

Factors Affecting Location-Based Mobile Advertising Effects: An Integrative Perspective

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Abstract

Purpose: This article aims to review the previous research on the effects of location-based mobile advertising (LBMA) and to propose an integrative approach to the factors affecting these effects.

Design/methodology/approach: In this conceptual article, previous research on LBMA effects are examined and synthesized, and the hypothesized, integrative model of the factors affecting these effects is developed.

Findings: A growing body of research is dedicated to identifying the communication effects of LBMA and the factors affecting them. Based on the results of that research and utilizing an integrative approach, six groups of variables were distinguished as the contextual framework for further studies on LBMA effects.

Research limitations/implications: The research proposition needs further literature studies and empirical testing. It implies research on the potential impact of various factors on LBA effects, such as multiple consumer traits and behaviors, situational context or marketing actions. The suggestions for further research are presented in the article.

Practical implications: According to forecasts, the contextual advertising, primarily LBMA, will be growing in the future in terms of expenditures and its significance in the integrated marketing communications. Identifying the factors affecting the effects of LBMA will help practitioners to tailor advertising messages to the target customers' location and to improve the effectiveness of their communication programs.

Originality/value: This article synthesizes the results of the previous research on the effects of LBMA and proposes an integrative contextual framework reflecting the hypothesized relationships between the groups of variables and LBMA effects.

Keywords: mobile advertising, location-based mobile advertising, advertising effects, factors.

JEL: M31, M37

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Czynniki różnicujące efekty reklamy mobilnej opartej na geolokalizacji odbiorcy: podejście zintegrowane

Streszczenie

Cel: syntetyczny przegląd wyników dotychczasowych badań nad efektami reklamy mobilnej opartej na geolokalizacji odbiorcy oraz przedstawienie propozycji zintegrowanego ujęcia czynników różnicujących te efekty.

Metodologia: artykuł ma charakter koncepcyjny. Przedstawiono w nim i zsyntetyzowano wyniki dotychczasowych badań nad efektami reklamy mobilnej opartej na geolokalizacji odbiorcy oraz zaproponowano hipotetyczny, zintegrowany model obrazujący oddziaływanie różnorodnych czynników na te efekty.

Wyniki: integrując wyniki coraz liczniejszych badań nad efektami reklamy mobilnej opartej na geolokalizacji odbiorcy i ich efektami przedstawiono ramowy model kontekstowy zawierający sześć grup zmiennych oddziałujących na efekty tej reklamy jako propozycję do dalszych badań.

Ograniczenia/implikacje badawcze: przedstawiona propozycja badawcza wymaga dalszych studiów literaturowych i empirycznej weryfikacji. Niezbędne jest badanie potencjalnego wpływu wyróżnionych czynników na efekty reklamy mobilnej opartej na geolokalizacji odbiorcy, takich jak określone cechy i zachowania odbiorców reklamy, kontekst sytuacyjny oraz działania marketingowe. W artykule przedstawiono sugestie dla dalszych badań w tym zakresie.

Oryginalność/wartość: artykuł zawiera syntezę wyników dotychczasowych badań nad efektami reklamy mobilnej opartej na geolokalizacji odbiorcy i propozycję zintegrowanego modelu obrazującego hipotetyczne związki między wyróżnionymi grupami czynników a efektami reklamy mobilnej opartej na geolokalizacji odbiorcy.

Słowa kluczowe: reklama mobilna, reklama mobilna oparta na geolokalizacji odbiorcy, efekty reklamy, czynniki różnicujące.

1. Introduction

Location-based advertising (LBA), defined as delivering advertising messages to its recipients in a specific geographical location, embraces traditional types of advertising such as point-of-sales advertising, outdoor advertising or out-of-home advertising in general (Bauer & Strauss, 2016; Ketelaar et al., 2017). However, today LBA is commonly considered a form of mobile advertising and a part of mobile marketing using location-based services (LBS), which involves sending customized advertising messages through mobile devices to targeted individuals located in a specific place and time (Bauer & Strauss, 2016; Bruner II & Kumar, 2007; Fang, Yang, Xu, & Li, 2016; Lee, Kim, & Sundar, 2015). Location-based mobile advertising (LBMA) emerged as a consequence of several phenomena, including: 1) the development of location-tracking technologies, such as GPS, WiFi or Bluetooth, 2) ubiquity of mobile communication devices, predominantly smartphones, and 3) the advertisers' everlasting desire to deliver promotional messages to customers with the maximum possible contextual accuracy and relevance, as evidenced by numerous research results (Baker & Lutz, 2000; Banerjee & Dholakia, 2008; Hsieh Lo &

Chiu, 2016; Li & Du, 2012; Stip, 2018). Assuming further technological advance in geolocation and the persisting trend of addiction to smartphones, the growing intent to use LBMA potential can be expected in the future (Hühn et al., 2017).

According to estimates, there have been 13.1bn mobile devices worldwide in 2019, and this figure is forecasted to grow to almost 17.0bn in 2023 (Statista, 2019). In 2019, 5.1bn people worldwide had mobile devices (66.5% of the world's population), including 2.7bn people (35.1%) who own smartphones (Statista, 2019). This potential has not gone unnoticed by advertisers, which is proved by a radical increase in expenses on mobile advertising. Mobile advertising spending worldwide, worth US\$8.5bn in 2012, hiked to US\$107.0bn in 2017, and is predicted to reach US\$165.7bn in 2019 and US\$187bn in 2020, which translates into 21.5% average annual growth in 2017–2020. Consequently, the mobile advertising share in global advertising expenditures was only 1.7% in 2012, but it surged to 19% in 2017 and is expected to rise to 27% in 2019 and 31% in 2020 (eMarketer, 2014; WARC, 2019; Zenith, 2018).

Location-based advertising on mobile devices has a quite short history linked to the spread of mobile devices and development of location-tracking technologies, yet the last decade saw its dynamic progress. Treated as a part of the so-called contextual advertising market, LBMA services were worth US\$6.0bn in 2013 and US\$13.0bn in 2018 and are predicted to bring revenues of US\$40.0bn in 2020, so they will account for 21% of the total mobile advertising expenditures (Berg Insight, 2018; Lin, Paragas, Goh, & Bautista, 2016b). LBMA offers important advantages for advertisers: 1) it can be addressed directly to target customers, 2) it can reach recipients in a specific geographic location recognized as relevant for a consumer and/or an advertiser, 3) the advertising message can be delivered in real time, 4) the advertisement can be individualized or personalized, and 5) the message can be quickly changed or replaced (Bauer & Strauss, 2016; Chen, Cheng, Yu, & Ju, 2014; Fang et al., 2016; Luo, Andrews, Fang, & Phang, 2014). These promising characteristics of LBMA give convincing arguments for applying it in marketing communication strategies, but its newness and limited data raise questions about its real effects and efficacy, of which advertisers seem to be uncertain (Lin, Paragas, & Bautista, 2016a; Lin et al., 2016).

The aim of the article is to review the previous research on the effects of LBMA and to propose an integrative, hypothetical model describing factors affecting these effects.

2. Research on LBMA Effects

Although the research on mobile advertising has already resulted in a large number of scientific publications (Andrews, Andrews, Luo, Fang, & Ghose, 2016; Bart, Stephen, & Sarvary, 2014; Chen & Hsieh, 2012; Gidofalvi, Larsen, & Pedersen, 2008; Izquierdo-Yusta, Olarte-Pascual, & Reinares-Lara, 2015; Soroa-Koury & Yang, 2010; Wong, Tan, Tan, & Ooi, 2015; Yang, Kim, & Yoo, 2013), the literature on LBMA is much poorer to date. The systematic literature review on location-based mobile advertising up to 2014 can be found in Bauer and Strauss (2016). The results of the recent analysis of selected databases, limited only to publications on LBMA effects, are presented in Table 1.

Database	Search criteria	Period	Number of publications ¹		Relevant subject categories or databases
Web of Science	topic: article title, abstract, keywords	2008– 2018	18	16	business, management, computer science information systems, communication, telecommunications, psychology
Scopus	article title, abstract, keywords	2008– 2019	21	16	computer science, business, management and accounting, social sciences, decision sciences, psychology
ScienceDirect	article title, keywords, abstract	2015– 2018	7	7	computer sciences, business
SpringerLink	all content	2003– 2019	67	51	computer science, business and management
EBSCO	subject term	2009– 2017	12	8	Business Source Ultimate, Academic Search Ultimate, EconLit with Full Text

¹ Scientific publications limited to research articles, review articles or proceedings/conference papers in all subject categories [left column], research articles, review articles or proceedings/conference papers in selected subject categories or databases [right column].

Tab. 1. The effects of LBMA: the results of search in selected databases. Source: <https://www.sciencedirect.com> [24.08.2019], <https://www.scopus.com/search> [24.08.2019], <http://apps.webofknowledge.com> [24.08.2019], <https://link.springer.com> [24.08.2019], <http://web.a.ebscohost.com> [24.08.2019].

Five databases were searched, selected due to their scientific profile, significance and size: Web of Science, Scopus, ScienceDirect, SpringerLink and EBSCO. Only research articles, review articles and proceedings/conference papers in English were considered, and only publications containing terms “location-based advertising”, “mobile advertising” and

“[advertising] effects” in the article title, abstract or keywords were retrieved, with an exception to SpringerLink and EBSCO databases, where all content and subject term, respectively, were adopted as the search criteria. Under these criteria, 98 publications in selected subject categories were obtained. After data cleansing which consisted in removing the articles or conference papers duplicated in more than one database and publications containing irrelevant content, 28 scientific texts remained.

The majority of research studies identifying LBMA effects and factors influencing them focuses on various psychological effects, mainly ad processing and – to a lesser extent – brand communication effects (Rossiter, Percy, & Berqkvist, 2018). The ad processing effects include ad perceptions, LBMA perceptions, ad attitude, LBMA attitude, intention to use ad, advertising avoidance, etc., and the brand communication effects embrace attitude towards the brand, the store or the seller, intention to purchase advertised product and others (Banerjee & Dholakia, 2012; Hühn et al., 2017, Lee, 2018; Lee & Choo, 2016; Unni & Harmon, 2007; Xu, Oh, & Teo, 2009). The research on brand communication effects concentrates on affective and conative communication effects but rarely on cognitive effects, such as brand awareness, store awareness, promotional campaign awareness or location awareness (Lee, 2018). The summary of LBMA effects identified in selected research is presented in Table 2.

Studying psychological reactions to LBMA is justified by the results of much previous research devoted to cognitive, affective and conative reactions to mobile advertising or advertising in general (Barry & Howard, 1990). For instance, positive or negative attitudes toward mobile advertising can have impact on the intentions to use an ad, and they can be correlated with consumer behavior, which seems particularly important since consumers’ attitudes toward this type of advertising are rather unfavorable (Izquierdo-Yusta et al., 2015; Lee, Tsai, & Jih, 2006; Tsang, Ho, & Liang, 2004). Research on ad processing, including ad perceptions, LBMA perceptions and ad attitude, is particularly important in the early stage of the LBMA life cycle when the adoption of a new service in the market is a key objective (Gilbert & Han, 2005; Hong, Thong, Moon, & Tam 2008; Pedersen, 2005). However, as the primary goal of LBMA is to produce specific behavioral effects such as visiting a store, familiarizing oneself with the marketing offer or finally purchasing a brand, it seems particularly valuable to measure the impact of LBMA on consumer behavior.

In fact, some researchers aimed to find out to what extent LBMA can influence buyers’ real behaviors. Going beyond conative effects, such as intention to use LBMA, store visit intention or brand purchase intention, consumers’ purchases and sales results were estimated through the field experiments or transactional data analysis (Fang, Yang, Li, & Deng, 2014; Luo et al., 2014; Fang et al., 2016). In a series of laboratory experiments designed with the use of the virtual supermarket (VSM) technology, van’t

Riet et al. (2016) and Ketelaar et al. (2017, 2018) also measured the behavioral effects, defined as brand choice or simply as purchase behavior, but in the virtual settings.

Authors	LBMA effects measured
Banerjee & Dholakia, 2008	perceived usefulness of the ad, attitude toward the ad, brand, store or service provider, behavioral intentions [toward the brand or service provider]
Xu et al., 2009	perceived entertainment, informativeness and irritation [of advertising] → assessment of the value [of advertising] → [favorable] attitude [toward advertising] → intention to use [advertising] / purchase intention
Banerjee & Dholakia, 2012	perceived usefulness, intrusiveness and offense of the advertisement, attitude towards the advertisement, LBMA, brand, store and mobile service provider, behavioral intention [positive, neutral or negative]
Luo et al., 2014	the likelihood of consumer purchases
Lee et al., 2015	attitude toward LBMA, attitude toward the ad, perceived intrusiveness of the ad, intention to visit the promoted store
Fang et al., 2016	product sales
Lin et al., 2016a	perceived advertising value → consumer response: searching for brand information / brand purchase / passing LBMA along
Shin & Lin, 2016	advertising avoidance
van't Riet et al., 2016	perceived ad intrusiveness, ad attitude, purchase behavior
Ketelaar et al., 2017	ad attention, brand choice
Hühn et al., 2017	perceived intrusiveness, relevance and value of LBMA
Ketelaar et al., 2018	perceived intrusiveness of the ad, ad attitude, brand choice
Lee, 2018	perceived entertainment, informativeness, personalization of advertising, perceived location awareness, sociability, brand interaction, irritation and privacy concerns, attitude towards LBMA and SoLoMo

Tab. 2. The effects of location-based mobile advertising: selected research. Source: Own elaboration.

3. Factors Impacting LBMA Effects

The effects of LBMA seem to be moderated by a range of factors of various nature (see Table 3). The most frequently studied factor is the location of an ad recipient while receiving a mobile ad, defined in terms of location congruence [with the ad], distance [proximity to the store or service point] or nature [private vs. public] (Banerjee & Dholakia, 2008, 2012; Hühn et al., 2017; Lee et al., 2015; Luo et al., 2014). This stream of research can be interpreted as the studies aimed at verifying the core assumption of LBMA, which is the geographical location congruence; in other words, the results of such research allow us to compare effects of location-based mobile advertising to effects of location-neutral mobile advertising, and they speak quite clearly in favor of LBMA (Ketelaar et al., 2017; Lee et al., 2015; Luo et al., 2014; van't Riet et al., 2016).

Authors	Factors [independent variables]	Selected findings
Banerjee & Dholakia, 2008	Advertising strategy: location based vs. location independent; type of location of the ad recipient: public vs. private; situational congruity [to consumption]: congruent vs. incongruent	Type of advertising strategy did not affect perceived usefulness of the ad. LBMA received in public locations and in consumption congruent situations was perceived as more useful than LBMA received in private locations and in consumption incongruent situations. The interaction between LBMA and behavioral intentions was stronger when the ad was received in public locations.
Xu et al., 2009	Advertisement format: text [SMS] vs. multimedia [MMS]	Both SMS and MMS location-based mobile advertising had positive impact on the attitude towards advertising, intention to use LBMA and purchase intention. Multimedia LBMA was more effective in enhancing the informative and entertainment value of advertising, but it also entailed a higher level of irritation.
Banerjee & Dholakia, 2012	Gender of the recipient: male vs. female; location of the ad receiver: public vs. private; the receiver's task situation: work vs. leisure	In public locations in leisure situations women were more likely to demonstrate the positive behavioral intention in reaction to LBMA than men. Conversely, in public locations in work situations men were more likely to demonstrate positive behavioral intention in reaction to LBMA than women. In private locations, no significant differences between men and women as to their reactions to LBMA, either in work or in leisure situations, were found.

Table cont.

Authors	Factors [independent variables]	Selected findings
Luo et al., 2014	Mobile user location: in proximal distance vs. in non-proximal distance; promotion lead time: less vs. more	Proximal distance SMS-based mobile promotions resulted in a higher likelihood of consumer purchases than non-proximal distance SMS-based mobile promotions, as well as SMS-based mobile promotions with less promotion lead time resulted in a higher likelihood of consumer purchases than SMS-based mobile promotions with more promotion lead time.
Lee et al., 2015	Type of information tailoring: personalization vs. customization; locational congruence: congruent locational context vs. incongruent locational context of the ad; product involvement: high vs. low	Customized LBMA led to more positive ad perceptions than personalized ads, particularly in the case of high involvement product ads. LBMA with a congruent locational context induced more positive attitudes towards the ads. Ad customization, locational congruency of LBMA and high product involvement alike resulted in perceiving LBMA as less intrusive and disturbing.
Fang et al., 2016	Product involvement: high-involved consumers vs. low-involved consumers; type of advertising channel: LBMA vs. BBA (behavior-based mobile advertising) vs. PWA (pop-up window online advertising)	The immediate and cumulative sales effects of LBMA among high-involved customers were significantly higher than the sales effects among low-involved customers. The impact of LBMA on sales was much stronger than PWA, but weaker than BBA.
Lin et al., 2016a	Motivational factors: perceived utility, utilization of contextual information, perceived control and trust; inhibiting factors: perceived sacrifice, privacy concern	Perceived utility, utilization of contextual information and trust were positively related to the perception of LBMA value, while perceived control was not. The perception of LBMA value positively influenced consumer responses, such as searching for brand information, passing LBA to others and purchasing advertised brand.
Shin & Lin, 2016	Perceived goal impediment, sacrifice, utility and entertainment; intensity of mobile device usage: heavy vs. medium vs. light users	The avoidance of LMBA was strongly positively associated with perceived goal impediment and with perceived sacrifice, and negatively associated with perceived utility. The intensity of mobile device usage did not influence LBMA avoidance directly.

Table cont.

Authors	Factors [independent variables]	Selected findings
van't Riet et al., 2016	Goal relevance: ad relevant to the consumer's goal vs. ad irrelevant to the consumer's goal; location congruence: ad received in congruent location vs. ad received in incongruent location	LBMA relevant to the consumer's goal resulted in a more positive ad attitude, higher purchase behavior and lower perceptions of ad intrusiveness than LBMA irrelevant to the consumer's goal. LBMA received in a congruent location was more effective in stimulating purchase behavior than LBMA received in an incongruent location, but only when it was also highly goal relevant; location-congruent LBMA was perceived as more intrusive than location-incongruent mobile ad
Ketelaar et al., 2017	Location congruence: location-congruent ad vs. location-incongruent ad; medium type: mobile vs point-of-purchase	Location-congruent ads were more effective in increasing brand choice intention than location-incongruent ads. Mobile ads attracted ad attention in incongruent conditions better than point-of-purchase display ads.
Hühn et al., 2017	Location congruence: location-congruent advertising vs. location-incongruent advertising	Location-congruent and semi-congruent advertising was perceived as more relevant and more valuable than location-incongruent advertising, but the perceived intrusiveness of location-congruent advertising and location-incongruent advertising was not significantly different.
Ketelaar et al., 2018	Ad openness: ad with open message design vs. ad with closed message design; location congruence: location-congruent ad vs. location-incongruent ad	The LBMA with the open message design was perceived as less intrusive than the LBMA with the closed message design; indirectly it induced more favorable attitude towards the ad and a higher brand choice likelihood, particularly when it was presented in a location-congruent situation.
Lee, 2018	Advertising type: regular LBMA vs. social-local-mobile advertising [SoLoMo]; situational context: low vs. high mental load capacity	The participants of the experiment responded more favorably to SoLoMo advertising. They demonstrated more positive attitudes towards SoLoMo advertising, since they perceived the SoLoMo advertisement as more entertaining and informative than regular LBMA, and as offering more location awareness, sociability and brand interaction than the regular location-based advertisement. They reacted more positively to both LBMA and SoLoMo advertising when they had low mental load capacity.

Tab. 3. Factors affecting effects of location-based mobile advertising: selected research. Source: Own elaboration.

Banerjee and Dholakia (2008, 2012) studied the impact of situational context of LBMA and the recipient's gender on ad perceptions, attitude toward the advertising, brand, store and service provider, and on behavioral intentions. Fang et al. (2016) and Lin et al. (2016a) analyzed the relationship between psychological factors, such as consumer involvement, perceived utility, perceived control and trust, perceived sacrifice and privacy concern, and perceived advertising value and behavioral reactions. On the other hand, the influence of advertising format (SMS and MMS), type of information tailoring (personalization and customization of ads) and the degree of the so-called advertising message openness (open vs. closed messages) on ad processing and brand communication effects was detected (Ketelaar et al., 2018; Lee et al., 2015; Xu et al., 2009).

Fang et al. (2016), Ketelaar et al. (2017) and Lee (2018) compared the communication and behavioral effects of LBMA with analogous effects of other forms of advertising: behavior-based mobile advertising, pop-up window online advertising, point-of-purchase advertising and social-local-mobile advertising. Having compared LBMA to traditional location-based point-of-purchase advertising, Ketelaar et al. (2017) suggested paradoxically that LBMA could be more effective in inducing brand choice not when it was location-congruent, but when it worked in location-incongruent situations. Shin and Lin (2016) analyzed the relationship between customers' perceptions and LBMA avoidance, finding out that avoidance of LBMA was strongly and positively related to the perceptions of goal impediment and the customer's sacrifice, and it was negatively related to the perceived utility of the ad.

4. An Integrative Approach

The to-date results of tests of the models showing hypothesized relationships between different variables and assumed effects of LBMA in the research often suggest significant impact of specific factors on consumers' psychological and behavioral reactions to advertising (Ketelaar et al., 2017; Ketelaar et al.; 2018, Lin et al., 2016a; Xu et al., 2009). The integrated model is proposed (see Figure 1) as a summary of the constructs of LBMA effects and factors affecting them.

In the proposed model, six groups of potential factors affecting LBMA effects are distinguished: location, situational context, consumer attributes and behaviors, consumer motives, interests and perceptions, LBMA strategy and marketing considerations. Based on the results of previous research, it is assumed that specific factors belonging to each of these groups can directly or indirectly influence ad processing effects (e.g. ad perceptions, ad attitude, LBMA perceptions and attitude), brand communication effects (e.g. brand awareness, brand attitude, brand purchase intention) and brand behavioral effects (e.g. product purchase, in-store visit, ad clicking).

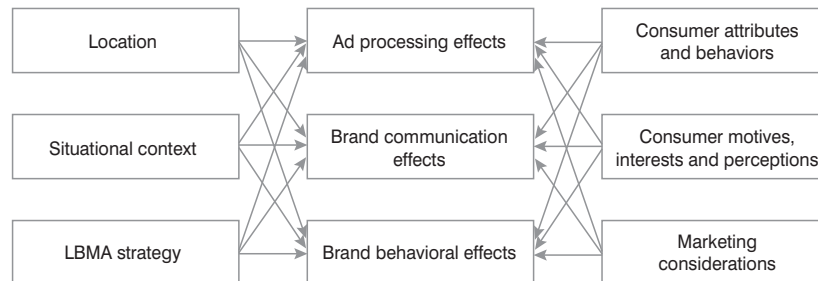


Fig. 1. Factors affecting effects of location-based mobile advertising: integrative approach. Source: Own elaboration.

Location refers to the group of factors reflecting the nature of geographical location of the consumer receiving a mobile ad, assuming its congruence with the ad aim and content. Therefore, it can be described as public or private, a mall, a street or a shop, home or workplace, etc. (Banerjee & Dholakia, 2012; Bauer & Strauss, 2016). Factors identified as situational context refer to external and internal conditions determining the actual situation of the consumer while receiving location-based mobile ad. These include, for instance, time conditions, such as time of the day, certain dates or weekdays, holidays or seasons, the ad recipient's current activity, e.g. work, leisure, sport or shopping, walking or driving a car, social context, situational congruence with consumption, the consumer's temporary feelings, his or her momentary cognitive status or degree of the ad relevance to the consumer's current goals (Banerjee & Dholakia, 2012; Bauer & Strauss, 2016; Lee, 2018; van't Riet et al., 2016).

Another two groups of variables with actual or potential impact on the LBMA effectiveness concern the consumer as an LBMA recipient; they include his or her attributes and behaviors, along with motives, interests and perceptions. Consumer attributes mean demographic characteristics such as gender, age or education, and potentially psychological, economic or socio-cultural traits such as the consumer's personality, income or cultural background. According to Banerjee and Dholakia (2012), gender can have impact on consumer reactions to LBMA, since they found differences between behavioral intentions of men and women in work and leisure situations. The results of other research show likely mediating impact of demographic, social, cultural and economic traits and personal interests on mobile services adoption and mobile advertising effects, which may also apply to LBMA (Chen & Hsieh, 2012; Drossos, Kokkinaki, Giaglis, & Fouskas, 2014; Gilbert & Han, 2005; Islam & Kang, 2019). Consumer behaviors include actions and habits potentially related to the LBMA processing, such as smartphone or mobile device usage, prior experience with mobile services, history of online behavior, etc. (Shin & Lin, 2016; Varnali, Yilmaz, & Toker, 2012).

Consumer motives, interests and perceptions as factors affecting LBMA or location-neutral mobile ad processing and communication or behavioral brand effects have been studied by Kaasinen and Yoon (2013), Drossos et al. (2014), Lin et al. (2016a), Fang et al. (2016), Feng, Fu and Qin (2016) and others. Feng et al. (2016) suggested that both extrinsic and intrinsic motivations have a significant and positive effect on attitude toward mobile advertising, while Lin et al. (2016a) found that when LBMA is perceived as useful, relevant and trustworthy, consumers positively assess its value, which leads to higher likelihood of behavioral responses, such as searching for brand information or product purchasing. Varnali et al. (2012) analyzed the relationship between the ad recipients' involvement with the ad content and the perceived medium fit message and the attitudinal and behavioral responses to mobile advertising. Fang et al. (2016) studied the relationship between customers' product involvement and sales effects of LBMA, suggesting that high-involved customers generate higher product sales than low-involved customers.

The LBMA strategy means a group of factors related to the advertising stimuli developed and sent by the advertiser, hence it contains creative stimuli resulting from managerial decisions as to the advertising appeal content and advertising execution format, along with communication channel solutions (Fang et al., 2016; Ketelaar et al., 2018; Lee et al., 2015; Lee, 2018; Xu et al., 2009). Finally, marketing considerations refer to the factors directly or indirectly determining the LBMA strategy, such as the type of product category represented by the advertised brand, brand image, location-tracking technology utilized, etc. For instance, Bart et al. (2014) found that communication and behavioral effects of mobile display advertising are related to the advertised product type (hedonic vs. utilitarian) and the consumer's involvement with product category (low vs. high).

5. Suggestions for Further Research

As in the case of other forms of advertising, research on LBMA effects and factors affecting them is crucial, ongoing and never-ending. Since location-based advertising on mobile devices is a relatively new marketing communication tool and involves advanced contextual targeting technology, the psychological and behavioral reactions to it, together with its economic effects and factors mediating them, need to be investigated. The research results to date can be deemed promising for LBMA, although its perceived intrusiveness, irritation of customers and avoidance of it are clear drawbacks.

It seems justified and desirable to identify and study the potential impact of subsequent factors on LBA effects, such as multiple consumer behavioral, psychological, demographic or socio-cultural traits, different situational factors and marketing communication variables under managerial control.

As the number of studies on the behavioral and economic effects of LBMA to date has been scarce, it seems advisable to identify factors that may have impact on the actual behavioral responses of LBMA recipients and the sales results of LBMA activities. Potential behavioral effects to measure include click on an ad on a mobile device, click-through rate, in-store visit, search for additional information about the product and product purchase, while economic effects include sales volume, sales revenue, average purchase value, profit, return on ad spend, etc.

Appropriate information and telecommunication technology needs to be applied to gather such data. LBMA reliance on mobile internet technology enables the acquisition of data on buyer behavior and sales data in real time directly from customers' mobile devices. Therefore, it seems reasonable to develop research on the effectiveness of LBMA with help of big data analytics. The data in most of the research to date was gathered using field or laboratory experiments, often supplemented with questionnaires, while some other was solely survey-based. For instance, Xu et al. (2009) used the LBA application called m-coupon service as a tool in the laboratory experiment in which simulated SMS and MMS local-based ads were presented to a group of university students who were instructed to follow a specially designed scenario. In the experiment of Lee et al. (2015), the simulated virtual streets were presented to 115 university students who could navigate through them, while the location-based ads were displayed on the virtual smartphone on the same computer screen; next they were asked to complete an online questionnaire. In the design of the randomized field experiment of Luo et al. (2014), a mobile application offering movie tickets at discount prices was used and the promotional text messages were sent by large wireless service providers on different days prior to the movie show time to over 12,000 individuals in different locations; the number of ticket purchases was registered and the response rate was calculated. Although the experiment can be considered a proper and reliable method of gathering data on LBMA effectiveness, it is worth supplementing this methodology with research based on big data to achieve even more meaningful results, including for instance linking ad clicking and in-store traffic. In fact, big data analytics have already been recognized as a breakthrough research method in social sciences, and used in research projects on online and mobile advertising, including LBMA, though these attempts are still sparse (Chang, Kauffman, & Kwon, 2014; Fang et al., 2016; Jansen, Sobel, & Zhang, 2011; Trusov, Ma, & Jamal, 2016).

The last suggestion concerns the research on the effects of LBMA with regard to the method of obtaining and utilizing location-tracking data for reaching target buyers. In some research, the effects of push and pull approach to LBMA, i.e. sending advertising messages to consumers without their request (push) or as a follow-up to such a request for specific information (pull), were observed (Okazaki & Barwise, 2011), but no

attention has yet been given to the alternative location data utilization methods. Advertisers can utilize mobile users' location history data, the current, real-time location data, or both. Targeting audiences based on the customer's location history enables creating advertising messages which are tailored both to physical location settings and behavioral profile of the mobile device user. It seems reasonable to compare the attitudinal and behavioral effects of LBMA designed with the use of those two methods.

6. Conclusions

Utilization of location-based mobile advertising has been growing over the last decade as a result of the development of wireless geolocation technologies and the prevalence of mobile devices, including smartphones. As was presented, at that time many research studies were carried out to explore the potential impact of various contextual factors, such as location of the ad recipient, situational factors, type of advertising message and execution, consumer attributes or consumer involvement and perceptions, on LBMA effects, particularly ad processing and brand communication effects. As a result of an extended review of this research and its findings, six main groups of variables affecting LBMA effects were distinguished: consumer's location, situational context, consumer attributes and behaviors, consumer motives, interests and perceptions, LBMA strategy and marketing considerations. These forces were included into a hypothetical integrated model illustrating possible relationships between them and communication or behavioral effects of LBMA.

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