

Design and Analysis of Online Advertising Expenditure Model based on Coupon Download

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In offline environment, unlike traditional advertising model through TV, newspaper, and radio, online advertising model draws instantaneous responses from potential consumers and it is convenient to assess. This kind of characteristics of Internet advertising model has driven the growth of advertising model among various Internet business models. There are, conventionally classified, CPM (Cost Per Mile), CPC (Cost Per Click), and CPS (Cost Per Sales) models as Internet advertising expenditure model. These can be examined in manners regarding risks that stakeholders should stand and degree of responsibility. CPM model that is based on number of advertisement exposure is mechanically exposed to users but not actually recognized by users resulting in risk of wasted expenditure by advertisers without any advertising effect. While on aspect of media, CPS model that is based on conversion action is the most risky model because of the conversion action such as product purchase is determined by capability of advertisers not that of media. In this regard, while there are issue of CPM and CPS models disadvantageously affecting only one side of Internet advertising business model value network, CPC model has been evaluated as reasonable both to advertisers and media, and occupied the largest segment of Internet advertising market. However, CPC model also can cause fraudulent behavior such as click fraud because of the competition or dishonest amount of advertising expenditure. On the user aspect, unintentionally accessed advertisements can lead to more inappropriate expenditure from advertisers.

In this paper, we suggest “CPCD”(Cost Per Coupon Download) model. This goes beyond simple clicking of advertisements and advertising expenditure is exerted when users download a coupon from advertisers, which is a concept in between CPC and CPS models. To achieve the purpose, we describe the scenario of advertiser perspective, processes, participants and their benefits

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of CPCD model. Especially, we suggest the new value in online coupon; “possibility of storage” and “complement for delivery to the target group”. We also analyze the working condition for advertiser by a comparison of CPC and CPCD models through advertising expenditure simulation. The result of simulation implies that the CPCD model suits more properly to advertisers with medium-low price products rather than that of high priced goods. This denotes that since most of advertisers in CPC model are dealing with medium-low priced products, the result is very interesting. At last, we contemplate applicability of CPCD model in ubiquitous environment.

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1. Introduction

The Internet has provided opportunities for on-line advertising market that were able to grow drastically with less cost and wide span of advertising to advertiser (Hoffman and Novak, 2000a; Silk et al., 2001; Dreze and Hussherr, 2003; Ramaraj and Suzanna A, 2003; Ribero-Neto et al., 2005). Especially, in offline environment, unlike traditional advertising model through TV, newspaper, and radio, online advertising model draws instantaneous responses from potential consumers and it is convenient to assess. That is, advertisers of the online advertising can track the number of user consumption of their advertisements and confirm inflow of the web site visitors and their activities (Kumar et al., 1998; Cheng and Dogan, 2008). This kind of characteristics of Internet advertising model has driven the growth of advertising model among various Internet business models. Easily seen from Google’s success story, the earning amounted to 6.82 billion USD in time period between March and June,

2010 which is an increase compared to 5.52 billion USD in the same period in 2009 (Google, 2010). The main profit models of Google are “AdWords”, keyword search advertising model, and “AdSense”, content match advertising model. These are based on CPC model that earnings are gathered by clicks of users.

Internet advertising models are classified according to the criteria of advertising expenditure and they are CPM (Cost Per Mile), CPC (Cost Per Click), and CPS (Cost Per Sales) models. These can be examined in manners regarding risks that stakeholders should stand and degree of responsibility. First of all, CPM model that is based on number of advertisement exposure is mechanically exposed to users but not actually recognized by users resulting in risk of wasted expenditure by advertisers without any advertising effect. While on aspect of media¹⁾, CPS model that is based on conversion action is

1) In this paper, media includes advertising publishers, portal websites, search service providers, and websites registered in advertising network such as AdSense of Google.

the most risky model. Because conversion action depends on capability of advertiser, media should bear burdens of risk that it links many users to advertiser but earns not as much advertising profit. In this regard, while there are issues of CPM and CPS models disadvantageously affecting only one side of Internet advertising business model value network, CPC model enables sharing of risk between both advertiser and media through only levying expenditure for the clicking advertisement. Therefore, it can be regarded as comparatively reasonable in terms of risk and responsibility. However, there can be fraudulent behaviors toward competitors to dishonestly invoking excessive advertising expenditure by abusing the characteristic of levying expenditure per click in CPC model and clicking advertisement without any conversion intention by users.

In this paper, we propose the CPCD (Cost Per Coupon Download) model which is a new Internet advertising expenditure model based on CPC model. CPCD model extends beyond users simply clicking advertisement and advertising expenditure is imposed when the coupon is downloaded. This is a concept in between CPC and CPS models. We describe the scenario, process, participants and their benefits of CPCD model. We also analyze the working condition for advertiser by a comparison of CPC and CPCD models through expenditure simulation. At last, we contemplate applicability of CPCD model in ubiquitous environment.

2. Design of CPCD-based Advertising Model

2.1 Scenario

Magretta (2002) compares constructing a business model to building a story. Just like there are characters, their personalities, and their roles in a story, there are counterparts in a business model as well. Proposing a possible scenario when designing new business model has great meaning. Scenario is the organization of entire story that users experience with respect to the business model and through the scenario, integrative and convenient understanding of specific business model is possible, and possible contradicting factors can be removed. And Magretta (2002) suggests the reason for unable to execute business model is due to failure of “narrative test” or “number test”. Here, scenario is means of “narrative test”. The scenario described here is for understanding the business model from advertiser’s perspective.

James, a owner of online men’s apparel store, launched CPC model-based keyword search advertising through the Internet advertising network. On the first month of the launch, impact of the advertising was better than expected and he earned more profit even except all the advertising expenditure which was one dollar per click. But on the second month, a lot more advertising expenditure was charged with the same revenue earned. James asked the advertising network firm and found out that competitors of the online store

madly clicked the advertisement. Now he has put himself in dilemma. He knows a lot of new customers become in favor of the website with more of revenue but if this keeps going, he cannot afford the advertising expenditure.

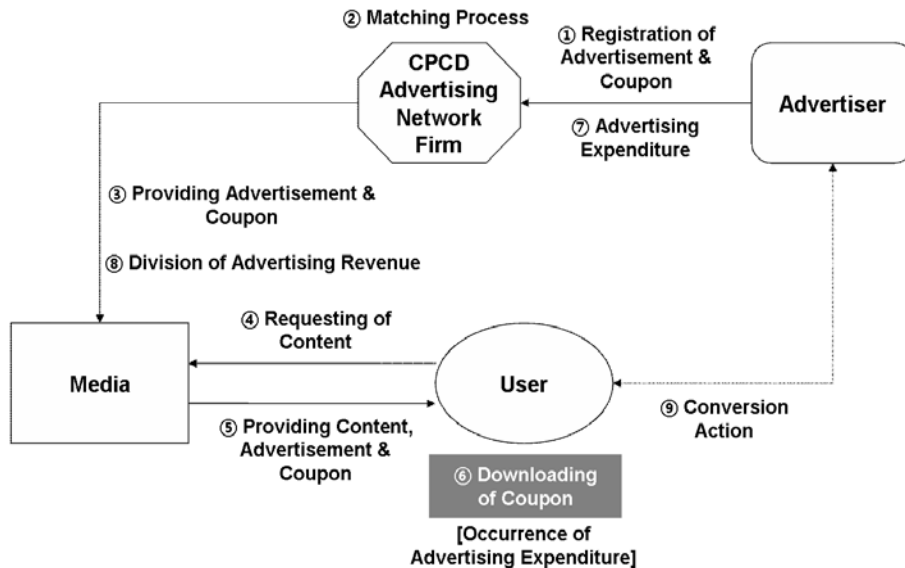
While struggling, James learns of new advertising model called “CPCD”. CPCD model is similar to existing keyword search advertising and content match advertising in exposure type but it is different in terms of expenditure. The advertising expenditure are not imposed depending on clicks of users but imposed when users click advertisement and download the coupon. James registers in CPCD advertising network and decides to offer «10% Discount Coupon». He then thinks of “What if competitors and other users with no intention may

keep on downloading?”. But CPCD advertising network firm limits downloading more than three times a day and only human being, not any mechanic access, can download the coupon. After a month of CPCD advertising launching, James is satisfied with the advertising expenditure and profit also with more of new customers due to the coupon.

2.2 Analysis of Process

2.2.1 Diagram

Mahadevan (2000) defines a business model as a flow of participants’ value, flow of benefit, and flow of products. <Figure 1> depicts the core process of CPCD-based advertising business model.



<Figure 1> CPCD-based Advertising Business Model Diagram

CPCD-based advertising business model commences with registration of advertiser to CPCD advertising network firm along with advertisement and coupon. CPCD advertising network firm who received advertisement and coupon from advertisers forwards those to the most appropriate media among the advertising network through matching process. After that, the users consume content and advertisement on media, download the coupon and advertising expenditure is charged to advertiser when users download the coupon. The most distinctive difference of CPC and CPCD models is that imposition of advertising expenditure; CPC model instantly charges when users click the advertisement provided by the media, while in CPCD model, users are not directed to the advertisers' website when they click the advertisement, but rather to the webpage providing coupons, and charges once users download coupons from the webpage. Of course it does not mean it cannot be linked to advertisers' website when users do not download the coupon, only advertising expenditures are not charged. Consequently, when users without any conversion purpose click on advertisement, no advertising expenditure would take place. After users download the coupon, CPCD advertising network firm pays incentive which is a part of advertising profit to media. In <Figure 1>, “⑨ Conversion Action” is a transaction between users and advertisers and it is shown in dotted line since there is no effect on occurrence of advertising expenditure.

2.2.2 Meaning of Coupon

The essence of CPCD model is that “coupon” is provided to users as a means of advertising, and is one of the oldest, the most effective, and the most widely utilized item of various advertising tools (Belch and Belch, 2008). Coupon advertising has its traditional purpose of “price discount” (Levedahl, 1986; Block and Robinson 1994; Schultz et al., 1998) and it has expanded to its original meaning and including “product information” (e.g., product characteristic, quality) to the potential consumer which result in hybrid sales promotion (Moraga-Gonzalez and Petrakis, 1999). The conventional coupon advertising model in offline environment was in paper form and users had to withhold it until the transaction. However, the paper form of coupon is inconvenient to obtain, has a possibility of loss, and even expiration of the due date (Swaminathan and Bawa, 2005; Jayasingh and Eze, 2009). On the contrary, the online coupon advertising model guarantees convenience of obtaining and exchanging it with product so this would alleviate complaints from users in offline coupon advertising model (Kumar et al., 1998). In particular, in B2B transaction, price discount in bulk order is likely to take place, while such means (i.e., coupon) of B2C transaction enables price cut and promotion of purchase ultimately (Chang and Lee, 2010). In addition, on the aspect of advertiser, the fact that online coupons have higher delivery rate and response rate to target customers than conventional paper form coupons can be another advantage (Suri et al., 2004). That is, the

online coupon advertising model enhances possibility of possession and contract usability and lowers transaction cost so that new value is engendered for users compared to offline coupon advertising model.

In this paper, we suggest the new value of “possibility of storage” in online coupon advertising model. Advertising in conventional media like TV, newspaper, and radio has to appeal biological senses and limitary memory of potential consumers which inevitably led to repetitive and stimulating messages. This would naturally confront “Advertising wear-out” (Simon, 1982; Naik et al., 1998) that no interest can be found toward the advertising messages. However, coupon in online environment can be stored by potential consumer, and therefore advertisers have to provide value that can be stored and sustained by potential consumers. Here, storable and sustainable value indicates not only price cut but information that can be reduced the transaction cost.

Furthermore, coupon can be a supplement to errors in relational analysis occurred in conventional Internet content match advertising. Internet content match advertising has possibility of error in relational analysis because context of content and advertisement are relationally analyzed and exposed. This causes users to click on the inappropriate advertisement with disfavored advertising expenditure. However, in CPCD model, advertisers would pay only if users download the coupons. Regarding that users who download the coupons are those interested in cer-

tain products, it is reasonable for advertisers.

2.2.3 Privacy Protection of User

Coupon is important in a way that not only with regard to price cut but also how it is delivered to the target group (Blattberg and Neslin, 1990). In previous researches, researchers utilized users’ information for delivery to target consumers. Rossi et al.(1996) conducted the research that inquires relationship between users’ information applicability and profit in issuing offline coupon. The research defined that when users’ demographic information were applied, there was 10% increase in profit comparing with the situation that users’ information are randomly collected. And 60% increase in profit when the recent purchase history were utilized, 90% increase in profit when the entire purchase history were utilized, and 160% increase in profit when both users’ demographic information and the entire purchase history were utilized. In online environment, in addition, coupons is corporate mechanism that enables customized marketing (Cheng and Dogan, 2008), so researches on the coupon model utilizing users’ information have constantly been conducted (Kumar et al., 1998; Moraga-Gonzalez and Petrakis, 1999; Montgomery, 2001). However, using users’ information is inversely related to users’ privacy. That is, the more users’ information is used, the less protection of users’ privacy may take place. Contrarily, we assert that possibility of privacy infringement will be lower since CPCD model exposes advertisements based on keyword from users’

search input and content consumed by users and provides coupon so there is no need to collect users' demographic information and purchase history information.

And offering coupon using users' information is only possible when users are logged in which is possible in a specific shopping mall but in case of situation in CPCD model, it is independent from logging-ins because it is based on content consumed by users, thus to wider span of usage will be possible. Furthermore, in case of coupon provision using users' information through mechanical level analysis is to predict what users need but in CPCD model, coupon is in the context of "search keyword" or "contents" which is regarded as what is already declared by users and this reduces the possibility of privacy infringement and increases the accuracy of coupon delivery to the target users.

2.2.4 Prohibition of Fraudulent Behavior

Similarly in CPC model where fraudulent clicks with dishonest purpose that can cause more of advertising expenditure, counter measures for abusing in CPCD model and false-downloading should be prepared. First method is to set advertisement downloading rate for certain number of coupon downloading in a day, if it is connection from fixed IP address, which is analogous to analysis of web server logs against frauds in CPC model (Bloch and Eroshenko, 2004). Second method is to track users' computer itself in case of users connect from dynamic IP address or when it is difficult to restrict based on IP address. That

is, when users download a coupon, "cannot be found" but "not harmful" encrypted information is sent to users' computer. Since then, when users download another coupon, the encrypted information can identify the reason for purpose of coupon downloading. Likewise in order to prevent frauds in the CPC model, when users transact, encoded information is sent to and saved in users' computer and after clicking arises to CPC advertising, "syndicator" confirms information saved on users' browser and analyzes the nature of clicking (Juels et al., 2007). Third method is to require input numbers or letters that only human can recognize so that mechanical connection and attempt to download is prohibited. This is very alike to what is required to type in certain numbers or letters at the last step in registering online to restrict automatic enrollment.

2.3 Roles and Potential Benefits of Participants

Timmers (1998) defines business model components as ① an architecture for the product, service and information flows, including a description of the various business actors and their roles, ② a description of the potential benefits for the various business actors, and ③ a description of the sources of revenues. While the scenario is an explanation from user perspective, analysis of the business model by the Timmers' definition is an explanation from a business perspective.

Participants of CPCD-based advertising business model can be divided into Internet user, media, CPCD advertising network firm, and

<Table 1> The Role, Value Proposition, and Potential Benefit of CPCD Model Participants

Actors	Roles and Value Proposition	Potential Benefit
Internet User	<ul style="list-style-type: none"> ◦ Consumption of contents ◦ Downloading of advertisement coupon ◦ The role of potential consumer 	<ul style="list-style-type: none"> ◦ Search cost reduction ◦ Product price cut
Media	<ul style="list-style-type: none"> ◦ Embedment of CPCD advertising module in web site ◦ Providing contents and advertisement 	<ul style="list-style-type: none"> ◦ Advertising profit sharing
CPCD Advertising Network Firm	<ul style="list-style-type: none"> ◦ Building CPCD system and network ◦ Allocating advertising profit 	<ul style="list-style-type: none"> ◦ Advertising profit sharing
Advertiser	<ul style="list-style-type: none"> ◦ Asking CPCD advertising network firm for advertising ◦ Paying advertising expenditure to CPCD advertising network firm 	<ul style="list-style-type: none"> ◦ Rational execution of advertising expenditure ◦ Securing new advertising channel ◦ Easiness to assess advertising effect

advertiser. The roles of the participants and the value offered by them are as follows: 1) Internet user consumes contents offered from media through keyword search advertising or content match advertising, and downloads coupons as a potential consumer, 2) media embeds CPCD advertising module in web site and provides contents and advertisement, 3) CPCD advertising network firm provides the CPCD system, establishes an advertising network that consists of media and advertiser, distributes advertising profit as an incentive to media, and 4) advertiser registers advertisements and coupons and pays for the advertising expenditure.

The potential benefits of the participants are as follows: 1) Internet user can cut search cost for product purchasing as well as price discount through coupon advertising, 2) media can get revenues according to coupon downloading, 3) CPCD advertising network firm can get revenues from advertising, and 4) advertiser can secure ra-

tional advertising expenditure execution, a new advertising channel, and get easily effect information of advertising based on coupon transaction rate. In other words, CPCD model can actualize economic value to all of participants and reduce transaction cost. <Table 1> summarizes the role of participants and their potential benefits from the business model.

3. Working Condition in the Business Model as Advertiser

In this chapter, we intent to draw the working conditions of advertiser in CPCD-based advertising business model by analyzing CPC and CPCD models' advertising expenditure simulation. Given this, the feasibility of CPCD-based advertising business model can be estimated.

3.1 Notions

Just as shown in <Table 2>, advertising ex-

penditure simulation that is to compare CPC and CPCD models is determined here. In particular, the working conditions of advertiser can be drawn by calculating advertising expenditure per coupon downloading, average conversion rate per coupon downloading, and invalid coupon downloading rate as variables.

Basically, in order for advertisers to participate in CPCD-based advertising business model, advertising expenditure compared to same number of products with CPC model should be equal or less than the CPC model (Condition 1), where setting the same number of products is to set the same sales goal (i.e., same value). In CPC model,

average conversion rate per click and invalid click rate are reflected to evaluate advertisement consumption for sales goal and this adds social issue such as invalid click rate in ROI calculator by Overture (http://www.overture.co.kr/ko_KR/src/h/tools/roic.php). In CPCD model, the number of coupon downloading for sales goal can be calculated by considering average conversion rate per downloading and invalid coupon downloading rate. Also, it is worth that coupon issuance cost and discount cost from advertiser are reflected in overall advertising expenditure. <Table 2> is organized the simulation structure for calculating overall advertising expenditure.

<Table 2> Advertising Expenditure Simulation between CPC and CPCD Models

CPC Model		CPCD Model	
Factors	Input Value	Input Value	Factors
Advertising Expenditure per Click	A1	A2	Advertising Expenditure per Download
Average Sales Conversion Rate per Click	B1	B2	Average Sales Conversion Rate per Download
Invalid Click Rate	C1	C2	Invalid Download Rate
Sales Goal	D1	D2	Sales Goal
Number of Clicks to Achieve the Sales Goal	E1	E2	Number of Downloads to Achieve the Sales Goal
	$(D1/B1) \times (1 + C1)$	$(D2/B2) \times (1 + C2)$	
		F	Product Price
		G	Coupon Discount Rate to Product Price
		H	Total Cost of Coupon Discount
		$D2 \times (F \times G)$	
		I	Cost of Traffic per Download
		J	Total Cost of Traffic
$E2 \times I$			
Total Advertising Expenditure	K1	K2	Total Advertising Expenditure
	$A1 \times E1$	$(A2 \times E2) + H + J$	

$$A1 \times E1 \geq (A2 \times E2)H + J \text{ (Condition 1)}$$

3.2 Working Conditions for Advertiser

In this paper, with manifold variables that affect advertising expenditure in CPCD model, CPC model is compared so that various conditions of advertisers' participant can be appraised. For this conditions of CPC model are presumed as in <Table 3>. To simplify the analysis, 1,000 KRW is assumed 1 USD. In the setting CPC model simulation, advertising expenditure per click is assumed at least 0.2 USD as in the case of Overture (Park and Lee, 2008). And average sales conversion rate of world's top online

mall is approximately 4% (Kent and Finlayson, 2006), considering this fact, defining average sales conversion rate as 0.5% seem adequate. Also, for invalid download rate, Overture reported that in 2006 the proportion of not charged or refunded invalid clicks reached up to 11% so that it is proper for analysis.

And possible conditions of advertisers being affiliated with CPCD-based advertising business model were derived from analysis that when variables which may affect advertising expenditure in CPCD model varied as displayed in <Table 4>. As a result, optimal point (Condition 1) when conditions changed was drawn.

<Table 3> Advertising Expenditure Simulation between CPC and CPCD Models(Input Value)

CPC Model		CPCD Model	
Factors	Input Value	Input Value	Factors
Advertising Expenditure per Click	0.5 USD	A2	Advertising Expenditure per Download
Average Sales Conversion Rate per Click	0.5%	B2	Average Sales Conversion Rate per Download
Invalid Click Rate	10%	C2	Invalid Download Rate
Sales Goal	100	D2	Sales Goal
Number of Clicks to Achieve the Sales Goal	22,000	E2	Number of Downloads to Achieve the Sales Goal
		$(D2/B2) \times (1 + C2)$	
		F	Product Price
		G	Coupon Discount Rate to Product Price
		H	Total Cost of Coupon Discount
		$D2 \times (F \times G)$	
		I	Cost of Traffic per Download
		J	Total Cost of Traffic
$E2 \times I$			
Total Advertising Expenditure	11,000 USD	K2	Total Advertising Expenditure
		$(A2 \times E2) + H + J$	

<Table 4> Working Conditions for Advertiser to Participate in CPCD-based Advertising Business Model

Working Conditions	Variables Setting	Results
Advertising Expenditure per Download	The same as CPC model in case of B2, C2, D2	A2 = 0.44 USD, K2 = 10,888 USD
	F = 10 USD, G = 10%, I = 0.05 USD	
Average Sales Conversion Rate Per Download	The same as CPC model in case of A2, C2, D2	B2 = 0.56%, K2 = 10,904 USD*
	F = 10 USD, G = 10%, I = 0.05 USD	
	The same as CPC model in case of C2, D2	B2 = 1.06%, K2 = 10,996 USD*
	A2 = 1 USD, F = 10 USD, G = 10%, I = 0.05 USD	
Invalid Download Rate	The same as CPC model in case of A2, B2, D2	C2 = 0%, K2 = 11,100 USD
	F = 10 USD, G = 10%, I = 0.05 USD	
Product Price and Coupon Discount Rate	The same as CPC model in case of A2, B2, C2, D2	F = 0.1 USD/G = 1%, K2 = 12,100 USD*
	I = 0.05 USD	
	The same as CPC model in case of C2, D2	F = 10.3 USD K2 = 10,999 USD*
	A2 = 1 USD, B2 = 1.06%, G = 10%, I = 0.05 USD	
	The same as CPC mode in case of C2, D2	
A2 = 1 USD, B2 = 1.06%, G = 3%, I = 0.05 USD	F = 34.5 USD K2 = 11,000 USD*	

* Rounded up from first point.

Working Condition: Advertising Expenditure per Download, Average Sales Conversion Rate per Download (Product Price : 10 USD, Coupon Discount Rate : 10%)

When working conditions for advertiser are analyzed based on advertising expenditure under the assumptions that product price is 10 USD and coupon discount rate is 10%, the optimal point for (Condition 1) is the situation when advertising expenditure per download is below 0.44 USD. However, when advertising expenditure per download in CPCD model is lower than that of one in CPC model, it is less likely that CPCD advertising network firm would choose the

model. Thus, CPCD advertising network firm should allot advertising expenditure per download higher than that of CPC model and to exert the policy that enhances average sales conversion rate per download instead. If advertising expenditure per download is 1 USD, in order to meet (Condition 1), average sales conversion rate per download turned out to be more than 1.06%. In this case, since coupon downloading indicates that users expressed their willingness to purchase, average sales conversion rate of download of 1.06% (0.5% in CPC model) is not overestimating at all. Additionally, when advertising expenditure per download is set as equal as advertising expenditure per click in CPC model,

average sales conversion rate per download should be more than 0.56% which is also not excessive at all.

Working Condition : Invalid Download Rate, Product Price and Coupon Discount Rate

When working conditions for advertisers are analyzed based on the invalid download rate, (Condition 1) could not ever be satisfied even invalid download rate was set as 0%. Also when it was appraised based on the product price and the coupon discount rate, if all of the variables -advertising expenditure per download, average sales conversion rate per download, invalid download rate, and sales goal- are set as equally as that of CPC model, (Condition 1) could not be sufficient in situation of when product price; 0.1 USD and coupon discount price; 1%. Consequently, the invalid download rate and sales goal was set as same as the condition of CPC model and for other variables, it was input as what have been discovered in previous simulation; advertising expenditure per download as 1 USD, average sales conversion rate as 1.06%, and coupon discount rate as 10%, at last, the optimal price was less than 10.3 USD. And considering conventional coupon discount rate is generally 3 ~ 10% according to AUCTION Corp. (<http://auction.co.kr>), when only coupon discount rate was changed to 3% ceteris paribus, the optimal product price was less than 34.5 USD. To conclude, the result of simulation implies that the CPCD model suits more properly to advertisers with

medium-low price products rather than that of high priced goods. This denotes that since most of advertisers in CPC model are dealing with medium-low priced products, the result is very interesting.

4. CPCD Model in Ubiquitous Environment

In this chapter, we analyze that whether CPCD-based advertising business model can be applied in ubiquitous environment, and if possible, how it would be. To suggest conclusion first, application of in ubiquitous environment would be more appreciated.

Rational Execution of Advertising Expenditure

Users in ubiquitous environment can obtain and manage diverse digital contents through their mobile device that can seamlessly communicate with computing factors applied in a real world. The action for access to diverse digital contents is termed "Touch" and "Tune" (Jun et al., 2009). Just as "clicking" in web environment, human being can consume contents and be occurred commercial transaction by touching RFID tags and by tuning WPAN module in ubiquitous environment. This has shown promise that CPT (Cost Per Touch or Tune) model can emerge as of CPC model in advertising expenditure area. The online is very much information oriented environment, while users in offline environment can consume services without information oriented intention

(Lee et al., 2007). Therefore, users can touch and tune computing factors applied in an offline environment without any burden. In this situation, if CPT model is adopted, advertisers have to afford lots of advertising expenditure. Yet, CPCD model allows users to touch and tune with convenience, consumes the contents, and charges for the advertising expenditure only when users download the coupon instead of when users touch or tune the advertisements, so that the rational execution of advertising expenditure would be possible.

u-Viral Marketing

In ubiquitous environment, since the coupon is saved in users' mobile device, the loss or difficulty of finding it would hardly happen. In case of digital coupons in mobile device, it would support convenient and effective use through automatic identification tag such as bar code (Scharl et al., 2005). Since coupon is positively correlated with repurchase (Taylor, 2001; Buckinx et al., 2004), storability of coupon is prominently important. However, users save coupons to their mobile device in ubiquitous environment is more than mere discount or provision of information, it is much meaningful as new method of marketing. Users can download coupons, carry it in mobile device as "Coupon wallet", and use it without any burden. Thus, users can also hand the coupon to other users through communication and this may imply another way for viral marketing (Lee and Jun,

2008). For an effective viral marketing, contents that are distributed should be valuable and usefulness to users (Perry and Whittaker, 2002), and coupons that provide discount and information can play this role.

In ubiquitous environment, the reason for viral marketing through coupon being a powerful tool for advertisers is that not only related to effectiveness and storability but also to the process of handling it to others itself. In viral marketing, transferring of coupon from one to the other is through users' mobile device and there should be a connection network or face-to-face offline meeting. This proves that there is social trust between the users and since consumers in market are strongly affected by people around them, viral marketing that reduces costs due to the relationships (Richardson and Domingos, 2002) would be very potent in that aspect with strong effect from viral marketing in ubiquitous environment.

5. Conclusion

Hoffman and Novak (2000b) have emphasized interactivity and outcomes as the criteria when suggesting advertising expenditure model on the web. Interactivity considers not only exposure of advertisements such as CPM model but also questions such as how much time users spend on advertisers' site, how many web pages they view, and how deeply users access on advertisers' site. That is, they are asserting the advertising expenditure model that even measures

users' behavior. Outcomes refers to the effectiveness of advertising. They suggest that advertising should draw direct responses of users and advertising expenditure should be charged according to this. CPCD model suggested in this paper charges advertising expenditure by the number of coupon downloads, not on clicks of users, so when coupon is issued by product category, users' interests can be understood only through advertising data. Further, when users purchase products, information with regard to their coupon download and product purchasing data can be helpful for prediction of users' behaviors. Not only that, CPCD model is not about simple clicks but about active behavior of coupon downloading and this is criteria for advertising expenditure. Even taking previous researches that coupon has positive influence in product purchasing (Bawa and Shoemaker, 1989; Totten and Block, 1994; Lam et al., 2001; Kotler and Keller, 2006), CPCD model has affirmatively embraced the outcomes of advertising compared to CPC model.

This research has designed and analyzed new concept of Internet advertising expenditure model based on users' behavior of "coupon download". To achieve the purpose, we described the scenarios, processes, participants and their benefits of CPCD model. We suggested that coupon in online environment takes role of reducing transaction cost and new value of "storability" may bring innovation to conventional marketing methods. Also, we showed that coupon download may offset issues and problems of conven-

tional content match advertising that correlation analysis error may lead to fraudulent advertising expenditure and violation of privacy for more appropriate provision of coupons. After that, working condition of advertisers in CPCD-based advertising business model is derived through simulation compared to CPC model. In the process, we figured out that CPCD model is more appropriate for advertisers with medium-low priced products. Lastly, we examined whether CPCD model can be utilized not only in off-line environment but also ubiquitous environment, and showed that CPCD model may work as a great tool for ubiquitous viral marketing.

CPCD model suggested in this paper is an alternative model to solve many issues in the current field of the Internet advertising and an experimental model in the field of ubiquitous advertising. However, in-depth research on product category that is suited for CPCD model is not sufficient and application in ubiquitous environment should be continuously examined. We expect more stable CPCD model through constant approaches on various perspectives in the future work.

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Abstract

쿠폰 다운로드를 기준으로 하는 온라인 광고비 모델의 설계 및 분석

전정호* · 이경전*

기존의 인터넷 광고비 모델에는 CPM (Cost Per Mile), CPC (Cost Per Click), CPS (Cost Per Sales) 등이 존재하며, 특히 CPC 모델은 광고주와 미디어에게 모두 합리적이라는 평가를 받으며, 인터넷 광고 시장에서 높은 비중을 차지하고 있다. 그러나 CPC 모델 또한, 경쟁 사업자에 의한 과도한 광고비 부과나 부정확한 광고 수익 등을 목적으로 하는 부정 행위가 발생할 수 있고, 사용자의 전환 의도 없는 광고물 클릭으로 인해 광고주에게 부당한 광고비가 부과될 수 있는 것이 사실이다. 이에 본 연구에서는 새로운 광고비 모델인 'CPCD' (Cost Per Coupon Download) 모델을 제안한다. CPCD 모델은 사용자가 단순히 광고물을 클릭하는 행동을 넘어 광고주가 제공하는 쿠폰을 다운로드 받았을 때 광고비가 부과되는 모델로서, CPC 모델과 CPS 모델의 중간 개념이라고 할 수 있다. 본 연구에서는 CPCD 모델의 설계 및 분석을 위하여 발생 가능한 시나리오를 제시하고, 프로세스 분석 및 관련 이슈에 대한 검토를 수행한다. 그리고 CPCD 모델에 참여하는 각 사업 참여자들에 대한 분석을 수행하고, 비용 시뮬레이션을 통해 CPC 모델과 CPCD 모델을 비교함으로써, CPCD 모델에 참여하는 광고주의 사업 참여 조건을 밝히며, 마지막으로 유비쿼터스 환경에서 CPCD 모델의 적용 가능성에 대하여 고찰한다.

Keywords : 인터넷 광고, 광고비 모델, CPCD(Cost Per Coupon Download), CPC(Cost Per Click), 비즈니스 모델

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