0	42.4	22.9	3.83 (858)

Note: 1 = *strongly disagree*; 5 = *strongly agree*.

^aRS = *reverse scored item*.

Peer pressure had an effect on Bluetooth popularity: 58.1 percent of respondents agreed or strongly agreed that they would use the technology if their friends used it, and 58.6 percent also said they would try Bluetooth if recommended by a friend (see Table 2).

Almost two-thirds (64.3 percent) of the respondents agreed that they would agree to opt in to Bluetooth advertising (see

Table 3). A third of the respondents (33.8 percent) were neutral about accepting Bluetooth advertising, and only 1.9 percent of the respondents said they would not accept it.

DISCUSSION

Bluetooth usage

The majority of the young people in the sample had used Bluetooth, and they were

using it for such relatively sophisticated purposes as exchanging files. For marketers, this is an encouraging finding: it means that consumers will be capable of downloading content and passing it on to their friends. The significant number of non-users, however, may present an obstacle to advertisers. The low numbers may reflect an awareness of Bluetooth functionality, but a lack of trust in its utility. Or

TABLE 2
The Influence of Peers on Consumer Acceptance of Bluetooth-Enabled Advertising

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (SD)
I will receive Bluetooth if most of my friends use it.	1.4	9.0	31.4	41.4	16.7	3.63 (915)
I will receive Bluetooth if I get recommended to use it by friends.	8.6	13.3	19.5	38.6	20.0	3.48 (1.20)
Behavioral intention						3.55 (771)

Note: 1 = strongly disagree; 5 = strongly agree.

TABLE 3
Intention to Receive Bluetooth-Enabled Advertising

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
I will opt-in to Bluetooth marketing.	0.5	1.4	33.8	55.7	8.6	100.0

Note: 1 = strongly disagree; 5 = strongly agree.

they may result from the fact that some respondents simply did not know how to use Bluetooth—a finding that would be surprising considering the perception that younger people generally are perceived as being technologically adept.

The success of Bluetooth-supported marketing campaigns depends on whether consumers know how to receive messages. The target consumers need to be educated on what Bluetooth is and its capabilities, which will help consumers to get the most out of their mobile devices. Because most people cannot be relied upon to read instruction manuals, however, advertisers need to find a way to communicate and interact with consumers. More specifically, companies need to include information about Bluetooth capabilities as a part of their on-going general-information consumer campaigns.

Although respondents' awareness of mobile advertising overall was high, aware-

ness of Bluetooth-supported advertising was substantially lower. Most respondents were willing to receive advertisements as a general service, but there was considerable disagreement over how often they would be willing to receive such messages. In this research, as in previous studies {Carroll, Barnes, Scornavacca, and Fletcher, 2007; Merisavo et al., 2007}, the consumer articulated a need to control how many messages they received and to have the ability to opt in (or out). As Bluetooth-enabled advertising grows in popularity, the volume of messages that consumers receive may increase. The increased volume—combined with the decrease in the technology's novelty—potentially may lead to annoyance and resistance to accepting additional advertising messages via Bluetooth.

The responses of the majority of participants in this study validate the efficacy of mobile marketing. The number of respondents reading the message in this re-

search actually was higher (92 percent as opposed to 81 percent) than the number found by P. Barwisc and C. Strong in their 2002 study. But, in spite of the popularity of the medium, marketers need to be aware of the time sensitivity of their mobile messages: although a majority of the respondents indicated that they read content as it arrives, there are consumers who do not pay immediate attention to such messages. And that delay could be a major factor for real-time Bluetooth-supported promotions.

Value of Bluetooth-enabled advertising
As demonstrated in previous studies (Merisavo et al., 2007; Rettie, Grandcolas, and Deakins, 2005), personalized content is an important positive factor to consumers, as the majority of respondents found personalized messages fun and useful. Because people take their mobile devices with them wherever they go, irrelevant, impersonal

messages from an unknown sender may be more intrusive than a personalized message from a company the consumer knows. This study also reinforced the findings of other research (Rettic, Crapdcolas, and Deakins, 2005) that sales promotions motivated respondents to opt in. In exchange for agreeing to receive marketing messages, consumers are likely to have high expectations of relevance and value from mobile advertisements. To maintain this trust, marketers need to properly target their audience with a personalized, entertaining message that conveys value to the consumer.

Consumers' privacy and security concerns

This research found considerable concerns over the privacy and security of Bluetooth, which may be linked to the fact that consumers are not fully aware of the technology's security features. A professional organization such as the Mobile Marketing Association (MMA) may be able to address those concerns, though consumers may be unaware of such an organization and its Code of Conduct provisions (MMA, 2007). A future strategy might be for a professional body to approve organizations that operate within a professional code and allow them to use a logo that indicates compliance. In turn, that logo could be incorporated into Bluetooth messages to provide some consumer reassurance.

As stated earlier, a major concern for consumers is the potential to receive more advertising messages than they would like. This study shows that people need to be able to easily opt in and out and feel as though they have control over the amount of advertising they receive. Consumers also are concerned about their personal information being used by unauthorized parties. The use of a professional symbol could assure consumers that their information will not be sold to other organizations unless they have given permission.

Interestingly, the majority of people are aware that Bluetooth is a safer technology than SMS, but this research showed that a substantial number of people still are unaware of this advantage. As privacy and security remain major issues for consumers, the sophistication of Bluetooth technology needs to be emphasized in new-customer solicitations and to reassure existing users.

The reputation of a company that uses mobile advertising also may cause some concern, it may be that consumers' concerns are reduced if the company appealing to them is a "tried and trusted" brand rather than one unknown to them. To gain acceptance and build credibility, a new company needs to consider how it can convey trustworthiness to new consumers it identifies as mobile-advertising prospects.

Interestingly, the majority of people are aware that Bluetooth is a safer technology than SMS, but this research showed that a substantial number of people still are unaware of this advantage. As privacy and security remain major issues for consumers, the sophistication of Bluetooth technology needs to be emphasized in new-customer solicitations and to reassure existing users.

The influence of peers on consumer acceptance of Bluetooth-enabled advertising

Friends appear to play an important part in the acceptance of new communication methods. Uptake partially will depend on what companies choose to use the medium as a method of communication. As previous studies have shown (Barwise and

Strong, 2002), younger consumers prefer to receive advertising from "cool" brands. And the actual message needs to be short, sharp, to the point, and entertaining—attributes that will help ensure recipient interest and encourage digital pass-along to friends. A personalized message will have a greater likelihood of acceptance (Merisavo et al, 2007; Rettie. et al., 2005). If a marketer requests a message recipient to respond in any way to the communication, such activity needs to be relatively easy to perform if the advertisement is to meet its full potential. In brief, a mobile advertisement with these characteristics stands a good chance of being shared by a group of friends who will want to conform to the norms of that group.

In conclusion, use of Bluetooth-enabled advertising is not yet common in the marketing community. In order for its use to become more widespread, the organizations involved need to consider educating consumers on what Bluetooth is and how to use it. Because consumers have substantial concerns about security and privacy, professional organizations need to interact with companies to create a public Bluetooth code of conduct that consumers can understand and trust. Companies that use Bluetooth-enabled advertising as an

interactive advertising medium need to understand consumers' ability to use the technology and, at least initially, not ask too much of the consumer.

FUTURE RESEARCH

The current study has highlighted the fact that a substantial number of consumers still struggle with Bluetooth applications. Future research could investigate in more depth consumers' perception of Bluetooth and answer such fundamental questions as how and why consumers use it. Such insight might better enable marketers to devise messages that are compatible with how people use their mobile devices and Bluetooth technology. Additionally, research needs to investigate what kinds of security and privacy issues consumers perceive as risks of Bluetooth usage and to identify what actions might reduce the perception of that risk.

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