Analysis of usage motives and usage attitudes of QR codes as advertising and promotional means: Focus on the lifestyle of smartphone users

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Abstract

This study investigates how the QR code, which is emerging as a new means of advertising and promoting, affects the usage motives and attitudes according to the lifestyle of smartphone users. Based on previous studies, we classified the lifestyle of smartphone users into success-oriented, social-oriented, family-oriented, impulsive-purchase, prudent/careful-purchase types. These lifestyles have created motivation for using QR codes, and the attitudes of users can be determined accordingly. The conclusions drawn from these studies will suggest the theoretical direction of how QR codes are effective depending on the lifestyle of customers categorized by individuals or organizations who want to advertise and advertise through QR codes.

Keywords: Advertising / PR, QR code, Lifestyle

1. Introduction

Smartphone (SmartPhone) is a high-performance mobile phone that can freely install and operate various mobile apps (MobileApp) with a high-performance general-purpose operating system (OS) like a general PC. Convenient functions based on user-oriented interface and apps have been rapidly spreading to modern people who keep pace with rapid changes. The results show that the importance of lifestyle variables on the use of new media and ad acceptance attitude is also applied to mobile advertising. In addition, it was expected that it will help to utilize mobile devices as effective marketing and advertisement channels through subsequent research on mobile advertisement messages and various types of mobile marketing messages that are adapted to lifestyle characteristics.

The spread of smartphones presented different possibilities for marketing in the mobile advertising market. QR code is one of the innovative technologies of smartphone Lee and Kim (2005) used QR codes in outdoor advertising to investigate the use of QR codes in outdoor advertisements through contact media, contact means, post-scan route, usage information, Motivation, shortcomings, attitudes, and activating the prisoners. This study suggests that QR codes create an environment that allows users to interact with customers in a limited space beyond the limit of simply delivering one-way messages. In particular,
QR codes in outdoor advertising lowered the barriers to entry and were effective in real-time marketing on the move [1].

The purpose of this study is to analyze the motivation of consumers to use QR codes and how people with various lifestyles show QR codes before using QR codes as marketing or advertising means. Based on this, we examine the possibility of QR code as a commercial communication means.

2. Literature review

2.1. QR code

As the spread of smartphones spreads, advertising and marketing using smartphones are rapidly growing and attention is focused on. One of the hottest of the many tools of interest is the QR code.

QR (Quick Response) code is a matrix method of two-dimensional bar code which was developed in 1994 by Denso Corporation of Japan and has a black and white plaid pattern. Unlike barcode, which stores only existing numbers, it can store various formats such as text, voice, image information, and location information. It can also display product information or link to the input web site if it is illuminated by a scanner. Two-dimensional barcodes have emerged in order to overcome the limitations of barcodes, such as the limitation of information capacity and the uniform representation of numbers, and they have four specific features: large data storage, high density data representation, data error detection and restoration, and data encryption. The QR code can easily access large amounts of information at anytime and anywhere without accessing the database with a single scan using a dedicated scanner. In addition, the QR code can be used in the offline environment such as product wrapping paper, bus stop, It can also be used in advertising. The QR code simplifies the event participation process, allowing users to participate in events with only one scan, unlike online, which requires a cumbersome event participation process, such as accessing URLs to participate in an event. Especially, by exposing QR code at outdoor contact through outdoor advertising, real-time marketing effect can be maximized [2].

QR code is used in conjunction with advertising to provide a basis for interacting with customers by moving away from one-way communication of simple image and product information transmission. For example, by exposing the QR code using the blank spaces of existing newspapers, magazines, broadcasts, and outdoor advertisements, consumers can be provided with more detailed information about the product beyond simple product advertisement or corporate image exposure, it can lead to homepage and mobile web page to implement integrated communication such as advertisement, PR, promotion, event, and CRM. In addition, it is also possible to provide the convenience of purchasing goods to customers by making it possible to connect to the purchase site immediately if they recognize the QR code in the advertisement [3].

QR codes that can be easily recognized by using a dedicated scanner of a mobile phone or a smart phone without needing a separate reader due to the popularization of smart phones in recent years have been introduced to distributors, media companies, Seoul municipalities, malls, Beauty industry, museum, securities company, and electronic payment. QR codes can also be transformed into design QR codes in combination with various types of designs. The design QR code can give users more visual stimulation, which can increase the attractiveness of the QR code and increase the effect of guiding users to access to the mobile web.
2.2. Lifestyle

Lifestyle can be defined as the total of elements such as culture, resources, and symbols that make up a unique lifestyle that a particular society, group, or individual possesses [4]. Engel et al. (1982) have defined lifestyles as personal lifestyles related to the use of time and money [5]. Lifestyle research can be divided into macroeconomic analysis that focuses on the overall trend of society and group according to the study subjects, and microscopic analysis to individualized market segmentation [6]. Consumer behavior research in marketing and advertising is mainly focused on micro-analysis of lifestyle characteristics for individuals or small groups.

The lifestyle study of mobile phone users, which is the technical basis of QR advertising, is a study by Wei (2006) on Chinese consumers [7]. In this paper [7], He surveyed 7,000 residents in China and analyzed the types of lifestyle related to mobile phone usage and direct or indirect use, and compared the differences between mobile phone usage patterns and traditional media use. This survey classified the five types of 'lifestyle', 'struggle', 'value seeking', 'ascension', and 'active professional type' Media use behavior, and advertisement exposure. These differences are directly related to education and income levels. In particular, the 'active professional' group in this study gives special suggestions by showing that they are active in advertisement exposure in all media.

The results of this study indicate that the characteristics of lifestyle are important factors in predicting mobile phone usage and internet use behavior and it shows consumers' influence on media selection and use. This shows that the effectiveness of online marketing communication through wired and wireless and the dependence of advertisement effect on media are significant. Therefore, it is expected that there will be a meaningful difference in the use motive of QR code according to lifestyle of smartphone users and analysis of acceptance attitude by lifestyle type.

2.3. Usage motivation, usage attitude

The use motive of QR code is selective and actively available according to the needs of users in the case of QR code, and has a combination of characteristics of mobile communication. Therefore, it is analyzed that applying theoretical framework of Uses & Gratifications (U & G) to the QR code is most appropriate for explaining consumers' reason and motivation for media use [8].

The QR code advertising attitude is related to the advertisement, usage attitude, media and attitude which is the basis of the QR code ad attitude. The attitude toward advertising refers to the positive or negative evaluation that people generally have about the ad [9]. In the case of mass media such as TV, the attitude toward advertising is known to be closely related to the use behavior of the advertisement, and it is often used as a variable explaining the user behavior as the usage behavior. For example, people who are more favorable to television commercials will tend to decrease the number of attempts to use advertising, and they will be more likely to respond positively to advertising. On the contrary, the negative attitudes toward mobile ads will lead to the use of ads such as deletion or rejection of mobile ads rather than clicking or linking them.

3. Research design

3.1. Research model
3.2. Research method

The classification of lifestyle used in this study is based on the lifestyle measurement factor of the previous research [10]. Some were modified to fit the situation and all were measured using the 5-point Likert scale (1 - not at all, 5 - very much).

The attitude toward QR code advertisement was measured with 13 items about four factors including (1) informationality, (2) entertainment, (3) disturbance, and (4) interactivity. The items were similar to those used in the existing mobile ad attitude research, and some items were modified and used. All items were also measured using the 5-point Likert scale (1 - not at all, 5 - very similar) [11], [12].

Use the QR code to get the product or related information based on the motivational questionnaire, to participate in the event or promotion, to have fun, curiosity and bored free time to get the coupon, In order to make it easier to use than the Internet and to have a different experience, it includes 9 items such as video advertisement [3].

3.3. Research subjects and analysis methods

The sample was extracted from the nationwide mobile phone users considering the distribution of male and female sex ratio and age group as a population. The penetration rate of smart phones by age group was 7.62% for teenagers, 35.18% for 20s, 29.5% for 30s, 15.1% for 40s and 12.6% for 50s or older. From March to June 2015, the questionnaire was distributed to 6 teenagers, 302 adults in their 20s, 13 adults in their 30s, 4 adults in their 40s, and 650 adults.

4. Results

4.1. Sample Characteristics

As for the general characteristics of the sample, 158 (58.5%) male and 103 (41.5%) female were the sexes and 302 (93.3%) of the 20s were the most common. The number of students in the occupation was the highest with 306 students (94.4%).

4.2. Validity and reliability of measurement items

In this study, we conducted exploratory factor analysis, reliability analysis, and confirmatory factor analysis of the measurement items to test the validity and reliability of the measurement items before measuring the structural equation model. In order to test the validity of the items, principal component analysis was used for factor extraction and exploratory factor analysis was performed using Varimax method. Factor loading was 0.3 or higher and the cumulative variance explained was 0.5 or higher [13]. The lifestyle of
the independent variables was reduced to 19 from the initial 23 items through the process of eliminating the items with the factor loading of 0.3 and the items cross-loading. The use motive and attitude of the subordinate variable were reduced to 23 in the initial 25 questions.

The lifestyles of prudent purchasing type and careful purchasing type were reduced to a single dimension and named as prudent-careful purchasing type. The interactivity of the use attitude was overlapped with the use motive and the item was removed. The playfulness type, information type, and relational type of usage motivation are reduced to a single dimension and named as playfulness-information-relational type. The explanatory total variance of the extracted factors is 61.94% for the independent variable and 71.69% for the dependent variable, which is above the general limit of 50%.

As a result of internal consistency test of items based on Cronbach's value, 0.674 ~ 0.946 were found to exceed the standard value of 0.6. Therefore, it can be seen that the dimensions of the items constituting each concept of the independent variable and the dependent variable exist in a single dimension (unidimensionality).

4.3. Hypothesis Verification

In this study, the structural equation model(SEM) is used as an analytical method for hypothesis testing. The fit of the structural equation model for path analysis was 2132.088 (df 796), p <0.000. The results were as follows: CMIN / DF = 2.697, GFI = 0.744, AGFI = 0.709, NFI = 0.755, CFI = 0.830 and RMSEA = 0.074.

In the lifestyle, the success-oriented type showed a positive (+) effect on the enjoyment of the use attitude [Hypothesis 1-1] was adopted. Impulse-purchase type among lifestyle has positive (+) influence on entertainment, information, and disturbance of use attitude [Hypothesis 1-4, Hypothesis 1-5, Hypothesis 1-6] was adopted. The social-oriented type of life style showed positive (+) influence on the informativeness of use attitude [Hypothesis 1-8] was adopted. The family-oriented type of life style showed a significant negative effect on the disruption of the attitude of use [Hypothesis 1-12] was adopted. In the lifestyle, the prudent/careful purchase type was shown to have a positive (+) influence on the entertainment and informativeness of the use attitude. Impulsive purchase type among lifestyle was adopted as positive influence on usage motivation. The usage motivation was shown to have a positive (+) effect on the entertainment and the informativeness of the use attitude.

Table 1. Hypothesis Verification Result

<table>
<thead>
<tr>
<th>Hypothesis division</th>
<th>Estimate</th>
<th>S.E.</th>
<th>t-value</th>
<th>P</th>
<th>Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Hypothesis 1]:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Lifestyle →</td>
<td></td>
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<td></td>
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<tr>
<td>UsageAttitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[H 1-1] (su)→ (ent)</td>
<td>0.202</td>
<td>0.083</td>
<td>2.45</td>
<td>0.014</td>
<td>adopted</td>
</tr>
<tr>
<td>[H 1-2] (su)→ (inf)</td>
<td>0.045</td>
<td>0.077</td>
<td>0.584</td>
<td>0.559</td>
<td>reject</td>
</tr>
<tr>
<td>[H 1-3] (su)→ (dis)</td>
<td>0.124</td>
<td>0.074</td>
<td>1.676</td>
<td>0.094</td>
<td>reject</td>
</tr>
<tr>
<td>[H 1-4] (im)→ (ent)</td>
<td>0.56</td>
<td>0.094</td>
<td>5.977</td>
<td>***</td>
<td>adopted</td>
</tr>
<tr>
<td>[H 1-5] (im)→ (inf)</td>
<td>0.423</td>
<td>0.086</td>
<td>4.899</td>
<td>***</td>
<td>adopted</td>
</tr>
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<td>[H 1-6] (im)→ (dis)</td>
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<td>0.075</td>
<td>2.068</td>
<td>0.039</td>
<td>adopted</td>
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<tr>
<td>[H 1-7] (so)→ (ent)</td>
<td>0.136</td>
<td>0.129</td>
<td>1.058</td>
<td>0.29</td>
<td>reject</td>
</tr>
</tbody>
</table>

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5. Conclusion and discussion

This study investigates how the QR code, which is emerging as a new means of advertising and promoting, affects the usage motives and attitudes according to the lifestyle of smartphone users. The main results and implications of the study are as follows.

First, five factors such as success-oriented type, impulsive purchasing type, family-oriented type, social-oriented type, and prudent/careful purchasing type were derived from the exploratory factor analysis of the first measurement item and the cumulative explanatory power was 61.94%. In the case of the independent variable, the use attitude was three factors of entertainment, information, and disturbance. The use motive was derived from one factor of playfulness/information/relational type, and cumulative explanatory power was 71.69%. Based on the exploratory factor analysis, the reliability analysis was conducted to analyze the reliability of the constructs. In addition, confirmatory factor analysis results show that there is intensive validity for construct validity test.

Second, we investigate the effect of smartphone users' lifestyle on their usage motives and usage attitudes. Smartphone users whose lifestyle is a success-oriented type have a positive (+) influence on the recreation attitude. Smartphone users, whose lifestyle is an impulsive purchase type, have a positive influence on the entertainment, information, and

<table>
<thead>
<tr>
<th>Hypothesis 1: Usage motive → Usage attitude</th>
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</thead>
<tbody>
<tr>
<td>[H 1-8] (so) → (inf)</td>
<td>0.272</td>
<td>0.125</td>
<td>2.172</td>
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<td>[H 1-9] (so) → (dis)</td>
<td>-0.035</td>
<td>0.116</td>
<td>-0.3</td>
<td>0.765</td>
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<tr>
<td>[H 1-10] (fa) → (ent)</td>
<td>0.035</td>
<td>0.074</td>
<td>0.476</td>
<td>0.634</td>
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<tr>
<td>[H 1-11] (fa) → (inf)</td>
<td>-0.014</td>
<td>0.07</td>
<td>-0.199</td>
<td>0.842</td>
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<tr>
<td>[H 1-12] (fa) → (dis)</td>
<td>-0.17</td>
<td>0.068</td>
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<tr>
<td>[H 1-13] (prca) → (ent)</td>
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<td>[H 1-14] (prca) → (inf)</td>
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<td>0.104</td>
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<td>[H 1-15] (prca) → (dis)</td>
<td>-0.025</td>
<td>0.094</td>
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</table>

[Hypothesis 2]: Lifestyle → Usage motivation

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>[H 2-1] (su) → (plinre)</td>
<td>-0.027</td>
<td>0.064</td>
<td>-0.419</td>
<td>0.676</td>
</tr>
<tr>
<td>[H 2-2] (im) → (plinre)</td>
<td>0.228</td>
<td>0.08</td>
<td>2.855</td>
<td>0.004</td>
</tr>
<tr>
<td>[H 2-3] (so) → (plinre)</td>
<td>0.1</td>
<td>0.1</td>
<td>0.999</td>
<td>0.318</td>
</tr>
<tr>
<td>[H 2-4] (fa) → (plinre)</td>
<td>-0.065</td>
<td>0.058</td>
<td>-1.122</td>
<td>0.262</td>
</tr>
<tr>
<td>[H 2-5] (fca) → (plinre)</td>
<td>0.125</td>
<td>0.083</td>
<td>1.499</td>
<td>0.134</td>
</tr>
</tbody>
</table>

[Hypothesis 3]: Usage motive → Usage attitude

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>[H 3-1] (plinre) → (ent)</td>
<td>0.62</td>
<td>0.068</td>
<td>9.141</td>
<td>***</td>
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<tr>
<td>[H 3-2] (plinre) → (inf)</td>
<td>0.57</td>
<td>0.067</td>
<td>8.455</td>
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<tr>
<td>[H 3-3] (plinre) → (dis)</td>
<td>0.01</td>
<td>0.062</td>
<td>0.16</td>
<td>0.873</td>
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</tbody>
</table>

χ²= 2132.088 (df 796), p<0.000, CMIN/DF = 2.697
GFI =0.744, AGFI = 0.709, NFI =0.755, CFI=0.830, RMSEA =0.074
interference of usage attitude. Smartphone users whose lifestyle is a social-oriented type have a positive (+) influence on the informativeness of usage attitudes. Smartphone users whose lifestyle is family-oriented have a negative effect on the disruption of usage attitude. Smartphone users who have a lifestyle prudent/careful purchasing style have positive (+) influence on the entertainment, information quality Smartphone users whose lifestyle is an impulsive purchasing type have a positive influence on usage motivation and use motive affects positively and positively on recreation and informativeness of usage attitude.

The conclusions drawn from these studies will suggest the theoretical direction of how QR codes are effective depending on the lifestyle of customers categorized by individuals or organizations who want to advertise and advertise through QR codes.

References


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