

Functional usability analysis of top korean mobile role playing games based on user interface design

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ABSTRACT

Mobile Role Playing Games (RPGs) are now very popular in gaming market. Still, we have great constraint in hardware provided such as screen size and interaction speed. Adopting techniques such as auto play enables the game designers to weaken the burdens of porting RPG scales to mobile platform. However, the interface design in mobile platform becomes quite different from PC based platform. In this paper, we investigate how user interface functionalities are provided for popular mobile RPGs based on google play downloaded between the year of 2014 and 2016. We analyze the commonalities and the differences of recent successful mobile RPGs first and take a user survey with heuristics. In result, subjects who are 16 ~ 25 in age weakly accept current interface layout and control as over 70% positive rate in 4 point Likert scale test.

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1. INTRODUCTION

In game interface design, the rule of thumb is to give good, convenient control over objects provided by the game with enough information and easy access. It can be summarized as the functionality and the usability of the user interface [1]. For role playing games (RPG), which needs the most complex control over objects and feedback of the game, it is quite essential to give proper interface that typically are composed of status window, chatting window, navigation, shortcut keys, and inventory section [2]. Thus, the interface should have the layout containing as rich information as possible but not give overwhelming information to users for not hindering the immersion [3].

However, for mobile RPG, the design principle should be quite different from that of PC based RPG due to the screen size and other hardware constraints. It is important to control the scene changes with respect to the information provided [2].

The usability evaluation issue is more complex. Usability evaluation based on a set of heuristics provided by experts and validated by user surveys becomes more important than ever. However, it also draws plenty of discussions and different approaches on how much the set of heuristics should include user experience, flow and fun issues in conjunction with the functionality [4-10]. Furthermore, it is also found that different genre requires different points in satisfaction of the user interface design such that the casual game [11] and management simulation game [12] users may need different standard of satisfaction.

Thus, in this paper, we will focus on mobile RPG interface. By doing so, we can avoid endless debates on the range of covering aspects of the game contents in usability evaluation [5, 7, 8, 10]. First, we will analyze top 5 games of the year between 2014 and 2016 based on google play downloads in Korea [13]. In this analysis, we try to find the commonalities and the differences of the top games and the recent trends

changing if any exists. Then, we set up a set of heuristics to evaluate solely the satisfaction rate of user interface based on the traditional heuristics by Korhonen et. als [4, 14] and tested by Korean gamers in validity [3] with interpretation of RPG scope. Thus, the evaluation of usability in this paper should be interpreted as the functionality satisfaction since RPG genre contains simply too many factors other than user interface design.

2. ANALYSIS OF TARGET MOBILE RPG GAMES

2.1. USER INTERFACE

Table 1 summarizes top 5 downloaded mobile RPG between the year of 2014 and 2016 based on [8]. Those games become the set of games we analyze in this paper.

Table 1. Top 5 Mobile RPG between 2014 and 2016

2014	2015	2016
Hero for Kakao	HIT	Lineage2: Revolution
Dark Avengers 2	Raven	Lineage: Red Knights
Crusader Quest	Idea	Destiny Child
Seven Knights	Mue origin	Aden
Fox Rain	100HEROES	Summoners War

We investigate all above 15 games for the basic layout, battlefield layout, and other functionalities. Figure 1 and Figure 2 demonstrates the difference in basic layout of information objects and battlefield layout with hand control design.



Figure 1. Basic Interface Examples

The analysis is done by our students having played target games in high levels and at least two months' of experiences by checklist method. Our checklist includes;

- a. Chatting window: Can user choose where to put?
- b. Main layout: The location on the screen
- c. Navigation: Provided?
- d. Shortcut Keys: Provided?
- e. Inventory Section: On the screen or separated screen?
- f. Auto play; Supported?
- g. Hand Control: Single hand or both hands?
- h. Battle Skill Buttons: The location on the screen



(a) Mue Origine – Controlled by both Hands

(b)



(b) 100 Heroes - Controlled by single Hand

Figure 2. Battlefield Interface and Control Examples

2.2. Analysis of User Interface

Table 2, 3, and 4 summarizes the differences found from our analysis in years respectively.

Table 2. Comparative Analysis of 2014 Top 5 RPG

2014 Games	Chatting Window	Main Layout	Autoplay	Control
Hero for Kakao	Choice	Low	Support	Both Hands
Dark Avengers 2	Choice	Upperleft	Support	Both Hands
Crusader Quest	Total	Low	No	Single
Seven Knights	Choice	Low	Support	Single
Fox Rain	Choice	UpperRight	Support	Both Hands

Table 3. Comparative Analysis of 2015 Top 5 RPG

2015 Games	Chatting Window	Main Layout	Autoplay	Control
HIT	Choice	Low	Support	Both Hands
Raven	Choice	Low	Support	Both Hands
Idea	Choice	Low	Support	Both Hands
Mue origine	Total	LowerRight	Support	Both Hands
100HEROES	Choice	LowerRight	No	Single

Table 4. Comparative Analysis of 2016 Top 5 RPG

2016 Games	Chatting Window	Main Layout	Autoplay	Control
Lineage2: Revolution	Total	UpperRight	Support	Both Hands
Lineage: Red Knights	Choice	Low	Support	Single
Destiny Child	Choice	Low	Support	Single
Aden	Choice	Left	Support	Both Hands
Summoners War	Choice	LowerRight	Support	Single

Among 15 RPGs we investigated, we found that all of them do not provide shortcut keys nor navigation and inventory section is separated from the battle screen. Also, all investigated games provide battle skill buttons on the lower right part of the battle screen and joystick pad is located on the lower left part. In layout, the top-down layout form was generally applied to the games we analyzed. However, in the case of 'Fox Rain', 'Mu Origin' and 'Lineage Revolution', it is flexible by using the expanded menu format in '┌' shaped layout. In the case of inventory indicator, the important information directly related to the state of the character and affects the battle process, it is provided as a separate menu on the mobile due to the restriction of the screen space as pointed by [2] earlier.

Other than those mentioned differences, most target games have similar user interfaces and controls. Overall, mobile RPGs provide very similar user interfaces thus the next step should be if this typical interface is satisfactory from users' viewpoint. Then, the question will be;

Q: Are gamers comfortable with this user interface and functionality design?

3. FUNCTIONAL USERBILITY EVALUATION OF YSER INTERFACE There haBY SURVEY

Heuristic evaluation is one of the so-called expert-based usability inspection methods for software development [15]. Nevertheless, heuristic evaluation with traditional 'usability' heuristics cannot be directly applied to the evaluation of video games because application software and video games are very different in context and usability heuristics do not cover all aspects of gaming such as fun, entertainment, and enjoyment[8].

If it were the userbility evaluation of mobile RPG itself, we may have to consider many aspects other than the functionality of the user interface. As summarized in literature reviews [7,10], one may have to worry if the usability questionnaire should include solely on the narrow range of the functionality[5] or include game play/game story, virtual interface and device- and application-specific properties of a system [8]. If that is the latter case, we need a bulky set of heuristics but still, that set of heuristics can never properly represent the complex structure of current mobile RPG due to its intrinsic subjectivity while we want to be as objective as possible in evaluation.

Thus, in this paper, we make our set of questionnaire only based on the functionality of user interface. Also, while our questionnaire is based on the previous researches [3,4,14], since all target games analyzed were RPG and due to different culture and language, we reinterpretate related heuristics within the scope of RPG genre and make the question as concrete as possible as shown in Table 6.

The survey was done in September 2017 using Google docs and subjects are from many different mobile RPG communities. Total 30 subjects were responded whose age vary between late teens and mid 20's and there were 21 males and 9 females. Their current most played mobile RPG is shown as Table 5.

Table 5. Mobile RPG that Subjects play the most

Games	Responses
Lineage2 Revolution	7
Crusader Quest	7
Seven Knights	7
Destiny Child	3
Raven	3
Mue Origin	1
Idea	1
HIT	1
Total	30

In this survey, we took 4 point scale in order to draw more active opinions from subjects because when we used 5 point scale, non-negligible portion of responses were just neutral (point 3). In our 4 point Likert scale questionnaire, 4 means most satisfactory and 1 denotes the least satisfactory. The result is summarized as shown in Table 6.

The positive responses (response 3 or 4) are over 70% in all questionnaire and the absolute points by Likert scale is between 2.90 and 3.37. The average of total 9 questionnaire in Likert scale is 3.13. Subjects were most satisfactory in finger movement(Q2) and clearly visible game indicators in the layout (Q7) but least satisfactory on enemy targetting (Q6) and purchasing item convenience (Q1).

On enemy targetting, actually the responses have great discrepancy with respect to the games they played. Destiny child users were most satisfied (all 3 subjects marked as 4) but Seven Knights users gave only 2.71 in average.

However, as mentioned earlier, subjects were mostly neutral when we used 5 point scale. That means we should not interpret the survey result as indicated in numbers. Rather, gamers may not find better interfaces in functionality yet and they are not rejecting current interface until then.

Table 6. Functional Usability Evaluation Result (4 points Likert scale)

Questionnaire/Points	4	3	2	1	Positive	Avg.
Is purchasing items convenient from UI?	7	14	8	1	70.0%	2.90
Are finger movements convenient to use skills?	16	11	1	2	90.0%	3.37
Sense of hit satisfactory?	8	15	4	3	76.7%	2.93
Are playing screen and map separated clearly?	11	14	3	1	86.2%	3.21
Are character movements convenient?	12	11	5	2	76.7%	3.10
Is enemy targeting convenient?	11	10	5	4	70.0%	2.93
Are indicators clearly visible?	9	18	1	2	90.0%	3.13
Are Audio-visual representation and layout satisfactory?	10	16	2	2	86.7%	3.37
Is character window convenient to use?	17	10	1	2	90.0%	3.13

4. CONCLUSION

In this paper, we analyzed the user interface configuration and the battle window display patterns of the fifteen(15) mobile RPGs that were successful in Korean market during 2014 and 2016 (Top 5 in each year). Since RPG is the most dominant game genre among Korean young gamers, either online or mobile platform [16], the usability evaluation of its interface design from actual gamers is important. Thus, we perform a user survey with a set of 9 questionnaire based on the heuristic for testing the functionality of the user interface and control.



However, due to the nature of the mobile device constraints, the configuration of the interface within the same RPG had little discrepancy in user interface as noted in other genre games (puzzle game [11], management simulation game [12]). In functional usability test, subjects were positive in general (over 70% positively responded with 3.13 out of 4 point Likert scale) but relatively dissatisfied for the enemy targeting control and item purchasing schemes during game playing. Also, subjects tend to respond as neutral if we gave 5 point scale test. That means even their positive responses in the survey result should be interpreted as weak acceptance from young gamers.

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