사용자 경험 향상: 중국 모바일 독서어플 관한 연구

량 배 배 · 반 영 환
국민대학교 테크노디자인대학원 인터랙션디자인전공

Enhancing the User Experience: A Research on China Mobile E-book App

Liang Peipei· Young-Hwan Pan

Graduate School of Techno Design, Kookmin University

[요 약]

사용자 경험은 중국 휴대폰 책읽기 앱이 혁신적으로 발전하는 중요한 경로이다. 설비, 플랫폼, 매체, 내용 및 형식은 이동식 매체 사용자 경험의 대상 전체로 구성된다. 사용자 요구을 이해하는 것은 사용자 경험을 향상시키는 논리적인 출발점이다. 본 연구는 사용자가 실제 사용 환경에서 전자 도서의 찾기 및 다운로드, 앱 화면 설치 및 경험, 음성의 낭독 체험, 평가 및 공유 네가지를 진행하게 한다. 사용자에 대한 관찰 및 인터뷰를 바탕으로 관련된 문제를 수집하고 정리를 통하여 사용자로 하여금 불쾌한 요소를 선별한다. 이상 문제에 대하여 초점을 맞춰 본 연구는 중국 휴대폰식 책읽기 앱을 개선하는 구체적인 의견을(가이드라인) 제시한다.

[Abstract]

The flourishing China mobile e-book App market has caused a series of problems, for which enhancing the user experience become an urgent matter. As a whole, user experience is related to the five planes such as the device, platform, medium, form and content. However, to understand the user needs is the logical starting point of the whole process. Contextual interview has been conducted in this study, while four types of tasks such as discovering and accessing a target e-book, setting and experiencing the reading interface, listening to the e-book and reviewing and sharing were asked to perform during the process, which has resulted in relevant problems and unpleasant factors in user experience. Based on the aforementioned contents, guidelines for enhancing the user experience of China mobile e-book App has been summarized as a result.

1. Introduction

As of June 2017, China mobile Internet user has created a new record of 724 million, in which the mobile network literature user of 327 million, according to "The 40th China Statistical Report on Internet Development" from CNNIC[1]. However, mobile e-book App, which refers to the application that users can download from mobile application stores for reading, is a priority option compared with tablet PC, e-book reader as well as web browsing for 71.4% digital readers, as is shown in "2016 China Research Report of Digital Reading Industry" from iResearch. The mobile e-book App has become an important channel for readers in the digital age to experience new ways of reading, and it is also the key point for the digital publishing industry to seek economic growth in the era of experience economy.

Nevertheless, the mobile e-book App market boom stimulated by huge user needs has also caused a series of problems, such as user churn and ambiguous business model (Xia, 2017)[1], the lack of e-book varieties and complex interface (Li, 2011)[2] and unsatisfactory charging mode (Qiao, 2017)[3] and so on. In this case, it is an urgent matter to enlarge the user scale and improve the user loyalty through enhancing user experience of mobile e-book App, so as to promote the healthy development of the market. What's more, to understand the user needs should be the logical starting point of the whole process.

This study will put forward a set of guidelines from the perspective of enhancing user experience after collecting and arranging users' unhappy experience with the most popular three mobile e-book Apps (iReader, QQ Read and Shuqi Novel) in China, the method of which is contextual interview. Before this, the five planes related to mobile e-book App will be analyzed in the next section.

2. The Five Planes

When a user want to read an e-book (content) through mobile e-book App (medium), firstly he should own a smart phone (device) which supports it technologically; secondly, he may download the App from an App store or a relevant website (platform) to this phone; then the e-book will be available for him to purchase and to read texts or images or listen to the audios (Form). Therefore, it is a systematic process, and what the user has experienced can be generally considered as a whole. Here, we may divide this whole into five planes: device, platform, medium, form and content.(Fig. 1)

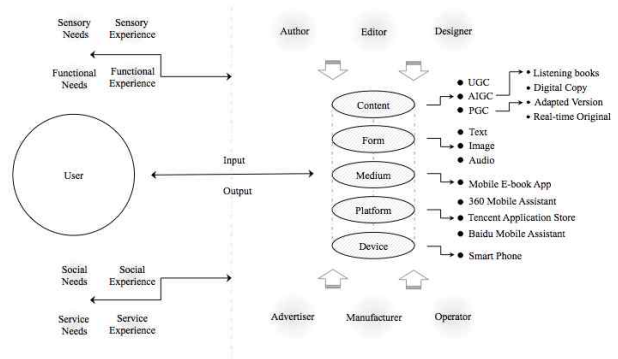1) CNNIC is short for China Internet Network Information Center.

Fig. 1. The five planes constructing user experience of mobile e-book App

2.1 The Device Plane: mobile phone

The device plane is the fundamental plane and plays essential role for the choices of the rest planes. For example, if you own a Huawei phone, you may certainly use the Application Store and Honor Read App from original device manufacturers (ODMs) to read e-books. Besides brand, the texture and performance of the phone are all key points constructing user experience.

2.2 The Platform Plane: application stores

The platform plane here is mainly referring to the application store, which is responsible for nearly all the aspects of our daily life and is also an important way to access service providers as well as realize absolute digital being. It means that with all kinds of applications, we may experience different kinds of products, systems and services.

2.3 The Medium Plane: mobile e-book App

This is the main part of the interaction as a whole. Compared with other planes, the medium plane plays the most significant role to construct the user experience; meanwhile, it is responsible for carrying and disseminating the content plane. The layouts, navigation, font style together with background color in medium interface are all key and influential elements during interaction. Currently, it is noteworthy that many media are striving to move toward platforms, they not only disseminate content, but also provide service products and social products.

2.4 The Form Plane: text, image and audio

From the form perspective, text, image, audio, video and Augmented Reality, Virtual Reality and Mixed Reality are basic components of the content, which result in different experiences. However, the medium forms on current mobile e-book App are text, image and audio. Compared to the former two, audio is contingent and can liberate the user from physical fatigue.

2.5 The Content Plane: PGC, UGC and AIGC

The content plane is the final purpose of use of mobile e-book App. Professionals, users and Artificial Intelligence are three main subjects contribute to the content, which lead to PGC (Professional Generate Content), UGC (User Generate Content) as well as AIGC (AI Generate Content) three types of content. While the PGC mainly includes three forms named digital copy, adapted version and real-time original.

3. Contextual Interview of User Needs

Contextual interview, which combines observation and interview, means that the researchers observe and listen to users in their real context rather than the laboratory, the implementation way of which is more natural and the result more real.

According to iResearch data released in July 2017, iReader, QQ Read and Shuqi Novel are the most popular three Apps in China mobile reading market, the corresponding number of their monthly independent devices are 93.75 million, 56.21 million, and 22.21 million respectively. Therefore, the interviewees are determined within users of the three APP mentioned above.

3.1 Participants

A total of 48 interviewees were determined in this study with 16 users using each App (iReader, QQ Read and Shuqi Novel) forming a group. The age of participants ranged from 20 to 45 years old, including 8 females and 8 males of each group. All had used the App for at least 2 months, which are much longer compared with average users. Participants were recruited through advertisements on WeChat's Circles, before which prospective participants completed a screener questionnaire by the function of voice chat on WeChat. The screening questions concerned the participant's age, gender, and details regarding to their mobile e-book App use. Only experienced and regular users were adopted in this study. The participants were compensated with $5 for their involvement. Each group interview took approximately 1.5 hours to complete.

3.2 Implementation

First of all, before the contextual interview, the researcher explained the purpose and significance of this study, and sought permission from the interviewees about using recording means such as pictures and videos. And during the interview each participant was asked to perform tasks with their own mobile e-book App on a planned execution order in interaction design lab, TED Graduate School, Kookmin University. The list of tasks was agreed upon prior to the use based on the experience of the user. These tasks were grouped into four categories: discovering and accessing a target e-book, setting and experiencing the reading interface, listening to the e-book and reviewing and sharing.

The role of the researcher was to have participants demonstrate several tasks that they would normally perform. During the process, the researcher reminded participants which tasks they had completed and which tasks still needed to be demonstrated. Examples of each task type are presented in the next section. Specifically, when the users were performing their tasks, the researcher carried out focused interview around the key operations. Besides video recording, all the key points were arranged with pen and paper.

Task Types

There were four types of tasks commonly performed by mobile e-book App users during the interaction process: discovering and accessing a target e-book, setting and experiencing the reading interface, listening to the e-book and reviewing and sharing.

Discovering and accessing a target e-book: Participants discovered and accessed a target e-book through the mobile e-book App. Generally speaking, participants might search for a target e-book by the "search" icon, import the e-book downloaded to the mobile phone to the "bookshelf" or transmit it from other devices to that of the App by the function of "transmitting by WLAN" (iReader), "transmitting by Wi-Fi" (Shuqi Novel) or "transmitting by Weiyun cloud storage"(QQ Read). If the target e-book is in "paid reading mode", the user needs to choose to buy or refuse.

Setting and experiencing the reading interface: In this step, participants experienced the reading interface and contents of an e-book, before which they usually would like to set the interface. Participants were asked to set the brightness, font size, spacing, background color, font color and flip effect of the interface before reading, also to experience the "night mode" and "eye protection mode". The purpose is to find a best set for reading.

Listening to the e-book: Participants were asked to employ the "phonetic reading mode" in the reading interface, before which they could set the speed as well as the timbre.

Reviewing and sharing: During this part, participants were asked to comment content and share it to the SNS such as WeChat, Circles, Sina Micro blog and QQ Zone.

3.3 Results

Different kinds of tasks lead to different types of unpleasant and dissatisfied experiences. The majority of problems observed in the contextual interview were accordingly classified into four categories: problems in discovering and accessing, problems in setting and experiencing the reading interface, problems in listening

to the e-book and in reviewing and sharing.

Problems in discovering and accessing: Participants in this part had been divided into two types according to whether they have specific targets or not, which leading to low paying willingness and inadequate personalization. On the one hand, participants who have a specific target (19 of 48) tended to obtain e-books by searching keywords directly, if they could not find expected result (13 of 19) or they found it (6 of 19) but need to pay for it, most of them (17 of 19) would turn to the micro-disk or network disc to download the target e-book to mobile phone and then imported it to the App to read, rather than pay for it in the first instance. On the other hand, for those who didn't have a specific goal (29 of 48), they would firstly resort to the "ranking list" (15 of 29) or the "free zone" (9 of 29) to find a target e-book. However, the former was considered to be too general to meet users' individual demands (9 of 15) and if they need to pay for the e-book, they would turn to other channels (12 of 15), while as the majority (7 of 9) considered, e-books in the latter were mostly those not popular and of low quality.

Problems in setting and experiencing the reading interface: Strain of hand and eye muscle, visual deterioration and monotonous interface background constituted the main problems of this stage. Firstly, the function of "auto flip" has been applied to all the three mobile e-book Apps, but participants considered it as losing their initiative (32 of 48) and failing to conform to their reading habit (36 of 48), while "manual flip" was easy to cause hand muscle fatigue. Secondly, the aforementioned three Apps' reading themes were roughly the same and not updated for extended periods of time, which resulting in aesthetic fatigue (35 of 48). Meanwhile, the backgrounds set by participants themselves were relatively rough (24 of 48). Last but not the least, "before going to bed" (42 of 48) and "waiting for public transport or friends" (37 of 48) were considered to be the top two contexts using mobile e-book App, but both of the contexts are not suitable for digital reading and are visually impaired. Although "night mode" as well as "eye protection mode" have been employed, they were widely regarded as "chicken ribs" (30 of 48). Therefore, participants were asked to perform the following task.

Problems in listening to the e-book: All the three mobile e-book Apps were equipped with "phonetic reading mode", the experience of which was considered to be poor, artificial and giving the user a sense of machinery (42 of 48). 35 of the participants indicated that they usually do not use this mode, while 13 suggested that sometimes they will have a try, but not for long-term use.

Problems in reviewing and sharing: Despite iReader, the other two mobile e-book Apps didn't show other users' comments among the same reading interface, which could not set off discussion and resonance. Meanwhile, 40 participants showed low willingness to share an e-book through SNS forwardly only if there were some special offers, 4 participants would like to share if the content is of high quality and 4 participants would never share.

To sum up, we may find that factors contributing to unpleasant experiences can be accordingly classified into four categories: Charging and general classification, monotonous interface and physical fatigue, mechanical voice and social factors lacking.

4. Guidelines for Enhancing User Experience

Marx developed a new study dimension of Alienation named Labor Alienation with inheriting thinking from German classical philosophers and laying foundation for scholars from Frankfurt School (Liang, 2013)[4]. Following this paradigm, the study of Technology Alienation, Information Alienation together with Media Alienation highlights the contradictory and opposing relation between human and artifact such as technology, information and media. In this paradigm, both sides confront each other with daggers, almost impossible to reconcile. However, the causes of revolution tend to come from the outside. The paradigm of user experience from the discipline of interaction design, beyond communication and philosophy, has become important perspective to be introduced to this field.

User experience is a perspective which is user-centered and human-oriented, it takes user need, feeling, attitude as well as emotion as the logical starting point and essential foothold of design and study. User's subjectivity, creativity and enthusiasm will be significantly highlighted and encouraged according to this paradigm, which can not only relieve the problem of alienation from the view of humanistic concern, but can also resolve the problem that neglecting user need with the fact that "media is the center" in journalism and communication field, and contribute a kind of "product thinking" to professionals in media industry corresponding with the term "user" at the same time.

Based on the aforementioned problems and unpleasant factors, relevant guidelines for user experience design for China mobile e-book App might be summarized as four aspects: native advertising and social elements; graph search and LBS; eye-screen interaction; public creation and UGC.

4.1 Native Advertising & Social Elements

It is essential to expand the user scale by encouraging them to voluntarily forward contents and invite friends through the SNS, and to embed in native advertising instead of charging users.

As is known to all, social media such as Facebook, WeChat and Twitter strengthens the strong relationship between individuals and

build weak relationships between strangers, it is no wonder that Clay Shirky acclaiming "the power of organizing without organizations"[5]. E-book may be a gift to a friend; also, it is generally considered as a kind of "social lubricant". Interaction between user and product may trigger that between different individuals accordingly.

Besides, native advertising is considered as a kind of significant means gaining benefits without affecting user experience. The agency Sharethrough defines native advertising as "a form of paid media where the ad experience follows the natural form and function of the user experience in which it is placed"[6]. While turning to academic work, Couldry as well as Turow (2014) consider native ads as "textual, pictorial, and/or audiovisual material that supports the aims of an advertiser (and is paid for by the advertiser) while it mimics the format and editorial style of the publisher that carries it"[7].

To combine these definitions, we may consequently find that the successful implantation of native advertisements can compensate for the user's free trial mode without compromising the user experience. Nevertheless, to share contents and invite friends through the SNS, which is a kind of cost of free reading, may expand the user scale, which will attract more advertisers and capital as well.

4.2 Graph Search & LBS

Mobile e-book App may benefit from recommending suitable e-books to users based on the technology of graph search, which could retrieve users' words as well as interpersonal relationships on the SNS. Robert Scoble and Shel Israel(2013) put forward that the hugeness can intimidate, but the little pieces make us smarter and enable us to keep up with, and make sense of, an accelerating world. This is the miracle of little data[8].

In most cases, users don't have a clear idea of what they want to read, but they may be more or less mentioned in the process of searching for information and chatting with friends. Graph search will enable mobile e-book App to analyze the keywords and social maps of users and provide suitable e-books as a kind of personalized push services. Nevertheless, combining with LBS (Location Based Service), mobile e-book App could collect the location information about the printed version of the most popular e-books or the users' favorite ones and push them to the relevant users to achieve O2O closed loop.

Besides, the storage platforms for big data processing such as distributed file systems and the techniques of parallel processing could be considered[9][10].

4.3 Eye-screen Interaction

Eye movement interaction may be a better choice compared with "manual flip" and "auto flip". As a kind of new means of interaction, eye tracking technology capture the eye image feature through the image sensor to recognize each person according to the image processing of the eye pupil, and can calculate users' real-time fixation point on the screen through these features by PCCR (the Pupil Center Corneal Reflection).

As we all know, a long time staring at the phone screen to watch easily lead to dry eyes, eye astringent and eye fatigue, and "blink of an eye" can relieve eye fatigue. Introducing eye-tracking technology into mobile phones and applying it to mobile e-book App can liberate digital readers from physical fatigue and control the speed of page flipping autonomously.

4.4 Public Creation and UGC

On the basis of mechanical AI voice, it is necessary to introduce the producing form of "user generate content" (UGC) to the "phonetic reading mode" of mobile e-book App in order to enhance user stickiness through public creation and to express humanistic care.

Shuqi Novel provides users with an "original" section, in which users can upload their own works. Phonetic reading part can also learn from this UGC model with users uploading their voice of e-books to make up for the deficiencies of mechanical voice by natural voice and the form of public creation. In addition, users can also upload dialect version to provide individual and local service. Young children upload their own voice and "push" them to their parents far away; while young parents who have to work in other cities may "push" their voice to kids and accompany them to sleep.

5. Conclusion

User experience is a whole, the device, the platform, the medium, the form, and the content are closely related to the user experience; the user experience is a process, from discovering and accessing, setting and experiencing, listening, as well as reviewing and sharing, the user experience has experienced a dynamic change. Mobile e-book App is not only related to the current user experience, but also connect the former context and the latter context; it can bring reading experience, but also associated with all aspects of life experience. The interaction between individuals as a result of that between user and product deserves much more attentions.

References

[1] Xia Tao, "The development and transformation of mobile e-book App based on 'WeChat e-books'," A Vast View on

Publishing, No. 10, p. 40, June 2016.

[2] Li Xingxing, "The E-book Platform: user experience is the king," Information on Publication, No. 19, pp. 17-18, July 2011.

[3] Qiao Hongli, "Research on Influencing Factors of Satisfaction with the Mobile Reading Service from E-book App," Library Journal, No. 4, p.28, April 2017.

[4] Liang Peipei, "Cultural Reflection on Alienation of Internet Information Consumption," Master dissertation, Shandong Normal University, Jinan, 2013.

[5] Clay Shirky, Here Comes Everybody: the power of organizing without organizations, Penguin Press, 2008.

[6] Sharethrough. Native Advertising Insights [Internet]. Available: http://sharethrough.com/nativeadvertising/.

[7] Couldry, Nick and Joseph Turow, "Advertising, big data and the Clearance of the Public Realm: marketers' new approaches to the content subsidy," International Journal of Communication, No. 8, pp.1710-1726, 2014.

[8] Robert Scoble and Shel Israel, Age of Context: mobile, sensors, data and the future of privacy, 1st ed. Patrick Brewster Press, p. 5, 2013.

[9] J. Yoon and U. Song, "Study of Optimization through Performance Analysis of Parallel Distributed File System," Journal of Digital Contents Society, Vol. 17, No. 5, pp. 409-416, Oct. 2016.

[10] V. Nguyen, S. Nguyen, and K. Kim, "Design of a Platform for Collecting and Analyzing Agricultural Big Data," Journal of Digital Contents Society, Vol. 18, No. 1, pp. 149-158, Feb. 2017.

Liang Peipei

2013 : Shandong Normal University, Master
Now : Kookmin University, Ph.D

2013~2015: Media Innovation Center, CUC, Editor
2016~Now: Interaction Design Lab, Kookmin University, Ph.D
※Research Area : User Experience, Media Convergence

Young-Hwan Pan

1993 : Industrial Engineering, KAIST, Master
1999 : Industrial Engineering, KAIST, Ph.D

1999~2005: Samsung Electronics, Senior Researcher
2005~2006: Pantech Co., UI Team Leader
2013~Now: UXPA in Korea, President
Now: Kookmin University, Professor
※Research Area : User Experience, Service Design