

The Use and Protection of Personally Non-Identifiable Information in Digital Behavioral Advertising in the Age of Big Data

Min-Wook Choi*

Department of Advertising and Public Relations, Namseoul University, South Korea;
mwchoi@nsu.ac.kr

Abstract

Objectives: With the rapid growth of digital behavioral advertising that utilizes the personal information, this study examined the protection of personal information in digital behavioral advertising. **Methods/Statistical Analysis:** First, this study examined the growth of digital behavioral advertising and personally non-identifiable information. It also investigated the protection of personally non-identifiable information. **Findings:** It is necessary to strengthen the consumer's rights to information control over personal information including personally non-identifiable information, not only for protection of personal rights but for sound and long-term development of digital two-way advertising industry and big data industry. This means that consumers can easily recognize and take actions on the utilization and protection of personal information in the process of two-way advertising, such as consent and notice of collecting personal information, rejection, and provision to the third party. By improving transparency of information circulation and securing trust of consumers, we can activate data circulation and develop big data industry and two-way advertising industry. **Application/Improvements:** The significance of this study lies in that it tries to examine the protection and utilization of personally non-identifiable information, which was lacking institutional and theoretical discussions.

Keywords: Big Data, Digital Behavioral Advertising, Personally Non-Identifiable Information, Protection Policies, The Use and Protection

1. Introduction

Today, most of the consumers have experienced behavioral advertising targeted at individuals based on the words that they searched. When exposed to this kind of behavioral advertising, we get to have two aspects of emotions. One is a positive emotion that we can get information on the service and goods we are interested in, and the other is a negative emotion that somebody is collecting and using our personal information such as our internet using behavior; feeling like our privacy has been intruded.

As we can see from the example above, today, behavioral advertising based on digital technology is

growing in a more sophisticated and rapid way. Behavioral advertising will be activated more as real-time analysis and examination of the purchase, taste and emotional patterns of individual consumers is possible, after analyzing big data collected through internet search, social networking such as Twitter and Facebook, and smart phone location-based services.

There are two conflicting viewpoints on the growth of behavioral advertising based on personal information. In an ubiquitous environment in which people have to depend on info-communication services whenever, wherever, and whatever they do. Personal information has the economic significance, that it is the price people have to pay for the

*Author for correspondence

benefits of those services, and at the same time for companies, it bears its significance as an important business asset that can create more profits through behavioral advertising. Also, in the age of big data, the ability of accurate analysis and prediction utilizing data can be directly connected to the companies' establishment of global competitiveness and also national competitiveness¹.

On the other hand, behavioral advertising has the danger of intruding personal information in that it observes the consumers' online using behaviors without them knowing it for a considerable amount of time, even though it uses the data collecting devices such as cookies to save data onto the consumers' terminals and collects the information of the consumers' internet activities. Moreover, with the growing effects of marketing through utilizing big data, more and more information-tracking technologies are developed and used, which can lead to more serious problems with intrusion on personal information.

Regarding the intrusion on personal information and its protection in behavioral advertising, personally non-identifiable information is the concept that we need to pay more close attention to in the future. With the development of ubiquitous environment, not only personally identifiable information that can identify specific individuals with name, ID number, and addresses, but also personally non-identifiable information that is dealt with anonymously, and cannot identify specific individuals is collected and utilized, including the Internet history data, service use record, search record, interest areas, purchase information, and IP information, through which behavioral advertising is being provided. There is a growing concern over intrusion on privacy of the Internet users as advertising using personally non-identifiable information that can identify individual consumers' information on behaviors, dispositions and locations are being rampant. The size of the Re-Targeting advertising that utilizes the Internet search and purchase record of the Internet users is growing rapidly, but there are no guidelines for personal privacy protection in the nation, as some people are pointing out.

The previous theoretical researches and planning of legal policies have been mainly focusing on the protection and utilization of personally identifiable information that can identify specific individuals with name and ID number on the Internet. In other words, the concern with personal information has been traditionally about personally identifiable information and it is hard to find the

discussions over personally non-identifiable information, which is becoming an issue in the recent digital behavioral advertising. Against this backdrop, social convenience is being achieved where businesses are conducting effective marketing through digital behavioral advertising and consumers are provided with specific information that they need. However, accompanied by this convenience is a growing possibility of intrusion on privacy of the information agents by indiscreetly collecting, using, and providing personally non-identifiable information, which makes the scale of damage bigger?

Based on the discussions developed so far, this study will examine the protection of personal information in behavioral advertising from the perspective of personal rights, in a situation where the digital behavioral advertising utilizing personal information is growing rapidly in the age of big data. Especially, the study aims to examine and analyze the utilization and protection of personally non-identifiable information, on which legal policy planning and theoretical discussions have not been done enough. Through this study, we will explore ways of sound and long-term development of digital behavioral advertising market in this age of big data.

2. The Growth of Digital Behavioral Advertising in the Age of Big Data and Personally Non-Identifiable Information

Advent of various social media and expansion of social network services caused by it provide an environment that makes new and creative services through analysis of big data possible². Through this, real-time observation of consumers' purchase, taste, and emotional patterns is possible, which leads to the creation of new services and values. Also, messages put up on social media such as Twitter and Facebook are appearing as a source for understanding the emotion and sentiments of the time, while personal social log data that are being utilized on Amazon and Google are foundation that provide personal convenience and personalized services. The representative case for personalized service accelerated by the development of big data is the digital behavioral advertising.

Digital behavioral advertising or online behavioral advertising is defined as "a method that selects and suggests the advertising suitable for the desire and behavioral characteristics of the online users, based on

personal or behavioral information on the online users”³. Federal Trade Commission (FTC) in America defines it as a behavioral advertising that tracks behaviors of consumers online such as search, visit web pages, and the contents they used in a certain period of time and conveys advertisement targeted at the interest areas of consumers⁴. Recently, as the skills utilizing big data are added to this, behavioral advertising services are providing behavioral advertising to a certain consumer at the right time and place through analysis results that have been accumulated by a vast amount of information on the online users^{5,6}.

The concept of personal information defined by “Act on promotion of information network and protection of information”, a legislation to protect the right to self-determination of personal information, is as following. “Personal information” is the information on the existing individuals, such as signs, letters, voice, sound effect, and images, which can identify certain individuals with name and ID number(it also includes the information that cannot identify a certain individual but can identify the person when combined easily with other information). And personal information includes information that can identify individuals when “combined easily with other information” as well as the information that can identify individuals with the certain information. Therefore, since general information related to individuals can mostly identify individuals when combined with other information, we need to regard almost all the information on individuals as personal information.

The types of personal information classified by “Act on promoting information network and protecting information” are as following. 1) Personally identifiable information: Information that can identify individuals only with the specific information. 2) Personally non-identifiable information: Information that cannot identify individuals with the specific information but can identify them when easily combined with other information. 3) Sensitive information: Information that is at great risk of intrusion on privacy, rights, and interests, such as thoughts, beliefs, and disease history⁷. Personally non-identifiable information, which is dealt with anonymously, cannot identify individuals with the specific information but can identify them when easily combined with other information.

The kinds of personally non-identifiable information are diverse, and personally non-identifiable information which is used for online marketing can be classified as behavioral information, dispositional information, and locational information. Behavioral information is one

that enables people to identify the behaviors of online users such as Internet site access record, service use record, interest area, purchase record, payment record, and Internet using time. Dispositional information is one that helps to identify political and philosophical dispositions of the users such as the users favorite broadcasting media, newspaper, political parties that they are joining, citizen organization, labor union, and politicians they support. Locational information is one that can track down the location of the users such as Internet Protocol (IP) and smart phone location.

Proper use of personally non-identifiable information enables effective personalized advertisement. For example, a series of search words that consumers put in can be used to understand the interest areas and potential goods of the user and perform behavioral advertising. If you put in your address on map search site, you can find local information related to the address and perform advertising related to the region. Also, information such as the list of programs that the users chose and the viewing time of the users on IP TV can be used to perform behavioral advertising on the products related to it.

3. Protection of Personally Non-Identifiable Information

3.1 Intrusion on Personally Non-Identifiable Information of the Digital Behavioral Advertising in the Age of Big Data

Today, big data is creating new opportunities for different fields in society. However, the danger that is caused by the new opportunities through big data cannot be overlooked⁸. The development of the technologies related to big data has made businesses collect and save more information indiscreetly and also make the personally non-definable information sensitive or definable by combining, analyzing and processing it⁹. That is, a lot of information in big data is created and collected through personal IT terminals, which can expose personal information unintentionally and intrude on privacy by commercially using personal data without control.

Behavioral advertising is already being widely used as the fastest and most effective tool for approaching consumers in the age of big data outside of Korea. But in reality, behavioral advertising is created as a result of information

collection and interactions between the invisible interested parties for a long time. The danger of intruding on personal information of the behavioral advertising is noticed as it observes the online behaviors of the users without them knowing it for a considerable amount of time. With the growing marketing effects of personalized advertisement, more and more technologies are developed and used to track down information, which leads to the growing danger of intruding on personal information.

The location based advertising that are growing rapidly with the rapid spread of smart phones bear possibility of intruding on personally non-identifiable information. The location based advertising application can deliver behavioral advertising according to the consumers' dispositions and conditions, but it raises privacy issue through personal location information leaks¹⁰. The legal issues on the intrusion on personally non-identifiable information by location based advertising came to the surface with the seizure and search of the Daum communication and Google Korea by the police in May 2011. The advertising agencies were accused of collecting the personal location information without consent of the users through smart phone applications, and there were conflicting opinions between the businesses and the police on the definition and regulation of the personal location information¹¹.

3.2 The Legal Concept of Protection of Personally Non-Identifiable Information

To understand the meaning of personal information in terms of personal rights, we need to examine the differences in view points of the subjects of personal information. We can divide the subjects into personal information owners and personal information handlers based on the difference in perceptions between the person who owns the personal information and one who handles other people's information. First, the personal information owner recognizes the information on them as personal rather related to property. On the contrary, the personal information handlers consider both the personal and property characteristics. Especially private sectors put more emphasis on the latter in general. Therefore, the approaches on personal information are different between the information owners and dealers.

Especially in North America, there is an opinion that the agents of personal information can claim their rights in relation with the third party and that this is a kind of

property rights¹². In other words, the rights to personal information is not merely privacy that has traditionally had passive meaning, but property rights through which people can provide personal information more actively and enjoy the benefits of info-communication services. If the personal information agents have property rights to their personal information, they get to have a perfect control over the personal information and handle it freely through contracts. This opinion properly explains the phenomenon that personal information has been collected and used with the consent of users, being in line with the legal policies of North America that has preferred autonomous regulation of the market to governmental intervention.

However, the right to personal information in terms of personal aspect is very important. If somebody collects and uses our record of intellectual activities online such as personal information and search words without our consent, it would be a serious intrusion on personal rights. Therefore, the rights that individuals have to their personal information are complex rights that enable people to exclusively control and enjoy the personal and proprietary benefits of the personal information. If we examine the law suits on the intrusion on personal information, the plaintiffs usually ask for compensation for mental damages and the court orders provision of alimony. Therefore, it is evident that the rights to personal information regard personal benefits as its main benefit and protection of the law. Also, the rights to personal information are exclusive rights; as personal rights cannot be the object of transfer, the rights to personal information cannot be transferred at any moment and can only allow its use. In this context, FTC in USA suggest the fair information practice principles for effective self regulation about personal information protection in internet¹³ and many countries also suggest similar principles^{14,15}.

4. Main Issues Regarding the Protection of Personally Non-Identifiable Information in the Digital Behavioral Advertising

4.1 Does Personally Non-Identifiable Information need to be Protected?

With the emphasis on personal rights and protection of personal information, personally identifiable information such as name, ID number and addresses that can

identify certain individuals is protected legally and institutionally and discussed actively in academic field. On the other hand, even though personally non-identifiable information such as site access record, service use record, search record, interest area, purchase record and location information is being actively collected and used, legal and institutional protection and academic discussion on this are much deficient. Especially for the sound growth of digital personalized advertisement, the discussion on this matter is necessary. It can start with the question, "Is the personally non-identifiable information worthy of protecting as much as the personally identifiable information?"

There are not clear regulations by current law on personally non-identifiable information, which is collected for customized services such as digital behavioral advertising. There were arguments over whether or not personally non-identifiable information is included in "personal information" suggested by Item 6 of Art.2 of Act on promoting information network and protecting information. There is also an opinion that personally non-identifiable information collected for behavioral advertising cannot be regarded as "personal information" that needs to be protected. This is based on the fact that even though the data collected for advertisements were gathered through cookie from the user A's computer, the computer can be used by many people and we don't know whose it is. Also, cookie does not collect names and addresses.

On the other hand, according to the opinion that personally non-identifiable information should be regarded as personal information that needs to be protected, even though it is not personally identifiable information nor sensitive information, the information collected for a long period of time allows very concrete profiling about a certain user and if this data is used for other purposes or misused, it will do tremendous harm to the information owner. In this kind of situation, forcing information handlers to deal with the information transparently and giving information owners a choice of opt-out cannot be a practical protection policy. With the dazzling development of the Internet, the amount of information accumulated is increasing geometrically and the quality of the analyzed data is getting incomparably higher than the beginning. Before the rapid development of information processing technology, personal information has been used anonymously, but the danger of intrusion on personal information was not that big at that time. However, the Internet that guaranteed anonymity has become vulnerable from tracking down through log-in information

and development of technology. And information that is treated anonymously can increasingly identify specific individuals by being combined with other information.

4.2 The Imbalance of Information

Currently, in the behavioral advertising through collecting personally non-identifiable information, most of the Internet users do not recognize that their online behaviors are being monitored and collected and also they do not know specifically what their personal information is used for. This phenomenon brings serious imbalance of information between the users and information handlers. That is, people who collect personally non-identifiable information know the usage and value of the collected information while the information owners does not have a clue. They do not know whether or not information is collected, the processing of collected data, and usage of it. Moreover, they do not know how and who is involved in the utilization and collection of their information. This kind of information imbalance is the danger inherent in the behavioral advertising.

Some Internet users might have been surprised to see a specific word featured in an advertisement that they have searched before. Here, an issue is raised on getting consent from the information owner when collecting and utilizing the personally non-identifiable information. In this case, personally non-identifiable information might have been collected and utilized without the information owner's consent or there might have been a process of passive consent without the information owner knowing it. The gist of the problem is that there are many cases in which consumers agree with the information use without knowing the exact meaning of the information collection and use. In this case, checking whether or not there was a formal process of consent is meaningless.

Also, even though users feel uncomfortable when behavioral advertising based on the word that they have searched are constantly featured on the computer, most of the users do not know how to reject the advertisements or helplessly see them because the process of rejecting it is so complicated. Also, the problem becomes more serious when their personally non-identifiable information such as Internet search behaviors is not limited in a certain site and rather transferred to the third party or stolen to be used as a behavioral advertising. Under current conditions, information collection is allowed for unlimited time until the user delete the device and there

is not special limitations on it. As such, the information imbalance between the information owners and handlers in the matter of consent, reject, use and theft by the third party, information saving and utilizing period in the process of collecting and utilizing personally non-identifiable information is becoming an important issue.

5. The Proposal for the Protection of Personally Non-Identifiable Information in the Digital Behavioral Advertising

5.1 Specifying the Protection Guideline on Personally Non-Identifiable Information

For the sound and continuous development of digital behavioral advertising, we need to establish the legislations for protecting and utilizing personally non-identifiable information in behavioral advertising and specify the guidelines for it. If we examine the related legislations and regulations, personally non-identifiable information is regarded as personal information only in case it can identify certain individuals combined with other personally identifiable information (name, ID number). When it is not combined with personally identifiable information and treated anonymously without identifying specific individuals, it is not regarded as personal information by current law. So, we can conclude that if personally non-identifiable information is treated without identifying individuals or combined with personally identifiable information after it is collected (Retrospective merge), then there is no legal regulation by current law. This is in contrast with the conditions in America in which there are guidelines for autonomous regulations for this kind of case.

To protect the information owner's right to self-determination of personal information, we need to take actions to fill the legal gap. Under the current situations, the info-communication service providers can collect, use, and provide the personally non-identifiable information without any limits and make a profile of a certain individual after collecting the personally non-identifiable information and combining it with the personally identifiable information. However, this is an extreme protection of the convenience of the info-communication service providers, which can lead to serious damage to the personal rights of information owners.

Establishment of legal regulations on personally non-identifiable information and specification of the guideline are necessary for the development of digital behavioral advertising. It is hard to judge the necessity of regulations on behavioral advertising to protect personal information in terms of current legislations or from interpretive perspective. For this, we need to discuss if collection and use of personally non-identifiable information to provide behavioral advertising intrude on personal information of the information owners and also specify the concept of personally non-identifiable information for regulations. Without doing this, the regulation policies that define the allowance range and limitations of behavioral advertising are meaningless. Also, it is hard to achieve the goal of activating behavioral advertising while minimizing the intrusion on personal information. Therefore, suggestions of specified standards by the departments that are responsible for regulations are desperately needed.

5.2 Strengthening the Right for Personal Information Control

If we examine the legislation trend in EU and the USA regarding the personal information protection in the age of big data, they commonly consider the convenience of the information dealer to improve the utilization of data, while strengthening the system for personal information protection and expanding the responsibility of the information dealers. They put their priorities on the protection of information owner's privacy to guarantee the information owner's right to self-determination of personal information. They are trying to find a balancing point between safe use of information and development of industries related to big data through transparent management of personal information¹⁶. We need to consider this trend when establishing policies for behavioral advertising that utilize the personally non-identifiable information and strengthen the consumer's right to personal information control in Korea, too. It is expected to solve the information imbalance problem between the information owners and dealers discussed earlier through policies to guarantee consumers rights to information selection regarding the behavioral advertising.

First, we need to strengthen the process of users' consent when collecting and utilizing the personally non-identifiable information for behavioral advertising. We can consider policies to guarantee the users' rights to selection by preventing information dealers from forcing the users

to provide information unconditionally and regarding it as a tacit consent to information provision. Usually, the purpose of information use is presented to us in a way that we never feel like reading it, with small letters and abstract phrases to force the consent to the service use. This kind of consent process cannot be regarded as an institution that guarantees the user's rights to selection. Therefore, when collecting data and using tracking skills, there should be a realistic method to get consent from users in which users can understand the contents easily.

Regarding the protection of personally non-identifiable information in behavioral advertising, providing the "opt-out scheme" through which information owners can reject collection and utilization of the information on themselves is a easy and realistic method to guarantee personal rights. In a modern society where big data is actively utilized, if people can easily and quickly delete the data related to themselves that have been collected and utilized whether they wanted or not, the rights to personal information control perceived by individuals can be strengthened.

Regarding the protection of personally non-identifiable information in behavioral advertising, we need to introduce the concept "right to be forgotten". In the current condition, limitless information collection is allowed until users delete the related device, and there are no regulations on this matter. In this case, collected data can be easily combined with other information and become personal information. Therefore, even if we allow collection of users' behaviors and search record through information tracking devices, we can consider methods to limit the period of collecting information to prevent the collected data from moving on to the personal information level (personally identifiable information level). By limiting the period and making cookie automatically expire, we can prevent the sophistication of the profiling on a specific individual through accumulated information for a long period of time.

In the process of behavioral advertising, we need to pay more attention to the regulations on providing personally non-identifiable information for the third party. Behavioral advertising is composed in a way its effect is maximized when the concerned cookie and the third party cookie are mutually combined. In most cases when sharing the data on users with the third party cookie or other sites, it is hard to find how and who knows my information, who is administering the advertisement, and whom to raise issues to when there is a problem. In

this respect, the danger of intrusion on personal information is much higher through the third party cookie than through the concerned cookie. Therefore, it is necessary to make regulations to get explicit consent from the users for providing information when the information collected by the concerned cookie is transferred to the third party cookie and to specify the sources when collecting and utilizing the personally non-identifiable information through third party provision.

5.3 Strengthening Autonomous Regulations and Consumer Education

In the age of big data in which the development of technology is drastically fast and a great amount of information is created and circulated, it is hard to achieve the effects by heteronomous regulations. Digital behavioral advertising utilizing personally non-identifiable information is not an exception. Therefore, we need to induce autonomous regulations by the businesses to make the companies and services that do not meet the needs of consumers and markets die out. For this to happen, it is necessary to provide proper education and promotion on the protection and utilization of personally non-identifiable information targeting at the consumers, who are both information owners and users.

To conduct this kind of autonomous regulation effectively, social supervision needs to be accompanied. As a method of social supervision to see if autonomous measures are taken to protect personally non-identifiable information, specialized institutions can set the standards and the process of protecting personally non-identifiable information and check the situations of certain companies after having companies write reports on whether they are following the standards and processes on their own. Specifically, companies need to check if they made an effort and take technical measures to protect the personal information of the consumers, and particularly if they supervised their employees and consigned agencies to prevent leaks and theft of personal information.

Regarding the protection of personally non-identifiable information in behavioral advertising, it is important to perform promotion and educate the consumers, who are one part of wheel along with companies. Most of the consumers are neither information experts nor personal information experts, so they lack knowledge and information on the utilization and protection of personally non-identifiable information in behavioral advertising.

Under this condition, it is hard to protect personal information properly in terms of protection of personal rights and distrust in behavioral advertising can be created out of vague anxiety. Therefore, education targeting at the consumers on the utilization and protection of personally non-identifiable information as a society needs to be conducted. Also, to prevent the distrust in behavioral advertising out of vague concern for intrusion on personal information in behavioral advertising, promotion on the effectiveness of behavioral advertising that utilize personally non-identifiable information is needed. This can be performed by administrative institutions in charge or related businesses.

6. Conclusion

With the rapid growth of digital behavioral advertising that utilize the personal information in the age of big data; this study examined the protection of personal information in behavioral advertising. Especially we tried to conduct analysis focusing on the utilization and protection of personally non-identifiable information, which showed lack of theoretical discussion and planning of legal policies. Specifically, we examined the growth of digital behavioral advertising and personally non-identifiable information. And then we investigated the protection of personally non-identifiable information. Based on this, we drew main issues regarding the protection of personally non-identifiable information in behavioral advertising and discussed the protection policies on them.

In the age of information, it is important to develop big data and digital two-way advertising industry as a power engine of new growth through proper analysis and utilization of information. However, indiscreet collection and use of personally non-identifiable information should be stopped in terms of protecting personal rights. Therefore, we need to make an effort to find optimal balancing point to coordinate the protection and utilization of personally non-identifiable information.

It is necessary to strengthen the consumer's rights to information control over personal information including personally non-identifiable information, not only for protection of personal rights but for sound and long-term development of digital two-way advertising industry and big data industry. This means that consumers can easily recognize and take actions on the utilization and protection of personal information in the process of two-way advertising,

such as consent and notice of collecting personal information, rejection, and provision to the third party. By improving transparency of information circulation and securing trust of consumers, we can activate data circulation and develop big data industry and two-way advertising industry.

The significance of this study lies in that it tried to examine the protection and utilization of personally non-identifiable information, which was lacking institutional and theoretical discussions although it is actively being utilized in the digital behavioral advertising in the age of big data. It is necessary to conduct continuous researches and discussions for social agreement on the range and level of personal information protection along with the sound development of industry.

7. Acknowledgment

Funding for this paper was provided by Namseoul university.

8. References

1. Choi MW. The customized public policy PR strategy in big data era. *Indian Journal of Science and Technology*. 2015;8(23):1-8.
2. National Information Society Agency. 2006. Available from: http://eng.nia.or.kr/english/eng_nia.asp
3. Lee SH. The regulation policy of the personal targeting advertising based on online behavior analysis. *Media and Law*. 2010; 9(2):49-73.
4. FTC, Self-regulatory principles for online behavioral advertising. 2009;1-55.
5. Ahn JJ. Online behavioral advertising and privacy. *Journal of Cyber Communication Academic Society*. 2013; 30(4): 43-86.
6. Unni R, Harmon R. Perceived effectiveness of push vs. pull mobile location based advertising. *Journal of Interactive Advertising*. 2007; 7(2):28-40.
7. Korea Communications Commission. 2014. Available from: <http://eng.kcc.go.kr/user/ehpMain.do>
8. Moon HJ, Cho HS. Risk based policy at big data era: Case study of privacy invasion. *Informatization Policy*. 2012; 19(4):63-82.
9. Sung JH. Gesetzliche Studied uber Datenschutz bei Big Data. *Informatization Policy*. 2013; 21(2):307-33.
10. An S, Suh S. Location-based advertising via smartphone applications: Analysis on the use of personal location-specific information. *Korean Journal of Advertising and Public Relations*. 2012; 14(1):129-59.

11. The Dong-A Daily News. 2009 Jun 01. Available from: <http://www.donga.com>
12. Jong S J. Developments in advertising technologies and their challenge to information privacy. *The Justice*. 2008; 106:601–23.
13. FTC. Fair Information Practice Principles. 2000. Available from: <https://www.ftc.gov/reports/privacy-online-fair-information-practices-electronic-marketplace-federal-trade-commission>
14. Cleff EB. Implementing the legal criteria of meaningful consent in the concept of mobile advertising. *Computer Law & Security Report*. 2007; 23(3):262–9.
15. Cleff EB. Effective approaches to regulate mobile advertising: Moving towards a coordinated legal, self-regulatory and technical response. *Computer Law and Security Report*. 2010; 26(2):158–69.
16. Kim IH. A constitutional analysis for legal protection and use of personal information. *Constitutional Law Research*. 2011; 17(2):353–89.