

Factors affecting success of mobile advertisements through short message services (SMS) for public donation for cancer

Somaieh Hajizadeh¹, Mirza hassan Hosseini², Bahram Hassanpour¹, Rahim Akrami¹
Kazem Zendehtdel^{1,*}

ABSTRACT

Background: Increasing cost of cancer in the world and particularly in developing countries, postulates need for public participation in cancer control activities, including prevention, treatment and supportive care. We studied role of different factors on the success of advertising through short message services (SMS) for public donations for cancer control activities.

Materials and Methods: Based on a conceptual model, we studied association of participants' interest for public donation with demographic factors and factors related to the message success including media success, and perceived social success. We collected data from health professionals and general public who used mobile phones and SMS by questionnaire.

Results: Overall, 560 subjects completed the questionnaire. From the factors related to the message, we found content of message had the greatest effect on the public motivation to donate. In addition, among factors related to the media, transmission process, and among the perceived aspects of the message, "social norms" and "reliability and credibility" had significant effect on the success of the SMS message to increase peoples' willingness to donate for cancer patients. Female were more keen on the donation than the men and there was inverse association between education level and the willingness to pay.

Conclusion: Advertisement through SMS seems to be effective methods to motivate the public donations for cancer. Different factors, particularly perceptive aspects, are associated with promotion of the people and their motivation for the donation.

Keywords: SMS advertising, Public Donations, Cancer, Iran.

زمینه و هدف: با توجه به هزینه های بسیار بالای سرطان در دنیا و بخصوص کشورهای در حال توسعه، یافتن روشهای مختلف جهت جلب مشارکت مردم در ابعاد مختلف کنترل سرطان شامل پیشگیری، درمان، و طب تسکینی اهمیت زیادی دارد. در این مطالعه عوامل موثر بر انگیزه مردم در موفقیت تبلیغات از طریق پیام کوتاه بر جذب کمکهای مردمی برای سرطان مورد بررسی قرار دادیم.

مواد و روشها: پرسشنامه ای طراحی شده و بین افراد مختلف در سه سطح پزشکان، کارکنان بیمارستان و مراجعین به بیمارستان که دارای تلفن همراه و توانایی در ارسال پیام کوتاه بودند توزیع شد. بر اساس مدل مفهومی انتخاب شده ارتباط بین تمایل مردم به کمک و خصوصیات جمعیت شناختی و همچنین متغیرهای مختلف مربوط به عوامل موفقیت پیام تبلیغاتی شامل عوامل مربوط به رسانه، عوامل ادراکی پیام شامل کنترل، محتوی، شخصی سازی، تکنولوژی، فرایند انتقال، مطلوبیت اجتماعی، و اعتبار پیام مورد بررسی قرار گرفت.

یافته ها: در مجموع تعداد ۵۶۰ نفر پرسشنامه مطالعه را تکمیل کردند. از میان مولفه های مربوط به پیام، محتوای پیام و از میان مولفه های مربوط به رسانه، فرایند انتقال و به ویژه هر دو مولفه مطلوبیت اجتماعی ادراک شده و اعتبار و اعتماد از متغیرهای مربوط به جنبه های ادراکی در تمایل مردم به مشارکت در کمک تاثیر داشتند. همچنین زنان تمایل بیشتری نسبت به مردان برای کمک را داشته و سطح تحصیلات رابطه معکوس با مشارکت در کمک داشت.

نتیجه گیری: تبلیغات از طریق پیام کوتاه برای جذب کمکهای مردمی برای بیماران سرطانی ابزار مفیدی می باشد. عوامل مختلفی در تمایل مردم به اهدای کمک تاثیر دارد و در صورت توجه به مولفه های مهم و تقویت آنها امکان مشارکت بیشتر مردم فراهم خواهد شد.

واژه های کلیدی: تبلیغات از طریق پیام کوتاه، کمکهای مردمی، بیماران سرطانی

*** Correspondence:**

Kazem zendehtdel, MD, PhD
Address: Cancer Research Center, Cancer Institute of Iran, Tehran University of Medical Sciences, Tehran, Iran.
Email: kzendeht@tums.ac.ir

Introduction

Marketing through Short Message Service (SMS) has provided several opportunities in the field of commercial advertisement.¹ According to Group Mobile Special (GMS) association Statistics, mobile phone users sent over ten billion SMS per month which has made SMS the most common service in the mobile phone worldwide. However, SMS Technology is not used for the advertisement and has not yet entered the world of marketing in developing countries including Iran.¹

Taking a look at the nature of this type of advertisement, SMS advertising has specific characteristics such as permanent access, high coverage level and visibility frequency which are due to the nature of mobile phone, highlights its position in the marketing media.² Rettie, et al. consider the advertisement via SMS a combination of email marketing and mobile phone based commerce and call it the best seller which is the customer's pocket.³ The cost of advertisement through SMS is also far less than that of other marketing media.⁴

Although, mobile phone service provides powerful capacity of the marketing range, few research have been conducted regarding the efficacy level, parameters influencing the target groups and analysis of their expected behavior. In addition, little evidence is available on the factors affecting advertisement via SMS in the field of non-profit organizations, where recipients will gain no material revenues.

According to the statistics of the International Agency for Research on Cancer (IARC), in 2008, 12.7 million people were diagnosed with cancer and 7.6 million people died of cancer. Therefore, mobilizing resources and increasing budgets for the cancer control programs is the most important priorities in all the countries, particularly in the developing countries, where the governmental resource is limited.

We study the effective factors and variables on SMS advertising in encouraging people to help fighting cancer from different aspects and opinions of the population under study. The results of the present study can be used in developing an appropriate strategy to motivate the donors and advertising to encourage people to help fight cancer.

Methods

Conceptual model:

We used a conceptual model based on summary and modification of the models published in the literature between 2004 to 2010 (2, 5). In this model, encouraging public donations was our dependent variable and factors related to message success, media success and perceived social success, and demographic characteristics were considered as independent variables (*Figure 1*).

Questionnaire:

We designed a Likert-type questionnaire including 30 questions with the five level answers (from completely agree to completely disagree) and six demographic questions. Likert questions were classified in nine areas including attention, action, control, validity and reliability, content, personalization, tools technology, transfer process and perceived social.

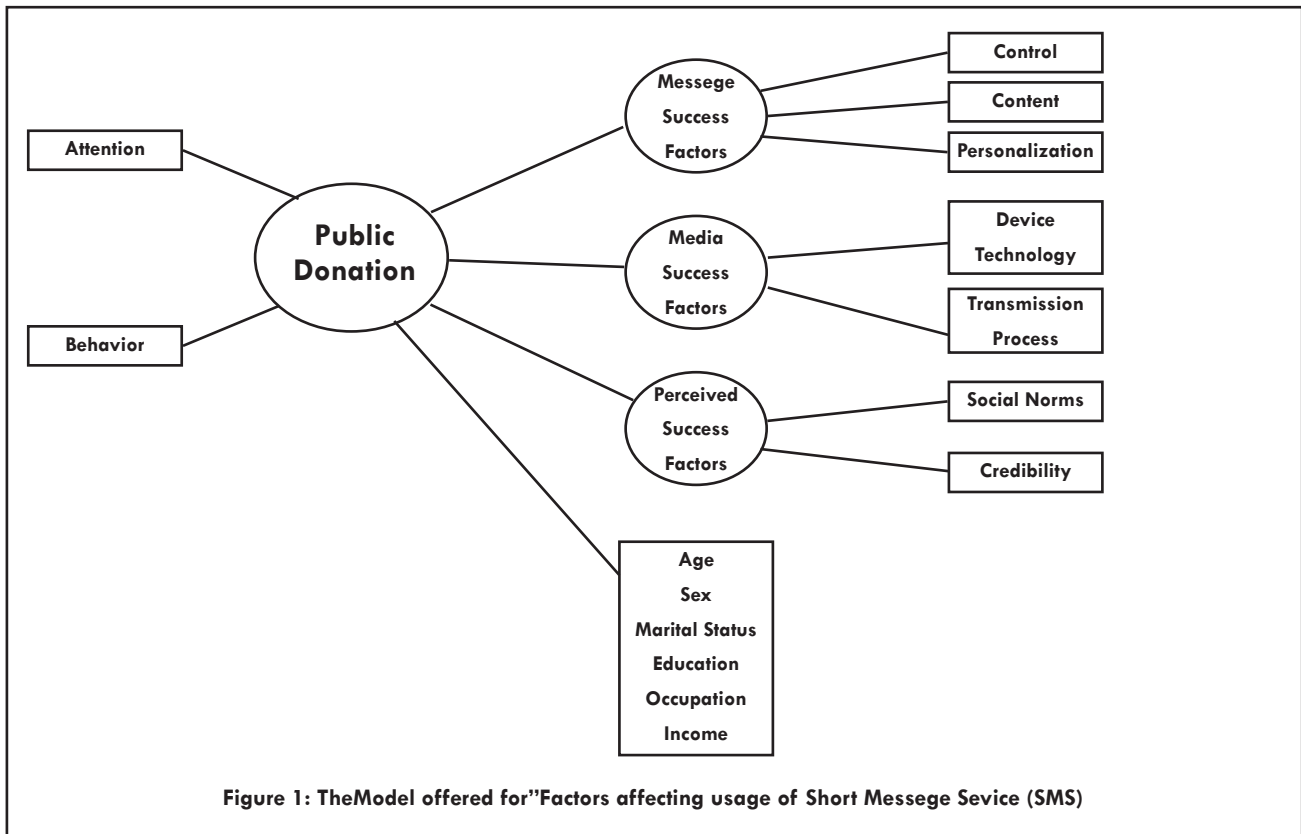
The content of the questionnaire was validated by 18 experts working in the university, hospital, charity organization, and Mobile Phone Company. Questionnaire was revised based on the comments and suggestions from the selected experts (content validity). We conducted a pilot study among 50 individuals and revised the questionnaire according to the feedback from the respondents.

Participants:

In winter of 2009, all people with mobile phone who were able to use SMS in Tehran city were chosen as research subjects. We distributed the questionnaire to 900 people with various socio-demographic background, including nurses, physicians, and general public visiting Imam Khomeini general hospital and the Cancer Institute of I.R. Iran.

Statistical analyses:

We used the variables related to attention and action to donate as the outcome (willingness to donate) and stratified the research subjects into two categories, including high or low score for their willingness to donate. Assuming the subjects with high score as the cases, and those with a low score as the control group, we used case control approach and logistic regression to perform



statistical analyses. Odds ratios and corresponding 95% confidence intervals measured the association between different characteristics and message success factors as explanatory variables and the willingness to donate as the dependent variable. Significance level was assumed less than 0.05 in all tests. We used STATA statistical software (ver. 10, Stata Corp) for the statistical analyses.

Results

Overall, 560 subjects completed the questionnaire form out of them 240 (43%) subjects were employees in the hospital or researchers and staff working in the academic institutions and 226 (40%) subjects were from general population. Most of the participants were younger than 40 years old (73%) and 410 (80%) of them had university education.

We found an inverse association between education and willingness to donate for charity through SMS in employees and academic staff (OR=0.5, 95% CI 0.27–0.92) (Table 2). An overall lower willingness to donate was

found among male compared to female (OR=0.58, 95% CI 0.4 - 0.95), in particular among those who were hospital staff (OR=0.1, 95% CI 0.02 - 0.6). We observed a positive significant association between income and the willingness to donate particularly among the academic staff and employees (OR=3.7, 95% CI 1.0- 13).

We found that agreement of the respondents for all factors related to message success including control; content and personalization were positively associated with the willingness to donate (Table 3). In particular those who agreed on the role of SMS contents had 9.6-fold higher willingness to donate compared to those who were not believed on the role of SMS contents (OR=9.6, 95% CI 4.8-19).

Regarding the effect of factors related to media device, those who agreed on the effect of transmission process, had 7.4-fold higher odds of willingness to donate (OR=7.4, 95% CI 4.6 – 11.7), while the odds ratio was lower for the agreement on the role of device technology (OR=3.13, 95% CI 2 – 4.8).

We observed relatively high and significant association between willingness for donation among those who

Table 1: Demographic characteristic of population under study

Variable	Staff* N (%)	Patient N (%)	Donor N (%)	Others** N (%)	All N (%)
Age	240(43)	43(8)	51(9)	226(40)	560(100)
20-30	95 (39)	21 (49)	17 (33)	95 (42)	228 (41)
31-40	80 (33)	11 (26)	14 (27)	77 (34)	182 (33)
>40	65 (28)	11 (25)	20 (35)	54 (23)	150 (26)
Sex					
Female	131 (54)	30 (70)	36 (71)	97 (43)	294 (53)
Male	109 (45)	13 (30)	15 (29)	129 (58)	266 (51)
Education					
Non-academic	38 (16)	24 (56)	10 (20)	37 (16)	109 (19)
Academic	202 (84)	19 (44)	41 (80)	189 (84)	451 (81)
Occupation					
self-employed	43 (18)	13 (30)	8 (16)	34 (15)	98 (18)
Governmental	125 (52)	7 (16)	24 (47)	57 (25)	213 (38)
Semi-governmental	30 (12)	5 (12)	4 (8)	88 (39)	127 (23)
Other	42 (18)	18 (42)	15 (29)	47 (21)	122 (22)
Income					
<500 \$†	112 (47)	34 (79)	22 (43)	83 (37)	228 (41)
501 -1000 \$	87 (36)	9 (21)	15 (29)	110 (49)	182 (32)
>1000 \$	41 (17)	0	14 (28)	32 (14)	150 (27)

* Employees and Academic staff

**General population

†Dollars = 10000 Rial

agreed upon the importance of perceived success factors including social norm (OR= 9.2, 95% CI 5.7–15) and credibility (OR=10.7, 95% CI 6.6-17).

Discussion

We studied effect of advertisement through SMS on public donation for cancer patients and cancer control program. We found that success factors of message, media and perception affect people's willingness toward public donations. Amongst the other factors, "perceived aspects" had the most influence. Between the factors related to the message success, message content and about the media, the transmission process showed the highest im-

act on individuals' attitude. In addition, from the perceived aspects, both "perceived social utility" and "credit and trust" turned out to be the main influencing factors on the willingness of people for donations. Women were more inclined to donate and higher level of education was negatively correlated with a positive attitude toward participating in public donations.

While message content had more impact on the public donation in this study, other studies reported significant association between tendency of people to accept the messages and factors such as usefulness of the contents, association of the message with the special event or occasions, attractiveness of the contents, honesty and informativeness of the message. Dickinger et al., and

Table 2: Associations between the willingness of people for donation and demographic variables

variables	Overall			Employees and Academic staff			Other		
	Positive/ Negative	OR (95 CI)*	p	Positive/ Negative	OR (95 CI)*	p	Positive/ Negative	OR (95 CI)*	p
Age									
20-30	174/54	Ref		77/18	Ref		64/31	Ref	
31-40	143/39	1.33 (0.8-2.2)	0.25	68/12	1.16 (0.5-2.8)	0.72	53/24	1.32 (0.6-2.6)	0.42
>40	124/26	1.47 (0.8-2.7)	0.19	49/16	0.58 (0.2-1.6)	0.3	44/10	2.33 (0.9-5.5)	0.05
Sex									
Female	243/51	Ref		111/20	Ref		73/24	Ref	
Male	198/68	0.58 (0.4-0.95)	0.02	83/26	0.39 (0.2-0.9)	0.02	88/41	0.74 (0.4-1.4)	0.37
Education									
Non-academic	94/15	Ref		36/2	Ref		27/10	Ref	
Academic	347/104	0.56 (0.3-1.0)	0.08	158/44	0.1 (0.02-0.6)	0.00	134/55	1.21 (0.5-2.9)	0.66
Occupation									
self-employed	82/16	Ref		35/8	Ref		28/6	Ref	
Governmental	172/41	0.84 (0.4-1.7)	0.63	98/27	0.87 (0.3-2.4)	0.79	43/14	0.6 (0.2-1.8)	0.37
Semi-governmental	88/39	0.53 (0.3-1.00)	0.06	26/4	1.15 (0.3-4.6)	0.84	55/33	0.4(0.1-1.1)	0.08
Other	99/23	0.79 (0.4-1.6)	0.53	35/7	1.26 (0.4-4.4)	0.71	35/12	0.55(0.2-1.7)	0.31
Income									
<500 \$†	203/48	Ref		89/23	Ref		64/19	Ref	
501 -1000 \$	166/55	0.87(0.5-1.4)	0.59	71/16	2.29 (0.9-5.5)		73/37	0.57(0.3-1.1)	0.12
>1000 \$	72/16	1.41(0.7-3)	0.34	34/7	3.71 (1.0- 13.0)	0.04	24/9	0.82(0.3-2.3)	0.71

*ORs and 95% CI were obtained from case-control comparisons using multiple logistic regression analyses adjusting for all factors shown in the tables.

**Dollars = 10000 Rial

Merisavo et al., showed that usefulness of contents affect acceptance of the message via mobile devices and tendency to accept the influence.⁵⁻⁶ Haghirian and colleagues found that educational aspect of the message affect on creating an optimistic perception about advertisement via mobile devices.⁷ Shen & Chen has also identified that educational aspects of the advertisement might lead to positive attitude of people about the advertisement via mobile devices.⁸

We found that emphasizing on transferring process from two components of media success will increase the possibility for public donation. In accordance with our findings, Dickinger et al., and Scharl et al., reported that transmission process of the message is an effective success index for advertising through text messages.^{2,5} In addition, based on Merisavo et al., devoting less time and cost lead to higher rate of using the text messages for mobile advertisement.⁶ In other words, mobile advertisement is useful for attracting small amount of money with less sensitivity to amount of money. It will also con-

tribute to decrease the level of security when asking for small amount of donation. In the absence of a quick and efficient service, people will resist on small amount of donation. Use of short message service will also facilitate public donation by alleviating concern about the time and place.

Both components of the perceived aspects of the message success including “perceived social utility” and the “credit and trust”, seems to be important factors to increase the tendency for public donation. Thus, a detailed analysis of this component may explore the methods that can increase success of the mobile advertisement while asking people to donate. The fact that public reception and social perception support positive attitude of people to mobile advertisements, affirms that attention to the received message irrespective of the financial and non-profit aspects will eventually lead people to read and to pay attention to the message they receive and also to forward it to others. This would end up to countless spread of the advertisements through people without any active

Table 3: Associations between the willingness of people for donation and different success factors

variables	Overall			Employees and Academic staff			Other		
	Positive/ Negative	OR (95 CI)*	p	Positive/ Negative	OR (95 CI)*	p	Positive/ Negative	OR (95 CI)*	p
Message Success Factors									
Control									
Disagree	128/47	Ref		54/16	Ref		46/28	Ref	
Agree	313/42	1.71(1.1-2.6)	0.01	140/30	1.24(0.6-2.6)	0.69	115/37	2.02(1-3.8)	0.02
Content									
Disagree	17/31	Ref		7/15	Ref		7/16	Ref	
Agree	424/88	9.6(4.8-19)	0.00	187/31	16.6(5.4-51)	0.00	154/49	8.2(2.8-23)	0.00
Personalization									
Disagree	105/66	Ref		37/23	Ref		40/37	Ref	
Agree	336/53	3.78(2.4-5.8)	0.00	157/23	4.15(2-8.6)	0.00	121/28	3.7(1.9-7)	0.00
Media Success Factors									
Transmission process									
Disagree	65/67	Ref		29/29	Ref		22/35	Ref	
Agree	383/50	7.4(4.6-11.7)	0.00	165/17	10.3(4.7-22)	0.00	139/30	7.87(3.8-16)	0.00
Device technology									
Disagree	85/53	Ref		29/24	Ref		33/24	Ref	
Agree	356/66	3.13(2-4.8)	0.00	165/22	5.9(2.8-12.5)	0.00	128/41	1.9(0.9-3.8)	0.06
Perceived Success Factors									
Social norm									
Disagree	85/69	Ref		29/28	Ref		27/38	Ref	
Agree	383/50	9.2(5.7-15)	0.00	174/18	13.6(5.8-32)	0.00	134/27	7.26(3.6-14)	0.00
Credibility									
Disagree	63/76	Ref		25/35	Ref		29/39	Ref	
Agree	378/43	10.7(6.6-17)	0.00	169/11	24.1(9.7-60)	0.00	132/26	7.4(3.7-14.)	0.00

*ORs and 95% CI were obtained from case-control comparisons using multiple logistic regression analyses adjusting for age, sex, education level, occupation and income.

role of the advertising center, a phenomenon called “viral advertisement” which is an indication of acceptability of the message by the receivers.

It has been suggested that the social factors positively affect the tendency of people to accept marketing through text messages.⁹⁻¹¹ On the other hand, the senders’ reputation and the credit of the sending center which is known to the receivers of the audiovisual advertisement are important elements to attract their attention for donation. In addition, the advertisement itself and its information have considerable influence on creating trust and credit for centers that seek public donations. These indexes have been used for evaluation of trust and were shown there is an association between credibility and reception of the message.¹²⁻¹⁴ Haghirian et al., have defined the ad-

vertisement credit as the consumers’ perception for the trustworthiness and reliability of the advertisement and this credit is influenced by many factors such as credit of the sending company or media. Credibility factor was suggested to be effective on participating in marketing through the behavioral tendency to using advertisement through text messages, and also through influencing the perceived utility.^{8, 15-16}

Differences among male and female that we found regarding willingness for donation could be linked to the social and economic structures in our country. Women, who are the focal center of love in the family, reported that they tend to be more positive for the help and donation. Nowadays, women play more active role in the society, they finance of the families and make more in-

dependent decisions about the expenses.¹⁷ As expected the results indicate not much differences on the tendency of women and men for donation to cancer patients and their consideration to the received message which is not much unexpected because most men in family income budget. Other studies showed that women had more desire to receive and utilize commercial advertisements via mobile devices as well. In accordance with our findings, it was suggested that there is a negative relation between the level of education and acceptance to donate through such advertisements.^{15,18} This could be due to the fact that educated people may prefer to use other types of donation such as web advertising, participation in specific charities, ATMs and other modern ways of donation. It could be due to the fact that it may take more time for them to trust the SMS advertisements and the sending bodies.

Using the questionnaire is one of the most persistent approaches to assess public perception about mobile advertisement. However, this method has some innate limitations such as limitation in number of the cross sections one may choose in the survey, limitation in defining and selection of the variables, selection of the research subjects, measurement bias, etc. We tried to validate the questionnaire with the expert opinion and believe that the results of this study are reasonably informative and valid. On the other hand, lack of sufficient evidence and literature, in the context of using modern advertisement tools in non-profit organizations in Iran and also other countries particularly in the low- and middle-income countries, limit the possibility of comparison with the evidence and judgment on the accuracy of the findings. It is necessary to conduct further research and find out how to increase the share of public funding on the control of different disease in the society and help of patients.

Also, according to this research with focus on the effective factors on increasing the acceptance of the message to donate and help the cancer patients and cancer control programs particularly in the resource limited countries. There will be more possibilities to observe and identify the fundamental elements of these factors which would not only decrease cost and time wasting, but would increase the spirit of public synergism considerably.

The paper at hand supports the effectiveness of mobile advertising for fundraising and supporting the cancer control programs. Attention to different success factors

including the message content and credit of the advertiser, trust and predesigned images of the sending center to the public could play an important role in the efficiency of the fundraising activities and enhancing the possibility for public donation and supporting the cancer control programs.

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