

# QR CODES - STUDY OF THEIR USE IN TOURISM ADVERTISING

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## **Abstract:**

*The development of intelligent technologies, as well as the continuous increase in the number of mobile device users worldwide, have generated significant behavioural changes for individuals; companies in turn have had to accept these behavioural changes from the demand profile and adopt innovative differentiation solutions in the global competitive environment; Consequently, tourism, as one of the most adaptable industries to new technologies, has noticed the major changes induced in online and mobile advertising; Also, in order to create competitive advantages, travel companies have constantly tried to provide innovative set of tools dedicated to tourists, used on the one hand for advertising, and on the other hand, as a support for tourists in travels; in the traditional and digital daily landscape, QR codes have already become very common images for everyone and obviously for tourists; these codes have had, over time, various uses in tourism; so these codes can be found either as dynamic tools to attract potential consumers from the traditional environment into the online environment or as an advertising tool for tourist destinations or as components in various advertising mixes or in gamification solutions in tourism, etc.; starting from these issues, this article presents a study on the use of QR codes in tourism advertising; to obtain a more complex picture, two important segments of the tourism market were considered, namely: individual users as tourists and travel companies as users of QR codes in advertising; we believe that the results obtained can provide useful information for both tourism and advertising companies, but also for tourists as final beneficiaries of tourist services.*

**Key words:** QR codes, advertising, tourism, online tourism

**JEL classification:** L86, M15

## **1. INTRODUCTION**

The sustained increase in the number of users of mobile devices in the world, as well as the development of intelligent technologies, have generated an important transformation of individuals' behavior into their daily and professional activities.

These behavioral changes have also led to a number of changes in people's preferences for searching for daily information, in their buying habits and in interpersonal communication.

Starting from knowing these changes, companies, irrespective of their size and industry, needed to adapt their communication mix/advertising, their business processes, offers and solutions dedicated to consumers, in an innovative, proactive and sustainable way.

One of the most adaptable industries to the changes brought by intelligent technologies and consumer behavioral changes is tourism; in the meantime, we could see how the companies in this industry were among the first adopters of enterprise mobility strategies and models.

Tourism companies, as pawns of a global market, have understood exactly the need to differentiate and build a competitive advantage; they have focused their efforts on stepping up advertising activities, focusing on adopting and developing innovative tools tailored to online and mobile environments; From this point of view, their effort began primarily by attracting potential consumers from the offline environment to the digital and mobile environments, trying to convert them into e-consumers.

One of the tools used worldwide to attract potential consumers from the traditional environment to online, are QR codes (Quick Response); it is well known that QR codes have received many different uses in everyday life, being adopted by companies in all industries, as an innovative tool, in advertising; using various solutions and media to insert QR codes, these can be found on printouts and in social media advertising, or in augmented reality and artificial intelligence applications; the tourism industry has used them all, mixed in various promotional sets; so we have all witnessed the extensive use of QR codes as scannable items all around us, accepting the in our

everyday life as a source of information, or as support in various activities or as a tool for offline and online promotion.

QR Codes, can be identified as a barcode type, containing a dots matrix that can be scanned with any mobile device and with scanning applications, that allow the conversion of the points in the matrix into intelligible and useful characters; there are a number of applications that allow the automatic generation of QR codes, as well as the encoding of useful information in a matrix, in various forms: "URL, coupon, text, SMS, Vcard, contact information, Calendar event, E-mail address, phone number, geo-location, SMS, Wifi network, etc." (Sankara, 2012).

It has been found that the use of QR codes on mobile devices, along with other interactive tools such as SMS, mobile sites, etc., can positively influence consumer behavior (Qian et al., 2017)

From statistical point of view, according to Juniper Research, by 2022, it is estimated that over 1 billion mobile devices will be accessing QR coupons (Econs, 2019).

According to the results of a study on the motivation and influence of the intent to scan the QR code, it was found that "the brand is the most important factor for all consumers, overlying QR code design and is followed by curiosity that has a positive impact on the scan intention" (Shintaro et al., 2017).

In recent years, in advertising, "SMS services have been replaced with the use of QR codes and near field communication (NFC) tags; so by scanning QR codes with intelligent smartphone cameras and reading NFC tags through NFC smart device readers, information can be instantly accessed and advertising resources can be accessed" (Chung, 2016).

The use of QR codes has become a very effective and fast tool for accessing a website or any other information used in mobile advertising (Meydanoğlu, 2018, pp:42); Also, QR code ads with a fun advertising message are perceived much better by consumers, increasing their intention to scan these codes (Meydanoğlu, 2018, pp:48).

The use of these codes has some advantages because „QR code-based technology is also superior in other ways, such as higher data storage capacity, lower implementation cost, technical simplicity, widespread use, and widely available, free programs for reading and decoding by camera-equipped smartphones" (Uzun and Bilgin, 2016).

In tourism, QR codes are used by companies in various forms, starting from posting them on printouts in order to attract tourists to the websites/social media, to promote tourist packages, to provide information on tourist packages, to offer specific details, for mobile payments, for participation in community communities, etc.; for example, in museums, the use of QR codes can provide "information in different ways: text, games, interaction with and between visitor, research, website promotion, video, choosing a path, augmented reality, etc." (Medic and Pavlovic, 2014).

Although the initial use of QR codes has been more intense in developed countries, the latter has expanded their use throughout the world; especially in the tourism industry, these codes are increasingly accessible by tourists, "for retrieving useful tourist information, facilitating access to the services offered, simplifying the activities of tourists, etc." (Pilai et al., 2017).

It is obvious that in recent years, in order to "support tourists' activities and improve their travel experiences, a number of applications were developed based on various tools including QR codes, along with free WI-FI and augmented reality" (Lalicic and Weismayer, 2016).

It is known that applications based on QR codes and their reading are frequently used in tourism, especially in "tourist orientation systems" (Basiri et al., 2018).

of a study on the use of "mobile QR payment technology in tourism, have shown that tourists have a positive attitude towards using QR code payments" (Tian and Koh, 2017).

In recent years, mobile applications such as "mobile learning and management system" have been generated; for example, "RM360 application uses QR codes attached to heritage buildings in historical sites and visitors can view information about vestiges, by scanning QR codes" (Radescu and Pavel, 2016); this application can also be used in tourism for any other type of tourist objective, using scannable QR codes by tourists.

Another example of a mobile application that uses QR codes in tourism has been tested in an "archaeological site in New Taipei City, Taiwan; the application uses scanned QR codes as input

data, based on which users can directly access the desired tourist information, collected in a cloud database” (Yang and Hsu, 2016).

The use of QR codes by tourists in their visits to palaces, museums or other important buildings, is very common and is also used along with audio guides based on visitor location services, that provide guidance and detailed information about the objectives visited (Lee, 2017).

QR Codes have been used also in applications dedicated to ”mobility impairments tourists who use special NFC badges and a QR code to access specially prepared trails for them in visiting some tourist locations and attractions” (Ribeiro et al., 2018).

In favor of using QR codes by companies in their advertising activities, it should be considered an important set of advantages: accessibility, simple and quick use, the possibility of directing through these codes to a wide variety of information sources or digital resources (website, social media profiles, phone numbers, multimedia information, coupons and discounts, SMS, etc.), extremely low costs, also they are versatile and can be integrated with various physical or digital media, having a high compatibility with any type of mobile device, and last but not least, allowing the collection of data and the identification of metrics specific to marketing campaigns made with these (Hsw, 2019).

It should be underlined that the use of QR codes in various activities and the expansion of the introduction of QR codes-enabled on smartphones, raises concerns about specific threats related to Phishing / Malicious URLs, URL Shorteners, Malicious Mobile Apps, Premium Rate Fraud, Mobile Device Exploits, Identity Card Abuse, etc. (Cyber, 2019).

Considering these issues, a study was conducted on the use of QR codes in tourism; For this purpose, two important segments of the tourism market were considered, namely: individual users, as tourists and travel companies, as users of QR codes, in advertising.

The results of the study, we consider that can bring an important informational contribution to both Romanian tourism companies, marketing companies and individual users as potential tourists.

## 2. MATERIALS AND METHODS

The study was conducted from May to August 2018, using a mobile survey based on the administration of two distinct questionnaires designed for each studied segment; in order to launch and manage the questionnaires were used dynamic QR codes, placed in social media; in this phase of the study, from the whole social media space only Facebook was used, considering its prevalence in the preferences of social media users worldwide and obviously in Romania; *in the case of individual users*, the study was extended to all users who communicate in English and Romanian; it was intended to identify their perception of QR codes and the use of these codes in travels; the studied population was composed of 1407 subjects, mobile social media users, of which 1258, formed the final sample; the questionnaire was released in bilingual format, Romanian and English; the preferences of Romanian/non-Romanian users/tourists were compared; the questionnaire contained questions divided in three modules; the first module included questions related to the socio-demographic profile of the respondents (country of origin, gender, age, education); the second module, sought to identify the level of knowledge about QR codes and about their use in travel, the physical support/place where the QR codes were scanned and the source provided by the scanned codes; The third module consisted of questions that identified the scanning's motivation, the experience in using these codes, and the identification of preferences for a more frequent use in the future.

*For tourism companies*, have been selected only Romanian companies from their perspective of Facebook corporate users; the purpose was to identify the use of QR codes in their advertising activities; the questionnaire was released only in Romanian, containing 4 closed questions on the use of QR codes in advertising, identification of physical support/place of QR codes for scanning, identification of sources promoted by QR codes and how companies perceive the benefits of using QR codes in advertising. In order to identify the study population, in the case

of companies, was used the Facebook Romania monitoring website, facebrands.ro; for study was selected Tourism & Vacation category, containing 1216 companies; after the analysis of the number of fans, the activity and the evolution of the companies and after the exclusion of the local/regional informational websites, the final sample included 292 companies; in the end, 78 valid questionnaires were obtained, with a response rate of 26.71%.

### 3. RESULTS AND DISCUSSIONS

The analysis of the collected data allowed to identify some important aspects regarding each of the studied respondent segments.

*For the individual respondents:*

- *the socio-demographic profile* - the distribution of respondents by country of origin, shows that 78.05% of the respondents declared that they are from Romania and the rest, from other countries; gender distribution, marked a higher representation of the male segment in both cases (54.02% Romanians/52.34% others); the most representative age category for the Romanians was 35-44 years (31.26%), while the, 18-24 years, age category was the best represented for the respondents from other countries; the educational profile brought first the high school graduates segment, in both cases (table no. 1).

**Table no. 1. Socio-demographic structure - comparative view**

		Romania (%)	Other countries (%)
<b>Gender</b>	Female	45.98	47.66
	Male	<b>54.02</b>	<b>52.34</b>
<b>Age (years)</b>	18-24	18.03	<b>28.16</b>
	25-34	20.18	24.4
	35-44	<b>31.26</b>	5.75
	45-54	23.39	0.23
	55-64	6.07	6.87
	65+	1.07	0.14
	Basic	2.32	5.73
<b>Education</b>	High school	<b>32.08</b>	<b>40.12</b>
	College	29.54	20.32
	University	30.12	25.13
	Post university	5.94	8.7

- *knowledge about the QR codes and their everyday use* - the comparative vision Romania vs. other countries, identified a significant segment of Romanian users (66.93%), compared to a very large segment of foreign respondents (90.09%);
- *the use of QR codes in travels* - the important comparative differences between Romanians and respondents from other countries are maintained; only 64.12% of Romanians indicate that they used QR codes in travel, compared with 90.12% of respondents from other countries;
- *identifying the physical support/place where the QR codes were scanned during travel*, brought to the fore completely different images for the Romanians, compared to the other respondents; The main three locations/physical media where Romanians scanned QR codes in their travels were: menus/dining locations (34.07%), followed by coupons/vouchers and posters/flyers/printouts; In the case of respondents from other countries, the percentages are incomparably higher, coupons/vouchers (87.56%),

followed by museums/exhibitions/tourist attractions and menus/dining locations (table no. 2)

**Table no. 2. Support/place where the QR codes were scanned - comparative view (%)**

Support/place	Romanians	Others
buildings	13.62	62.86
museums/exhibitions/tourist attractions	9.05	<b>83.02</b>
posters/flyers/printouts	<b>23.76</b>	63.78
products	8.17	68.44
in the bus/metro/train/bus station	10.11	50.22
transport tickets	7.35	38.12
menus/dining locations	<b>34.07</b>	<b>80.03</b>
coupons/vouchers	<b>33.09</b>	<b>87.56</b>
in stores	14.65	67.08
packages/bags	7.08	18.12
hotels/restaurants / cafes	19.03	71.06
maps/tourist guides	13.07	77.98
car/taxi/public transport	6.02	30.09

- *identifying the source provided by scanning QR codes* - the two segments of the Romanians/foreigners had different choices and again, in all options, the percentages of those outside Romania are significantly higher; the first three sources indicated by foreigners were: video/audio content (77.89%), message/information/text and website/social media profiles; In the case of the Romanians, the sources identified were: a website/social media profiles (47.08%), discounts/rewards and direction/guidance (table no. 3).

**Table no. 3. Source provided by QR codes - comparative view**

Source	Romanians (%)	Others (%)
website/social media profile	<b>47.08</b>	<b>75.43</b>
E-mail address	28.09	34.17
products/services code	15.88	65.44
message/information/text	27.92	<b>76.07</b>
phone number	14.78	18.09
video/audio content	2.74	<b>77.89</b>
direction, guidance	<b>28.72</b>	51.23
Prize/game	13.45	62.45
discounts/rewards	<b>31.56</b>	74.89
event invitation	12.23	65.93
travel group interaction	5.65	60.12
travel apps	4.06	50.08
online travel support	1.09	57.35

- *the motivation for scanning QR codes*, brings a very different image between Romanians and those from other countries; foreign respondents indicated that the first motivation in scanning QR codes was accessing useful information (92.79%), followed by access to

specific services (museums, exhibitions, events, transport, etc.) and promotions/discounts; the motivations of the Romanians are completely different, and for them curiosity (79.02%) prevail being followed by promotions/discounts and entertainment. (table no. 4)

**Tabel no. 4. - The motivation for scanning QR code - comparative view (%)**

Motivation	Romanians	others
curiosity	<b>79.02</b>	20.76
access to specific services (museums, exhibitions, events, transport, etc.)	30.08	<b>90.89</b>
useful information access	25.07	<b>92.79</b>
Promotions/discounts	<b>58.36</b>	<b>81.27</b>
shopping	28.98	49.34
communication with other tourists	25.69	46.13
entertainment	<b>30.65</b>	68.78

- *the experience of using QR codes* for Romanians vs. foreigners, brings, for both segments, on the first places utility (72.67%/96.12%) and necessity (67.85%/90.67%), followed by interesting for Romanians and entertaining for foreigners; another aspect to consider, in the case of the Romanians, is the segment that indicated difficulty in using the QR codes, and which is again incomparably higher than that of the foreign respondents (table no. 5);

**Tabel no. 5. The experience in using QR codes - comparative view**

Experience	Romanians (%)	Others(%)
interesting	<b>49.02</b>	30.77
useful	<b>72.67</b>	<b>96.12</b>
necessary	<b>67.85</b>	<b>90.67</b>
difficult to use	35.22	9.07
entertaining	29.09	<b>47.23</b>
useless	5.89	1.09

- *the preference for continued and more frequent use of QR codes* - indicates in both cases, very important segments of future users, namely 81.91% for Romanians and 98.75% for foreigners.

*For tourism companies in Romania*, the following aspects were highlighted:

- *the use of QR codes in advertising*, indicated an important segment of non-users (61.88%);
- *identifying the preferred physical support/location for QR code insertion/exposure* - the first three indicated were: advertising materials (76.02%), tickets/invitations (68.34%) and coupons/vouchers/special offers; last ranked in preferences, was social media (10.09%); this is a worrying situation, especially since Facebook in 2017 has launched "Conversion Lift," which allows companies to use sales data directly on Business Facebook Page, using bar codes, QR codes, directly scanable) (table no. 6).

**Tabel no. 6. Preferred support/location for QR codes**

<b>Support/location</b>	<b>(%)</b>
advertising materials (printouts, signs, flyers, brochures, posters, catalogs, advertising items, etc.)	<b>76.02</b>
maps/tour guides/Google maps location	30.11
coupons / vouchers/special offers	<b>56.78</b>
menu lists	39.22
tickets/invitations	<b>68.34</b>
social media	10.09
Event Displays, fairs, exhibitions	36.67

- *identifying the source provided by scanning QR codes* - the top three selected were: social media/website/blog (78.33%), followed by event invitations and discounts/rewards/special offers; on the last place, travel apps (2.11%) (table no. 7);

**Table no. 7. Source of QR codes**

<b>Source</b>	<b>(%)</b>
social media profile/website/blog	<b>78.33</b>
a message/information/text	20.07
photo albums/video/audio content	16.11
direction, guidance information	7.11
prize, game	9.23
discounts/rewards/special offers	<b>22.56</b>
event invitation	<b>28.19</b>
travel group interaction	9.11
travel apps	2.11
online travel support	9.55

- *identifying the benefits of using QR codes in advertising* - the first three indicated were: low costs/cheap (92.34%), easy to use and attractive for consumers/tourists; the least benefit was considered to be creating of a consumer/tourist community (table no 8).

**Table no. 8. The benefits in using QR codes in advertising**

<b>Benefits</b>	<b>(%)</b>
Cheap/low costs	<b>92.34</b>
attractive for consumers/tourists	<b>70.55</b>
easy to use	<b>86.12</b>
high mobile devices compatibility	57.12
audience identification	56.12
easy way to reach consumers/tourists	48.32
creating a community of consumers/tourists	34.12
identifying tourists preferences	56.23

To get a more complete picture of the results of this study, web-observation was also used to identify companies in this category using QR codes for social media advertising; it was found that

only 34 companies use QR codes, which shows that Romanian adopters of the use of these codes in social media advertising, are indeed very few.

#### 4. CONCLUSIONS

From the perspective of individual QR code users, as tourists, the following can be highlighted:

- A significant segment of Romanians non-users of QR codes (33.07%) was identified, compared to a much smaller (less than 10%) segment for respondents from other countries;
- 35.81% of Romanian respondents never used a QR codes in their travels;
- In the case of the physical support/place where QR codes were scanned by Romanians in the travels, compared to foreign respondents, there were notable differences on certain categories, namely: buildings, museums/exhibitions/tourist attractions, hotels/restaurants/cafes, maps/tourist guides, stores, products, which Romanians have selected in very low percentages compared to respondents from other countries; this means that Romanians are not accustomed to scanned QR codes because the codes are not common in their home country; therefore they do not seek or use them, nor in their travels; in this case, companies in general and those in tourism in particular are those that do not use enough QR codes in advertising and therefore have not generated habits in using these codes to their consumers/tourists;
- The source provided by the QR codes identifies other major differences between the two respondent segments; it can be noticed that, in all categories of sources, the foreign respondents indicated much higher percentages than the Romanians; Thus, it can be highlighted: online travel assistance, travel group interaction, travel applications, prizes/games, discounts/rewards, products/services codes; the most selected categories of Romanians allow observation that, first of all, tourism companies that use QR codes in current and advertising activities, mainly provide only these types of sources for QR codes; at the same time, the source categories indicated by foreigners are extremely little used by Romanian companies as source in QR codes; it is also visible that Romanian respondents are not orientated either to the identification of online travel support, or to the interaction of travel groups or to downloading travel applications; a potential explanation might again be the lack of the habit of using QR codes for these purposes as they are not commonly used in their home country;
- The motivation of scanning QR codes for the Romanian respondents segment is marked by curiosity, which again highlights the lack of their habit in using QR codes and even more, a very low understanding of their necessity and usefulness in everyday activities or in travel; unlike them, foreign respondents, who have the habit in using and knowing the usefulness of QR codes, are motivated mainly by facilitating access to various tourist attractions, obtaining useful information and accessing promotions and discounts;
- the experience in using QR codes clearly identifies the fact that Romanians who used QR codes, correctly perceived their usefulness and necessity, perceiving them also, as interesting elements in travel; this is a very strong indication for tourism companies that need to expand the use of QR codes in current activities and advertising, thus pursuing the perception of tourists in this regard;
- Indicating the preference for the continued and more frequent use of QR codes, forms a large segment of Romanians who want the more frequent use of these; this aspect, again can provide an important element in the more intense and diversified adoption of QR codes by companies in general and by tourism in particular; in the end, it can not be avoided the identification of a non-users segment of these codes, 18.09%, which could be converted into effective users, with additional efforts from companies.



*In the case of Romanian travel companies*, a fairly narrow segment of QR code users in advertising activities can be created; they prefer to insert QR codes on advertising materials, coupons/vouchers and tickets/invitations; Also, they prefer to drive the user, using scanned QR codes, to the website/ blog/social media profiles, while highly useful sources for tourists such as direction/quidance information, travel apps, online travel interaction, or online travel support, are very little used; the benefits pertaining to the use of QR codes in advertising are mainly related to the lack of costs for their use and to the affordability of their use for tourists, while the benefits like identifying the audience, identifying tourists' preferences and creating communities of tourists are very little appreciated.

The results provided by the data analysis of tourism companies in Romania allow the correlation and the easy explanation of the results from the study of the Romanian users/tourists of the QR codes; it is obvious that the effort and interest of Romanian tourism companies are not sufficiently geared towards the preferences and needs of their consumers; so tourists could not get habits in using these codes and therefore did not have the opportunity to perceive properly the usefulness and necessity of these codes for travel support and as an added value of their tourist experience.

We consider that the results obtained can provide viable support especially for Romanian tourism companies in their efforts to differentiate themselves in the global competitive landscape and also for the marketing companies and, last but not least, for the tourists in expanding their set of travel support tools with the use of these codes.

## LIMITATIONS

In the study, can be highlighted some limits regarding, on the one hand, the insufficient representativeness of the studied population and, on the other hand, the fact that it was only considered the most used social network, Facebook; but we believe that the results obtained can be used as a basis for carrying out other more complex studies and using several variables of analysis as well as for comparative studies at regional and global level.

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