Research Article

Game Design in the Design Thinking Process For a Video Game Development Model to Support Tourism

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Abstract.
This article discusses the influence of video games on the tourism industry. Video games have become a popular and rapidly growing form of entertainment worldwide. This article reveals how video games can promote tourism through immersive virtual experiences, explore fictional worlds with stunning landscapes, and showcase the culture and historical heritage of various regions different. Dubois and Gibbs proposed the theory that video games can influence tourists' motivation to visit video game-related tourist attractions. Although video games have the potential to boost tourism, research shows that their effectiveness is still lower than that of cinema or print media. However, the development of video games with tourism themes offers opportunities for game developers and the tourism industry. By combining advanced technology and creativity, video games can provide educational experiences, promote tourist destinations, and create new value for players. The author offers a new framework that integrates design thinking with game design as a more effective approach in developing video games that support tourism.

Keywords: video game, tourism, game design, design thinking

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1. INTRODUCTION

Although Since recent times, video games have been a relatively new medium that continues to grow rapidly, video games have become one of the most popular forms of entertainment throughout the world. Video games as a means of entertainment have become a forum for exploring various themes and concepts involving aspects of real life, including tourism. This article tries to raise the still new idea of revealing how tourism is driven by the development of video games through the creation of immersive virtual experiences, then allowing players to explore fictional worlds that have stunning landscape beauty, as well as unique introductions to distinctive cultural and historical heritage. from various regions in the world .

Dubois and Gibbs build a new theory that video games in particular can shape themselves into media that can have an impact on tourism. The new theory built by Dubois and Gibbs actually tries to apply the concept of motivation for tourists to visit tourist attractions because of films. Historically the influence of media on tourism can be found in media such as film or television [1].

Various motivations for tourists to explore tourist attractions when connected to video games include special motivation, indirect motivation, and motivation that arises by chance. The specific motivation is that tourists deliberately visit the tourist attraction because they remember it from video games, while indirectly, the tourists are actually not interested in the tourist attraction because of the video game but know there is a connection, the third is by chance when they are at the tourist attraction and realize that it exists. the relationship between the location of the tourist attraction and the location in the video game.

Tourism themes in video games not only appeal to gaming fans, but also provide exciting opportunities for game developers and the tourism industry as a whole. By combining advanced technology and creativity, game developers can create virtual worlds that resemble real tourism destinations, thereby attracting players' interest and curiosity to explore places that may otherwise be difficult to reach or expensive to visit.

However, research conducted by Dubois et al. Shows that even though video games show strong influence and attractiveness in showing locations in tourism promotion efforts, the ability of video games to promote tourism is still low when compared to film or print media such as brochures. It should be noted that efforts to promote tourism will be less effective if they are linked to video games that contain violent content [2]. Shaheer then tried to create a framework to describe how video games were developed to encourage tourism. Video games have the ability to encourage tourists to visit cultural heritage tourist attractions, for example tourist visits triggered by the video game "Lara Croft: Tomb Raider" to the Angkor Wat Buddhist temple in Cambodia [3].

The framework created by Shaheer begins to show how to develop video games and also consider the tourist destinations that will be displayed both from the demand and supply sides. Although this framework focuses on tourist destinations that have tourist attractions in the form of cultural heritage. Video games with a tourism theme also have the potential to provide educational benefits and tourism promotion. Through realistic simulations, players can learn about history, culture, architecture, flora, fauna and other elements in certain tourist destinations. Coghlan and Carter also prioritize educational elements in video games by emphasizing game design that supports tourism by including elements of serious games. Video games using serious game
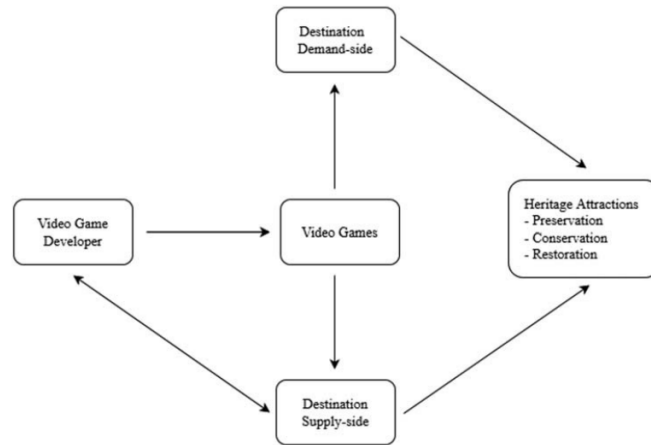
Figure 1: video game development framework to encourage tourism by Shaheer.

elements have been proven to be used to generate positive emotions among tourists, especially feelings of joy and curiosity [4]
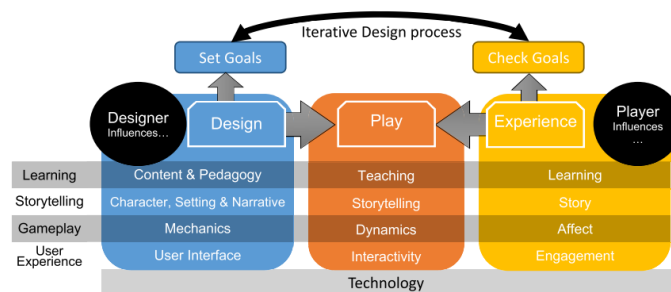

Figure 2: serious games development framework for tourism by Coghlan and Carter.

However, despite its positive potential, tourism themes in video games also raise several questions and challenges. One of them is the effectiveness of using video games to promote destinations. In this scientific article, we will develop a more adaptive framework that can increase the tourism promotion benefits of video games. By combining design thinking with game design, video game developers can have a framework concept that can be used and is more effective.

2. LITERATURE REVIEW

2.1. GAME DESIGN

Game design is the process of designing and developing video games. Various playing elements are combined to form a video game playing experience. According to Adams Game Design is the process of imagining a game, determining how it works, describing

the elements that make up the game (conceptual, functional, artistic, etc.) and transmitting information about the game to the team that will make it. and is built in an iterative process, with repeated testing and tuning, and occasional modifications to the design, during development [5].

Figure 3: concept of Game Design process stages by Adams.

Adams assesses that in the Game Design process there are mainly stages that are carried out repeatedly, namely the elaboration stage because at the elaboration stage of a video game this is the stage of concretization of a design concept. Salen & Zimmerman also support an iterative process in video game development. A video game designer cannot fully anticipate and predict in building a playing experience in a video game [6].

The key components in a video game product can be generally grouped as follows:

Players. Game design designs a concept like what type of video game a player will play. Players here are an important part that can be designed in video games. In video games a game designer must think about the player's feelings about the game, because the player participates in the game with thoughts and actions [5].

Core Mechanics. Core mechanics or game mechanics is a form of reference to a video game concept in the rules and systems that regulate how players interact with the game. Core mechanics include actions, challenges, abilities, and interactions in the game. Good game mechanics should be balanced, challenging, and provide players with meaningful choices.

User interface. User interface or user interface involves concepts in menu design, control, and interaction between the player and the game. An intuitive and responsive user interface is key to providing a smooth and easy-to-understand gaming experience.
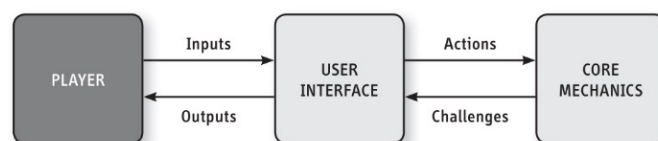

Figure 4: key components of Game Design by Adams.

2.2. DESIGN THINKING

Design thinking is an innovative approach used in a variety of fields, including product design, business development, education, and complex problem solving. Design thinking takes a human-based innovation approach that aims to build creative ideas and effective business models by focusing on people's needs. In design thinking, a designer looks for a solution to their product by starting to recognize their customer's problem or desire and then considering it from the perspective of their target user. Based on information from the target product users, ideas are developed and continued with designing a prototype [7]. The design thinking approach can be used to develop several things such as new products, new services, developing new business models, or designing innovations in organizations and the social environment.

The design thinking process can be defined as a creative approach to solving problems. Through design thinking, the solution that is realized is an effort to fulfill the user's desires, then the problem that is solved is a unique problem, and then creates new value for the user [8]. Design thinking emphasizes a deep understanding of the problem area (problem space) and the problem solving area (solution space). The problem area includes three stages, namely understand, observe and define point of view. Meanwhile, the problem solving area also includes three stages, namely ideate, prototype, and test. Then the final stage is reflect.
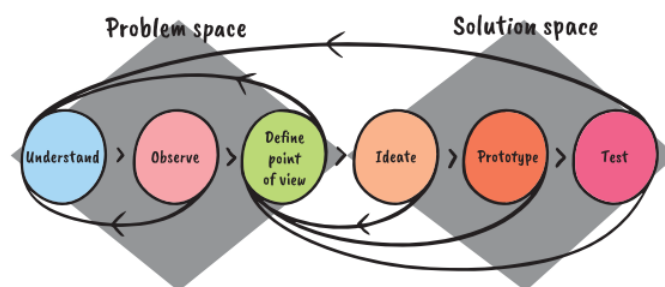

Figure 5: Design thinking process, source Lewrick et al.

Briefly, the stages in the design thinking process in the problem area can be elaborated as follows:

1) Understand. Understand phase or problem understanding phase. In this first phase, efforts are made to achieve a deep understanding of the problem or user needs. Designers must be able to clarify what information is still missing about target users, user needs, and user problems.

2) Observe. The observe phase is the phase of conducting detailed research regarding user needs or problems. In this phase, research methods can be carried out such as using observations, interviews and surveys.

3) Define point of view. The define point of view phase focuses on evaluating, interpreting and weighing the findings that have been collected. Ultimately all findings flow into a synthesis of results (point of view).

Then the stages in the next area, namely the problem solving area (solution space), can be briefly elaborated as follows:

1) Ideate. Ideate phase or understanding formation phase. In this phase the designer focuses on forming ideas. Designers can apply principles and techniques for looking for creative ideas, for example brainstorming to get various possible solutions. Apart from that, a feasibility study can also be carried out.

2) Prototype. The prototype phase or prototype phase is the phase where a prototype is produced quickly so that it can be tested on potential users.

3) Test. Test phase or test phase. In this closing phase, the design idea that has become a prototype is tested. In this phase, user feedback is then collected which then becomes input to continue developing product ideas.

3. DESIGN CONCEPT

By combining game design and design thinking, the author offers a new form of frame work as a form that is more compatible with video game development, namely as follows:
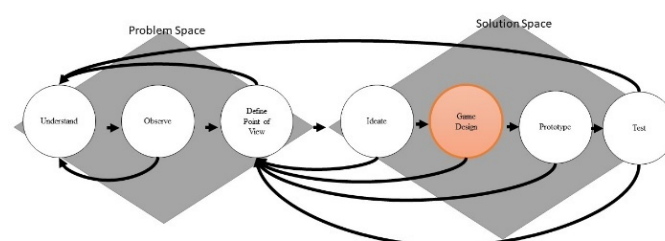

Figure 6: A new framework that combines design thinking with game design developed by the author.

The new form of design thinking process was briefly modified in the problem solving area (solution space) by adding game design between the ideate and prototype phases.

Meanwhile, the stages in the design thinking process in the problem area remain the same in the order: (1) Understand. Understand phase or problem understanding phase. (2) Observe. Observe phase or observation phase. (3) Define point of view. The define point of view phase or the phase of determining the point of view.

The difference appears in the problem solving area (solution space) where a game design phase is added so that the process sequence is as follows: (4) Ideate. Ideate phase or understanding formation phase. (5) Game design. Game design or game design phase. (6) Prototype. Prototype phase or prototype phase. (7) Tests. Test phase or test phase.

The game design phase allows products to be developed specifically by implementing a more detailed game design. By placing game design in the design thinking process, the development of a game will have the ability to capture the needs of users using the framework offered by design thinking.

4. RESULTS AND DISCUSSIONS

4.1. PREVIOUS RESEARCH

Several video game application developments to support tourism can be found in previous literature. For example, Widarti & Emanuel designed a gamification-based application by creating a prototype to help tourists explore Borobudur temple, Prambanan temple and Gedongsongo temple. Gamification is a learning method applied in learning applications by using game design elements to improve non-game contexts [9]. Although Widarti et al. Claims that the application prototype design is liked by the user respondents with an acceptance rate of 86%. But in making the application they have not used the design thinking framework.

Other research, for example in Bahtiar et al. Who also develops gamification applications for tourism, especially rural tourism. Through the application, it is hoped that village visitors will change their visiting activity patterns from previously only taking photos, then change them to be more interested in exploring the village's potential through the mobile application. Apart from that, the development of rural tourism gamification is expected to increase tourism potential and introduce rural tourism to elementary school students [10]. In making this application Bahtiar et al. It is hoped that apart from increasing tourism, it will also provide education regarding teamwork, however, judging from the framework, there is no visible effort to develop applications based on users as applied to design thinking. So it should be suspected that the development of this
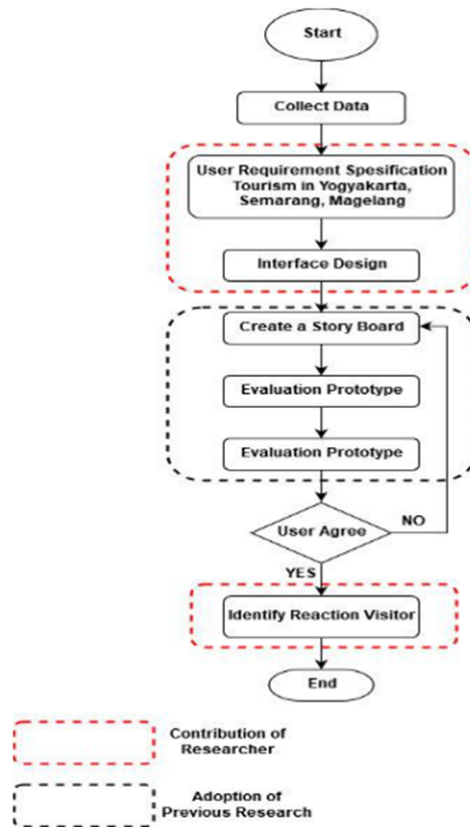
Figure 7: cultural heritage tourism gamification research framework by Widarti & Emanuel.

application did not explore user needs or even try to understand the problems faced and solve the problems.
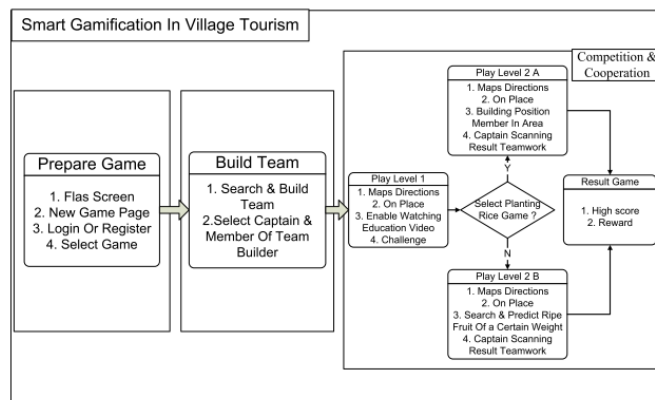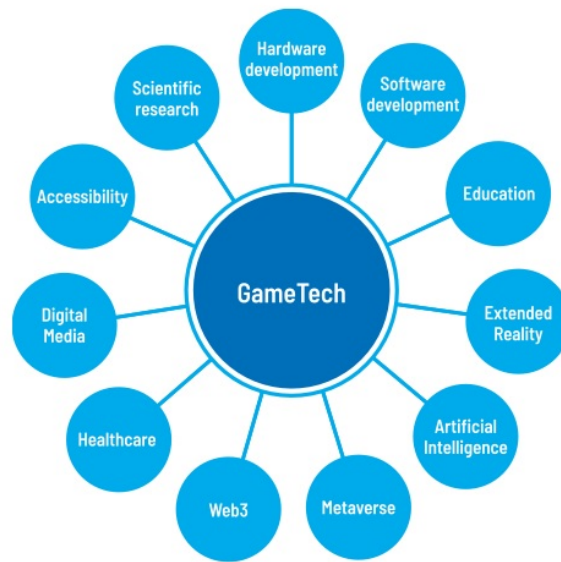

Figure 8: method proposed by Bahtiar et al.

In the video game industry, the tourism segment doesn't seem to get much attention. This is felt because video game developers have not yet found the right prototype pattern for video games to support tourism.

Source: Niko Partners 2022

Figure 9: global overview of game tech source Niko Partners.

Until 2022, it seems that the giants in the video game industry have not yet seen the opportunities for developing video games in the tourism sector. Research and development investment also still does not see tourism potential. Gaming companies in Asia are actively investing in R&D in gaming technology. As a result of the video game industry's continuous innovation in the field of technology, it has had an impact on the fields of software, hardware, education, science and medicine [11]. The lack of close collaboration between the tourism industry and the video game industry can also be seen from the AGI (Indonesian Game Association) report on the 2021 Indonesian game industry ecosystem map. That many video game development companies in Indonesia do not yet see the potential of the Indonesian market. Nearly half of video game companies from Indonesia is looking more at the global market [12].

Figure 10: Target market for the Indonesian gaming industry from Sihombing & Manurung.

The findings that the video game industry has not looked at tourism potential are contrary to the findings of academics. Nuenen and Charles argue that the last two decades of tourism studies have been decades in which the Internet and digital technology have become fundamentally integrated into our lives. The tourism industry has been greatly impacted by the internet and mobile mediality. For example, in online travel bookings, there is virtual reality to imagine distant locations in images and text [13].

4.2. UNDERSTAND INDONESIA'S TOURISM POLICY

The government as one of the stakeholders in the tourism sector has established a policy known as the super priority destination policy. The development of super priority destinations is a direct instruction from the President of the Republic of Indonesia Joko Widodo to the Minister of Tourism and Creative Economy to focus on developing Super Priority Destinations both in terms of infrastructure and the creative economy side [14].

Indonesia's Super Priority Destinations are a group of tourism destinations that have been designated by the Indonesian government as main destinations that receive special focus and support in efforts to develop the tourism sector.

The tourist destinations of the Super Priority Destination program are:

1) Lake Toba in North Sumatra Province

2) Borobudur in Central Java Province

3) Mandalika in West Nusa Tenggara Province

4) Labuan Bajo in East Nusa Tenggara Province

5) Likupang in North Sulawesi Province

It is hoped that these super priority destinations will help support the government's target of increasing Gross Domestic Income (GDP). In 2024, it is hoped that foreign exchange from tourism will reach 30 billion USD with the number of tourists from Indonesia reaching 350-400 million people and the number of foreign tourists visiting 22.3 million [15].

4.3. OBSERVE INDONESIAN TOURISM POLICY

In briefly observing Indonesia's tourism policy, it has a big impact, especially with the determination of these super priority destinations. For example, the government plans improvements in six points, namely:

1) Improvement of spatial planning

2) Development of access and connectivity to tourist destinations

3) Construction of facilities at tourist locations

4) Improving the quality of Human Resources

5) Marketing local products

6) And big promotions

The area of the 5 super priority destinations is:

1) Lake Toba covers an area of 386.7 hectares

2) Labuan Bajo covering an area of 400 hectares

3) Borobudur covers an area of 309 hectares

4) Mandalika 1175 Hectares

5) Likupang 197.4 Hectares

And there are at least four world heritage sites including Borobudur Temple, Prambanan Temple, Sangiran Early Human Site and Komodo Island.

4.4. DEFINE POINT OF VIEW FOR INDONESIAN TOURISM

Based on government support and the uniqueness of tourist locations from super priority destinations, an idea for game design development should actually be established. This support will have a direct impact on the five super priority destination locations so that it will encourage promotions regarding these locations in addition to other supports that encourage development in various aspects such as spatial planning, infrastructure, facilities, human resources and encouraging promotion of local products. However, despite the level of government support for tourism, there are several things that academics have questions about [16]. According to Lesmana et al. Tourism development should, apart from referring to existing tourism models, also have to prioritize several things such as the uniqueness of Indonesian culture such as traditional arts, traditional food, cultural events and the friendliness of its people.

4.5. IDEATE, GAME DESIGN, PROTOTYPE AND TEST INDONESIAN TOURISM

Although in general the use of video games in promoting tourism is still unknown to the public, video game development must begin immediately to open up more opportunities for the success of the five super priority destinations. The design thinking-based video game development process enters the solution space phase, divided into four

phases, namely ideate, game design, prototype and test. Game design here is a special characteristic of design thinking which is developed for video game development. By having game design in the solution space, it can encourage more specific ideas in the development of video games that carry the theme of Indonesian tourism promotion. In general, the tourism sector has become a very strategic sector. Tourism has become Indonesia's largest source of foreign exchange income that does not come from natural resources. Tourism occupies the fourth highest position as a source of foreign exchange after petroleum, natural gas, coal and palm oil [17].

The use of digital technology can not only encourage improvements in terms of information and education aspects but can also be an operational part of tourism. For example, the use of geospatial technology to record tourist locations, hotels and restaurants. However, Indonesia, with its uniqueness as a maritime country, is also a country with a population that embraces Islam in the world. The development of video game ideas that take themes such as halal tourism could be very relevant in the future. In the future, strategies are urgently needed to increase collaboration between all halal tourism stakeholders such as the central government, regional government, communities and local entrepreneurs [18]. In the future, it is necessary to consider when developing tourism-themed video games to also pay attention to the segmentation of local Indonesian tourists who are also included in the halal tourism concept segment. One way, for example, is through the development of video games for education for halal tourism practitioners. Considering there is still a lack of knowledge and implementation of halal tourism in Indonesia. For example, Borobudur, one of the super priority tourist destinations, is still not optimal in implementing tourism policies based on halal tourism [19].

Information gaps in Indonesian tourism are not only found in the concept of halal tourism but also in other types of tourism. For example, the social cultural gap to support diving tourism on Komodo Island, for example, specifically on environmental conservation issues [20].

Overall, there are many opportunities for ideas to develop a video game that strengthens tourism in Indonesia. For example, video games are categorized as serious games or games developed for educational purposes. By definition, Serious Games (SG) are games with a purpose, that is, software belonging to the videogame category that is used to achieve a goal unrelated to the game, through the distinguishing features of the gaming medium [21].

From the various ideas that will be collected, they will then be finalized in the form of game design, prototype and of course ended with a test. This all then makes the

strength of the game development concept based on design thinking. Apart from the complexity of the ideate, game design, prototype and test stages in making tourism supporting video games, the importance of the stages in the problem space are also emphasized, namely understand, observe and define point of view.

5. CONCLUSION AND RECOMMENDATION

Professional video game development requires large costs, as well as a long allocation of time and also the mobilization of human resources which of course are also not easy to find considering that there is still a scarcity of experts in video game development in Indonesia. Therefore, it is very important that careful development planning is needed. One of the methods currently being offered is the design thinking method. However, because design thinking was not based on video game development, the concept still needs to be refined. On the occasion of writing this article, the author offers to refine the concept of design thinking by including game design in the solution space.

In the future, more applicable research is needed in developing video game concepts that support tourism, for example through the use of design thinking methods that include the game design that the author proposes, both of which focus on problem space and solution space as a whole. The ultimate goal is to achieve video game outcomes that can support the Indonesian tourism industry and also encourage more positive aspects from the use of video games.

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