

A Comparative Study on User Experience of Contactless Retail Services between Chinese and Korean Users

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비대면 소매 서비스에서 중국인과 한국인의 사용자 경험 비교 연구

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Abstract In order to study the similarities and differences of user experience of contactless retail services between Chinese and Korean users, this study focuses on E-mart 24 Self Convenience Store Gimpo DC Branch, Conducted in-depth interviews with Chinese and Korean users who have experience. The interviews are based on the 7 principles of Peter Morville's Honeycomb Model. As a result, the satisfaction of Chinese users is higher than that of Korean users. Human touch, and the desire for a faster society made Korean users more resistant to E-mart 24 Self Convenience Store. Chinese users raised concerns about the inconvenience of the system with little consideration for foreign users. It is expected that this study will help E-mart 24 Self Convenience Store to satisfy users from more cultural backgrounds.

Key Words : Contactless Retail Services, Self Convenience Store, User Experience, E-mart 24, Chinese Users, Korean Users

요 약 본 연구는 국내 무인 편의점에서 중국과 한국인의 사용자 경험을 측정하는 것에 목적이 있다. 따라서 본 연구 대상인 이마트24 셀프스토어 김포DC점을 경험한 적 있는 중국인과 한국인 사용자를 대상으로 심층 인터뷰를 실시하였다. 인터뷰는 피터 모빌의 허니콤 모델의 7가지 원칙에 따라 설정했다. 연구 결과, 중국인 사용자의 만족도는 한국인 사용자보다 높은 것을 알 수 있었다. 인간미를 중시하지만, 더 빠른 속도를 추구하는 사회문화의 영향으로 한국인 사용자는 이마트24 셀프스토어에 큰 불편함을 느끼는 반면, 중국인 사용자는 외국인 사용자를 거의 고려하지 않는 시스템이 다소 문제점으로 제기되었다. 이 연구는 이마트24 셀프스토어가 더 많은 문화적 배경을 가진 사용자를 만족시키는 데 도움이 될 것으로 기대한다.

주제어 : 비대면 서비스, 무인 편의점, 사용자 경험, 이마트24, 중국 소비자, 한국 소비자

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1. Introduction

1.1 Research Background and Purpose

A contactless service is one that minimizes or reduces to zero the contact and conversation between the provider and the user. South Korea calls it “Untract Service”, this is a newly coined word created by Namdo Kim professor[1]. Since 2017, both China and South Korea have set off a wave of development of contactless retail services. In South Korea, with the increasing cost of labor and the advent of personalization, the emergence of bank ATMs, kiosk ordering machines, and self-checkout stands all prove that the contactless market is constantly expanding [2]. In 2020, The outbreak of the COVID-19 let whole society start the movement of keeping social distancing, accelerated the development of contactless retail services. In China, the emergence of the epidemic has demonstrated the necessity and considerable future development of self convenience stores, which have been tepid in the past[3].

How did self convenience stores develop? On December 5, 2016, Amazon Go, the first self convenience store in the world, opened to internal employees in the United States, and it was officially open to the public on January 22, 2018. It is automated and allows customers to purchase items without having to be checked out by a cashier or using a self-service checkout counter. Amazon Go works by using computer vision and sensors to detect what items you're taking out of the store[4].

The emergence of Amazon Go has set off a boom of self convenience stores. After Amazon Go, local versions of “Amazon Go” have also been launched in China and South Korea. In China, Taobao initially launched the “Tao Coffee” experience in unmanned stores in early July 2017[5]. On October 31, 2018, China's first airport self convenience store operated by

Cloudpick was officially opened at Shanghai Hongqiao International Airport, provides contactless retail services to passengers[6]. On September 30, 2019, the Shinsegae I&C, a subsidiary of the Shinsegae Information Technology, cooperated with E-mart 24, launched the first “JUST PICK&OUT” type self convenience store—E-mart 24 Gimpo DC Branch, which cause the many attention[7].

The establishment of self convenience stores has been promoted by various countries, which seems to be a promising industry. What about the actual experience of users? This study focuses on E-mart 24 Gimpo DC Branch, aims to contrast Chinese Users and Korea Users who have a different cultural background, research the similarities and differences of user experience and needs for self convenience store, helps to develop it to get all the cultural background users' satisfaction. It's reference significance for future development.

1.2 Range of the Research

The reason for choosing E-mart 24 Gimpo DC Branch in this study is that E-mart 24 ranks the third on convenience stores in South Korea released by Korea Reputation Newspaper in September 2019[8]. It also belongs to the brand with the highest degree of concern for self convenience stores in the industry. E-mart 24 Gimpo DC Branch is the first brand to achieve “JUST PICK&OUT” cashier-less store in South Korean. Beyond that, It has 93 other types of self convenience stores[9]. In this industry, E-mart 24 is the most representative brand and has great potential for future development.

In the first phase, we learned about the current operation mode of E-mart 24 Gimpo DC Branch based on field visits and data researches. In the second phase, we conducted in-depth interviews with 6 Chinese users and 6 Korean users who have experience. From the perspective

of user experience, we analyzed the current advantages and limitations of the Gimpo DC Branch and discussed its future development direction.

2. Background

2.1 Definition and Characteristics of Self Convenience Store

Self convenience store refers to all or part of the business process in a store, which is processed intelligently and automatically through technical means, and reduces or does not involve human intervention. There are no cashiers in the store, and it is usually open 24 hours a day. Consumers can enter the store through an app or a bank card, choose goods, and check out by using a self-service checkout counter or be automatically deducted. The store managers come to the store several times a day to supplement, display, discard, and clean the store. The store will be equipped with monitors. For the owner, such consumption mode can reduce the labor cost. For the consumer, it can reduce communication.

2.2 E-mart 24 Self Convenience Store Gimpo DC Branch

In September 2019, Emart24 self convenience store Gimpo DC Branch officially opened, is domestic first achieve “JUST PICK&OUT” cashier-less store convenience store. He is located in Gimpo. The new branch is named Gimpo DC. Because it’s in the same building with the Data Center of Shinsegae I&C. Shinsegae I&C developed various technologies that have been used in this Gimpo DC Branch.

Anyone can freely come in and out through the door in Fig. 1, then space is divided into two areas. Outer space for customers who are not E-mart 24 members also can use, the area with the seats, vending machines, microwave ovens, trash cans, etc. The internal space is the real self



Fig. 1. The Appearance of Store



Fig. 2. The Turnstile of Entrance

convenience store part, need to scan a QR code to enter, the entrance looks like Fig. 2, It's achieved by the Computer vision, sensor fusion, artificial intelligence, machine learning, and other cutting-edge technologies, through these technologies can track each customer know what items they chose, at the same time of customers out automatically settle accounts from the customer's SSG PAY account, and send the details to the customer. No need to scan the bar code. Therefore, it is also known as the Korean version of Amazon Go.

Before entering, customers need to download the SSG PAY, after landing a personal bank card and agree that the function of automatic deductions can get an entering QR code. After identifying the QR code, the customer will be automatically bound with it, there are 31 cameras set on the ceiling that can accurately track the customer's move line. When shopping is done, customers can just take the goods and go out.

The interior space displays more than 790 products similar to the general E-mart 24 store, except for alcohol. The difference is that goods weight sensors have been installed at every goods shelf, customers picked up or down the commodity will be perceived by artificial intelligence, so goods are displayed not too stick together but make sure that there is a certain distance between each other as shown in Fig. 3. As soon as the customer leaves the store with the item, the inventory will change at the same time. The customer can receive the information of the settlement within 5–10 seconds, which is much faster than Amazon Go.



Fig. 3. Display of Goods

Staff exists here, the difference is that the time had tied at the cashier, can more focus on the management of the store, accept customer's refund and exchange, help the customers who buy cigarettes do the adult certification, commodity display, store cleaning, etc[10-12].

3. In-depth Interview

3.1 Experiment Method

In order to compare and analyze the similarities and differences of users' experience of contactless retail service between users under different cultural, this study conducted in-depth interviews with Chinese users and Korean users with similar conditions.

3.2 Research Methods and Subjects

From May 16, 2020, to May 23, 2020, we conducted in-depth interviews with 6 Chinese users and 6 Korean users aged 21 to 29, among which 4 were female interviewees and 2 were male interviewees. In order to better research the relationship between the user's experience and their cultural background, we decided that an in-deep interview was the most appropriate way. The information of the interviewees is shown in Table 1.

3.3 Research Process

The in-depth interview will objectively explore

Table 1. In-depth Interview Profile

	Gender	Age	Job	Nationality
A	Female	26	Student	Chinese
B	Female	27	Student	Chinese
C	Male	24	Student	Chinese
D	Female	24	Salesman	Chinese
E	Male	29	Salesman	Chinese
F	Female	25	Designer	Chinese
G	Female	23	Office Worker	korean
H	Male	26	Salesman	korean
I	Male	21	Student	korean
J	Female	23	Student	korean
K	Female	26	Office Worker	korean
L	Female	22	Student	korean

user evaluation of E-mart 24 Gimpo DC Branch with the Honeycomb Model. Considering that it is a physical storefront and uses new technologies that are unfamiliar to users, we adjusted the content of the 7 principles. As shown in Fig. 4, the principle of Delight is used to study consumers' satisfaction with the new operation mode instead of the existing principles of Accessible and Usable.

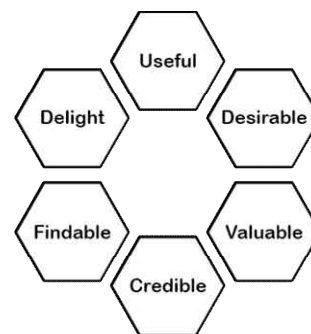


Fig. 4. Reconstitution of Honeycomb Model

3.4 Results of the In-depth Interview

According to Fig. 5, We can know Chinese users are more satisfied with E-mart 24 Gimpo DC Branch than Korean users on useful, valuable, and credible, and similar evaluation about delight. But about findable and desirable, Korean

users are more satisfied.

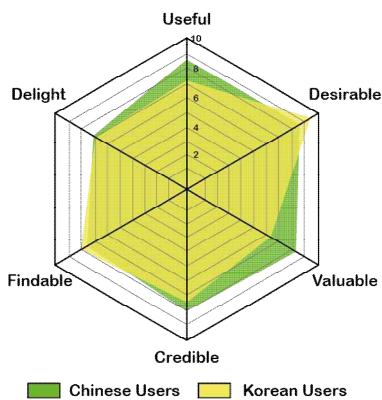


Fig. 5. Honeycomb Model Evaluation Chart

Based on the in-depth interview, We can know the similarities and differences between Chinese users and Korean users' experience of E-mart 24 Gimpo DC Branch. We have compiled the highlights into the following Table 2.

E-mart 24 receives a positive evaluation from both two countries users in the aspects of shopping without checking out, payment deduction speed, perfect facilities, display, comfortable environment, visual design, and future development value. But, there are also some problems such as non-sale of alcohol, shortage of fresh food, complicated pre-admission procedure, imperfect design of

App, and too few discounts.

For Chinese users did not sell alcoholic commodities didn't cause great trouble to them. Relatively, Korean users have a higher dependence on alcohol. In Seoul, alcohol consumption for a year can make the top five in the world[13]. Therefore, the absence of selling alcohol has a great influence on the evaluation of Korean users. In addition, the ordinary convenience stores have some hidden functions that can only be generated by people, such as keeping security at night, but the hidden functions will disappear when the ordinary stores are replaced by unmanned stores, which is also a big penalty point for Korean users who attach importance to human touch.

Under the increasingly rapid social environment, Korean is very quick and relatively impatient to download an app or adapt to a new scheme[14]. Even the young users show a stronger attitude of refusal in the face of the complicated login program. For Chinese users, they think it is too bother to download a new app every time they visit a new brand of a self convenience store, which will lead to a pile of unusable apps on the phone. China's self convenience stores can enter by WeChat or Alipay, so they do not need to download new apps every time[15]. In addition, Chinese users think the design of the App is not intuitive

Table 2. Comparison results of similarities and differences

		Positive	Negative
Common point		<ul style="list-style-type: none"> - Come out without checking out. - Fast deduction. - Design well with brand characteristics. - Face recognition authentication. - It is meaningful for future development. 	<ul style="list-style-type: none"> - No alcohol. - The food may be out of stock. - The pre-admission procedure is too complicated. - security issue. - The price should be cheaper, few discounts.
Difference	Chinese User	<ul style="list-style-type: none"> - Except for the first admission, subsequent admission is convenient. - The instructional posters in the store are with English and graphics, show you how to shop. - Less contact with clerks. 	<ul style="list-style-type: none"> - The discounts are not clearly marked. - Don't want to download a new app. - The accessibility of the SSG PAY is inadequate- It takes users too much time to find the admission permit QR code, only provides Korean, and not visually in line with E-mart 24.
	korean User	<ul style="list-style-type: none"> - Privacy. - Avoid ungracious service. - There is no difficulty in using the self-service machines. - It can expand the number of the branch at a slow and reasonable speed. 	<ul style="list-style-type: none"> - Loss of humanity than before. (Night policing, Free access to fresh-expired food) - A limit on the number of people. - Buying cigarettes is more complicated. - Don't want to adapt to a new system. - Don't want it to replace the traditional store.

enough. In order to find the entrance QR code, there are too many clicks, and the interface is in Korean, which is more inconvenient for them.

Also, some users in both countries believe that since labor costs are reduced, the price should be lower or more discounts.

There is that most of the Korean users believe that the current Gimpo DC Branch there are still many problems need to improve, It can't completely replace the traditional convenience store and It's a long way to go that let everybody all feel convenient to use. So slow reasonably development is very necessary. And rather than a completely self convenience store, they suggest that a hybrid version of the vending machine is more suited to the moment.

Compared with Korean users who believe that the development speed of science and technology should match the change speed of people, some Chinese users believe that the progress and change of science and technology can promote people to change, but only if the technology is enough perfect. At the same time, they also believe that in the context of the epidemic, self convenience stores can slow down the spread of the virus to a certain extent if disinfection measures are completed, which is of great significance and value to the current society.

4. Conclusion

4.1 Summary and Discussion

To sum up, what improvements should E-Mart 24 make? First, solve the problem that the "membership" process is too complicated. If It's hard to simplify the admission process, increase the membership discount, or launch limited products is another way to attract consumers in the early stage of operation. Also, more staff may be needed to help users join membership. Second, figure out the problem "not selling

alcohol." Third, For foreign users, clearly marked important price information, and direct text multilingual or visualization appears very necessary. The App also needs to add the function of "one-click to enter." Fourth, the variety of goods and the preferential activities need to increase, and in order to avoid out of fresh food stock situation due to selling up inconvenience to users, They can make use of the advantage that AI can accurately calculate the inventory of goods to develop the function of "Real-time inventory query" on the app, avoid customer make a trip in vain. And at the same time, they also need to develop the replenishment system to ensure the supply.

4.2 Research Significance and Limitations

We expect this research can help E-mart 24 to develop into a self convenience store what can let all cultural background users satisfied with, we thought is not only can help the development of E-mart 24 self convenience store but also for the other "contactless" service industry is has a certain reference value.

Unfortunately, the Chinese interviewees in this study are all Chinese living in South Korea. Although for the objectivity of the study, we tried to select the Chinese who have just come to Korea. But compared to pure Chinese, they have had a certain understanding of Korean. Furthermore, this study only interviewed young people in their twenties, who are only part of the users of E-mart 24. In order to develop it more comprehensively, opinions of other age groups should also be considered. Therefore, more follow-up studies are needed to complete the deficiencies of this study.

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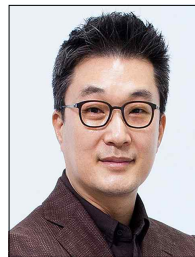
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