

**Kotliarova Y.**  
*Educational and Scientific Institute*  
*"Institute of Information Technologies in Economics"*  
*State University "Kyiv National Economic University named after Vadym Hetman"*  
julkot@ukr.net  
**Shapoval V.**  
*College of Information Systems and Technologies of the*  
*Kyiv National Economic University named after Vadym Hetman*  
bongyr@i.ua

## **MODERN TECHNOLOGIES OF PERSONALIZATION IN RETAIL TRADE**

Nowadays, there is a rapid technological development which allows exchanging data not only between people but also between things. The beacon technology named **"Beacon"** features is the transmission feature of short messages with a unique identifier which allows the use of Bluetooth Low Energy technology for organizing mid-range navigation in the Beacon function [1]. This technology is not intended to accurately determine the position in the room, but only to capture the moment of approaching the object (Bluetooth device) to the beacon. There are three main standards for lighthouses today: iBeacon, AltBeacon and Eddystone. A way to implement marketing communications using Bluetooth technology in the immediate vicinity of the target audience has given rise to a separate type of marketing - Bluetooth marketing [2].

While searching for web resources, everyone leaves their digital footprint. However, what about retailing at shopping malls? The principle of **"Beacon"** beacons in the retail industry is that a person has a mobile application of the company (store, brand, manufacturer) and when the mobile device enters the zone of the beacon having a unique identifier, the application is activated and sends a person a push message. Push messages are small volume pop-up messages (up to 100 characters) that appear on the screen of a mobile device and report some events, offers, discounts, promotions.

Each **beacon** contains an accelerometer, a memory module, a small microprocessor with a Bluetooth module and a miniature battery [1]. The range of the beacon extends up to 50 meters, and the cost of the device is from 70 UAH. The main manufacturers of lighthouses include BlueCats, BlueSense, Estimote, Gelo, Glimworm, Gimbal, Kontakt, Sensorberg, Sonic Notify, etc.

Let us highlight the following areas of Beacon's application in retail:

- *outdoor* – setting the beacon at the entrance to the point of sale, which sends push messages as a bait and attracts new buyers. It is possible to use it also when leaving the trading point to maintain loyalty of the buyer;
- *in-door* – navigation in the middle of shopping malls as a guide; as a device for collecting information about potential buyers, conducting an analysis of the number of visitors, the time of stay, the number of received push-messages and responses to it in real-time;
- *in-place* information and special offers for visitors to outlets and networks among shop windows, shelves, departments; as a means of creating a thermal map with places of the most dense finding of visitors;
- *in-application*, through a mobile application with a buyer's discount card attached to it, it is possible to analyze previously made purchases and provide instant relevant personalized recommendations; Encourage interaction with social networking accounts, which will significantly increase the amount of data on the owner of the mobile device; Integration of a mobile application with a cash system, which will enable the introduction of interesting loyalty programs.

Other fields of application Beacon beacons: exhibitions, conferences, museums, cafes and restaurants, offices, medical services, environmental monitoring, rescue services, banks, logistics, production, construction, organization of events, educational institutions, gaming, Internet of Things (IoT).

#### Benefits of “*Beacon*” Technology in Retail:

- a push message is displayed on the screen, even if the mobile device is in sleep mode;
- the possibility to make a personalized assessment of purchasing activity in real time;
- compatibility with all devices with Bluetooth 4.x;
- convenient navigation in shopping malls and supermarkets;
- geolocation ads (promotions, discounts, offers);
- analytics of visits and transfer of buyers;
- integration with loyalty programs;
- easy integration with mobile applications (iOS, Android);
- sending push-messages of different type (text, picture, link);
- improving the quality of service provided by sales consultants.

The main disadvantages of Beacon technology include the fact that the company must have its own mobile applications as a means of communication and enabled Bluetooth as a communication channel on a mobile device.

Alternative technology solutions: NFC (Near Field Communication), geofencing (creation of virtual areas in malls), RFID (Radio Frequency Identification, RFID) – a method for the automatic identification of objects in which radio signals are read or written data stored in so-called transponders, or RFID labels [3].

Among the three major standards for the iBeacon, AltBeacon and Eddystone lighthouses, iBeacon technology provides wider opportunities for applications in retail and mobile marketing, including the transmission and receipt of information at the retail locations, navigation services and positioning within retail premises, compact delivery of promotional offers on a mobile device. With the help of such lighthouses, it becomes possible to personalize the offers, to emphasize the relevance of digital channels, which prompts the buyer to interact with external physical devices using mobile devices by creating an IoT's network. iBeacon technology allows quick transferring of "smart" product recommendations and acting as a new kind of personalized service for customers.

#### *References*

1. Tigina MS Application of Beacon technology for information navigation within the premises / MS Tigina, E.D. Pavlintseva. // The Vestnik of Moscow State University named after Ivan Fedorov. Moscow State University of Printing named after Ivan Fedorov. – 2015 – # 1. – P. 160-164.
2. Bluetooth Marketing [Electronic Resource] – Resource Access Mode: <https://ru.wikipedia.org/wiki/Bluetooth-Marketing>.
3. RFID [Electronic Resource] – Resource Access Mode: <https://ru.wikipedia.org/wiki/RFID>.

**Scientific supervisor:** Olga P. Stepanenko, ScD in Economics, professor of the Economics Information Systems Department, Institute of Information Technologies in Economics of the Institute of Information Technologies in Economics, Kyiv National Economic University named after Vadym Hetman.