

# Determining the Receptivity to the Bluetooth Marketing by the Portuguese Consumer

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**Abstract:** With increasing technological innovation, the concept of marketing and its applications become more functional and wide. Today, we witness a steady growth in the development of mobile marketing campaigns, i.e., marketing campaigns targeting mobile devices (mobile phones, Smartphones, PDAs, tablets). Among the several mobile technologies available (Bluetooth networks, Wi-Fi, WAP, SMS service, MMS), Bluetooth seems to have the biggest potential for the least invasive consumer mobile marketing strategy. This study seeks to answer the question "what factors may motivate the Portuguese consumer to accept Bluetooth marketing?." We propose a conceptual model capable of investigating the relationships between the several responsiveness factors to Bluetooth marketing. The development of a set of hypotheses supported by an online questionnaire to a valid sample of 755 participants, demonstrates that there is a relationship between factors such as expanded knowledge of the technology, and Bluetooth marketing receptivity. Additionally, we find that the information value of mobile advertising messages, such as entertainment value and personalization, relates well to responsiveness. The ability to accept/dismiss promotional messages sent to mobile phones and other safety features also correlated well with Bluetooth marketing receptivity.

**Keywords:** Bluetooth Marketing; Consumer Behaviour; Mobile Marketing; Technology

## 1. Introduction

The beginning of this decade brought us new technologies, which have made possible new forms of interaction and communication between individuals and groups (Kotler, Kartajaya and Setiawan, 2010). Because mobile devices overcome space-time communication barriers (Wagner, 2011) and enable consumers to make purchases virtually anywhere/anytime, the proliferation of such devices has become increasingly attractive to marketers.

In Portugal, recent studies show that mobile phone penetration was over 90% in 2009 (Marktest, 2010) and, in June 2011, there were already 240.000 Smartphone users (Marktest, 2011).

The Mobile Marketing Association (MMA) defines mobile marketing as a set of practices that enable organizations to communicate and interact with their audiences in an interactive and relevant manner through any mobile device or network (MMA, 2009). Indeed, concepts such as "Brand in the Hand" (Sultan and Rohm, 2005) already demonstrate the

commitment of companies to shape consumer attitudes through the use of value-added content that can be personalized and time/space aware.

Hence, the tendency to use Bluetooth and other mobile marketing methods (based on factors such as geographic location of individuals, entertainment and interactivity) has been increasing. According to the Bluetooth Special Interest Group, in 2011, devices equipped with Bluetooth represented 10% of the market, and, in 2013, this number had already reached 85% (SIG, 2014a). It is predicted that by 2018, more than 90% of Smartphones will include Bluetooth Smart Ready technology (in its most current version), making object connectivity via applications/intelligent software possible and enabling, for example, the automatic turning of lights when entering one's house (SIG, 2014b).

Despite the investment of companies in mobile marketing, there are few academic studies about the implications of using mobile phones as a marketing channel. In fact, there are no significant studies on how consumer behaviour/attitude will change with these new forms of marketing. Given these limitations, it is important to identify the factors that may motivate consumers to participate in this new Bluetooth marketing trend. In this paper, we shed some light and provide some insights not only for marketers but for managers as well, who are willing to develop Bluetooth focused marketing strategies.

## **2. Literature Review**

### **2.1. Interest of Bluetooth Marketing**

In short, Bluetooth is a short-range wireless technology that connects different electronic devices by radio frequency, facilitating the exchange of information between them safely (Rajic, 2008). Currently, this is a widely accepted technology that is prepared, by introducing Bluetooth Smart Ready, to be part of the technological revolution of the wireless sensors and the designated Internet of Things (SIG, 2014b).

When it comes to on-site promotion, Bluetooth marketing is considered a type of location-based advertising (Unni and Harmon, 2007). These authors define LBA (Location-Based Advertising) as advertising campaigns that target mobile devices, emitted from an identified transmitter specific to the consumers' location. The information exchange between mobile devices and users also brings Bluetooth technology within the realm of location-based services (LBS). LBS are services that integrate the location/position of a mobile device with other information, to bring added value to the user (Schiller and Voisard, 2004), data services and/or geographically targeted information (Karimi and Hammad, 2004). In addition, Bluetooth marketing may also be viewed as a form of permission marketing, since the very characteristics of the technology allow it to meet the consumer's freedom to accept (opt-in) or decline (opt-out) promotional messages (Aiello, Jong and Nes, 2009). Opt-in describes the set of rules according to which marketing/commercial messages are sent to those who previously and explicitly demonstrated their consent (Laudon and Laudon, 2007). Opt-out is the opposite mechanism, i.e., the possibility of the consumer to cancel the reception of marketing messages (Laudon and Laudon, 2007).

Considered one driver of Bluetooth marketing, the technology of contextual labels developed by an European project entitled AmbieSense (ICT, 2007) that studied the interaction of various physical spaces with humans through mobile devices and wireless transmitters, led to a form of marketing also known as proximity marketing. Bluetooth technology

companies have since increased the development of bluecasting hardware/software, i.e., the production of systems that allow Bluetooth transmission signals among several devices. This growing interest has been the genesis for many scientific studies that aim to determine the potential applications of this technology and their limitations.

## 2.2. Receptivity to Bluetooth Marketing

The relevance of consumer behaviour studies in mobile marketing and mobile advertising has been validated and applied by previous studies on consumer acceptance of mobile marketing (Basheer, Ibrahim, and Alnawas, 2010; Haghirian, Madlberger, and Inoue, 2008; Saadeghvaziri and Hosseini, 2010), through the development of conceptual models supported by the Theory of Reasoned Action (TRA) proposed by Ajzen and Fishbein (1980). Based on the available literature, we can identify variables such as entertainment value (Basheer et al., 2010; Haghirian et al., 2008; Saadeghvaziri and Hosseini, 2010), information (Saadeghvaziri and Hosseini, 2010), credibility (Jayasingh and Eze, 2009; Yang, Zhou, and Liu, 2010), customization, permission (Leppäniemi and Karjaluoto, 2008; Liu, Xiaopeng, and Xiang, 2010; Saadeghvaziri and Hosseini, 2010) and monetary benefit (Nittala, 2011; Pietz and Storbacka, 2007) as positive factors for the acceptance of mobile marketing (Saadeghvaziri and Hosseini, 2010). In turn, irritability, privacy and security related issues were identified as negative factors (Jayasingh and Eze, 2009; Saadeghvaziri and Hosseini, 2010).

As stated above, Bluetooth technology as a consumer communication tool is not yet widely explored. Leek and Christodoulides (2009) study measured the acceptance of Bluetooth-enabled advertising among young people. The results, based on a sample of 210 participants, between 18 and 29 years old, showed that there is still ignorance and prejudice against Bluetooth technology.

According to Leek and Christodoulides (2009), the type of Bluetooth usage by individuals can indicate the willingness to accept Bluetooth-enabled advertising. Similarly, in this study, we proposed an analysis of the perceptions of Bluetooth technology and its influence on Bluetooth marketing receptivity. With this in mind, we formulate the first hypothesis:

*H1: Consumers perception of Bluetooth's ease of use is positively related to Bluetooth marketing receptivity.*

Moreover, Leek and Christodoulides (2009) findings suggest that previous usage of Bluetooth to exchange files or messages is a strong indicator for marketers since it may mean that consumers will be able to download promotional content and share it with other people, such as friends and family. Based on this concept, we proposed the following hypothesis:

*H2: Previous use of Bluetooth for file exchange is positively related to Bluetooth marketing receptivity.*

Leek and Christodoulides (2009) also identified a link between Bluetooth use and peer influence, finding that individuals who did not use the technology, would use it if a friend used it or recommended its use. Although this is not a key factor identified in other studies, it is nevertheless an

interesting approach, especially when it comes to creating marketing campaigns targeted to a younger audience. In this study, we formulate the following two hypotheses:

*H3: Bluetooth use because friends use it, is positively related to Bluetooth marketing receptivity.*

*H4: Bluetooth use recommended by friends is positively related to Bluetooth marketing receptivity.*

According to Leek and Christodoulides (2009), the content of advertising messages is valued, if it is found useful, i.e., personalized and fun. Thus, in this study we analysed the entertainment value of personalized content in advertising by formulating the following hypothesis:

*H5: Consumer perception of the entertainment value of personalized advertising messages is positively related to Bluetooth marketing receptivity.*

Following Leek and Christoulides (2009), we also wanted to determine if the personalization of mobile advertising messages was a significant factor in the willingness of the Portuguese consumer to adhere to Bluetooth marketing. Hence, the following hypothesis:

*H6: Consumer perception of the value of personalized advertising messages via mobile phones is positively related to Bluetooth marketing receptivity.*

However, as mentioned by Leek and Christoulides (2009), the majority of young people surveyed (89%) showed concern about being able to accept/reject mobile advertisements immediately. Therefore, to understand whether this is an important responsiveness factor or not, we formulated the following hypothesis:

*H7: Consumers ability to accept or decline advertising messages on mobile phones is positively related to Bluetooth marketing receptivity.*

Leek and Christodoulides (2009) also concluded that despite the fact that respondents considered normal the reception of mobile advertising messages, there was disagreement as to the frequency they would like to receive them. Thus, we proposed to investigate the relationship between this factor and Bluetooth marketing receptivity by testing the following hypothesis:

*H8: Consumers perception of potential data privacy issues is negatively related to Bluetooth marketing receptivity.*

Furthermore, it was found that consumers recognize Bluetooth technology as safer than SMS. Therefore, to understand how confident the Portuguese consumer is in the security

characteristics of Bluetooth and how this relates to Bluetooth marketing receptivity, we propose the following:

*H9: Consumer perception of Bluetooth's security features is positively related to Bluetooth marketing receptivity.*

Finally, Leek and Christodoulides (2009) conclude that consumers' privacy and data security concerns are reduced if the company developing the campaign is a well-known brand, rather than being completely new or strange. Based on this concept, we proposed the hypothesis:

*H10: Brand reputation is positively related to Bluetooth marketing receptivity.*

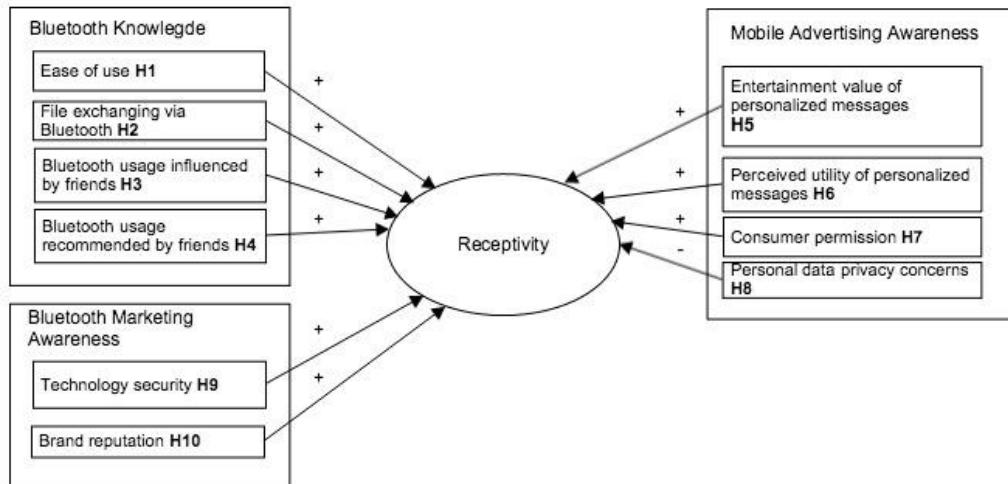
In conclusion, Leek and Christodoulides (2009) identify privacy and security concerns as the biggest obstacle to the receptivity of Bluetooth marketing. It was verified that the consumer would only accept Bluetooth-enabled advertising if their privacy, security and control over the frequency of messages were guaranteed (Leek and Christodoulides, 2009). They also state that the main reason Bluetooth remains so interesting is that it allows reaching consumers at specific locations, with enriched messages, without the cost and complexity necessary for SMS and MMS services. Another great advantage of Bluetooth marketing campaigns is that these are not intrusive, since it is possible for the consumer to easily reject them (Leek and Christodoulides, 2009).

### **3. Research Objective**

The overall goal of this research is to assess which factors can motivate Portuguese mobile phone users to accept Bluetooth marketing. The aim is to better understand the extent to which this technology could be used as a marketing tool, and if it can affect consumer behaviour.

### **4. Methodology**

The development of the above hypotheses was based in Leek and Christodoulides (2009) and Ruzzon (2009). In Figure 1, we present the proposed study model of the relationship between the factors associated with Bluetooth knowledge, mobile advertising and Bluetooth marketing awareness and the receptivity to Bluetooth marketing.



**Figure 1:** Determinants of receptivity to Bluetooth marketing - proposed study model

Data collection was conducted by an online questionnaire, consisting of 13 closed questions, 10 borrowed from Leek and Christodoulides (2009) 5-point Likert scale, with the aim of reaching, at a reduced cost, Portuguese citizens (of the mainland and islands), of any age, gender, occupation and education level. The data was then structured (i) by the use and knowledge of Bluetooth technology, (ii) by advertising via mobile phone receptivity, (iii) by factors influencing participation in bluetooth marketing campaigns and (iv) by demographic data. The questionnaire was online between May and June 2012. Since it is extremely difficult to obtain probability samples via the Internet because the reporting population depends mainly on voluntary action (Malhotra and Birks, 2006), a non-probability sampling technique was applied, resulting in a convenience sample. The obtained sample was comprised by 755 individuals, 36.2% (273) men and 63.8% (482) women; 71% (536) were under 34 years old. In regards to the participants' occupations, 40.3% (304) were students, 30.9% (233) workers and 23.8% (180) working students. Most respondents, 74.7% (564) had a level of education equivalent to higher education and live in the North Coast (54.6%; 412).

## 5. Results

Almost half of the sample (43.7%; 330) stated they don't intend to participate in Bluetooth marketing campaigns. Nearly 32.7% (247) knows how to activate Bluetooth in their mobile phones and 53.30% (404) stated they could use every Bluetooth function. In terms of Bluetooth use frequency,

40.9% (309) answered they used it once every two weeks and 34.4% (260) never uses the technology. From the 95,4% (720) of the sample that uses Bluetooth, 86,1% (620) agreed it is an easy technology to use, 68,4% (493) use it for file exchange and 60,6% (437) use it to pair devices. However, only 4.4% (32) stated they would activate the technology in response to a marketing campaign.

In terms of peer influence in Bluetooth usage, there are some interesting results. Nearly half of the sample (40%; 301) disagrees they would use it because of friends. In terms of recommended use by friends, 37.6% (284) didn't have an opinion on the matter. However, from the individuals that stated they didn't know about Bluetooth technology, 14.3% (5) agreed they would use Bluetooth because friends do. On the other hand, 29.5% (213) of the sample that claimed to know Bluetooth, agrees they would use it because friends do. In terms of recommendations by friends, for those who didn't know Bluetooth technology, 17.1% (6) agree they would use it if recommended by friends. On the other hand, respondents who use and know Bluetooth, 30.5% (220) stated they would use it if recommended by friends.

By hypothesis testing H1, H2, H3 and H4 (Table 1), we found that the type of Bluetooth usage (the ease of use, files exchange and the influence of peers) has a positive relationship with Bluetooth marketing receptivity.

**Table 1:** Bluetooth knowledge relationship to receptivity to Bluetooth marketing

Hypotheses	Test	Result	Verification
H1: <i>Consumers perception of Bluetooth's ease of use is positively related to Bluetooth marketing receptivity.</i>	Pearson Correlation	r=.16*	Verified
H2: <i>Previous use of Bluetooth for file exchange is positively related to Bluetooth marketing receptivity.</i>	t-Student Test	t=-3,62**	Verified
H3: <i>Bluetooth use because friends use it, is positively related to Bluetooth marketing receptivity.</i>	Pearson Correlation	r=.43*	Verified
H4: <i>Bluetooth use recommended by friends is positively related to Bluetooth marketing receptivity.</i>	Pearson Correlation	r=.62*	Verified

\*p<0.001    \*\*p<0.05

In terms of mobile advertising awareness, 71.8% (542) of the sample disagrees or strongly disagrees with the statement “I like receiving advertisements on my mobile phone”. Also, 37.4% (282) disagree or strongly disagree that message personalization is entertaining; however, almost half of the sample (47.1%; 356) agreed it is useful. Also, 58% (438) agreed that it is normal to receive mobile advertising in their mobile phones. However, 70.2% (530) didn’t find receiving mobile advertisements enjoyable or entertaining.

The ability to cancel advertising messages at anytime was found to be important with 89.8% (678) agreeing. 63.6% (480) didn’t have any interest in receiving this type of messages and 45.4% (343) would only read them if they had the time. Additionally, 63.4% (479) demonstrated concerns about the risk of personal information being used by unauthorized parties.

By testing hypothesis H5 to H8 (Table 2), we found that there are indicators for a positive relationship between consumer perceptions about personalization, utility, entertainment value and Bluetooth marketing receptivity. However, there was a negative correlation between consumer’s privacy concerns and Bluetooth marketing receptivity.

**Table 2:** Mobile advertising awareness relationship with receptivity to Bluetooth marketing

Hypotheses	Test	Result	Verification
H5: Consumers perception of the entertainment value of <i>personalized</i> advertising is positively related to Bluetooth marketing receptivity.	Pearson Correlation	r=.40*	Verified
H6: Consumers perception of the value of <i>personalized advertising messages via mobile phones</i> is positively related to Bluetooth marketing receptivity.	Pearson Correlation	r=.36*	Verified
H7: Consumers ability to accept or decline advertising messages on mobile phones is positively related to Bluetooth marketing receptivity.	Pearson Correlation	r=.13*	Verified
H8: Consumers perception of potential data privacy issues is negatively related to Bluetooth marketing receptivity.	Pearson Correlation	r=-.09**	Verified

\*p<0.001    \*\*p<0.05

In terms of Bluetooth marketing awareness, almost half 40.2% (303) didn’t consider Bluetooth a



safer technology than SMS/MMS and 54.7% (413) agreed that brand name and reputation was important in accepting Bluetooth advertising. By testing hypothesis H9 and H10 (Table 3), we found a positive correlation between Bluetooth security/brand reputation and Bluetooth marketing receptivity.

**Table 3:** Bluetooth marketing awareness relationship with receptivity

Hypotheses	Test	Result	Verification
H9: <i>Consumer perception of Bluetooth's security features is positively related to Bluetooth marketing receptivity.</i>	Pearson Correlation	r=.34*	Verified
H10: <i>Brand reputation is positively related to Bluetooth marketing receptivity.</i>	Pearson Correlation	r=.45*	Verified

\* $p < 0.001$  \*\* $p < 0.05$

## 6. Discussion and Conclusions

Although, respondents don't demonstrate interest in Bluetooth marketing campaigns, the sampled Portuguese consumer is familiar with Bluetooth technology, similarly to the Brazilian consumer (Ruzzon, 2009). In fact, it was shown that participants knew how to exchange files (considering Bluetooth's ease of use), which can be a good indicator for marketers since it shows consumer ability to potentially download advertising content. However, most of the participants never used the technology, which may demonstrate a poor knowledge of Bluetooth capabilities and a lack of confidence in its utility. Yet, a relationship between usage type and Bluetooth marketing receptivity is supported by this work. This may be due to the fact that the majority of our sample was comprised by young people and young adults, typically considered the most appropriate target audience since they are usually the early adopters of new technologies (Leek and Christoulides, 2009).

Regarding peer influence in Bluetooth usage, data shows that the most influential are those who already know the technology, supporting a relationship between peer influence and Bluetooth marketing receptivity, demonstrating that groups of friends and family can influence the use of Bluetooth as a response to a marketing campaign. Again, these results may be influenced by the participants age, since younger individuals have greater need to integrate social groups and to align themselves with new trends (Leek and Christoulides, 2009). In conclusion, these results are consistent with those of Leek and Christoudolides (2009), showing file/information exchange as a positive factor.

In addition, as Leek and Christodoulides (2009) suggest, peer influence and the ability to "spread the word" to a group of friends about Bluetooth-enabled advertising campaigns, can reduce their concerns about privacy and security.

Despite the fact that the sampled Portuguese mobile phone users perceive mobile advertising as a annoyance, the entertainment and utility value associated with the personalization of mobile advertising messages is considered a relevant factor to achieve a positive response to Bluetooth marketing, as supported by Leek and Christoulides (2009) for the English young consumer. These results agree with other studies that identified a positive relationship between the acceptance of mobile marketing campaigns and personalization and entertainment value, which is even considered a way to boost customer loyalty/retention and certain product sales (Saadeghvaziri and Hosseini, 2010).

Regarding consumers' perceived control over advertising messages, we found that this was an important factor for a positive Bluetooth marketing receptivity, as supported by Leek and Christodoulides (2009) and Ruzzon (2009). Furthermore, the permission to receive mobile advertising messages is a valued factor for this sample. This result can be seen a positive indicator for Bluetooth marketing since these campaigns are mainly based on the space-time location of individuals and therefore not intrusive. In fact, a relationship between the subjects who value control and their receptivity to Bluetooth marketing is supported, demonstrating that any mobile marketing campaign based on the consumers' freedom to accept or reject messages will be better accepted, as also found by Leek and Christodoulides (2009).

Additionally, this study supports a possible negative relationship between concerns about data privacy and Bluetooth marketing receptivity. Thus, individuals in this sample, as in Leek and Christoulides (2009), need to be informed about the non-intrusive technological features of Bluetooth and the legislation that applies, since in Portugal it is prohibited by law to send advertising messages to individuals through electronic means without prior consent. Furthermore, consumers in this sample showed no interest in receiving mobile advertising messages. This lack of interest may be related to a daily reception of unsolicited advertising messages and the poor general content of these messages.

In conclusion, the relationship between consumer mobile advertising awareness and receptivity to Bluetooth marketing may improve if the advertisements are objective, personalized, useful and fun, and if regulations concerning this sort of advertising are respected. This is also demonstrated by Leek and Christodoulides (2009). In addition, we found that Bluetooth marketing could succeed,

since these campaigns are based on the individual's willingness to accept mobile advertising messages in a given location and context, in a timely manner.

Regarding the security characteristics of Bluetooth technology, unlike the findings of Leek and Christodoulides (2009), the sampled Portuguese consumers didn't find Bluetooth to be safer than SMS, which shows some degree of ignorance about Bluetooth technology. In fact, this study supports a relationship between the consumers' perception of Bluetooth's security features and receptivity to Bluetooth marketing. Plus, brand reputation of mobile advertisers is an important factor, encouraging acceptance of Bluetooth marketing for this sample, since 54.7% consider this a positive factor. In fact, a positive relationship between brand reputation and receptivity to Bluetooth marketing is supported, which shows that brand recognition is an important factor in the decision to accept mobile advertising messages.

In terms of Bluetooth marketing awareness, this study is in line with the results of Leek and Christodoulides (2009), showing that consumer privacy and data security concerns can be reduced if the company that advertises is well recognized, revealing the need for companies and their brands to reassure their target audiences of mobile marketing campaigns. This result is similar with what had been observed in other studies that demonstrate that the credibility of the company that advertises affects the consumer attitude towards a mobile marketing campaign (Saadeghvaziri and Hosseini, 2010).

## **7. Future Research**

The perceptions of marketing agencies about Bluetooth technology should be studied with the aim to answer fundamental questions regarding the limitations and obstacles to Bluetooth as a marketing communication channel. This approach could potentially help overcome the possible barriers that exist on the part of marketers and perhaps demystify its use for mobile marketing strategies. Company and brand views on Bluetooth marketing could also be better studied. The results could then be crossed checked with the sample obtained in this study to further understand the advantages and limitations of Bluetooth marketing campaign.

In relation to the consumer, it would be interesting to make a deeper study to determine if the latest mobile devices such as Smartphones, tablets or smart watches are better suited for Bluetooth marketing.

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