Exploring Resilience: A Virtual Tour of Disaster-Affected Communities through Digital Photo Stories

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ABSTRACT
This study analyzes and explores disaster village tourism and life situation communication, clarifies the form and virtual scenarios, determines building blocks, and suggests sufficient functional requirements to develop virtual tourism scenarios. The questionnaire survey method is direct and effective for identifying questions; the case analysis method surveys the situation of the disaster village tourist attraction; and the theoretical analysis method discusses theories related to Digital Photo Book. The results indicate that tourists are interested in using Digital Photo Book as an information guide. Digital Photo Book's contribution to tourist information is more significant than conventional information, with 77% of tourists believing that the information provided greatly influenced their interest in the future. 70% of respondents stated that the impact of the information provided reached a satisfactory level. Digital Photo Book is more easily accepted and appreciated by tourists and is more suitable to be applied globally in the aspect of tourism, especially in areas with limited access.

INTRODUCTION

The COVID-19 pandemic has disseminated globally(Mohanty et al., 2020). The phenomenon in question has had a significant influence on human existence and has resulted in numerous fatalities. To curb the transmission of the virus, numerous nations have instituted self-isolation measures, resulting in a significant downturn in the economy.

The advancement of Information Technology has had many effects, particularly in the field of tourism. Technology has effectively eliminated significant obstacles in the pursuit of information by integrating tourism and educational settings. The efficiency of technology in boosting tourist activities has heightened travelers' fascination with it(Goo et al., 2022). Thus, it is imperative for visitors to enhance their proficiency in utilizing technology to enhance their vacation experience and employ suitable tactics to fulfill their travel requirements. The advent of the digital age has enhanced travelers' capacity to access diverse information through online sources, such as the internet. With the advancement of technology in the tourism industry, the Internet has emerged as a viable means of accessing tourism-related information. Web-based information refers to the utilization of social media platforms as a means of accessing and acquiring knowledge on tourist destinations to be visited. Currently, travelers engage in new forms of tourism, including the utilization of virtual technologies. Tourists thereafter upload and transfer their effort, and the outcomes are promptly exhibited on their social media platforms. The emergence of the digital tourism landscape has sparked investigations into how visitors might effectively utilize digital devices to

access(Natocheeva et al., 2020), generate, curate, and analyze copious amounts of information for the sake of problem-solving, critical thinking, communication, networking, and ethical discernment. Multiple studies indicate that digital books exhibit both promise and limitations in the context of tourism practices.

Many industries and tourism are closed(Ekmeil et al., 2021). Several steps have been taken to reduce the impact of viruses. It is hoped that the scientific community will develop new technical methods to help humanity in these difficult times. Augmented truth can be very effective in dealing with life in times of crisis. Mastering the field of science and technology will encourage leaders to create power to compete with other digital marketing websites, such as those in the United States, the United Kingdom, Germany, and Japan (Xu & Chen, 2021). These countries not only increase efforts to master various science and technology sectors but also routinely prioritize the budget for each sector.

Undoubtedly, technology has emerged as a crucial determinant in the realm of education throughout the present digital age(Elena-Bucea et al., 2021). Up until now, technology has mostly served to enhance learning outcomes and the teaching and learning process. This includes tasks such as gathering information from the internet and utilizing programs to provide educational material. In addition, technology can serve as a supplementary tool to enhance instructional activities. The current issue lies in the fact that there is still a significant portion of the population who have not availed themselves of technology as a means of enhancing their learning. This diminishes the level of engagement in educational resources. In order to prevent the distortion of information or material, it is essential to possess sufficient expertise and experience when utilizing technology, particularly in the educational field. The Epub-based digital book application exemplifies a flexible and dynamic presentation of digital documents. Due to their significant economic potential, digital books have become a highly sought-after trend. Digital books are books that are printed using digital technology and may be accessed and read on a computer or other electronic device. When utilized, digital books offer a practical remedy to the issues and deficiencies of printed books. Due to their digital format, e-books are immune to physical damage and obsolescence, as they do not possess the physical characteristics of printed books. Given their diverse conveniences, digital books are undeniably superior to conventional books in terms of accessibility and longevity.

In contemporary society, smartphones have become an indispensable requirement for individuals to fulfill their social needs and engage in interactions. The Android operating system is widely utilized as the operating system (OS) on numerous smartphones(Chan et al., 2020), and a multitude of developers engage in the creation of applications or games on the Android platform(Xu & Chen, 2021). Nonetheless, the number of applications suitable for tourism purposes is limited(Li et al., 2021). Despite the prevalence of smartphones among tourists(Subawa et al., 2021), a significant proportion of them do not utilize these devices for entertainment purposes while visiting tourist sites.

Digital Photo Book is among the prospective advancements in smartphone technology. The utilization of Digital Photo Book in the realm of education is limited, with most Digital Photo Book applications being predominantly employed in the gaming industry. It is recommended that collaborative laboratories for education and Digital Photo Book be developed to enhance future educational experiences, with a focus on ease, safety, and convenience. This partnership can be described as virtual tourism that can be used on smartphones.

Scholars and governments from various countries have conducted many studies on how they recovered from disasters and rebuilt their tourism industries. Like Iceland, the volcano erupted in 2010(Beck et al., 2019). They encountered restrictions in accessing neighboring European nations. The initiative to revive the tourism sector(Pestek & Sarvan, 2020) involved the implementation of a digital tourism platform aimed at luring international visitors. Volcanic eruptions, such as the Yogyakarta eruption, have taken place in Indonesia. Efforts are being made by the local community to recuperate from the aftermath of the calamity and rejuvenate the tourism sector through the sale

of photographic compilations that document the historical significance of Mount Merapi, and the regions impacted by the volcanic eruption. The present investigation centers on the creation of digital tourism based on Digital Photo Book, with a particular emphasis on its potential for promoting creative economic empowerment in communities(Loureiro et al., 2020) situated at the base of Mount Sinabung that have been impacted by volcanic eruptions. To achieve this objective, a simulation model of digital travel images is employed within a tourism framework. The utilization of Digital Photo Book in tourism for the purpose of preserving and documenting significant cultural and historical resources(Yin et al., 2021) for regional and national benefit is a crucial aspect of digitalization.

The genesis of Digital Photo Book is widely acknowledged to have occurred in the developed nations of the West during the year 1990. The technology underwent a process of socialization and commercialization, ultimately resulting in the development of an interconnected tourism system. In reference(Liu & Yang, 2021), the utilization of this technology exhibits significant promise across a multitude of domains, including industrial simulation, urban planning and architectural design, real estate and real estate advertising, game engine and network animation, science and technology museum digitization, the entertainment industry, virtual studios(Wen & Fu, 2021), and other related fields(Syahputra et al., 2019).

In fact, it's now easy to assemble, create, design, and purchase professional-looking photo books Use dedicated digital writing tools(Corrigan-Kavanagh et al., 2023). These tools let you create traditional photo albums more quickly and professionally than ever before, sometimes directly through a smartphone app. In modern life, many photo albums appear that mark certain events and experiences as something special. They increase their presence through the many digital photos that are increasingly shared on personal devices and social media sites. This reflects the function of the traditional analog photo album, which is the public face of a larger collection of printed photos carefully crafted to depict aspects of happiness and success.

Although this research idea is still in its infancy, it has the potential to become more important if all researchers can contribute to solving the puzzle(Kasemsarn, 2022). The use of modern technology is essential, as is the ability to adapt information to suit multilingual functionality and appeal. Through images, we challenge the everyday uses of the new modern tourist and open new possibilities for understanding our historical heritage.

The advancement of technology is occurring at a rapid pace across multiple industries. The tourist and hotel industry is seeing significant growth(Komurcu et al., 2021), driven by advancements in information technology. The advent of contemporary technology has brought about a sequence of alterations in the tourist industry, evident in the supply and demand of tourism, hence emphasizing the growing need for hoteliers to actively use technology in order to enhance the quality of their services. Enhancing the technology expertise of all hotel personnel on an ongoing basis can assist in attaining this objective. Nevertheless, the hotel business typically falls behind other industries in the implementation of Information Technology.

The advancement of technology has shifted towards mobile applications and Web 2.0(Acikgul Firat & Firat, n.d.), transitioning from traditional marketplaces to more inventive and cutting-edge applications. Consumer websites are crucial in facilitating advertising and marketing efforts that target a global audience of consumers. The significance of social networks in pre-trip planning, decision making, and sharing of implicit knowledge is growing. Technological applications also offer instruments for grouping and collaboration, as well as facilitating globalization and mass production. Technology adoption alters the landscape of competitiveness in the tourism industry.

Information Technology Systems are extensively utilized in two interconnected industries, including tourism and hospitality. Frequently employed to enhance communication among travel service providers, travel agents, and travelers. Consequently, it has become a prominent component of the tourism and hospitality sector, integrated into several tourist attractions, hotels, transit facilities, and other associated service providers. Presently, there is a growing trend in the popularity

of e-travel activities and the digitalization of tourism and hotel activities. This includes online bookings, flashpackers, travel blogs, electronic travel guides, online service platforms, and other similar advancements.

Technology has greatly facilitated global access to and management of information, benefiting various individuals, including travelers(Ivanov et al., 2022). This phenomena also have the capacity to alter the economic paradigm of the tourism industry. The commercial landscape, once dominated by entrepreneurs, is now under the influence of individuals empowered by the advent of social media. Universities play a crucial role in advancing public knowledge and are essential for achieving various scientific advancements. Further investigation is required to examine the interconnection between the national currency, tourism, and information technology. This research is particularly crucial for facilitating government initiatives, especially those pertaining to the tourism industry.

Researchers must focus on several key aspects throughout the creation of this technology, including exploring the technological capabilities in terms of its origin, classifying the frameworks for cellular transformation, and considering the system context for integrating selected processes into a unified system. Encompasses a classification system of architectural styles, the ability to understand and adapt to the surrounding environment, the use of advanced tools and techniques, and the practical implementation of the software. When assessing the maturity of system development and development frameworks, it is important to also take into account streamlined business system and process lifecycles, as well as security management, including the management of unique signatures and the control of hazards.

METHOD

This study used a research and development approach. When implemented, the researcher used the waterfall model. It comprises five steps: communicating, planning, modeling, building, and deployment(Sagnier et al., 2020). The communication stage is carried out by observing the field and conducting interviews with tourists; planning is done by providing Digital Photo Book boxes and other equipment to the virtual lab; modeling is designing virtual tourism models from real lab observations; creating programs for virtual tourism to increase tourist interest; and aiming to provide virtual tours for tourists to provide an overview of the real conditions of the field in the affected parts of the village.
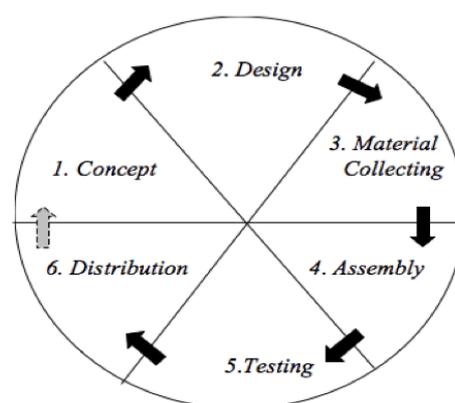

Figure 1. MDLC Model Diagram

Concept

During the stage of conceptualizing, the objectives, subjects, and product concept were determined and drafted. The intended subjects of this development. The purpose of multimedia development is to facilitate Tourism to access Information.

Design

During the stage of designing, the authors created a design of the product based on the pre-determined product development concept in the previous stage. This stage allowed the authors to design the interface of the photo book and developed it into a storyboard and flow chart.

Material collecting

The next stage was material collecting. This stage allowed the authors to collect some of the required materials for developing the Digital photo book. In this stage, the authors collected relevant images, illustrations, videos files to be included in the media.

Assembly

After the material required were collected, then it proceeded by assembling and compiling based on the prepared story boards and flow charts. The development of the multimedia in this research utilized Adobe Software. While to develop Digital photo Book, this research utilized Kvisoft Flipbook Maker and Adobe Flash.

Testing

The next phase was testing. The phase of testing aimed at identifying the feasibility of the developed Digital photo book. It also aimed at testing the media to the intended subject to identify how accessible the media is. In this stage, the developed media underwent two stages of testing, alpha testing and beta testing. Alpha testing aimed at examining the Digital photo book features such as displays, illustrations, and any technical matter in the Digital photo book. While beta testing aimed at examining the users' perceptions, for instance the user's interest and interaction with the application. Beta testing was conducted by means of questionnaire. To test the product validity, it was examined by the appointed experts (material, media, and language) and also involved the users (teachers and students).

Distribution

After the media was declared valid and feasible, the developed product was stored on a Website.

Culture

Indonesia comprises of thousands of islands, populace dissemination in Indonesia is moderate(Basuki et al., 2022), with numerous developments of people and bunches happening over a really long period of time . Integration with nearby communities too happens, giving rise to characteristics, identities and traditions that are blended and molded by distinctive characteristics and situations, giving rise to tribes, traditions and conventions that are distinctive from any other bunch on soil. On the one hand, it has an affect on the development of tribes in certain ranges. In case a populace is spread out in huge numbers, bunches or groupings are shaped that have the same design. Traditions are ties that join together individuals into bunches or classes and involve a certain zone. Gather designs, or the same set of propensities, are a fortifying figure and provide a bond of solidarity to create a bunch with an identity that's diverse from other bunches. This can be one of the driving variables for the arrangement of ethnicity .

This ethnic gathering is basically aiming to assist individuals pick up security and consolation as well as solidness and back in their lives. Traditions and traditions are passed down from era to era and don't disappear with each era, but proceed to exist due to the impact of new societies that will supplant ancient societies. There are territorial contrasts in Indonesia's topographical area. Human life as a social creature is determined by its nature. Society may be a bunch of individuals who have certain propensities that are distinctive from creatures, and whose lives are decided by nature. People can as it were impact nature so that their life needs are met

Common conditions incredibly impact designs, styles, demeanors and behavior in social intuitive to meet people's living needs, since their nature as it were impacts, not decides. The result was a tribe

with a identity, characteristics and customs that were diverse from the Sumatera. For case, the Batak's individuals on the north sumatera have a diverse dialect tongue from the Karo's individuals in same provincies. Moreover with the Karo community at the foot of Mount Sinabung, North Sumatra, which comprises of numerous tribes, and each tribe can comprise of a few clans.

Smartphone Technology in Tourism

Presently, the state of affairs concerning tourism and information and communication technology is experiencing a period of rapid advancement. Information technology has the ability to fill a gap in the tourism sector and improve efficiency in associated industries. The field of smart tourism technology is rapidly advancing and expanding in different regions across the globe(Wang et al., 2022). When considering the possibilities for technological development in the tourism sector, it is important to carefully evaluate the convenience and benefits of each technology, including mobile computing. This technology is highly portable and can be easily transported to any location. It is extensively utilized by the general population and visitors, particularly through the usage of smartphones. Smartphones have become an indispensable companion for visitors throughout their journeys. Smartphones serve as valuable additions to travelers' journeys. Tourists utilize smartphones for multiple purposes, including documenting and capturing images, interacting with social media platforms, searching for tourist information, and communicating with others. The existence of smartphones equipped with pre-existing applications has a significant influence on the daily lives of individuals in the local community. There is a wide range of applications that are now available and continuously expanding in the tourism industry. In the tourism industry, the adoption of smart tourism is highly imperative, and it is naturally accompanied by the advancement of smart cities. The study of tourist behavior through the application of technology involves the use of tracking technology. Researchers employ methods such as GPS and GIS technology to track tourists, with a particular focus on analyzing tourist movement patterns and tracking behavior using cellphones.

In terms of ontology, there are numerous domains that can be advanced through the utilization of information technology in the tourism industry. For example, in areas related to transportation, accommodation, food services, tourist attractions, tourist services, and tourist equipment. With this advancement, it becomes possible to create several types of tourism that contribute to smart tourism, particularly in achieving Sustainable Accessible Tourism (SAT)(Rahmadian et al., 2022) to get an edge in the current competitive market.

The rapid pace of technical advancements is driving the implementation of novel methods for delivering services within the tourism sector. The visitor information centers employ advanced technology to manage water usage in a destination. Additionally, biometric systems are utilized in air travel to enhance innovation and security. These technological advancements in ICT-enabled tourism contribute to a unique sort of alienation. The review study highlights the recent adoption of innovative processes in the tourism and hospitality industry, such as tourism podcasts as an interpretation medium, tourist mobility using GPS, aerial digital imagery combined with Light Detection and Ranging (LiDAR) data, and geographic information system (GIS) mapping and analysis.

The researchers offer intriguing observations regarding the current backpacker culture and the continuous integration of physical travel with information and communications technologies. Researchers conducted a study on the factors that contribute to innovation in the tourism business and identified information technology as one of the main factors. This finding emphasizes the high level of innovation happening in the tourism sector and provides proof of the rapid growth and transformation of the industry, largely driven by the impact of information and communication technology (ICT). Studies indicate that while inbound tourism can serve as a novel and influential catalyst for regional innovation, its impact on technological innovation seems to be substantial. Less potent than social innovation.

RESULT AND DISCUSSION

The research implementation procedure commences with a comprehensive analysis of the problem through a thorough literature study. This is followed by conducting a field study to assess the potential that has been acquired in the field of research. The research process involves the development of products tailored to the researcher's specific requirements, as well as the utilization of public knowledge in utilizing electronic devices, such as computers, and any preliminary accomplishments that have been attained. Activity orientation is established to initially select one's own study aims, analyze book categorization, and assess the necessity and utilization of fundamental technologies acquired during research. During the design stage, five activities are conducted. These activities include defining the indicators for success, selecting the research techniques, determining the research method, deciding on the topic or material, and creating a flow diagram based on the storyboard. During the development stage, which follows the design stage, a product performance measurement instrument is constructed to assess the performance of the designed product. The subsequent phase is the implementation stage, during which many actions are undertaken, specifically the dissemination or provision of digital books to the general public. Once the previous tasks have been completed, the final step involves conducting an evaluation that encompasses various activities. These activities include conducting thorough and ongoing monitoring and evaluation, which entails publishing research on the conducted activities, discontinuing operations and informal activities, conducting formal reviews such as alpha testing with validators who are knowledgeable about the documents and analyzed media, as well as performing other relevant tasks. The beta test encompassed a group of educators and included around 10 individuals with different proficiency levels, ranging from high to poor. Upon completion of the activity, a feasibility test is conducted to examine the final product that was developed.

1. *Design Research Method*

   This study analyzes and explores disaster village tourism and life situation communication, clarifies the form and virtual scenarios, determines building blocks, and suggests sufficient functional requirements to develop virtual tourism scenarios. Ensure that the tourist environment is scientifically designed, reasonable, and suitable for the target market.

2. *Questionnaire Survey Method*

   The questionnaire survey method is direct and effective for identifying the questions to be asked. Surveys were administered to the respondents using uniformly designed questionnaires. This research uses the questionnaire. The ability of tourists to use Digital Photo Book related to the desired information to interview 100 tourists from various backgrounds and ages while collecting questionnaire data analyze and discuss the results, and finally draw conclusions.

3. *Case Analysis Method*

   Surveying the situation of the disaster village tourist attraction to tourists and the usefulness of Digital Photo Book in tourism.

4. *Theoretical Analysis Method*

   First, discuss theories related to Digital Photo Book, define the concept of Digital Photo Book, explain the level of use of Digital Photo Book for tourism, analyze the content of Digital Photo Book, and discuss Digital Photo Book in detail. Discuss the level of practical applications of Digital Photo Book in various existing tourist attractions.

   These results indicate that tourists are very interested of Digital Photo Book as an information guide. Tourists are very interested in using Digital Photo Book to find information about places they want to go visit. The results are shown in Figure 2.
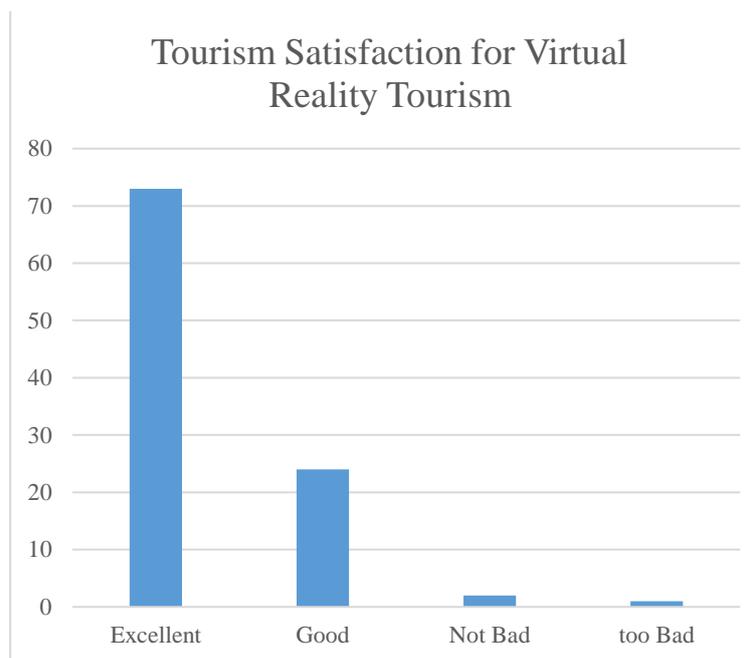
Figure 2. Tourism Satisfaction with Digital Photo Book Information

As shown in Figure 3, Digital Photo Book's contribution to tourist information is more significant than that of conventional information. About 77% of tourists thought that the information provided greatly influenced their interest in the future. About 70% of the respondents stated that the impact of the information provided reached a satisfactory level. From tourists points of view, this information is more useful in helping them find the information they need than the results of reviews or information guides from official websites. From this, we know Digital Photo Book is a very important technology in tourism, and tourists are also interested in using Digital Photo Book in tourism. The following comparison is presented in Figure 3.
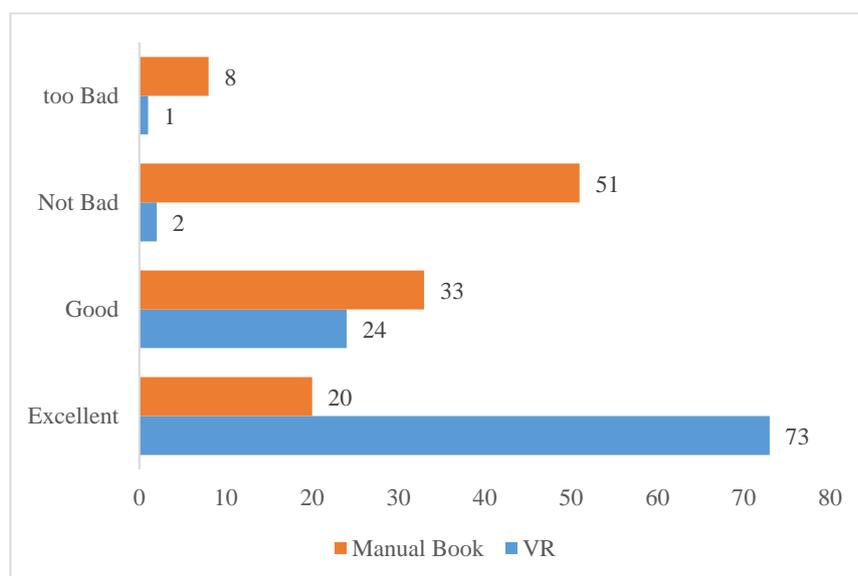
Figure 3. Manual book vs Digital Photo Book

As can be seen in Figure 3, The application of Digital Photo Book in tourism. The comparison of the use of Digital Photo Book and manual books produces an extraordinary phenomenon(Kholiq, 2020), but on the contrary, Digital Photo Book is more easily accepted and appreciated by tourists

when delivering information. Digital Photo Book is more suitable to be applied in the aspect of tourism globally, especially in areas that have limited access.

Figure 4. Cover Digital Photo Book

Through a questionnaire survey, the knowledge level of the 100 tourists regarding Digital Photo Book is shown in Table 1.

**Table 1.** Table of Understanding of Digital Photo Book by Education

	High School	**Undergraduate**	**Postgraduate**
Excellent	13 people	20 people	12 people
Good	10 people	10 people	21 people
Not Bad	1 people	3 people	1 people
Too Bad	1 people	0 people	0 people

It can be seen in Table 1 that tourists with higher education understand Digital Photo Book technology much better than tourists with lower education.

Figure 5. disaster information from natural disaster genre photos

Under limited objective conditions, Digital Photo Book can be used to better acquire new knowledge, improve the quality of tourists, and encourage the excitement and enthusiasm of tourists to be more qualified, thus providing new selling points and tourism potential for sustainable tourism development.
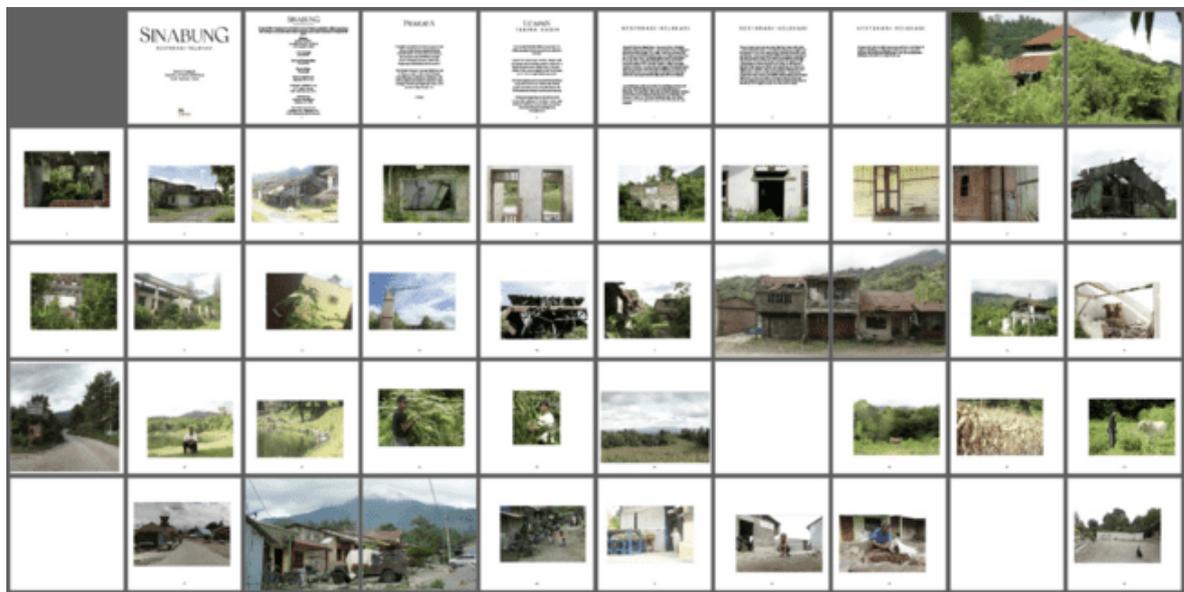
Figure 6. Layout Digital Photo Book Sinabung

Figure 7. Image of humanism among disaster-affected residents

In addition, tourists can also use computers to find information and arouse their tourism interest using Digital Photo Book without having to go directly to the destination without complete information, so that they can learn about the culture and geographical conditions of the tourist attraction they want to go to. High-quality tourism management resources are consolidated into superior stakeholders to develop the right tourist attraction and reduce wasted promotion costs.

The work of culture is to control people to get it how to act, carry on and carry on in building up connections between people and other human bunches. Another work is as a direct for people in living life socially and as a clear qualification between people and nature. Culture is the most line with respect to behavior which sets numerous rules with respect to what can be done, must be done and cannot be done as people towards nature.

From a add up to of 60 pictures, it can be concluded that the work of Sinabung Eatery includes a concept and photographic work with humanistic characteristics, to be specific a delineation of Indonesian culture, which comprises of fabric and non-material culture, such as remains, the affect of calamities, day by day exercises after catastrophes. , Town migration, unused cultivating strategies, and social intuitive carried out by town communities which shape a total culture and have social and stylish values.

This study represents an enhancement of prior research. Centers on the comprehensive development of digital books and does not go into the details of the content. However, the study content is unrelated to tourism. Several prior research conducted by specialists have demonstrated that the efficacy of digital books can be equated to that of traditional printed books. Regarding the sample size, this study is restricted to use a single community group consisting of 20 samples. This differs from earlier research that employed a larger number of samples compared to the author's study. Research is inherently fallible. The author's research was conducted using a limited sample size of only 20 individuals. In addition, this research just concentrates on digital books and does not make a comparison with other variables, such as printed books, as conducted by certain specialists who utilize both printed books and digital books as variables. According to this, the researcher proposes that future studies should include additional community groups in order to do this. In addition, employing two variables in the form of physical books and electronic books can enhance the diversity of study.

CONCLUSIONS

In brief, despite the extensive utilization of Digital Photo Book across diverse sectors, particularly in the realm of tourism, there remain numerous challenges that require resolution in its implementation. For example, the main problem is that not all tourists obtain specific and detailed information, and not all access devices can use this technology, especially for the middle and lower classes. With the continuous development of science and technology, Digital Photo Book can be achieved using virtual design in the process of digital tourism, and virtual technology will become increasingly widely used.

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REFERENCES

Acikgul Firat, E., & Firat, S. (n.d.). *WEB 3.0 IN LEARNING ENVIRONMENTS: A SYSTEMATIC REVIEW*.

Basuki, T. M., Nugroho, H. Y. S. H., Indrajaya, Y., Pramono, I. B., Nugroho, N. P., Supangat, A. B., Indrawati, D. R., Savitri, E., Wahyuningrum, N., Purwanto, Cahyono, S. A., Putra, P. B., Adi, R. N., Nugroho, A. W., Auliyani, D., Wuryanta, A., Riyanto, H. D., Harjadi, B., Yudilastyantoro, C., … Simarmata, D. P. (2022). Improvement of Integrated Watershed Management in Indonesia for Mitigation and Adaptation to Climate Change: A Review. In *Sustainability (Switzerland)* (Vol. 14, Issue 16). MDPI. https://doi.org/10.3390/su14169997

Beck, J., Rainoldi, M., & Egger, R. (2019). Virtual reality in tourism: a state-of-the-art review. In *Tourism Review* (Vol. 74, Issue 3, pp. 586–612). Emerald Group Holdings Ltd. https://doi.org/10.1108/TR-03-2017-0049

Chan, A. S., Fachrizal, F., & Lubis, A. R. (2020). Outcome Prediction Using Naïve Bayes Algorithm in the Selection of Role Hero Mobile Legend. *Journal of Physics: Conference Series*, *1566*(1). https://doi.org/10.1088/1742-6596/1566/1/012041

Corrigan-Kavanagh, E., Frohlich, D. M., & Scarles, C. (2023). Re-invigorating the photo album: augmenting printed photobooks with digital media. *Personal and Ubiquitous Computing*, *27*(2), 467–480. https://doi.org/10.1007/s00779-022-01699-5

Ekmeil, F. A. R., Abumandil, M. S. S., Alkhawaja, M. I., Siam, I. M., & Alaklouk, S. A. A. (2021). Augmented reality and virtual reality revolutionize rusiness transformation in digital marketing tech industry analysts and visionaries during Coronavirus (COVID 19). *Journal of Physics: Conference Series*, *1860*(1). https://doi.org/10.1088/1742-6596/1860/1/012012

Elena-Bucea, A., Cruz-Jesus, F., Oliveira, T., & Coelho, P. S. (2021). Assessing the Role of Age, Education, Gender and Income on the Digital Divide: Evidence for the European Union. *Information Systems Frontiers*, *23*(4), 1007–1021. https://doi.org/10.1007/s10796-020-10012-9

Goo, J., Huang, C. D., Yoo, C. W., & Koo, C. (2022). Smart Tourism Technologies' Ambidexterity: Balancing Tourist's Worries and Novelty Seeking for Travel Satisfaction. *Information Systems Frontiers*, *24*(6), 2139–2158. https://doi.org/10.1007/s10796-021-10233-6

Ivanov, S. H., Webster, C., Stoilova, E., & Slobodskoy, D. (2022). Biosecurity, crisis management, automation technologies and economic performance of travel, tourism and hospitality companies – A conceptual framework. *Tourism Economics*, *28*(1), 3–26. https://doi.org/10.1177/1354816620946541

Jamaluddin, M. F., Hadian, M. S. D., & Nugraha, A. (2021). Concept of Balance in the Hindu-Balinese Community for Sustainable Tourist Park Spatial Planning. *Gondang*, *5*(2), 193-203. https://doi.org/10.24114/gondang.v5i2.29354

Kasemsarn, K. (2022). *The International Journal of Visual Design Creating a Cultural Youth Tourism eBook Guidelines with Four Design Factors*. *16*(2). https://doi.org/10.18848/2325-1581/CGP

Kholiq, Abd. (2020). Development of B D F-AR 2 (Physics Digital Book Based Augmented Reality) to train students' scientific literacy on Global Warming Material. *Berkala Ilmiah Pendidikan Fisika*, *8*(1), 50. https://doi.org/10.20527/bipf.v8i1.7881

KÖMÜRCÜ, S., İŞEVCAN ERTAMAY, S., & GÜLER, M. E. (2021). IMPACTS OF TECHNOLOGICAL DEVELOPMENT ON EMPLOYMENT STRUCTURE OF TOURISM INDUSTRY. *Yönetim ve Ekonomi Araştırmaları Dergisi*, *19*(1), 146–165. https://doi.org/10.11611/yead.814765

Li, Y., Song, H., & Guo, R. (2021). A study on the causal process of virtual reality tourism and its attributes in terms of their effects on subjective well-being during COVID-19. *International Journal of Environmental Research and Public Health*, *18*(3), 1–16. https://doi.org/10.3390/ijerph18031019

Liu, J., & Yang, T. (2021). Word Frequency Data Analysis in Virtual Reality Technology Industrialization. *Journal of Physics: Conference Series*, *1813*(1). https://doi.org/10.1088/1742-6596/1813/1/012044

Loureiro, S. M. C., Guerreiro, J., & Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. In *Tourism Management* (Vol. 77). Elsevier Ltd. https://doi.org/10.1016/j.tourman.2019.104028

Mohanty, P., Hassan, A., & Ekis, E. (2020). Augmented reality for relaunching tourism post-COVID-19: socially distant, virtually connected. In *Worldwide Hospitality and Tourism Themes* (Vol. 12, Issue 6, pp. 753–760). Emerald Group Holdings Ltd. https://doi.org/10.1108/WHATT-07-2020-0073

Natocheeva, N., Shayakhmetova, L., Bekkhozhaeva, A., Khamikhan, N., & Pshembayeva, D. (2020). Digital Technologies as a Driver for the Development of the Tourism Industry. *E3S Web of Conferences*, *159*. https://doi.org/10.1051/e3sconf/202015904002

Pestek, A., & Sarvan, M. (2020). Virtual reality and modern tourism. *Journal of Tourism Futures*, *7*(2), 245–250. https://doi.org/10.1108/JTF-01-2020-0004

Rahmadian, E., Feitosa, D., & Zwitter, A. (2022). A systematic literature review on the use of big data for sustainable tourism. In *Current Issues in Tourism* (Vol. 25, Issue 11, pp. 1711–1730). Routledge. https://doi.org/10.1080/13683500.2021.1974358

Sagnier, C., Loup-Escande, E., Lourdeaux, D., Thouvenin, I., & Valléry, G. (2020). User Acceptance of Virtual Reality: An Extended Technology Acceptance Model. *International Journal of Human-Computer Interaction*, *36*(11), 993–1007. https://doi.org/10.1080/10447318.2019.1708612

Subawa, N. S., Widhiasthini, N. W., Astawa, I. P., Dwiatmadja, C., & Permatasari, N. P. I. (2021). The practices of virtual reality marketing in the tourism sector, a case study of Bali, Indonesia. *Current Issues in Tourism*, *24*(23), 3284–3295. https://doi.org/10.1080/13683500.2020.1870940

Syahputra, M. F., Arippa, A., Rahmat, R. F., & Andayani, U. (2019). Historical Theme Game Using Finite State Machine for Actor Behaviour. *Journal of Physics: Conference Series*, *1235*(1). https://doi.org/10.1088/1742-6596/1235/1/012122

Wang, X., Zhen, F., Tang, J., Shen, L., & Liu, D. (2022). Applications, Experiences, and Challenges of Smart Tourism Development in China. *Journal of Urban Technology*, *29*(4), 101–126. https://doi.org/10.1080/10630732.2021.1879605

Wardhani, A. K., Chandra, E., & rafi Agustina, M. (2020). Tinjauan Visual Promosi Pariwisata untuk Pengembangan Budaya Betawi di Jakarta. *Gondang*, *4*(2), 119-127. https://doi.org/10.24114/gondang.v4i2.19751

Wen, J., & Fu, F. (2021). English Teaching Courses for Students Majoring in Occupational Health in Higher Vocational Education Based on Virtual Reality. *Journal of Physics: Conference Series*, *1881*(4). https://doi.org/10.1088/1742-6596/1881/4/042020

Xu, R., & Chen, H. (2021). Application of Virtual Reality Technology in Industrial Creative Product Design. *Journal of Physics: Conference Series*, *1992*(2). https://doi.org/10.1088/1742-6596/1992/2/022016

Yin, C. Z. Y., Jung, T., Tom Dieck, M. C., & Lee, M. Y. (2021). Mobile augmented reality heritage applications: Meeting the needs of heritage tourists. *Sustainability (Switzerland)*, *13*(5), 1–18. https://doi.org/10.3390/su13052523