

A Study to Design a Low Cost and Marketable Game

Jude Joseph Lamug Martinez
School of Computer Science
Binus International – Binus University
Jakarta, Indonesia
jmartinez@binus.edu

Erwin Adi
School of Computer Science
Binus International – Binus University
Jakarta, Indonesia
eadi@binus.edu

Abstract—Game industry in developing countries such as Indonesia is usually categorized as a small industry. Developers need to find efficient techniques to make addicting games without having to spend much resource to overcome the complexity of the art and music. Our study sought, implemented, and tested a list of criteria on what contributes as enjoyable arcade game. Specifically, the game made use of the uniqueness from Indonesia Culinary properties as a source of character differentiation. The list of criteria was tested through the player's excitement about the game, and the study has shown to produce a marketable low cost game when compared to other well-known games in the market.

Keywords—game implementation; character design

I. INTRODUCTION

The gaming industry has shown to play an important role in the world economy. The growth of the global gaming industry revenue on 2006-2007 reached 28.4% [1]. On the contrary, the movies and music industries have their revenues fall into -10%. The game market is not even shaken by the darkening of global economic situation, proven by the fact that it has grown 13% on January compared to the previous year of the same month which reaches a total value of \$1.33bn. The year 2008 was known as a record-breaking year for the game market in the US [2].

Among the Asian countries where the online game penetration is considered low, Indonesia may be placed as having the highest growth of game industry in Asia. This indicator serves as a sign of a high growth of what makes up the game components such as design, content provider, hardware, reusable software, etc. Furthermore, a non-profit organization that serves as an association for multimedia industry has recently started up the first rendering farm in Indonesia. Although the operational cost is forecasted to be higher than the association could afford, its chairman is confident that the donations from potential users will exceed the break-even operational cost of 5,000 USD per month. This courage indicates an initial stage of a boom of digital animation industry in Indonesia.

Game developers in Indonesia are usually home-based and categorized as small industry. Nevertheless, some of them are hired by international game sponsors. The developers in Indonesia still meet some obstacles regarding the development. As it was stated at the Indonesian Game Developers Gathering, some of the obstacles are the innovations or creativity of the developer, the funding

support, marketing strategy, and also support from the Indonesian Government [3].

Indonesian game developers need software so called as Software Development Kit or SDK and also game engine—software used to make the games which consist of ready-to-use modules such as graphical effect, sound effect, and other system resources with convertible programming language. The price for obtaining that software could reach \$1000 and the engine is not bundled with the compiler, the cost can grow up until 3 times from the starting cost [4].

The authors see a potential, marketable game logic that suits the Indonesian game authors. The game genre is an arcade style with plots that exhibit Indonesian culture. Specifically, the game developed in this paper emphasizes on Indonesia culinary themes. Furthermore, the research would use a tangible and ubiquitous SDK to overcome the funding problem described above.

Indonesia has a rich culture that that could be traced for hundreds years. Each province has its own unique culture which differs from other provinces. These cultures can catch the interest of foreigners. It can be seen from how temples in Indonesia became famous tourism objects. Bali is also one of the places in Indonesia that is still rich in their ancient culture; and it is famous all around the world as a tourism target. It could be seen that Indonesia's heterogeneity of religions and ethnic groups produce admirable arts and crafts [4]. Shields, canoes, spears, drums are carved objects from Papua; masks from Bali, and wayang from Java are the popular objects for stage performances and wall decorations. Patterns for clothing that were made by using wax, known as batik, have brought the clothing industry to the exporting realm. Not to mention the richness of ceramics, basketworks, kris, and beadworks, the list would go on and shows Indonesia's affluence in creative products.

Similarly, Indonesian culinary is quite well known by foreign countries such as European countries. Sri Owen, who is an Indonesian who married and lived in England, has produced several books about Indonesian culinary. One of her book titled "The Rice Book" had achieved "Andre Simon Award" as "Food Book of the Year London 1993/94" and also being nominated on "James Beard Award New York 1994". Sri Owen has opened a restaurant, catering, and a cooking course at her flat at Wimbledon Village, London; and all of them always favored by the locals [5]. It can be seen that Indonesian culinary is an interesting issue for the world to explore.

TABLE I. COMPARISON OF PROBLEMS AND SOLUTIONS

Game Referenced Title	Problems	Solutions
Cooking Mama	The mini-games are not bounded. No ending state.	Mini-games are bounded by the limited life given to the player for the main game. When the life has reached 0, the game is over.
Connect 2	No uniformity in terms of graphic, theme, title, and storyline.	Through the whole game, the graphic, theme, title, song, character, and storyline was made uniform to bring the atmosphere of the game to the player.
Geo Challenge	Too detailed questions and graphics which confused player.	The graphic and question were limited to some detail that make the game has enough difficulty level yet playable.
Hidden Object	The hidden objects were placed on the same place which made the player able to remember it exactly.	Each of the mini-games was made with a random logical arrangement. With this condition, there are no repetitions of specific state of the game, including the placing of the objects.
Typing Game	Storyline was not stated clearly since the beginning of the game.	Storyline is stated clearly since the beginning of the game through the instructions of the game.
Pick Route Fall	Player has to see the instructions, even if they do not want it.	With the Instructions menu put on the main screen, player can choose whether they want to see the instructions or not.
Fallen Object	A casual game which is quite monotonous with no twisted game-play or themes.	With storyline added to the game and also character and objects and themes, the game were twisted in a way it was not done before.
Swapping Cover	Used to be a manual game which the writers had never found on the PC game before.	The game was transformed into a flash-based game with a total different theme from the original one.

II. PROBLEM ANALYSIS

To be able to come up with an interesting and fun game, the authors studied existing games and used its strengths and pitfalls to create a unique theme to further catch the attention of the game players. Table I shows the findings.

Below are some reviews for the games that are developed based on the gameplay.

A. Match the pair

Connect 2 is a time based challenging puzzle game where you need to find pairs of matching tiles to make them disappear from the game board [21].

You can connect tiles that are on the same line or up to 2 lines away, no matter how many spaces are in between but you are penalized 10 seconds for wrong moves.

Very good puzzle challenge where you need a good quick eye to find matches, good concentration and a bit of luck with the random generation of the images. There are bonus levels for clearing the board within the time frame and you can use the hints button to clear up to 3 materials.

B. GeoChallenge

GeoChallenge is one of the FaceBook games that tell a story about being a flight attendant. The main goal is to deliver each of the passengers to its destination. It consists of 3 mini games; the game that is being referenced is the third game which required the player to stick on the map based on the tourism-place being shown.

C. Hidden Object

One of the well-known hidden object games is Mystery Case Files. In this game, players are presented with numbers of different scenes with dozens of objects ingeniously hidden amongst the clutter. A list is provided at the right of the screen showing items needed to be found. Whenever a player found an item listed, they only need to click it, and it will be

automatically removed from both the screen and the list. Players have to complete all the items on list within the time limit given. Some of the screen could consist of another scene, which players have to go through door on the first screen. On those hidden scene, there will be another new list to be completed. This kind of twist does add a nice adventure flavor to the mix [22].

D. Typing Game

Typing game allows its player to entertain their mind and train it at the same time. It trains the coordination between eyes and hand, and also the typing ability of its user. Typing games will not teach its player about how to type correctly, it rather improves their typing speed. More and more typing games were being twisted into variety of themes, making it give a whole different environment of the usual typing games. The one that is used as the references for further developed game is titled Barracuda. The main story of this is to keep the river clean by kept on typing the words as they appear floating down the river correctly. Wrong typing will make the river goes darker and ends up when the river is on the darkest color [23].

E. Pick Route Fall

The main idea of this game is to catch the fallen object that is being thrown from the above through connected lines and branched into several ends. Players will have to choose which ends the object will fall from. Some twisting was being done to the game, such as a girl throwing its heart and one guy will have to choose the right ends in order to get her heart.

Bishi Bashi is a series of mini-games produce by Konami and Sony PlayStation games. Each game in the series involves playing a wide variety of challenging and competitive mini-games against computer or other player

[24]. One of the in Bishi Bashi took a story of a young girl throwing her heart through a given path from top to bottom. The start of the path is branches and so do the end. The player will taken part as the guy who has to catch the girl's heart by choosing which end the heart will fall.

F. *Fallen Object*

Basic thing to do on this game is to catch the right object that is falling randomly from the above. Some games also required its player to catch it in the right order given. Wrong object that is taken will give some negative effect to the player. The game that is used as a reference is the game from a mild game which is made for their marketing tools.

G. *Swapping Cover*

Swap the cover and guess where the object initially was placed. Those are the basic idea of the game. The object will be first placed in one of the plates uncovered. Players will be given a second to remember the place of the object and the plate be covered. Plates will be swapped one to another so that it will confuse the player. The goal of the game is to guess the right place of the object after the plates is being swapped.

H. *Current Game*

There are several of games published on market nowadays, with the food genre. Some of them directly go through the cooking process to simulate how the food is being made and give the chances to the players to try it. One of the well-known one is Cooking Mama [25].

Cooking Mama, like its name, is a cooking simulation game in which the players pretend to prepare and cook various types of meals. In the end of each cooking, the meal will be judged by a chef named Mama, which also role as the guide during the game. Mama tells the player about what to be prepared, how to prepare it, and in the end, how to cook it to a complete meal. The judging will be in terms of scoring between zeros (0) to one hundred (100). Complete each task perfectly in the given time period, and player will earn the perfect score too (100). And vice versa, mistakes that were made through each task would reduce the points player earns at the end of the cooking. The whole points will then be converted to a bronze, silver, or gold medal.

Cooking Mama consist of 76 different recipes. Those recipes come from all over the world, European, Asian, and also western. Apart from it, players could also create their own unique recipes by combining those original recipes. When players just want to test their cooking skills, they can just simply go to the mini games that provide each of the cooking skills game.

III. DISCUSSION

The writers have pointed some of the problems regarding the current game available on the market, whereas as the solution, another game is created to cover the weaknesses points out previously, and also in combination of selecting a unique theme to attract the player.

Current games that appeared on the market, taken as the reference by the writers, consist of several mini games.

Nevertheless, the mini games are not related to each other. Rather, it stands on its own. Hence, the writers came up with the solution of creating the game that consists of mini-games which still connected from one to each other. Journey to the Indonesian Culinary was chosen as the title to represent the main theme of the game, Indonesian Culinary. Mini games that are available on the main games are also made as a solution addressed to game that is on the market.

Most of the games used as references by the writers have pitfalls in terms of:

A. *Storyline*

Each game must have a storyline, the addressed problem are whether the storyline is clearly stated from the beginning and up until the very end; or if it is interesting and able to attract the player; or if it is correlated to the main theme of the game. Some of the referenced game had those problems. Therefore, Journey to the Indonesian Culinary tried to address those problems without neglecting other aspects such as the logical flow and etc.

B. *Uniformity of title, themes, format, and graphic*

The problem issued from one of the game where there is no uniformity throughout the entire game. Addressing to this problem, the writers tried to build Journey to the Indonesian Culinary to be unified in terms of its title, themes, format, and graphic. The main theme of the game is about Indonesia, and therefore several elements of Indonesia put on the game to build that environment. Those elements can be in terms of the character's costume of the game, the tools used on the game, the background, and also the color theme of the game.

C. *Game play*

Some of the game plays of the referenced games are too monotonous. Journey to the Indonesian Culinary tries to represent a game-play that is not monotonous and twisted in a more complex way yet is still fun to play with. All of the logic made on each of the game on Journey to the Indonesian Culinary is made random. Therefore, players will still be looking forward to surprises every time they play the game.

IV. CONCLUSION

Making a game cannot be made based on exact theories. It should go through flows of research, testing, and new ideas to be added. There are many factors that can affect a good game. Fun is what to be achieved on making a game so that people would get excited on playing it. There is no other reason for people to play the game other than to have some fun.

Fun of the game sometimes can be the X-factor that can only be felt by particular people. Nevertheless, there are still ways to achieve through upgrading the other factor that affect the game, such as game play, visual, storyline, and etc

Ideas are found to play quite a big part to create that fun factor. Unique, fresh, and new ideas are to be added to the game. Journey to the Indonesian Culinary were made in terms of issuing this problem. An Indonesian theme is rarely made to be a theme of the game; which make it quite unique when it is applied.

In Journey to the Indonesian Culinary games, the player will act as the character of the game that goes around Indonesia to gain knowledge about Indonesian Culinary. On the main screen, two choices are available; which are Play – to start playing the game, and Instructions – to see the explanations about how to play the game. When player decides to play the game, they will be directed to a map of Indonesia with destinations on each of the big islands; Sumatera, Java, Kalimantan, Sulawesi, Bali, and Papua. One hidden final game is available for the player to unlock when they have accomplished each of the game located on the island. Culinary from each of the island is available inside the game based on its location.

Journey to the Indonesian Culinary used the pitfalls of the previous established games to its advantage. It consists of several mini games with separate goals. Nevertheless, the main goal of the game has to be achieved through those mini-goals. This way, the game was made bounded and the player is focused to the main goal, instead of playing the mini game randomly without a main goal.

Furthermore, the Journey to the Indonesian Culinary was made to address the issues of the current game. It issues the problems of the referenced game in terms of an interesting, clear, and correlated storyline, a random way of playing the game, and the uniformity of theme, title, format, and graphic throughout the game. Another benefit gained from the game is that the player could broaden their knowledge regarding Indonesian culinary, hence benefiting a certain instance (in this case, the Indonesia tourism industry).

As could be seen in our study, Indonesian culture was promoted through highlighting the Indonesian culinary as the topic of games. The game developers could collaborate with the government to promote the game, while at the same time enliven up the Indonesian culture. This mutualism could support the game developers to overcome their funding problems. Apart from the funding, it was described that game developers also have problems for marketing their products. The study has shown a proof-of-concept game that could be marketed through collaboration with an instance. Other mutualism examples in applications were between product advertisers and game makers.

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