

# Users' Satisfaction Analysis of Kiosk Contents in the Bus Stop

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## ABSTRACT

The purpose of this study is to investigate the user satisfaction of kiosk contents installed at bus stops in Seoul. A total of 400 kiosks, which are touch-based traffic information systems, are installed and operated, providing contents such as bus routes, marginal area, seoul tourism, life information, angel donation, transportation cards, magnifier and boarding requests. The study results showed that the user satisfaction scores of bus routes and transportation cards were high, but it was necessary to improve other contents. The results of this study will be used as basic data to propose user experience(UX) of public service design. We will also use it as content guidelines for public information kiosks to be developed in the future.

**Key Words** : Users' Satisfaction, Kiosk, Contents

## 1. Introduction

The bus stop is a gate that ensures the user space linkage as one of the elements of the urban environment and connects city's environment and transportation as a space is continuously connected. A bus stop of the past did not meet complex and various desires of users and the role was weak as a public service providing the necessary information except the simple functional role of the bus stop.

Recently, however, it is a vigorous movement to actively respond to the changing information through kiosk introduction to provide service of informational and cultural experience for users in public places. Local governments have installed kiosk applied to a touch screen which makes it easier to implement the project of information system available to search a transit routes and a map as well as public transportation routes.

However, the number of users is significantly smaller than the number of public information displays[1].

The fundamental cause is the lack of content principles and guidelines that optimized for public information display.

Most existing research on information systems focuses on the usability of the system. However, in media use today, content quality and emotional satisfaction have a significant impact on users. Therefore, an empirical evaluation method based on media contents is needed.

Thus, this study aims to investigate the user's satisfaction with the contents of the kiosk at the bus stop through questionnaires. Through this study, we will grasp the user 's needs about the kiosk contents and utilize it as the basic data for suggesting the user experience (UX) of the kiosk to be installed in the future.

We hope to contribute not only to improving the content satisfaction of public information display but also to be actively utilized in the production process of the display to be developed and installed in the future.

## 2. Research method

This study was carried to review through the response to the questionnaire to identify user's satisfaction with the kiosk contents of a bus stop in which study participants are free to try the touch styled-bus guidance terminal that is installed at the bus stop (BIT) in Seoul city.

The survey was conducted on the satisfaction surveys targeting for 32 participants composed of college students

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Fig. 1. The bus stop LCD kiosk used in the experiment.

Table 1. User satisfaction assessment questions of bus stop kiosk

	Assessment Items	Questionnaire Items
①	Bus routes	Blue bus
		Green bus
		Red bus
		Incheon bus
		Gyeonggi bus
		Shuttle bus
		Rotation bus
②	Marginal area	Surrounding area public transportation path finding
③	Seoul Tourism	Seoul municipal Seoul tourist recommendation
		Festivals & Performance
④	Life Information	Latest searches
		Real-time news
		Weather
		Entertainment information
⑤	Angel donations	
⑥	Transportation card	Balance inquiry
		Transportation card charge
⑦	Magnifier	
⑧	Boarding requests	

of 20s old, the evaluation items were based on the information provided guidance on the touch styled-LCD bus guidance terminal in the current bus stop.

User satisfaction was measured by questionnaires of kiosk experienced users. Satisfactory items were answered with a 5 point Likert scale ranging from 'not at all' (1 point) to 'very agree' (5 points). Assessment and questionnaire items are shown in Table 1.

### 3. User satisfaction of information system

It is no exaggeration to say that the core of the kiosk that has been continuously developed since its introduction in Korea in 1933 is user-centered and content that can satisfy users[2].

People quickly adapted to the kiosk, hoping for more at the same time and finding something new. However, disappointing users for reasons such as lack of realistic content and management will lead to indifference, which can not be reversed as quickly as the interest gained quickly.

Therefore, more efforts should be made to research and provide good quality contents so as to satisfy the users of kiosks as much as possible and to facilitate mutual communication.

Iivari & Eravasti (1994) found that user satisfaction is an appropriate response measure as a predictor of the successful implementation of an information system and as a measure of performance measurement, and suggests that higher user satisfaction results in higher information system performance[3].

In other words, consumer satisfaction can be regarded as judging whether satisfaction of consumer's expectation and desire level of attributes of product or service and satisfaction of emotional response caused by satisfying expectation and desire level.

This study is about the user satisfaction of the touch type bus information system kiosk. However, since there are not many papers since the research on the user has begun in earnest, the prior research about user satisfaction in the information communication field such as mobile social network and mobile contents service.

Duan (2013) investigated the effect of the quality of mobile social network service (SNS) on user satisfaction on the user satisfaction of mobile social network service

(SNS) as the ease of use, immediacy, efficiency, And the relationship between reliability and use satisfaction was not significant. The higher the service diversity and mutual social action among service quality, the higher the satisfaction level of mobile social network service and the more the response satisfaction did not affect the use satisfaction of mobile social network service. The emotional quality showed the highest satisfaction with the use of mobile social network service. The higher the emotional quality, the higher the use satisfaction of mobile social network service (SNS) [4].

Kim (2011) studied the factors affecting the satisfaction and loyalty of mobile Internet contents. Through the research, he identify the attributes of each factor, the strategy for enhancing satisfaction and loyalty to mobile Internet contents was studied. As a result of the empirical analysis, mobile contents quality, mobile internet system quality, and user characteristics affected satisfaction. These factors influenced re-use and corporate attitudes. The results of this study suggest that the intention to reuse affects the recommendation of others[5].

The results of this study show that the quality of contents, system quality, playability, etc. In this study, we evaluate user satisfaction in kiosk, which is a touch-based bus information system.

#### 4. Results

On the validation results done through frequency analysis and t-test to determine user's satisfaction of a kiosk contents of a bus stop, first, frequency analysis of each of the contents-specified satisfaction is shown below in Table 2.

Bus routes 4.63 ( $\pm$  0.62) in the highest, transportation card 4.06 ( $\pm$  0.68), life Information 3.88 ( $\pm$  0.81), marginal area 3.56 ( $\pm$  0.96), Seoul Tourism 3.19 ( $\pm$  0.66), magnifier 3.19 ( $\pm$  0.91), boarding requests 3.19 ( $\pm$  0.75), donated angel 2.50 ( $\pm$  1.03), which was higher in the order. The user's average satisfaction of kiosk contents of a bus stop was shown to be 3.52 points ( $\pm$  0.35).

It is analyzed that the usage frequency of practical menu is high because of the place characteristic of the bus stop, and the satisfaction of contents of the bus route information is also high.

**Table 2.** User satisfaction of bus stop kiosk

assessment items	case number	mean	standard deviation
Bus routes	32	4.63	.62
Marginal area	32	3.56	.96
Seoul Tourism	32	3.19	.66
Life Information	32	3.88	.81
Angel donations	32	2.50	1.03
Transportation card	32	4.06	.68
Magnifier	32	3.19	.91
Boarding requests	32	3.19	.75
<b>Satisfaction of kiosk contents</b>	<b>32</b>	<b>3.52</b>	<b>.35</b>

**Table 3.** The difference of the satisfaction according to the gender

assessment items	gender	case number	mean	SD	t	p
Bus routes	m	10	4.60	.55	-.11	.918
	f	22	4.64	.67		
Marginal area	m	10	3.40	.89	-.44	.665
	f	22	3.64	1.03		
Seoul Tourism	m	10	3.40	.89	.87	.400
	f	22	3.09	.54		
Life Information	m	10	4.20	.45	1.09	.292
	f	22	3.73	.90		
Angel donations	m	10	3.20	1.10	2.00	.065
	f	22	2.18	.87		
Transportation card	m	10	4.20	.45	.53	.603
	f	22	4.00	.77		
Magnifier	m	10	3.40	1.14	.62	.548
	f	22	3.09	.83		
Boarding requests	m	10	3.20	1.10	.04	.966
	f	22	3.18	.60		
<b>Satisfaction of kiosk contents</b>	<b>m</b>	<b>10</b>	<b>3.70</b>	<b>.40</b>	<b>1.40</b>	<b>.184</b>
	<b>f</b>	<b>22</b>	<b>3.44</b>	<b>.31</b>		

To identify the difference of the satisfaction according to the gender, the results on two independent samples carried out by a t-test was shown in "Table 3"

The average satisfaction for men was 3.70 ( $\pm$  0.40), the average for women was 3.44 points ( $\pm$  0.31), t statistics for the gender difference was 1.40, significance probability

was 0.184, which was analyzed to be no significant difference at the significance level of 0.05 in the content satisfaction according to gender. That is to say, it can be said that there is no difference in the contents satisfaction according to the user's gender.

Meanwhile, the answers on the most important factors considered in the kiosk contents of bus stops were shown to be the results that convenient usability (information usability) was the highest 53.1%; visual stimuli (information representation) was 34.4%; empirical fun (user's interest) 12.5. It can be said that these results showed higher desire to utilize in the kiosk contents of bus stops as public facilities for all users available to use the system easily and conveniently.

These results suggest that it is necessary to add and change unique and interesting contents to engage the users who are focused only on providing simple information in order to improve the active use and user satisfaction of the touch type bus information system kiosk.

## 5. Conclusion

This study was carried out on the basis of studies to propose digital contents to a bus stop as a public service design.

The study results were found that users showed a little higher satisfaction of 3.52 points (out of 5 points) than the average, and showed the highest satisfaction with "bus route" information of the contents offered. In addition, the satisfaction with the services of balance inquiry on 'transportation cards' showed the next highest score in the order. These results showed that the users have higher demands for the practicable functions of the transportation service in the kiosk contents of the bus stop.

On the other hand, in the case that the satisfaction "donation angel" was the lowest, there were opinions that it does not fit as the kiosks contents of bus stop, and there were also other opinions on UI which they do not think that they want to make a donation for due to a short time of staying and giving no confidence.

Next, a "convenience (usability information)" was shown to be the most important component of kiosk contents, which the service development is fitting is required. The specified system used in public places such as kiosk contents of the bus stops may cause discomforts.

Although the people use the services irrelevant to their personal data, they should be aware of their surroundings when they use the large display, hence it is the importance problem to be directly connected with the usability.

As well, the environment of a bus stop kiosk is different from a computer environment which individuals or specific groups use. Unlike the environment used by individuals or specific groups designated, in the kiosk contents of the bus stop as a social infrastructure used for all citizens, the range of users cannot but be wider. In other words, all people as well as the general public including the elderly and the disabled should be able to easily and conveniently use the system, and a universal usability at all design stages for this purpose should be considered.

A kiosk is a medium equipped with functions that can satisfy both the user's reason and emotion. Therefore, not only convenience of information sharing and learning can be provided, but also public display function for the beauty of the city is possible.

If we can efficiently combine these characteristics of digital signage devices with culture, art, and advertisements, and produce a variety of contents that can interact with each other, new experiences will enable us to effectively engage citizens.

In addition, I think that it is possible to meet not only reason but also emotional satisfaction by trying various methods using modern technology and motion graphics for modern people who attach importance to sensitivity.

The results of this study are expected to provide direction to find ways to supply convenient digital content to users on the types and trend of popularization and public information displays on the touch screen with ever increasing demand.

However, the additional research and usability assessment on users needs to be performed for the universal use of the results of this study, which will systematically solve these limitations by subsequent studies.

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**REFERENCE**

1. Y. H. Choi, J. H. Park, H. C. Yoon and J. H. Lee., "Principles for User Interface Design in Public Information Display," Proceedings of KSPE, Vol. 2012, spring, pp. 1051-1052, 2012.
2. J. Y. Ma., "A Study on the Satisfaction for Visual Factors of the Buttons in the Kiosk Interface Design," Master's Thesis of Ewha Womans University of Digital Media, 2009.
3. J. Iivari., I. Ervasti., "User information satisfaction: IS implementability and effectiveness," Information and Management, Vol. 27(4), pp.205-220, 1994.
4. X. Duan., "The effective of smartphone-based mobile social network service quality on user satisfaction," Master's Thesis of Korea University of Digital Management, 2013.
5. E. Kim, "Mobile Internet Content Satisfaction Influence Factor Analysis," Information and Management, Master's Thesis of Korea University of Management Information, 2011.

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