

The effectiveness of individual targeting through smartphone application in retail: evidence from field experiment

Mariia I. Okuneva

Research Advisor: Dmitriy B. Potapov

Advertising



Radio

TV

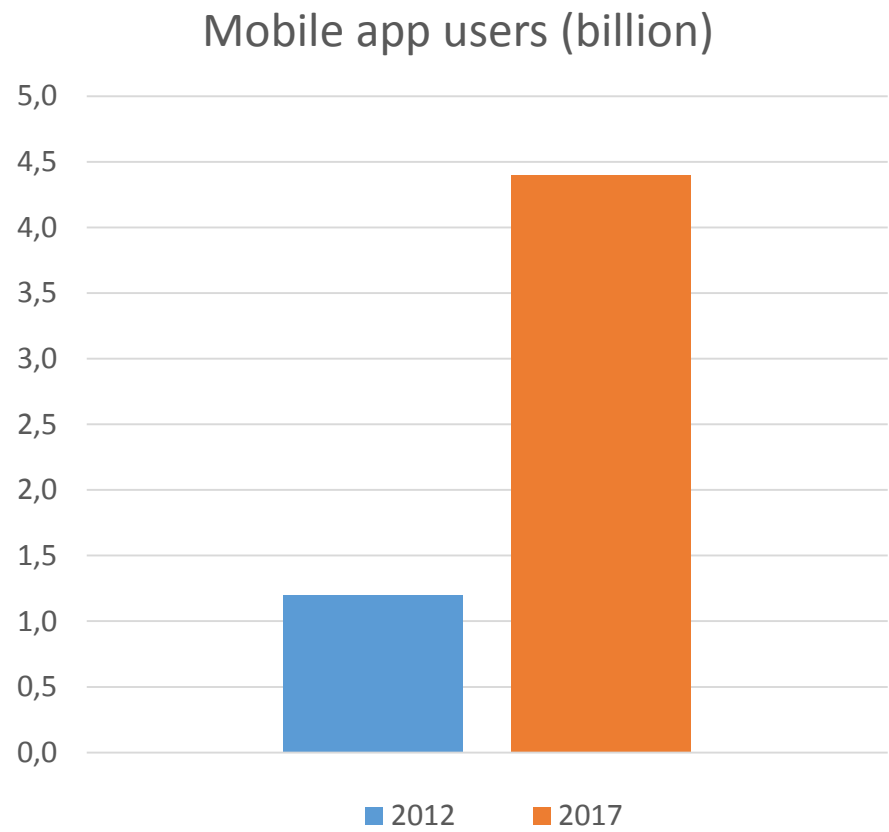
SMS

Web site

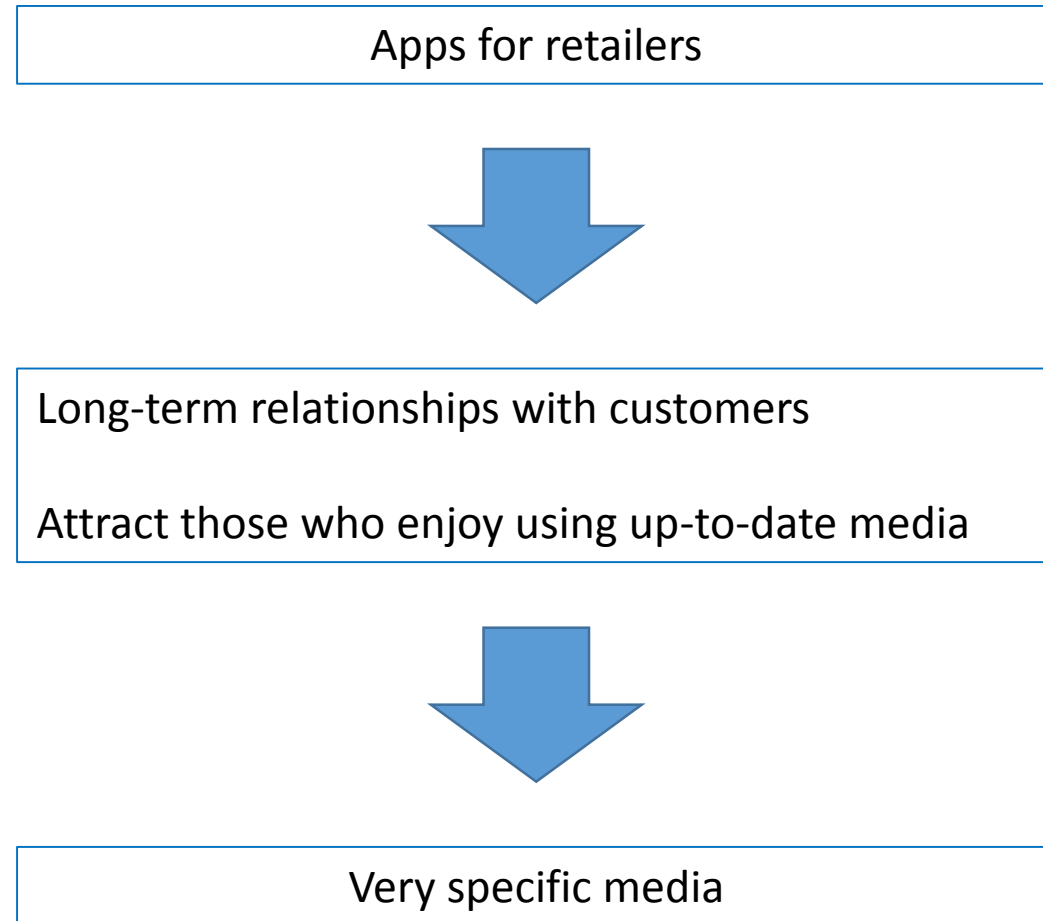
Branded mobile applications

(Bellman et al. 2011): “software downloadable to a mobile device which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience”





Source: Portio Research (2013)



average development cost: \$6453 (TechCrunch, 2010)

Research by Distimo from the latter half of 2011 shows that 91% of the top 100 brands have at least one app in the leading app stores (Apple, Android). That's up from 51% in early 2010.

research from Deloitte in 2011 revealed that 80% of major consumer and healthcare apps are downloaded fewer than 1,000 times.

newest technologies, such as GPS and location information, and those that solve problems and provide portable functionality

Пн. - Сб. 9,00-18,00
Вс. - выходной

Добро пожаловать

БОЛЕЕ
2000
игрушек

МАГАЗИН
УМНЫХ
ИГРУШЕК

Обучающие
игрушки и наборы

Музыкальные игрушки

Куклы, домики и
аксессуары

Конструкторы

Мягкие,
интерактивные и
заводные игрушки

Транспорт и модели

Настольные игры



which characteristics of consumers and products are associated with a higher effectiveness of the advertising through mobile app?

Goals of the research

- 1) The main goal of our research is to provide customers of the retail chain with the most relevant advertising messages, that is to create rules for individualized targeting system
- to understand what characteristics of past purchase behavior of customers improve the effectiveness of advertising campaign conducted via smartphone application
- to determine the advertised product categories characterized with higher response
- 2) Repetition effect?
- 3) Two different messages?

Literature review

Effectiveness of advertising	Field experiments	Targeting
<p>TV (Lodish, 1995)</p> <p>store flyers (Gijbrecchts et al., 2003)</p> <p>coupon campaigns (Venkatesan et al., 2012)</p> <p>Lewis and Reiley (2014b) have found that online advertisement leads to an increase of purchases by 5% (brick-and-mortar stores account for 93% of the growth)</p> <p>(Luo et al. 2013) large-scale randomized experiment: individually geographical and temporal targeting are effective, but simultaneous use of these two strategies can lead to different results</p> <p>Merisavo (Merisavo et al., 2006) the effectiveness of mobile advertising (SMS)</p>	<p>(Ackoff, 1975) the effect of advertising on Budweiser beer sales</p> <p>Levitt (2009) experiments with private entities will be more popular in future and they will be aimed at testing and extending current economic theories</p>	<p>“setting marketing policy differentially for different customers or segments” (Dong, 2009)</p> <p>Personalization is the form of one-to-one marketing that can be described as the process of identifying the best match between marketing mix and customer’s preferences by the company (Arora, 2008).</p> <p>Rossi (Rossi et al., 1996) underlined and quantified the effectiveness of direct targeting</p> <p>(Ansari and Mela, 2003) the effect of content targeting: increase of click-throughs by 62%.</p>

Effectiveness of advertising

- weekly sales (Lewis and Reiley, 2014a, 2014b)
- purchase intent (Goldfarb and Tucker, 2011; Bart et al., 2014)
- purchase probability (Luo et al., 2013)
- attitude toward advertised product (Bart et al., 2014)
- store traffic – weekly number of receipts per store outlet – (Gijbrenchts et al. 2003)
- trip revenue (Venkatesan et al., 2012)
- average daily expenditure (Merisavo et al., 2006)

- Relevant information
- Which variables (characteristics of past consumer behavior, demographic information, special features of advertisement) enable the researcher to determine **whom** to target and **with what sort of advertising campaign?**
- Zhang and Wedel (Zhang and Wedel, 2009): loyalty promotions (aimed at customers who bought the target good on the prior occasion) are more effective than competitive promotions, offering products to those who didn't buy them.

Recency Frequency and Monetary value (RFM) model

- select the customers that are worth targeting (Colombo, 1999)
- how often the customer buys the product or visits the shop
- how much the consumer spends on current and past transactions
- how recently the last purchase has been made by a buyer

Products?

- Bart (Bart et al., 2014) proved that mobile display advertising of utilitarian products with higher level of involvement was more effective than advertising of hedonic goods with lower involvement

Research design

- Run randomized individual-level field experiment
- The choice of products for promotion is made by the retailer and is considered as exogenous.
- Advertising campaign for different product categories (such as milk, vegetables etc.)
- About 13000 customers have downloaded the application
- Push notification - treatment
- Randomization procedure prevents selection bias and produces comparable groups

Model

- $PurchaseAmount_i = \alpha + \beta * Exposed_{ic} + \gamma * X_i + \delta * Exposed_i * X_i + \varphi * Z_{ic} + \rho * Exposed_{ic} * Z_{ic} + \varepsilon_i$
- $PurchaseAmount_i$ denotes the amount of money spent by the consumer during 14 days of the advertising campaign;
- $Exposed_{ic}$ – a vector of dummy variables that take the value of 1 when the user is exposed to the advertisement of particular product category and the value of 0 otherwise (control groups will serve as the baseline condition);
- $Exposed_i$ – a dummy variable that takes the value of 1 when the user is exposed to any advertisement;
- X_i – a vector of past purchase behaviour characteristics of the user;
- Z_{ic} – a vector of characteristics attributable to the product category bought by the consumer

- *Purchase probability* $_i = \frac{\exp(U_i)}{\exp(U_i)+1}$
- $U_i = \alpha + \beta * Exposed_{ic} + \gamma * X_i +$
 $+ \delta * Exposed_i * X_i + \varphi * Z_{ic} + \rho * Exposed_{ic} * Z_{ic} + \varepsilon_i$

U_i – the latent utility of the store visit (any product purchase)

Limitations of research

- generalization problem
- the number of people who can see pop-ad in the application