Digital Advertising in Smart Cities – Methods for Raising Consumer Engagement

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Abstract
The paper discusses the opportunities that lie before digital advertising in smart cities and how its effectiveness could be raised through engaging consumers. The theoretical framework of visual attention and banner blindness is analyzed, so as to outline the challenges but also opportunities before digital advertising. The main objective is to propose methods for raising the efficiency of mobile ads with regard to their surrounding area. Previous studies are also analyzed regarding digital advertising and smart cities. Through content analysis the main aspects of digital advertising and smart cities are analyzed, so that a proposition could be made regarding their integration aiming at raising ads visibility and thus their effectiveness. Key component of user engagement regarding mobile advertising is interactivity. It is found to play a vital role in negating the effects of banner blindness. It also enables users to turn the ads into viral ones and thus raise brands' awareness. The paper could be of interest to practitioners, academicians and students in the field of marketing, advertising, sales promotion and brand communication.

Keywords: mobile advertising, smart cities, banner blindness, advertising efficiency, visual attention.

1. Introduction
Since the dawn of time mankind has always strived for a better life. Industrialization perhaps was the first major leap toward using technology to substitute hard labour thus improving everyday life. What the 21st century brought is digital technology and smartphones in particular. The number of smartphone users worldwide has drastically increased from a bit over 2.5 billion in 2013 to around 4.6 billion in 2023 and it is estimated to reach 5 billion users in 2027 [1]. These figures are representative of the fact that mobile devices present various opportunities before both users and businesses. For the former, smartphones would enable them to perform activities such as communicate, shop, acquire information, use them for online banking, compare products or services and spend some leisure time on social networks, to name a few. For the latter, mobile devices and especially smartphones are a valuable source of consumer information and feedback, since it is possible to track users' online and offline behaviour and thus present them with tailored marketing communication and advertising in particular. With global ad spend sky rocketing in the past ten years, starting at 8.4 billion USD in 2012 [2] and estimated to reach 362 billion USD in 2023 [3] mobile advertising is turning into a preferred channel to advertisers giving their best to optimize ad campaigns and deliver personalized and relevant ads to their prospects.

The market share by ad format in 2022 in the USA, which is the leader in mobile advertising, is divided almost equally among Search roughly 36%, Display with almost 32% and Digital Video 30% and the rest is for other ad formats [4]. This paints a picture of users' preferences when it comes to engaging with targeted advertising. Still, we need to be cautious as to not place Search first in terms of efficiency, since there is a huge difference when it comes to comparing it to say Display or Video advertising. Each category holds a different audience with regard to its state which is best displayed in the

AIDA (Attention, Interest, Desire and Action) model. Both display and video have to engage their customers with the first step of the model, whereas search would involve a target audience that is more or less acquainted with the product and this implies starting from the second step (Interest) onwards.

However, it is not all roses. The rise in mobile ad spend throughout the years does not necessarily mean that mobile advertising or online advertising are immune to flaws. There are at least several key issues with mobile advertising that this text would discuss such as banner blindness. It is one of the leading causes for online ad avoidance since less than 14% of users notice ads, roughly 3% deem them relevant and 35% of users do not click on a banner in any given five-month period [5]. After discussing such effects that notch the effectiveness of online ads, several proposals are made that could help raising the relevance and engagement of mobile ads, thus enabling businesses to connect with their prospects and transform them into loyal customers all while taking into account the smart city environment.

1.1. Banner Blindness

Advertisers have always tried to maximize their efforts in placing the right ad in the right medium at the right spot. If the media is poorly selected this could lead to failure to meet business objectives and an inefficient allocation of marketing budget [6]. Breuer and Brettel imply that different types of advertisements could lead to different impact on short-term and long-term customer behavior. This also holds true for existing customers and the potential ones.

Web-based advertisements are a preferred option for advertisers, especially when budgets are limited and/or the target audience is computer savvy. However, one of the most notorious problems in internet display advertising is banner blindness. [7] "Banner blindness is a term used to describe the inattention blindness that occurs when web page viewers do not notice the presence of an advertising banner on the page." [8]. Most researchers agree that the explanation lies in the fact that users know where the advertisements are located on a page and do not expect to find any useful information and choose not to view them. We exhibit banner blindness when we intentionally attempt to avoid looking at advertisements on a web page. This is even true when we are presented with advertisements that are placed on top of the page, with images, and it can sometimes be triggered by fancy formatting [9]. However, using eye-tracking technology could reveal where the user looks most on a webpage and following the gaze pattern leads to findings that help improve user experience and leads to more ads being noticed.

It is found that the similarity between an unexpected distracter and the main point of attention leads to more attraction which means that it decreases banner blindness. This leads to the conclusion that the more the advertisement resembles a feature of the webpage that the user perceives not as advertisement or as something that might give him/her more information, the more likely it is that the ad is viewed and clicked on [10].

One very important variable that must always be taken into consideration is the individual differences in cognitive capabilities among the users. For instance, a user with a large

working memory capacity would be able to allocate spare capacity to attend to the distracter without forgetting about his/her primary task when viewing a webpage. Observers with experience in multitasking environments may be better able to sequentially attend to the stimuli so that they can perform the primary task and attend to the distracter [11].

If digital marketers are faced with the challenge of banner blindness, they could always use techniques in design to help. Some creative suggestions include salience, animation or other techniques that grab user attention. Animated ads come to play an interesting role in this case. According to Edwards and Lee [12], users reported that they disliked these ads for being distracting. However, it is exactly this distraction that the advertisers might seek in order to grab attention. According to Yoo et al. [13] animated ads increased user attention capture, recall, and appeal.

In research using eye-tracking technology, Resnick and Albert [8] formulated two questions in order to investigate banner blindness:

1. How does the location of web-based banner ads within the design of a commercial home page influence the likelihood and impact of banner blindness?
2. How does the specificity of the user's task influence the likelihood and impact of banner blindness?

Three out of their five hypotheses were confirmed and the findings are as follows: "Banner blindness is strongest when users are goal directed and the banner advertisement is located in an area where users can reliably anticipate advertising will appear. When either of these factors is absent, banner blindness begins to dissipate. The shape of the visual field during situations of banner blindness seems to be more vertically aligned than horizontal in nature." [8]. The scientists also discovered that banners placed on the right received the least attention and the ones on the top above or below the menu bar scored a bit higher. This was due to the fact that users were prepared to see advertisements at these locations and paid no attention when browsing goal-oriented. However, when browsing freely users did pay some attention to the right placement and a bit more to the top.

1.2. Visual Attention in Advertising

When it comes to efficiency of advertising consumers' visual attention plays a significant role. It was estimated that in the 1970s people in the USA were exposed to anywhere between 500 to 1600 ads per day [14]. If we fast forward to 2017 these numbers would jump to 4000-10000 ads daily [15]. All these data may seem astounding but we have to take into account all the different communication channels – TV, radio, press, online, outdoor and transport advertising, etc. But what is more interesting, if of course this data is correct, is that most people would indeed remember just a few ads, if any at all. So, it would only seem natural that brands are facing an overwhelming task to draw customer visual attention and if they succeed in doing so, the next part is even more challenging – they have to make people remember their message. Thus, brands would use all the basic and other parts of the graphic design to capture consumer attention – shape, size, form, lines, texture, colour, etc. In addition, the context in which the advertisement is placed also plays a decisive role in whether or not the ad would be relevant to the consumer. All these efforts

on behalf of the companies Wedel and Pieters call visual marketing and define it as "the strategic utilization by firms of commercial and noncommercial visual signs and symbols to deliver desirable and/or useful messages and experiences to consumers. An important component of visual marketing is the actual design of the visual communication, including logo, packaging, and advertising design, and more recently web page design" [16]. This is all in favour of acquiring consumer attention which is key for ad processing that Fuster [17] into a selective and executive.

Based on the AIDA model, which has served as the basis for developing additional, for instance the ACCA model (Awareness, Comprehension, Conviction, Action), it is easily visible that attention or its successor awareness are the first or entry point of advertising. According to Aaker, Myers and Batra "attention can be viewed as an information filter—a screening mechanism that controls the quantity and nature of information any individual receives" [18]. The authors continue that it is not an easy task to capture a consumer's attention because "an individual, overtly or accidentally, avoids exposure to stimuli." [18]. And all this being said almost thirty years ago, when online banner ads were flourishing. For instance, some of the first banner ads in 1994 generated a click-through rate of 44% [19]. The click-through rate of a banner ad unit reveals how many times a banner has been clicked on to the times it has been displayed and, in this case, it means that almost half of the people who saw the banner clicked on it. In today's reality this would seem impossible to achieve and latest data suggests a clickthrough rate for Google ads to be between 3-5% among all industries [20] which is a good percentage but still more than ten times less that it was 30 years ago. The battle for consumer attention becomes even harder when it comes to targeting younger generation. A recent study finds that 99% of Gen Z consumers (born between 1997 and 2012) are likely to hit the skip button of a video add and 63% uses ad blockers [21].

However, it is not enough to capture consumer attention for the ad to be efficient. The next step, which is comprehension, should occur so that the ad copy is adequately interpreted. "The comprehension of an ad's positioning, through its copy points, has a real and measurable impact on advertising response, most researchers today agree that good comprehension is vital for persuasion to occur." [18]. Comprehension could generally be divided into objective and subjective. Objective comprehension deals with what and how much of the intended in the copy did the receiver of the ad interpret, has he/she managed to grasp the general idea or not. Subjective comprehension deals with the possibility that the receiver of the message has gone beyond the implicit meaning and dove deeper into its other possible meanings, has used his/her general knowledge to interpret it and has made some connections to his/her life experience or even fantasies. According to Mick [22] ad efficiency and credibility and its possibility to be liked and recalled are in a direct ratio to its subjective comprehension. In the following lines the opportunities that lie before capturing consumer attention and engaging with them through online advertising in the context of the smart cities would be discussed.

2. Prerequisites of raising online advertisement engagement

Smart cities have been defined to "try to improve urban performance by using data, information and information technologies (IT) to provide more efficient services to

citizens, to monitor and optimize existing infrastructure, to increase collaboration among different economic actors, and to encourage innovative business models in both the private and public sectors." [23]. Technology has proved to be key in the digital realm and especially when it comes to smart cities, as analyzed by Vrabie and Tirziu [24]. This technology could enable users to use their smartphones, for instance, and thus connect to interactive advertisements placed in key locations in smart cities. But the question remains: how to capture consumer attention and raise their comprehension of the advertising message? This would imply that the consumer also engages with the marketing communication that is being served.

Karimova [25] argues that interactivity is inherent in the traditional forms of advertising, as well as the so-called new media, denoting mainly the Internet. Her arguments are not without grounds however some of them may be approached from the philosophical perspective rather than the practical one. Basically, the proposed model of inherent components of interactivity in advertising consists of seven dimensions: active engagement and reaction; physical action; flow; involvement; control of consumers; two-way communication and feedback.

The argument for active engagement is that consumers do so by interpreting, constructing and co-creating the meaning of the advertising. This may be found as a somewhat broad definition and it could be addressed to any form of communication that a user is influenced by. It would seem that this is a more passive role of the consumer than really taking an action toward the marketing communication of advertising. Which brings us to the second dimension – physical action. Karimova's examples in this regard are quite apt that traditional advertising could also suggest that the user does a particular action toward the advertising – it may be as simple as rubbing a scented page of a magazine that advertises perfumes or as complex as building a model out of a magazine's page. The involvement part is really important for the interaction to be in place. Some researchers find a correlation between interaction and experiential involvement; they assume that the more immersive the experience, the more interactive it is [26].

Another vital component that could be used to raise consumer engagement through a higher degree of interactivity is personalization of advertising communication, as analyzed by Vangelov [27].

When a message is personalized, it speaks to a particular customer or set of customers. No matter the medium online or offline, personalization is key. In the internet environment personalization is played through contextual advertising. The same could be applied in the natural environment of smart cities. What the digital environment presents is a higher degree of interactivity, as discussed earlier. In this regard, several cases of interactive digital advertising would be studied in order to pinpoint its relevance in the urban environment.

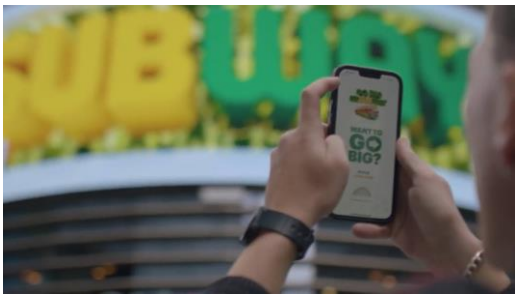
3. Online advertisement engagement in the smart city environment

Several propositions for raising the online advertising consumer engagement in smart cities shall be discussed through three case studies. They would serve as base for developing or

adding more digital instruments that may aid in improving the connection with consumers, deriving more data from their digital devices and thus raising the engagement of online advertising. It is important to note that all three cases include people using their smartphones in order to get in touch with the brand, that is via QR code scanning, entering a website, etc.

The first one is by Subway. The brand has paced a large digital billboard at Westfield, UK. It includes the option to scan a QR code and thus interact with the billboard (figure 1).

a



b

c

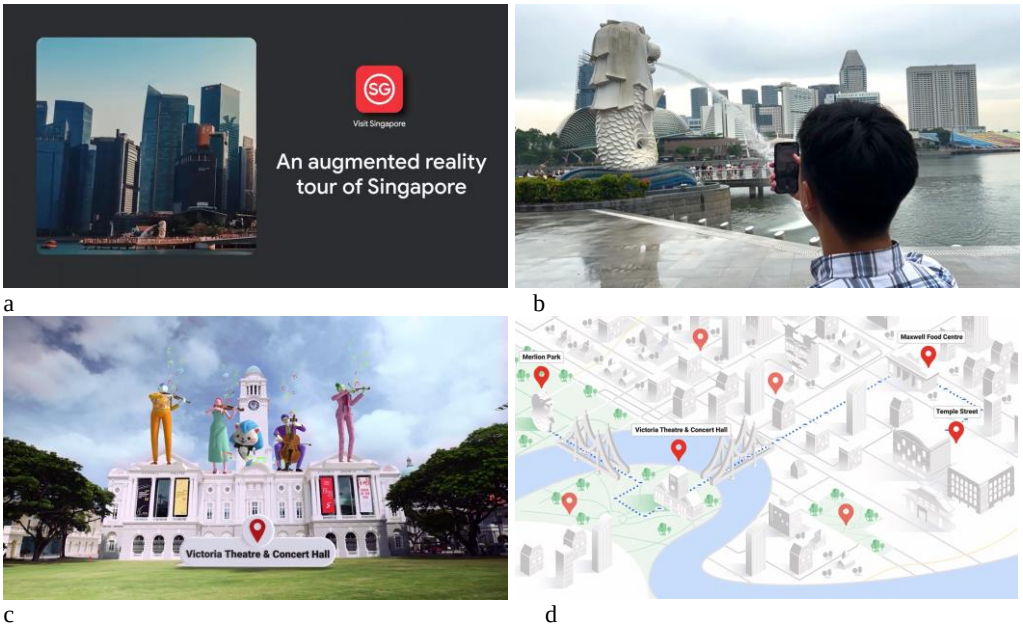

d

Fig. 1 a, b, c and d
Source: https://www.youtube.com/watch?v=dYHAKU6f3q4

Passers by are able to scan the QR code and start choosing the ingredients of their Subway sandwich. In the meantime, users' names are written on the billboard which implies personalization of the message.

By interacting with their smartphone, the levels of engagement are raised and people are become more involved with the online advertising. Other passers by intrigued by this uncommon brand advertisement which raises their curiosity and they also interact with the billboard.

At the end their sandwich is delivered personally where they are standing for other gathered people to see and take a photo of with their smartphones. This would enable them to later share all this on social networks and thus the advertisement would go viral.



a b

c d

Fig. 2 a, b, c and d
Source: https://www.youtube.com/watch?v=zFxpXiAkT2k

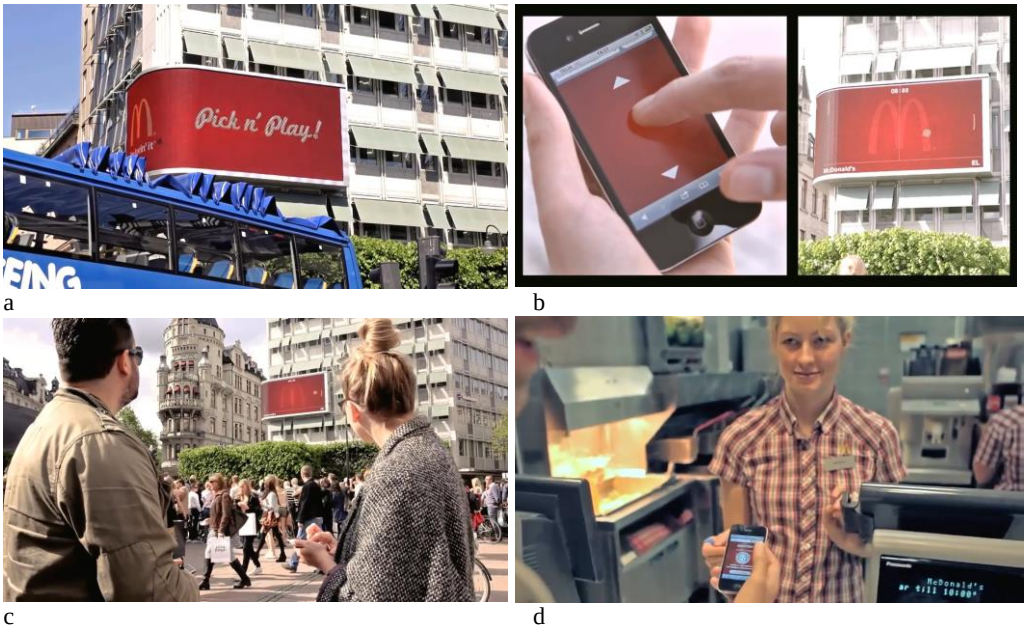
The next example is by ARCore and Singapore Tourism Board (figure 2). It enables to take a tour of the city via augmented reality. It would serve as to make the experience more interactive and also provide additional information and sensations otherwise absent in the real-world environment which instantly transforms the destination into a smart city. The personalized information the users receive makes them engage with the advertisement on a deeper level, making it possible to remember it for a longer period of time.

The user experience is enricher by the augmented reality and this further adds onto the engagement rate of the online ad. Additionally, users also provide the city and the brand with their own customer information and feedback which serves as a great way to get in touch with them at a later stage and extract valuable user information that would enable the brand and the smart city to provide better services and become even smarter.

The last example is by McDonalds in Stockholm (figure 3). They have also installed a large digital billboard. This time passers by are encouraged to interact with it and play a game. If they win during the 30 second period, they win a coupon that they can use in the nearest McDonalds venue. The prizes include ice-creams, sodas, and sandwiches. What is more important is that people willingly interact with the online advertisement and thus consumer engagement is being raised.

The prices they win, if they succeed in playing the game are an example of another marketing communication – sales promotion. This would mean that this is an example of an integrated marketing communication. Still user engagement is high, the possibilities for viral communication through sharing, commenting and interacting with photos and/or

videos of the outdoor event are also there. The smart city of Stockholm could use all this and other user data to interact with people later and also for better city services.



a b

c d

Fig. 3 a, b, c and d
Source: https://www.youtube.com/watch?v=F1FB8guuu-o

4. Conclusion

The text analyzed some key aspects of online advertising, smart cities, interactivity and its application. It proposed an additional component of a smart city – personalization of communication. It is through personalized experience that people are encouraged to step out of their online word they constantly engage with through their smartphones and become involved with the online advertising in an interesting and enjoyable way. This way personalization becomes a crossing point between the urban environment, the online advertising and the residents. Three examples of online advertising in smart cities were analyzed. They all attracted passersby with innovative communication and required their reaction. Besides interactivity, other major factors were found to play an important role, as well – involvement, active engagement and reaction, physical action. All of them add to and raise consumer engagement which is vital online advertising. This way urban areas could increase their significance to locals and visitors while brands and local governance structures create engaging, enjoyable and interactive experience for citizens and tourist thus improving their quality of life.

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