User Review Analysis of Mobile English Vocabulary Learning

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Abstract: *More and more language learners today rely on mobile assisted vocabulary learning to expand their grasp of words. Against this background, reviews left by target users are impactful in a language learning app market because online reviews play roles as a decision-making tool used by prospects before committing to any service provider and as a channel through which a mobile app developer understand users' current expectations and their using and learning experience in depth. The aim of this study is to explore the issues users concern the most in app-based vocabulary learning and provide suggestions to mobile app developers, hoping they leverage the advice to perfect apps' performance and gain a competitive edge in a booming app market.*

Keywords: Review analysis, Mobile learning, Vocabulary learning

1. Introduction

The basics of acquiring a new language come down to learning vocabulary; however, how to learn vocabulary effectively is problematic (Alqahtani, 2015). Many researches have proven that vocabulary is acquired in a multitude of ways. For example, vocabulary learning is facilitated while language learners are doing reading (Jenkins, Stein, & Wysocki, 1984). In another theory, some scholars believe that body gestures lead to learning new words more effectively with the aid of multimedia (Pi, Zhu, Zhang & Yang, 2021). When new words are introduced with concurrent gestures, all the gestures that are understandable enhance language learners' comprehension of target words and support recollection of those words (Huang, Kim & Christianson, 2019). A "listen-and-sing" pedagogical method is also proven useful for picking up a language (Ludke, Ferreira & Overy, 2014). Other scholars demonstrate that language learners gain benefits from a gamified vocabulary teaching method (Mohamed, 2021). Researchers have identified various research-based strategies for learning vocabulary in a real classroom.

However, because of the coronavirus outbreak, more learners tend to rely on online language learning, which once only served as a facilitator in a language class (Zboun and Farrah, 2021). Many studies shift their focus to online language acquirement, in some of which scholars start to pay attention to mobile-assisted language learning, a popular research area in the field of second language acquisition (Lin & Lin, 2019). Language learning apps give a wide range of support in vocabulary learning through audio pronunciations, specific definitions, related practices as well as different dictionaries (Ana, 2015). Learning vocabulary via a mobile app seems to be a new trend in the Chinese language learning market in recent years.

Finding a high quality vocabulary learning app, however, appears to be a daunting task particularly when a language learner is given numerous options in modern days. App quality dramatically varies behind the ostensibly booming mobile app market. Users, before downloading an app, consult reviews to help them make a decision (Al-khiza'ay, Alallaq, Al-Mansoori & Al-Sudani, 2019). To a mobile app developer, reviews, containing rich information on users' opinions and expectations, also play an important part in future mobile app design (Jiang, Kwong & Yung 2017) Both positive and negative reviews faithfully reveal users' preferences and needs, and understanding and analyzing user experience has gradually become a design paradigm (Yang, Liu, Liang & Tang, 2019). Thus, this study aims to help mobile app developers to improve their mobile app designs in the Chinese vocabulary learning market based on review analysis. The main objectives of this study are:

To understand what are some emerging problems when learners are using apps to improve their lexicon.

To explore what are the determinant factors and important features of a successful vocabulary learning app from the perspective of users.

2. Literature Review

Mobile learning has become popular since digital devices with easy access to internet are more affordable and accessible to normal people. The concept of mobile learning refers to the implementation of a portable digital device in any branch of study, one subdivision of which is mobile assisted language learning

(Gangaiamaran & Pasupathi, 2017). Generally, that users rely on personal, portable, and wireless devices, ranging from mobile phones to computers, to learn a language is defined as mobile-assisted language learning (Gangaiamaran & Pasupathi, 2017).

On one side, the emerging trend is seemingly changing our educational philosophy and shaping a better future of e-learning. For example, in one study conducted in Greece, most educators involved in the research agreed that they were ready to adopt mobile learning in their classrooms (Nikolopoulou, Gialamas, Lavidas & Komis, 2021). In a controlled classroom setting, existing evidence has also proven that mobile learning has positive effects on language acquisition (Wang, Teng, & Chen, 2015). For instance, some researchers maintain that mobile learning benefits low-achieving students in a language class by bolstering their confidence and making obvious changes in their learning outcomes (Hao, Lee, Chen, & Sim, 2019). Evidence has also demonstrated that students who were using phones would spontaneously spend more time studying outside the classroom (Leis, Tohei & Cooke, 2015). An educator is not hard-pressed to support an argument concerning the effectiveness of app-based language learning with robust evidence.

On the other side, however, scholars have keenly noticed the downsides of mobile learning. For example, some scholars raise their concerns that mobile learning has constraints including the initial equipment design that is not suitable for language learning, limited storage capacity and memory retention of a device, and reading on a small screen and more (Miangah & Nezarat, 2012). In a similar vein, other scholars, after examining voluminous literature, also

express their worries, reasoning that an app may contain materials of an unsuitable level, cause distraction to students, and fall flat to eliminate concerns from home and school (Kacetl & Klímová, 2019). One feature of mobile learning is that learners can decide when and where they study a target language with great flexibility (Kukulska-Hulme, 2012). Beyond the confine of a classroom, language learners are left huge room to make their own study plans, unfortunately, without professional instructions in most cases. All the concerns and worries noticed by scholars may directly bother language learners using mobile learning in their daily life.

One way to solve the problem is to identify essential elements of designing a better vocabulary learning app and improving the current mobile apps' performance so that language learners are supported by a better tool to improve their lexicon. Many apps offer online channels to streamline communication between service providers and users, because of which, analysis of user reviews may help us derive some insights about future mobile app design for vocabulary learning. Thus the purpose of the study is to pinpoint what is of the utmost importance to users and how to improve vocabulary learning apps in the future based on user review analysis.

3. Methods

To achieve the research goals, inductive method is employed in this study. First, user reviews are collected and sifted. Then selected reviews are categorized based on detected patterns. Finally, detailed explanation and suggestions are provided based on review analysis.

3.1 App Selection

To identify necessary features of a successful vocabulary learning app and help mobile app developers avoid emerging problems in the vocabulary learning market, apps that have a high market share may cast light on these murky issues. Keywords such as "vocabulary", "English words", and "English learning" were searched in App Store. Five apps that had the most downloads were ultimately selected because they had a considerably large number of users. Apps which were not solely designed for vocabulary learning were excluded. Total numbers of app downloads of the top five were 803,000 times, 451, 000 times, 210,000 times, 102,000 times, and 61,000 times respectively. The data were collected in February 2022. Numbers of downloads of other apps were relatively small so information about those apps would not be considered. In addition, two of the five apps were excluded for that reviews of the two apps were not reliable. In January 2022, one app of the two had more than 1500 reviews without any negative reviews. Every user writing reviews gave a five star rating meaning that every one was extremely satisfied, which is not supposed to happen to any products. The total number of reviews of the other app was approximately 1800 in that single month with less than 2.5 percent of reviews being slightly negative. When those negative reviews were carefully perused, not one review was substantive or informative. To ensure the data credibility, data of the two apps were no longer employed. The selected three apps were Baicizhan with 830,000 downloads, Hujiang Word Fun with 210,000 downloads, and Zhimi with 61,000 downloads.

3.2 Data Collection

Since all three apps are updated frequently every year, reviews left more than half a year ago might fail to reveal useful information and individual experience concerning the latest functions and changes. Accordingly, this study mainly focuses on reviews left between June and December 2021.

3.3 Data Analysis

Since a complete message or information is communicated in one or more chunks in Chinese both explicitly and implicitly, it is not possible to simply extract salient features or opinions through selection of high frequency nouns, noun phrases or adjectives., etc.

Example:

It is very nice. Very vivid.

This ambiguous meaning expression implies that this user liked illustrations used to explain word meanings. To avoid that any important information is missing, every sentence or unstructured chunk is carefully read and opinions or features are artificially extracted based on its explicit or implicit meaning.

Through extraction, all those reviews are classified mainly into three groups based on inductive method: invalid reviews, positive reviews, and negative reviews. Invalid reviews will not be discussed because they don't contain information that provides any constructive suggestions. All 2902 invalid reviews are the ones: a) that only express personal emotions or perceived achievement without reasons following (e.g. "I do like this app!" or "I have improved my English score."); b) that contain valueless information such as a messy code, a string of numbers,

customer loyalty, non-English vocabulary learning experience or advertisement (e.g. "I have used this app for more than two years." or "It is a good app for Japanese learners."); c) that are questions from users to figure out how to use basic functions; d) that are pure appreciation to program developers (e.g. "Thank you, I do like this app. You did a great job."); and e) in which identical information occurs.

In order to identify language learners' needs and find design inspiration from a large volume of review data, both positive and negative reviews would be further examined by detecting actionable suggestions and classifying those ideas and sentiments into several groups. In this study, negative reviews are mainly concerned with how to improve programs for better vocabulary learning experience while positive reviews included information about what functions should be retained and reasons occasionally given. To be more specific, both positive and negative reviews would be further analyzed from three aspects, namely user interface design, system operation and service, and learning experience.

In a general sense, a user interface, types of which include graphical user interface, command line interface, menu-driven user interface, touch user interface, etc., is an access point where human-computer interaction happens (Churchville, 2021). This study mainly focuses on the design of graphical user interface, a visual representation on digital control panels, for that most users are concerned with effective visual information capturing and visual comfort. In the part of system operation, reviews about system operation zero in on problems of operation fluency while service part refers to the quality of customer-agent connection and price issue.

The two parts are frequently mentioned in reviews in the range of using experience, both of which are, however, unrelated to visual or academic issues, and are therefore discussed respectively under the same theme. In terms of learning experience, opinions and salient features related to academic issues are extracted and reconsidered. All three themes are identified based on what users concerned the most through opinion and feature extraction in previous steps.

4. Results and Discussion

In this section, users' needs and learning experience are analyzed from three forementioned aspects. One interesting finding is that target users of the three apps have mutual features in each aspect. Therefore, data collected will be mixed for further analysis. Through data collection, all 1473 reviews were filtered and selected, in which there were 1032 negative reviews and 441 positive reviews. Since in a single negative review one user might leave more than one detailed suggestion, the total number of the detailed suggestions is slightly greater than the number of negative reviews, which is 1147. For example, one user gave feedback that modeled pronunciation of one word didn't match the given phonogram and that some functions couldn't be found easily on the screen. In such a review, topics this user discussed would be regarded as two separate suggestions. Likewise, in one positive review, one user would possibly refer more than one certain favored feature. The referral number is 495, predictably greater than the number of positive reviews. All the data are listed in table one.

Table 1. Different types of reviews and total numbers

Type				Number
Invalid review				2902
Negative review				1032
	Detailed suggestions			1147
		Interface design		502
			Versions available on iPad / Landscape orientation	410
			Dark mode	54
			Complicated interface design	38
		Syetem operation and service		202
			System issue	137
			Poor service	36
			High price	29
		Learning experience		443
			Professionalism	242
			Personalization	201
Positive review				441
	Referrals			495
		Interface design	Simple interface design	96
		Syetem operation and service		52
			Price	49
			Good service	3
		Learning experience	Features need to be maintained	347

Note: All data were obtained in February 2022.

4.1 Negative Reviews

4.1.1 User Interface Design

Among all 1147 detailed suggestions, 502 are about user interface design, where there are three major problems remaining to be tackled. First of all, a requirement for building and deploying a version of apps that can work both on a tablet and a phone in landscape orientation appears 410 times, occupying approximately 36 percent of all 1147 suggestions. There are several reasons why users have such a need. Since users usually spend a long time finishing one learning task per day, they naturally hope to stare at a larger screen where images and words are adjusted to a larger size in proportion to the screen to protect their eyes, the idea of which also helps explain why users expect to place their phones or tablet in landscape orientation. Unfortunately, the current app design only allows users to use those apps in portrait orientation on their phones, causing a visual constraint. Further, many users are wont to split-screen multitask learning pattern. When they are doing vocabulary learning, the split-screen function on tablet engages them in instructive videos, taking classes online, looking up word meanings, or finishing other tasks simultaneously. Given this popular user learning pattern, designs to permit rotation both on phone and tablet should be given priority in future mobile app development.

Approximately 11 percent of reviews among 502 suggestions in terms of user interface design reveal that mobile app developers should design a dark mode or an eye protection mode. Since the target users of this type of apps are students who spend most of their daytime studying at school, they usually learn vocabulary at night, which means the artificial light from the screen becomes stronger, making users' eyes uncomfortable. A night mode helps protect eyes from strains. This need from users also reminds future mobile app developers that target users' daily schedule should be seriously taken into consideration.

About 38 reviews indicate that interface design is overly complicated. Users find it difficult to interact with necessary functions on the screen because they can't find functions they need. Some typical problems are that:

1. users can't directly see progress bar which informs users of how much they have done;

2. users are not given feedback about their academic performance;

3. users can't find functions such as dictation and autoplay vocabulary broadcast, which help language learners review what they've learned.

It is partly because some new users are unfamiliar with multiple functions or technologically illiterate but the fact that some users who have used apps for years can't find functions such as dictation practice strongly indicates that the interface design certainly needs to be improved to ensure easier user-app interaction. Gratuitous advertisement directing users' attention to unnecessary information can be another cause of such inconvenience as some users complained in their reviews. The third possible reason can be that many functions are hidden. A simple but ambiguous icon on the screen fails to convey sufficient information to tell users what functions can be found after touching that icon.

Though different users have personal preferences and habits of using an app, mobile app developers should pay sufficient attention to problems that have been mentioned continually in negative reviews. Undoubtedly,

certain reviews are unfair because some users are not well acquainted with functions of newly downloaded apps or they are lack of requisite skills to use those apps effectively. Most reviews reflect users' objective attitudes toward an app. To optimize such language learning apps, the user-centered design philosophy should be always kept in mind.

4.1.2 System Operation and Service

Among all 202 detailed suggestions in terms of system operation, 137 users reported that systems didn't run smoothly, accounting for a massive 67.8 percent of reviews in this part. There are four major problems. First, apps crash on splash screen. It may cause a costly user churn. In this study, it is found that poor app stability and bugs directly led to some users to delete those apps or leave harsh reviews. One user left a critical review, saying he unhesitatingly deleted the app because he couldn't stand an unstable app. Second, users are not able to log in their accounts from time to time. That may influence learners' daily routine. In fact, many target users have tests ahead. Their study schedules will be affected if they can't follow their predesigned vocabulary learning and reviewing timetables. Third, apps fail to provide users with uninterrupted sessions. For example, in one review, the user said that the app froze for more than 30 seconds before the next word could appear on the screen. Application freezing causes inefficiency and time-wasting and may impede mental flow when a learner is studying attentively. Fourth, users are not able to download or update some vocabulary ebooks, which is basic service. When users are not accessible to the basic service, uploading or downloading necessary documents, it is unlikely for them to consider further utilization. Other minor problems also exist. For example, in the past users could discuss in

their study groups online, which was a popular function. Because of frequent system crash, they are not able to leave any message to their partners. Additionally, when users are doing revision by spelling new words, the system identifies correct spelling accidentally as wrong.

About 17.8 percent in 202 reviews focuses on poor service delivered by apps. The first obvious problem is that users can't get their refund. For example, one user deposited some money in his account but later that user didn't place any orders. He rightfully expected a full refund. Unfortunately, he couldn't get any return. Companies' breach of their economic duties — users get their refund without runaround — possibly involves intentional misconduct or a knowing violation of law. Meanwhile, some users complained that after they deposited money, they couldn't check their balance, which also violates customers' rights to know from both a moral and a legal perspective.

Second, when users have complaints or requests, response time is long or no response is given in most cases. Users today expect communication with virtual service agents to be instant. Indeed, immediate resolution of users' concerns are indisputably important when efficiency is greatly valued in modern days. The relationship between business and its potential users will be stagnated if a prompt reply is not offered. Users are likely to assume that the service agent has no interest in their needs if response are delayed, let alone no responses from business.

Third, users' personal information should be strictly protected. Some users complained that after they registered online, they received multiple phone calls from different companies trying to sell products to them. The leakage of

personal privacy deeply bothered them. These users' experiences are merely an epitome of the entire app market where many apps require users to provide information such as their personal phone number, real-time location, associated accounts on other apps and so forth before starting their service. This marketing strategy is ignoble because many companies actually fail to get any permission from users for using their personal information for other commercial purposes. Consequently, some users expressed their strong anger in their criticisms.

Last but not least, in 29 reviews users are not satisfied with the high prices of service and byproducts sold online. As is known to all, the actual market prices of goods are determined by the interaction of both the law of demand and the law of supply. Though it is irresponsible for us to arbitrarily draw a conclusion that the products are sold for more than their worth, the concern about the prices from a noticeable number of users should be eliminated somehow.

Problems listed above deserve time and solutions because users may wear off an app due to one bad experience. Collecting and analyzing in-app feedback is critical for business to improve its service based on real marketplace needs.

4.1.3 Learning Experience

The main purpose for users to download these apps is to expand their mastery of vocabulary. Nearly 443 detailed suggestions concentrate on users' learning experiences, 54.6 percent of which are concerned with professionalism with the rest in regard to personalization. More than half of the users criticized the quality of teaching materials while the other half of users made demands of more personalized settings.

4.1.3.1 Concerns about Professionalism

The potential user group is large, ranging from beginning language learners to advanced learners. A high quality app, embodied in the accuracy of English knowledge, reinforces word skills while a bad one impairs this skill for not all learners are capable of realizing teaching errors and doing self-correction. Indeed, many users concern about the current qualities of all three apps. Some academic issues are raised in all 242 suggestions in terms of professionalism. First, the given information is not matched or correct. For example, the meaning of a word is unmatched with its illustration. Some words are mispronounced with wrong phonogram or at an improper speech pace. Because many learners are still at a beginning level, they are likely to be misled and build up wrong vocabulary knowledge, ending up with considering using an app a waste a time. Content editors of an app should always be mindful of users' learning experience and showcase each knowledge point with great care.

Second, essential information is missing. Users require vocabulary trivia such as verbs conjugation, commonly used phrases, homophones, homographs, instructive videos, uncommon meanings of words, and sufficient real-world sentence examples to facilitate their better understanding of English. To learners without rich English language learning experience, they need extra support to build a knowledge frame for further exploration. As to advanced learners, they may have to study archaic literature or construe obscure meanings, whose need is concentrating on terminology acquisition. So to improve user satisfaction and cater to different needs, both content editors and mobile app developers should provide more comprehensive

information on language acquisition from different dimensions.

Third, more word books are expected to be imported into apps. A larger user base gives these apps a better chance to reach out more people; however, unclear service goals are associated with such an ambition. For example, ebooks including specialized vocabulary learning in certain fields are not available to users who have such a need; nor are vocabulary books according to regional English curriculum frameworks. Offer of limited sources to multiple users segmented in distinct groups results in a gap between what users actually seek for and what an app can purvey. To solve this problem, software companies either set a clear goal with which a subset of education is chosen and business is tailored to a particular niche or have a broad marketing strategy, reaching out all audience with all-in-one service.

Other problems less mentioned in reviews are that:

a. sentence examples are listed without audio recordings;

b. commonly used meanings are not distinguished from meanings rarely used;

c. standards against which learners measure vocabulary are not reliable.

Comprising the quality of an app may come with consequences such as users' complete abandonment of an app or negative reviews through which users complained about bugs and glitches. Factors such as English language error will come down to the ultimate user experience. A low quality apps, falling short of users' expectation, winds up with users converting to other apps.

4.1.3.2 Dissatisfaction with Personalization

A whopping 45.4 percent of users felt discontented because their using experience was impersonal, leaving a myriad of detailed suggestions about how to improve individualized settings. The users' voice should be heard.

To help an app level up, a list of tips provided by user for how to customize settings is curated. While users are learning new words:

1. predesigned choices should be displayed in a random order;

2. users can freely choose to learn words with pictures, audio documents, videos, or text alone;

3. users can personalize their word lists and daily study schedules;

4. take notes or leave messages for later use;

5. be able to manage self-imposed deadlines and send customized reminders to users;

6. increase the maximum number of words that can be marked, highlighted, and saved;

7. record learners' pronunciation and later compare theirs with standard pronunciation;

8. set options such as "I can clearly remember", "my memory is vague", or "I don't remember" for each word;

9. allow users to edit meanings of a word;

10. install widget on the home screen and get a daily new word automatically;

11. provide a mind map for each word as memory facilitators;

12. add English translation;

13. get users informed of the error times and personal accuracy rate for each word;

14. create hyperlinks between related words;

15. learners are given chances to make sentences with target words and build word association networks;

16. learn new words offline;

17. offer voice prompts to inform users whether they get the meaning right or wrong.

After users have learned all new words:

1. they can customize the number of times of reviewing target words;

2. they can cancel or postpone review schedules;

3. demonstrate the current number of learned words and get to know their levels of existing knowledge of vocabulary;

4. create a positive learning environment, trigger a reward system, and increase peer encouragement;

5. use multiple forms of vocabulary assessments including dictation, cloze tests and so forth;

6. the same questions can be re-answered to deepen their memory.

Through those reviews, what is noticeable is that users are looking for more personalized settings based on their own learning patterns and using habits. Even though developers are not expected to cater to each individual user, it is possible to predict their preferences through those valuable reviews. Because all those practical suggestions stem from extant frameworks of the apps, app developers don't need to rebuild a frame painstakingly. Instead, they should take full advantage of those suggestions and modify their designs.

If developers listen to their users' voice, even minor progress will set an app apart from the heated competition and guide them on their path to perfect their service.

4.2 Positive Reviews

Many users in this study generously left a high star rating; however, a 5-star review with no accurate depiction of using experience following provides no valuable insights which tell us what actually benefits users. The value of receiving a detailed positive review is to help mobile app developers precisely spot what specifically sets their apps apart from the competition and what is likely to win a more significant number of users over in the future. What's more, when potential users spend several minutes reading those reviews, a powerful and persuasive 5-star review with detailed descriptions helps alter a bad impression caused by some negative reviews and serves as a decision-making tool.

4.2.1 Interface Design

In all 495 positive reviews, 96 reviews focus on apps' aesthetic design. A typical review is that " the interface design is sleek and simple." A sheer number of users agree with such a review, saying that they are satisfied with these apps' aesthetically pleasing interfaces when they interact with apps. Most users use "clean", "convenient" and "understandable" to describe the interface design when they recommend those apps to new prospects.

It seems to be paradoxical that users of the same apps have totally disparate feelings about the interface design. Some users think it is too complicated while other agree that simplicity is the strength of those apps. It is may be because aesthetics is subjective or users' previous app using experience is different but

realizing mutual merits of the interface design of those apps is worth more efforts. There are three common features causing users to think the interface design is pleasant.

First off, the color scheme used in each app is internally coordinated. The main colors chosen in the color wheel are cool ones, such as blue and green. At a psychological level, colors on the spectrum known as cool colors are described as calm and stability. The service purpose of these apps is to facilitate users' language learning that requires learners to be attentive and focusing on their study. A cool color, for example blue, gives users a sense of imperturbability and peace, subconsciously leading them to be more composed and absorbed in their academic affairs. Such a color also successfully makes a learner unwittingly think the app is reliable and trustworthy. All in all, colors chosen in each app, admirably proportional and balanced, have realized the initial objectives of the interface design.

In addition, users can interact with the interface easily. It is partly because some users are technology savvy. Another more important reason is that visual icons on the screen as a great attention grabber guide users to target functions effectively. When a user logs in an individual account, icons on the interface aid navigation to the most essential functions users need. One golden rule is that simple icons of an app should be designed mostly for uses' goals and from their perspectives while a complex design compromises efficiency of using an app. Admittedly, no design can satisfy everyone. Mobile app developers should be mindful of a fact that visual icons are used as guidelines. Especially to people who are relatively technology illiterate, try to keep icons as simple and understandable as possible so less negative reviews will be received.

Third, the amount of advertising appearing on the screen is deliberately controlled. Too much advertising that diverts users' attention to unnecessary information and influences the quality of user experience may cause a costly user churn. It is understandable that a business benefits from advertising. What is admirable is that the three apps moderately deliver advertisements to users to avoid bothering them so that apps successfully increase user engagement and enhance using experience.

In conclusion, when users use these apps, the color and typeface are strategically used to convey a sense of calm and reliability with carefully designed layout and items that help hold users attention to target functions and get tasks done comfortably and swiftly and interfaces purposefully kept relatively simple, allowing users to avoid unnecessary elements. The general design philosophy of an app should be user-based, meaning that every detailed design stems from users' goals, their technical skills, personal learning preferences, app using patterns, and individual dispositions.

4.2.2 System Operation and Service

In 52 reviews, 49 focus on the pricing topic. In terms of pricing, many users enjoy basic service offered by apps for free. However, as is previously discussed, about 29 users think the prices of advanced service and byproducts are not acceptable. Users enjoy service provided by companies while having concerns about unreasonable prices of other service and products determined unilaterally by one party. What service should be charged and how to price online service and products are controversial topics. Although there is no one formula-based pricing strategy that can suit any products and service, service providers should make their target users heard. After pinpointing their target users, companies can engage their users seamlessly through

online polling, surveys, questionnaires, and more. Since users demonstrate their willingness to tell their sides of the stories, companies should take full advantage of those reviews to ensure they have delivered exceptional buying experience.

In the rest 3 reviews, users appreciate good service. Though a very few users, as service recipients, wrote reviews, excellent service does play an indispensable part in creating a successful mobile application. As is discussed earlier, when the service is of poor quality, users are found not shy to leave negative reviews. Excellent user support and service are two key factors to avoid user churn especially in e-commerce where users can easily switch to other apps with no extra cost. How an app functions is only one part of the entire user experience while good service as a bottom line of an app plays another part.

4.2.3 Learning Experience

A detailed positive review not only has an influence on future users, most of whom are inclined to relate themselves to reviewer and hear opinions from them, but also helps a company realize what it has done right. A mobile app developer can avoid redesign apps blindly and diversify the business efficiently by maintaining what is well-received and removing what is ill-conceived. The following analysis of approximately 347 positive reviews highlights some common features shared by these apps, which are greatly valued by users and are supposed to be maintained in the future mobile app design.

First, apps have provided knowledgeable and resourceful resources. A considerable number of users value learning support such as illustrations, instructive videos, word games, different types of exercise, etymological information, fixed phrases and so forth, notwithstanding the missing information of some words and supplemental content required to be added. Second, learners feel more motivated under web-based peer pressure and more engaged in language learning in a digital society. Though those digital interpersonal platforms still confront challenges, a healthy learning environment with a well-established motivation system is greeted warmly by most users. Third, these apps help users to combat Ebbinghaus forgetting curve and commit new words to a long-term memory through regular review of new words. Personal study plans are automatically created according to scientific learning methods and users are required to strictly follow these plans aiming at retaining new words efficiently. What's more, since apps have sign-in functions, language learners gradually form a habit of learning new words everyday to get a record everyday. At psychological level, human perception of time can be purposefully and productively manipulated by being shown a progress bar (Harrison, Yeo & Hudson, 2010). Similarly, when languages learners check their sign-in records, they may feel more motivated and keep more self-disciplined. Fourth, some functions are customized to users preferences. For example, users are allowed to upload their own vocabulary lists and decide how many words they plan to learn per day. Admittedly, users are expecting a more tailored experience as is discussed earlier.

Through the four focal points, users are revealing a signal that they scrutinize every part of an app intensely and are willing to pay a powerful compliment about the service quality when an app truly solves users' problems and delivers user-centered service, and vice versa. One noticeable point is that both positive and negative reviews focus on the same topics while revealing mixed attitudes toward those issues. Those

inconsistent attitudes are caused by users' different thresholds of feeling satisfied and tastes of aesthetics, helping mobile app developers to determine what are the most tangible and obvious needs from both sides.

5. Conclusion

This study aimed to analyze both negative and positive detailed reviews in order to assist mobile app developers to avoid potential problems and provide high quality service to their target users. Findings from the collected reviews reveal what users concern the most when they are using an app as a language learner. Here are some essential elements that stand out and work closely together in the using experience:

1. Different app versions should be available to users as and when needed.

2. Dark mode or eye protection mode should be provided as an option in the system settings.

3. Interface of an app should be kept clean and simple with icons as an aid to navigate users effectively.

4. Although bugs, crashes, and other problems are inevitable, app stability should be partly ensured.

5. Provide high quality service.

6. Determine reasonable prices for products and service.

7. Provide error-free content.

8. Add more personalized settings.

These major requirements from current users reveal some golden principles of designing a mobile application. First of all, a mobile application developer should know the target users better and update their general profile. For example, many users are

students, studying at school during daytime and spending time learning vocabulary at night. Some in this study even revealed that they used these apps at one or two in the morning in the reviews. This is a popular learning pattern many users have based on their time schedules. A mobile app developer should follow the trend and ensure that the design meets most users' expectations. The second point is that personalization is of great importance in the overall using experience. Users in modern days more and more care about their personalized experience while using an app. When users feel that they are listened and understood and their wants and needs are valued, they will be more loyal to one mobile app. Since the marketplace is increasingly competitive and crowded, users are given multiple options to choose from. One strategy we learn from reviews to create a high market-share mobile application is to design a user-centered app that respects individuality and updates the settings based on unique user profiles. Third, ensure to deliver error-free knowledge in a language learning app. Because many target users are beginning learners, they are not able to catch mistakes. One mistake either erodes the credibility of an app or misleads users. Fourth, reduce bugs and crashes, improve service quality, and make sure the system runs smoothly. Users will immediately delete an app when they are disappointed with the stability of it. Additionally, problems such as privacy leakage should also be prevented and tackled.

Today, users' demand increases when they can download apps of higher quality with lower cost or even no cost. Undoubtedly, mobile app developers are facing greater challenges in a more competitive market. It is a positive signal that many users are willing to express what they need online. If a developer can listen to their audience intently and discern

the valid and the invalid, data collected from their users will be a useful tool to help an app gain insights of the future market and make substantial improvement.

6. Suggestion for Future Research

More and more language learners are engaged in online learning, using different English language learning apps to facilitate their study. Accordingly, some issues are raised in this study. It is noticed that some users have concerns about learning methods applied in these apps. They are worried that learning new words with matched pictures is not an effective method, reasoning that they only remember illustrations used to explain the meaning of a target word instead of the word per se. So how to effectively illustrate a word and how it works is worth more exploration. What's more, research about how to integrate learning vocabulary online with daily teaching practice can be conducted in the future because more and more language learners rely on mobile vocabulary learning. Problems such as how to prevent privacy leakage or how to price service properly should also be tackled in future discussion. By analyzing users' reviews, a mobile app developer will reap benefits to optimize app management, reduce user churn, and ultimately convert language learners to the app in a long term.

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