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## QR CODES IN THE BUSINESS WORLD

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### ABSTRACT

The development of information, communication and mobile technologies forms the current trends in business. QR Codes are one of the fastest perceived and creative approaches to marketing and advertising. They are an innovative and different means to achieve interactive advertising campaigns. QR Codes are a powerful tool that can significantly improve the marketing strategies of companies. The aim of the current work is to study and present the advantages of QR Codes, to highlight good practices and to propose ideas for their application in business.

**Key words:** QR Codes, marketing, advertising

### INTRODUCTION

Business is changing and is inseparably connected with the latest technological innovations. Development and introduction of mobile technologies has a significant impact on the companies' strategies. Companies have opportunities for diversifying and improving their marketing tactics. The wide spread of smart phones is a prerequisite for making QR Codes in an extremely popular, powerful and effective tool in marketing. QR Codes are innovative and different means for interactive marketing campaigns.

#### 1. QR CODE TECHNOLOGY

QR Codes are invented by the division of Toyota, Denso Wave Incorporated in 1994 in Japan. QR stands for Quick Response – a code for a quick reaction, because the idea is the code to be decoded at high speed.

QR is a 2-D matrix code that contains information (**Figure 1**). It can be read and decoded by special devices – readers and related software (1).

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Figure 1. QR Code

The demand of storing greater amounts of information, but at the same time occupying small physical space leads to creation of QR Codes. Unlike 1-D codes that convey information by the size and position of bars and the spaces between them, 2-D codes do that by the arrangement of dark and light elements of the code. QR Codes contain information in both horizontal and vertical direction and this is the reason for their small size.

QR Codes are composed of black and white elements, called modules, each of which represents a binary zero or binary one, and this makes the codes machineintelligible. The modules are grouped into sections that perform different functions – some of them contain data, while others are designed to improve the reading performance, to help error correction, to allow symbol alignment and size identification. Each

code has a quiet zone (an area with no data) that is designed to provide separation of the code and the surrounding objects.

QR Codes can contain different types of data – Calendar event, Contact information, Email address, Geo location, Phone number, SMS, Text, URL, etc.

QR Codes are scanned and read by special software – QR Reader/Scanner. Smart phones can work with various readers/scanners, so users can use their preferred application. There are many free apps for different mobile operating systems – QR Droid, QR Barcode Scanner, i-Nigma, ScanLife, AT&T Code Scanner, Scan For iPhone, QRafter, Quickmark, Nokia Barcode

Reader, Google Zxing, Blackberry Messenger and others.

### TRENDS IN QR CODES.

Many people think that QR Codes do not look well and are not attractive. For this reason, many companies are trying to create more appealing codes. There is a new stage in their design development – designer QR Codes (QR Codes with an embedded logo or image). This is possible due to the error correction capability of codes – some modules in QR Code can be replaced but it still is readable. Designer codes are more attractive and this is an additional reason for users to scan them. Examples of designer QR Codes are codes of BBC, Walt Disney, Coca Cola, Nestea, Pepsi and others (Figure 2).



Figure 2. Designer and visual QR Codes.

The development of technology leads to the creation of QR Codes that combine attractive visual elements and standard QR Codes. The company Visulead provides opportunities to create visual QR Codes. They are much more attractive and can be successfully integrated into an advertising campaign.

## 2. BENEFITS OF QR CODES

### 2.1. BENEFITS OF QR CODE TECHNOLOGY

The QR Code technology provides a number of advantages (1):

- **Storage of large amounts of data** – QR Codes can contain much more information than conventional 1-D barcodes.
- **Storage of different types of data** – QR Codes can encode four types of data – numeric, alphanumeric, binary and Kanji.
- **Small size** – QR Codes occupy a small physical space and can be generated in 40 different sizes (called versions).
- **Fast scanning** – QR Codes can be scanned and read from any angle (due to the Position-detection patterns in three corners of a symbol).

- **Error correction** – depending on the chosen level of error correction, QR Code can be decoded even if a part of it is dirty or damaged. This is possible due to the fact that codes are generated with embedded algorithms for error correction (the Reed-Solomon codes are added to the original data).

### 2.2. BENEFITS OF USING QR CODE TECHNOLOGY IN MARKETING

The rapid development and penetration of mobile technologies and services inevitably has an impact on the development of marketing. More and more companies create marketing strategies based on the potential of mobile devices and make them a favorable environment for marketing and advertising. There are different types/channels of mobile marketing – SMS marketing, MMS marketing, voice marketing, mobile applications, mobile banner ads, Location-based marketing, mobile games and in recent years – QR Codes (2).

Some experts define two kinds of QR Codes (3): **online codes** (they point to websites and provoke

interaction between client and server, which requires an Internet connection or phone service) and **offline codes** (they do not require an Internet connection and stored information such as addresses, phone numbers, text and etc. can be retrieved and processed on the phone.)

QR Codes contribute to (4, 5):

- **Link between offline and online content (print and online media).** QR Codes can be placed on printed materials (offline media such as brochures, billboards, newspapers, magazines, business cards) and after scanning, they direct users to online media (web sites, social networks, Google Maps, etc.). There is a connection between the physical world and Internet. Users can scan the code when they are offline and have an access to online information.
- **Reach a large audience** – QR Codes can be placed in different places (almost everywhere) and they are visible to many people. Therefore, the message encoded in QR Code reaches a wide audience of users immediately.
- **Combination of interactive and passive features** – QR Code technology combines and provides users interactive capabilities (sending requests to purchase goods or services; shares and likes on social networks, etc.) as well as passive features (reading reviews and comments, reading or watching instructions and videos, downloading applications, visiting social networks pages, finding objects location on maps, etc.).
- **Call to Action** – Scanning codes results in immediate connection with consumers and it can be used by companies to provide information or marketing messages to them. QR Codes contain so-called **Call to Action** – codes may encourage some activities such as SMS or phone calls, purchase of items or services. Therefore, they can be used to stimulate online transactions and mobile commerce. This is a prerequisite for an increase in sales (in real or electronic stores) and increase in the revenue of the companies.
- **Connection with customers** – QR Codes allow connection with customers through social networks (i.e. building and expanding the community of supporters of the company) as well as receiving a feedback (opportunities for reviewing or commenting products and services via online feedback forms).
- **Reduce the cost of campaigns** – There are free tools to create QR Codes. This significantly

reduces the cost of implementing QR Codes as a part of marketing campaigns.

- **Tracking and measurability** – The actions after scanning QR Codes (scans, clicks, etc.) can be traced and analyzed due to the available web tools. The results may be measured and the efficiency of QR Code campaign can be estimated precisely. This is a great advantage of QR Codes campaigns compared to the traditional approaches that rely on offline media.
- **Facilities for customers** – Through QR Codes, consumers can be directed to the necessary information on websites, phone calls or SMS messages in a convenient and fast way.

### 3. FIELDS OF APPLICATION OF QR CODES.

#### 3.1. LABELS AND PRODUCT PACKAGING.

This is one of the most common uses of QR Codes. Many companies use them as an extension to the labels of their in-store products. QR Codes can direct customers to additional product details, clients' ratings and reviews. They are an economically efficient way to deliver a huge amount of information about the products in less physical space. Moreover, companies can use QR Codes to neutralize the threat of competitors' mobile sites.

Manufacturers of industrial goods use QR Codes as a tool to provide instructions for products, to launch video or audio training instead of printing manuals and the result is reducing the training costs.

Food companies also add QR Codes on product packaging. They provide nutrition information, information on the origin of foods, recipes and recommendations on how to prepare food, etc.

There are examples of Bulgarian companies that also add QR Codes on product packaging – “Lady Sofia” Ltd. (Bulgarian manufacturer of polyamide tights, stockings and socks); the brand “Antola” of “Tandem-Popovo” Ltd. (manufacture for production and processing of red meat), “Realux” (trademark for energy-saving fluorescent lamps and incandescent lamps), and others.

More and more companies are beginning to use QR Codes not only to provide additional information about products, but also to provoke

the activity of their customers – online orders and shopping, payment of bills, etc. Recently, **virtual QR Code stores** gain more popularity. The most known is Tesco in South Korea, which is an example of a unique and appropriate use of QR Codes technology to implement a virtual shopping.

### **3.2. MENUS IN RESTAURANTS.**

QR Codes are used in many restaurants to provide additional information to customers about offered food, its ingredients, videos on how the food is prepared, recommended dishes, etc. QR Codes on bottles of drink (especially popular on wines) can provide an interesting experience for connoisseurs.

The same trend of using QR Codes is observed in many fast food chains (e.g. McDonalds) and coffee shops (e.g. Starbucks).

### **3.3. QR CODES – A PART OF EXHIBITIONS IN MUSEUMS, GALLERIES AND PARKS**

Many museums and galleries use QR Codes as a part of their exposures. QR Codes are a convenient means of providing additional information to the visitors, which can be even used for educational purposes. Some museums prefer to use QR Codes as a tool to attract new target groups of visitors, mainly young people, because the QR Code technology is an attractive challenge to them. Others use technology to improve interactivity and connections with visitors through games or quizzes.

### **3.4. SOCIAL QR CODES – A MEANS OF COMMUNICATION AND RELATIONSHIP WITH CUSTOMERS.**

A number of companies use codes to communicate with customers, mainly to get feedback about the quality of their products or services. After scanning QR Code, customers are directed to online feedback forms and they can rate or give a comment on products or services they used. This is an extremely important for companies because by collecting this information they can improve the quality of their products or services. Sometimes, companies use two codes – one for positive response and another one for negative. After scanning any of them, consumers can express in details their choice in an appropriate feedback form.

On the other hand, there is a trend people to be connected in various social networks (especially in Facebook) through their mobile phones. Companies use this tendency to increase the community of supporters on social networks (collect more Likes or Followers in social media via QR Codes).

Bulgarian examples of using social QR Codes are: Tuborg (on bottles of beer – after scanning QR Code, users have an access to news or information on events organized by the brand or to its pages on social networks) (6), Coca Cola and others.

### **3.5. DOWNLOADING APPLICATIONS AND PAYMENT OF BILLS**

Many Bulgarian companies use QR Codes to provide their customers the opportunity to download the necessary mobile applications to take advantage of companies' mobile services. For example, a courier services company Econt Express use QR Codes to allow its customers to download the application iEcont v2 and use it to benefit from the services of the company – package tracking, online payments directly from a mobile device.

Other companies combine the potential of QR Codes to download apps with options for payment of bills. This facilitates the payment procedure – there is no need to fill in multiple documents. As an example we can give the monthly e-invoices of VIVACOM. The special QR Code of Cellum Pay is added to the invoice and allows its payment by scanning the code.

### **3.6. BUSINESS CARDS**

Business cards with QR Code placed on them become more popular. The QR Code contains except the necessary contact information (standard elements such as name, phone, address, fax, e-mail) but also the owner's profiles on social networks, blogs, etc. Using QR Codes on business cards helps to print a large amount of information on small-sized cards. More important is that business cards with QR Codes create a vision for a modern and technological performance of the company and its employees.

### **3.7. “MUNICIPAL” QR CODES**

Some municipal governments have begun to use QR Codes to provide real-time information to

citizens and tourists. QR Codes can be placed at bus stops, railway and metro stations and deliver information about timetables and schedules of the public transport or next to landmarks and tourist attractions and give more data about them. QR Codes can be also used to provide information about different social events organized by the city government. The result is an improvement of public awareness.

Some companies even consider QR Codes as a means of entertainment, “killing time” and avoid getting nervous while people use public transport, especially during peak hours.

As examples of “Municipal” QR codes we can point Lisbon and Rio de Janeiro – QR Codes made of decorated cobblestones are placed on the streets. After scanning, visitors are directed to web sites with tourist and local culture information, sightseeing maps, etc. This is an extremely convenient and interesting way to attract tourists and provide the necessary information.

The municipality of Burgas is one of the first in Bulgaria that uses QR Code technology to inform citizens and visitors about the location of landmarks and tourist attractions, latest news and cultural events. The municipal government of Sofia plans to use QR Codes (set on signs for “blue” and “green” zones) as a part of the parking system. The codes will direct users to the information (on the Internet or to a phone number) about the ways of payment for short-term parking.

#### 4. CREATING A SUCCESSFUL QR CODE CAMPAIGN.

Many companies have begun to use QR Codes as a part of their marketing strategy. Unfortunately, some of them just want to show that they are familiar with new technologies and trends and do not deliver the necessary content to their customers.

Creating a successful QR Code campaign is a result of careful planning and implementation of a specific sequence of steps. The algorithm is based on (7).

##### **Step 1: Plan and define a strategy for implementing a QR Code campaign**

The success of the campaign depends on using the right technology and binding it with the right

audience. It is very important to explore precisely the target group of users and to define the goals of the company.

Firstly, it is very important to establish whether customers (target group) have smartphones.

Worldwide, there are many researches that show who scans codes and why. According to the latest statistics (8) for the first quarter of 2013, there were over 18 million QR code scans and about 6.7 million scans were reported only in March 2013. 25-44 age group performed almost half of the scans – 48%. Most scans were made in order to obtain additional information about the offered products, mainly in the retail sector.

According to (9) 57% of users do not take any action after scanning, 21% share the information with other people and 18% of consumers make purchase after scanning QR Codes.

There is no research on who scans QR Codes in Bulgaria. This is not unusual, because QR Codes are not so popular and they are entering at a slower pace. From the available statistics we can draw some conclusions whether QR Code campaigns could be applied successfully on the Bulgarian market.

The Pragmatica agency and Digitribe (the unit of Publicis MARC Group) conducted research “Mobile applications as a communication channel” among 560 people, and the results show the following (10):

- **A profile of owners of smartphones:** 64% of respondents have a smartphone. Age group 18-34 years is the most active in usage of smartphones. Over 90% of them live in the capital and regional centers in Bulgaria and have income over 1000 leva/month. The conclusion is that the owners of smartphones are among the most solvent consumers and can be an attractive target group.

- **Activities of the smartphones owners:** over 69.6% of consumers use Internet via their smartphones every day. The mobile versions of social networks such as Facebook and Twitter are the most frequently used applications (71.4%), following by the news mobile apps (56.3%) and games (50%). Some consumers bought items on the Internet (such as clothes, books, cultural events tickets, travel services, etc.). Based on these data it can be concluded that the owners of smartphones are active online users.

- **An opinion on advertising in mobile applications:** over 33% of consumers do not like or are against the idea of classic brand advertising in mobile applications. However, about 41% of the participants were interested and had sought additional information about the product or service seen in advertisement in a mobile application. This means that there are opportunities for development of mobile applications as a communication channel, which is a condition for successful implementation of QR Code campaigns.

Based on these data we can conclude that there are prerequisites for successful implementation of the QR Code campaign.

An important question is what the desires of consumers are – to save money or time, gain access to content/information or to opportunities, get additional bonuses. The answer of this question is crucial in order to give consumers what they want (information, service or opportunity) via QR Codes.

Objectives of the company are also very important in the development of the strategy – increase sales, resulting in increased revenue; increase traffic to its web pages; improving communication with customers and obtaining feedback from them; better presence in social networks and increasing group of followers/fans (more “likes” or “follows”), etc. The objectives of the company define the information load of the QR Codes.

### **Step 2: Create QR Codes**

There are many tools and services for generating traditional QR Codes. Most of them are free and easy to use, requiring no prior knowledge and training. There are also means for creating QR codes with embedded logo/image or attractive visual codes.

When a QR Code is creating it is very important to consider what information will be encoded and how it will affect its size and the opportunities for quick and easy scanning of the code. Many QR Code campaigns fail due to the creation of codes that contain too much information. QR Codes with more data are difficult to scan and read – they require smartphones with powerful hardware features. This fact limits the number of users who can

scan codes and therefore can be a target group of users.

Among the most popular tools for generating QR Codes are: QR Stuff, AZON Media, 2CodeMe, ZXing Project, BeQRious, Delivr, goQR.me, Online Qr Lab, KAYWA, BeeTagg and many others. QRCode.bg, qrngen.eu are among the most used Bulgarian tools.

Besides the traditional QR Codes, there are some global campaigns that distinguish with exceptional creativity, uniqueness and efficiency. For example: Sunny QR Code Emart (QR Code that can be scanned only during lunchtime – 12-13 h and provide great discounts to customers); Tattoo shop in Istanbul (empty QR Code that must be filled in very precisely to be scanned and then users can fill in the necessary forms to apply for a vacancy job in the shop).

Once the QR Code is generated, it needs to be tested with various readers.

### **Step 3: Create a mobile website.**

In cases where the QR Codes will direct to a web page, it is necessary to create a mobile friendly version of the website instead of using a standard page. Mobile phones do not display standard web pages appropriately. The mobile version of a web page is an environment that is optimized for smartphones and is adjusted to their specific features. In addition, mobile sites allow call links; email links; SMS (text); Google maps integration; social sharing links, etc.

### **Step 4: Add QR Codes to a variety of communication channels and media**

QR Codes can be placed and added to various marketing materials – brochures, billboards, item labels, business cards, web pages and social networks. It is very important to consider where the scanning will take place and what the next action after scanning is.

Many campaigns failed because of ignorance or lack of consideration of this step. Examples of inappropriate placement of codes are: QR Codes on high billboards or billboards on highways where the traffic moves fast (it is impossible to scan or it is very dangerous); QR Codes in places without Internet connection (in cases where the code refers to a web page); QR Codes on web page (in cases where the code refers to the same

page); too small QR Codes (which makes them difficult or impossible to scan) and many others.

#### **Step 5: Give a reason to scan QR Codes.**

Consumers need a reason to scan QR Codes. At the beginning it is normal people to be curious and to scan each code. Due to wide usage of the QR Code technology users' curiosity will not be sufficient to rely on it. Consumers should know what to expect after scanning, what additional benefits they will get. It is necessary to give a well-founded reason to encourage users to scan, such as "Scan to Like us on Facebook and get 20% off discount!"; "Scan to Download a free eBook"; "Scan to Download a free mp3"; "Scan to Get VIP access"; "Scan for fun", etc.

#### **Step 6: Track and analyze the campaign**

Tracking the number of QR Code scans and the subsequent users' activities after scanning provides opportunities to measure the results of campaigns. The companies can consider how successful and effective their campaigns were.

There are different tools that track the number of scans, their geographical location and distribution, the time that users spend on viewing or using the information provided via QR Codes. Results can be analyzed and used to improve the marketing campaigns of companies and overcome some drawbacks. One of the most popular tools is Google Analytics (it provides information about how many people have scanned the QR Codes and have visited the related web sites via them). Among Bulgarian tools are: qrl.bg (a system for generating and monitoring QR Codes and measurement of QR Code scans); QRbg.net (a platform for management and monitoring QR Code campaigns) and others.

In most cases, when QR Code campaigns do not achieve the desired results, the reason is that QR Codes do not provide customers the information they need or enough quality content.

#### **CONCLUSION**

QR Codes are one of the fastest adopted and creative approaches in the field of marketing and advertising. The development of the mobile technologies and the widespread use of smart

mobile devices is a necessary and sufficient condition for QR Codes conversion into a powerful marketing tool.

QR Code technology is a means that any company (including small ones) can use to provide information about its products and services to a wide audience. It can be used to create interactive advertising campaigns, engagement of company's customers, without being associated with higher costs. This inevitably leads to an improvement of the performance of the companies.

#### **REFERENCES**

1. QR Code® Essentials, 2011 Denso Adc, <http://www.nacs.org/LinkClick.aspx?fileticket=D1FpVAvvJuo%3D&tabid=1426&mid=4802> (last access 30.06.2013).
2. <http://bg.wikipedia.org/wiki> (last access 30.06.2013).
3. Philogene, E., QR Codes – a point of view, The Digital Lab, 2010, <http://digitallabblog.com/digital-lab-blog/qr-codes-a-point-of-view/> (last access 30.06.2013).
4. QR Codes for Marketing: A Unique Way to Bridge Offline and Online Media, Human Service Solutions, LLC, <http://www.hswsolutions.com/services/mobile-web-development/qr-code-marketing/> (last access 30.06.2013).
5. Gaudet C., Yes You Scan! 5 Benefits To Using Qr Codes In Marketing!, <http://www.predictableprofits.com/yes-you-scan-5-benefits-to-using-qr-codes-in-marketing/> (last access 30.06.2013).
6. <http://beatnsound.bg/statii/hi-tech/tuborg-e-pyrviat-masov-produkt-s-qr-kod-na-etiketa-unas> (last access 30.06.2013).
7. Jeff Korhan, 5 Steps to a Successful QR Code Marketing Campaign, Published August 24, 2011, <http://www.socialmediaexaminer.com/5-steps-to-a-successful-qr-code-marketing-campaign/> (last access 30.06.2013).
8. ScanLife, Trend Reports, <http://www.scanlife.com/en/trend-reports> (last access 30.06.2013).
9. <http://2d-code.co.uk/qr-code-user-study/> (last access 30.06.2013).
10. 90% от потребителите на смартфони у нас са в София и областните градове, сп. NetworkWorld – България, бр.2, април 2013