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CATALOG DEVELOPMENT OF BETTA FISH TYPES USING PHOTO AND AUGMENTED REALITY AS INFORMATION AND PROMOTION MEDIA FOR INDONESIAN BETTA FISH

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ABSTRACT

In today's modern era, there are many ways to promote a product to the wider community, one of which is by using catalogs. Catalogs are known as effective promotional media as they present information and product images in a visually appealing manner. In this study, we will develop a catalog with an augmented reality feature that will appear when the catalog pages are scanned using certain applications. This catalog was created to introduce a variety of popular betta fish in Indonesia to the public. In this development, MDLC (Multimedia Development Life Cycle) will be used since it considered the most suitable method for catalog development.

Keywords: *Information System, Betta Fish Catalog, Augmented Reality*

INTRODUCTION

In Indonesia, freshwater and seawater ornamental fish have a fairly large market. Approximately 1,100 freshwater ornamental fish species are traded globally, and 400 of them are widely bred in Indonesia. Among the many types of ornamental fish bred, Betta fish is one of the type that are quite popular among the public. Betta fish are also loved for their beautiful colours and shapes, as well as their ease of care compared to other types of ornamental fish (Nugroho et al., 2018). Betta fish has the Latin name *Betta* sp., and belongs to the *Anabantidae* family, which means this fish has the ability to take oxygen directly from the air (Pattiasina et al., 2021). So, betta fish no longer need additional dissolved oxygen-producing devices such as aerators. This ease of maintenance makes Betta fish more and more popular among ornamental fish hobbyists (Destriana, 2019). To increase the popularity of Betta fish in Indonesia, suitable promotional media are necessary to attract readers' interest in the topic. Catalogs are considered the best media for providing information and promotions, as catalogs have been widely used for other similar purposes (Malekani & Benard, 2018). Through the catalog, we can use good image-taking and wording techniques to increase the attractiveness of the object that we want to promote (Kasim et al., 2017). The catalog design also will feature product videos that utilize Augmented Reality technology. This method is expected to increase the attractiveness of the catalog to the reader. Augmented Reality is a technology that can combine two-dimensional or three-dimensional artificial objects into the real environment by projecting these objects through an applicaton, allowing us to see these objects simultaneously in the real world (Flavián et al., 2019). The most common tool used to view the projection result is through the smartphone camera (Kim et al., 2017). However, Augmented Reality technology has been implemented in many other aspects such as in games, home marketing

prototypes, retail stores, learning media and many others (Chen et al., 2019) This catalog will utilize Augmented Reality (AR) technology as a medium for video playback in the catalog. To view videos in the catalog, readers only need a smartphone and a special application to scan the AR code listed on each catalog page. As a result, readers can view photos and videos of each fish discussed in the catalog.

LITERATURE REVIEW

The research entitled "Catalog Development of Betta Fish Types using Photo and Augmented Reality as Information and Promotion Media for Indonesian Betta Fish" is a study that takes references from previous research, namely as follows: Previous research conducted by (Sari, 2018) is an applied research on catalog design to promote a bridal gallery called Titi Dona's bridal gallery. This study discusses the background of Titi Dona's bridal gallery initially used social media as promotional media. They realized that not everyone has and uses social media, so they decided to design a catalog in order to increase their promotional reach. This study uses the ADDIE method (Analysis, Design, Development, Implementation, Evaluation) as a reference for creating their catalog. Initially, the author determined the SWOT (Strength, Weakness, Opportunity, Threats) of Titi Dona's bridal gallery business, and then she carved out the plan for how the catalog will look and be designed, after that the development stage was carried out according to the design made. After development, the catalog will be shared with the closest people and see their response to the catalog. When enough responses have been gathered, she will begin the evaluation stage and correct any deficiencies. The final result of this research is a catalog containing photos and explanation of all services provided by Titi Dona's bridal gallery. The next research conducted by (Fernando et al., 2021) is an applied research that focuses on catalog design by applying augmented reality technology as a promotional media for San Esha Arthamas Company. This research utilizes the MDLC (Multimedia Development Life Cycle) method as a reference for creating the catalog. The MDLC method has six stages: concept, design, material collecting, assembly, testing, and distribution. Initially, the authors came up with the catalog concept. Then they determine the most suitable design for the catalog. After that, the authors began to collect materials in the form of photos, 3d textures, backgrounds, and audio used in the catalog. After all the materials have been collected, the authors begin to add all the materials into the catalog design. Finally, all AR on each catalog page will be tested to ensure that everything runs well. After testing, the catalog will be distributed to prospective buyers of PT San Esha Arthamas.

Another research was conducted by (Dewi et al., 2017) which is also applied research on catalog design to introduce the types of songket patterns to the public. This study uses research and development methods as a reference for creating their catalog. In this method, the writer will initially observe all types of songket fabric in Jinengdalem village, then after all songket patterns are collected, the writer will take a photoshoot and group them based on the existing categories. Finally, a catalog design will be created based on previously collected materials. The final result of this research is a catalog that contains all types of songket fabrics produced in Jinengdalem village. Another research conducted by (Hidayat et al., 2018) is an applied research that focuses on catalog design as a promotional and information media for Global Bangun Mandiri Company. Initially,

the authors analyzed the company's problems, and then they collected data through observation, interviews, and literature studies. The authors then conducted a design analysis to analyze what the company needed to promote. Finally, they created a design concept that encompassed media planning, messaging planning, and visual planning. The result of this research is a catalog that contains all the information about PT Global Bangun Mandiri in order to assure consumers of the quality of the products produced by this company. Lastly, research conducted by (Budiarto & Arief, 2019) is applied research on catalog design as a medium for information and promotion of Polymindo Permata Company. This research carried out the design process through three stages, namely rough layout, comprehensive layout, and final artwork. In this catalog design, the authors use two software, namely Adobe Photoshop CS6 and Corel Draw X7. The final result of this research is a catalog containing the products produced by PT Polymindo Permata, along with detailed information about each product.

Year	Authors	Conslusion
2018	Gusni Widia Sari	This research discusses the design of the catalog with the ADDIE method.
2021	Yusra Fernando, Imam Ahmad, Arief Azmi, Rohmat Indra Borman	This research uses the MDLC methods to create the catalog and apply Augmented Reality Technology in the catalog.
2020	Yusticia Elrachmaditha Sukarto, Denny Indrayana Setyadi	This research uses the ADDIE method in creating catalog for the promotion of the Keraton museum in Sumenep.
2018	Wahyu Hidayat, Andriansyah, Reni Wulandari	This study uses research and development methods in designing a catalog of profiles and products from PT Global Bangun Mandiri.
2019	Mukti Budiarto, Muhammad Arief	This study discusses catalog design with research and development methods that contain promotions and information about products from PT Polymindo.

Table 2.1 Conslusion and Literature ReviewBased on references from all studies above, the author will design a betta fish

catalog using the MDLC method and apply augmented reality technology in the catalog as carried out by (Fernando et al., 2021). The author will design the catalog starting from determining the concept as carried out by (Hidayat et al., 2018), observations such as those carried out by (Dewi et al., 2017) to the distribution stage as carried out by (Sukarto & Indrayana, 2020).

METHODS

The following is a flow of steps that the author will carry out to design the catalog. This study uses a research flow that refers to the MDLC (Multimedia Development Life Cycle) model, which consists of 6 stages: Concept, Design, Material Collecting, Assembly, Testing, and Distribution (Setyadi & Ranggadara, 2020). This flow describes all the author's stages, from planning to the finished product. The research flow is shown in image 3.1:

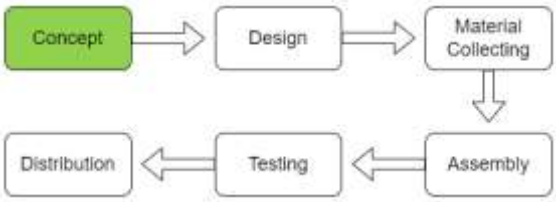

Image 3.1 Research Flow

Initially, the author will determine the concept of the catalog. Then, the design will be created according to the catalog's theme. After that, the author will conduct the material collection, including recording, taking photos, and determining the text that will be used as the catalog content. Finally, the author will add images, videos, and text to the catalog based on the design created earlier. After that, the catalog will be evaluated to determine if the content is feasible. If all the catalog content has been evaluated, the catalog will be distributed online as an electronic catalog. The catalog will contain three main elements: videos that can be viewed using AR technology, photos of Betta fish, and text containing information about each type of fish.

Tools and Materials:

- Canon EOS M camera with 0.25m/0.8ft macro lens.

- 8-watt Eglare stand lamp

- Bilico BL 3520 Tripod

- Black, white, and green background.

- An acrylic aquarium measuring 18x12x15 cm (LxWxH)

- A 25x25 cm mirror for the bottom of the aquarium

- Some types of betta fish: crown tail, rose tail, double tail, dumbo ear, veil tail

Software:

- Unity 2020.1.17

- Adobe Photoshop CS6 13.0.6

- Adobe Premiere CC 2020 14.0

The catalog will use MDLC (Multimedia Development Life Cycle) method. Therefore, the following steps will be carried out:

1. Concept

In this stage, the author will consider various aspects of the catalog concept following the theme and purpose of the catalog, namely as an informational and promotional medium. Using Augmented Reality technology, the author will make a Betta fish themed catalog that uses Augmented Reality as the video playback medium. This concept was chosen because it is considered quite interesting and can increase reader interest in this catalog. In addition, it is

consistent with one of its purposes, namely to act as a promotional medium.

2. Design

In this stage, the author will determine the most suitable design that fits the catalog's theme. Then, the author will adjust the placement of text, photos, and videos in the catalog to attract readers' attention.

3. Material Collecting

In this stage, the author will gather information from various sources to assist in writing the information for the catalog. Then, the author will collect various items listed in the instrument list, such as betta fish models that will be recorded and photographed. After all photos and videos are taken, the photos will be edited in Adobe Photoshop software to enhance and remove the photo's background, and all photos will be exported as ".PNG" files. The video will be edited in Adobe Premiere software to shorten the video's duration to approximately 10 seconds. All videos will be exported as ".MOV" files.

4. Assembly

In this stage, all collected materials will be arranged according to the design determined during the design stage. The software used for making this catalog is Adobe Photoshop CS6 version 13.0.6.

5. Testing

The testing stage is carried out after the author has completed the entire catalog. The author and supervisor will evaluate the finished catalog to find out if there are still errors in the writing or other aspects. Besides that, the author will also test the Augmented Reality scanning function on every catalog's page to ensure everything works. Once an error is found, the author will immediately correct the error before distribution.

6. Distribution

After the catalog passes the testing stage, it will be distributed online through several social media forum and group of ornamental fish hobbyists. So, that is how the author implemented the MDLC method to design and create a betta fish catalog. By using this method, we can speed up the catalog creation process and minimize errors that might occur when distributing the catalog.

RESULTS AND DISCUSSION

In this chapter, we will begin to develop the catalog according to the chosen method. There are three important points to consider when developing the catalog's concept: first, the catalog must be specific to betta fish, then it must be unique compared to other similar items, and lastly, the catalog must have an attractive but simple design. By considering these three points, the author will determine the basic concept of the catalog. Essentially, the author will create a catalog describing various types of betta fish organized by the shape of the tail. There will be seven different kinds of betta fish in the catalog. They are plakat, halfmoon, rose tail, crown tail, veil tail, double tail, and dumbo ear. As for the second point, the author will embed AR technology into the catalog, so it will be unique compared to other similar products. Finally, on the third point, the author will shorten writings and also simplify the description, so it can be more easily understood by ordinary people.Next, we will talk about catalog design. At this stage, the author will create a simple but attractive design so that the catalog can be enjoyed by all people, not just betta fish hobbyists. According to the predetermined concept, the catalog will have

three main elements: photos, augmented reality videos, and description text.The author created the catalog design using Adobe Photoshop. Initially, the author determined the most suitable size for this catalog. After various considerations, the author chose a canvas with a size of 4500x3580 pixels and a resolution of 300 pixels/inch. This size is considered the most suitable because the photos and videos that will be used in the catalog are mostly landscape. After that, the author will determine how the photos and text are arranged in the catalog. In image 4.1 there is a screenshot of the design process.

Image 4.1 Design Process

In the third step, we will collect all the tools and materials needed. Once all the tools are collected, the author will start gathering content that will be used in the catalog. The content is in the form of betta fish photos and videos. Then, the content will be edited using various software before it can be used in the catalog.

Initialy, the author determines all the tools and materials needed. Once determined, the author will start buying tools and materials that are not available through e-commerce. Then, the author will search and buy seven types of betta fish from local breeders via Instagram and Facebook. After everything is gathered, the author will start shooting and recording the betta fish. This process will deliver photos in ".jpg" format and videos in ".mp4" format. After that, the photo will be directly edited using Adobe Photoshop to remove the background, and then the photo will be exported in ".png" format. Meanwhile, the video will be edited using adobe premiere to enhance and cut the duration to a range of 10 seconds, and the video will be exported in ".mov" format. Then, the video results will be processed through Unity to be integrated with Augmented Reality technology. In Images 4.2, 4.3, and 4.4, there are screenshots of the material collecting process.

Image 4.2 Tools and Materials

Image 4.3 Background Removal Process

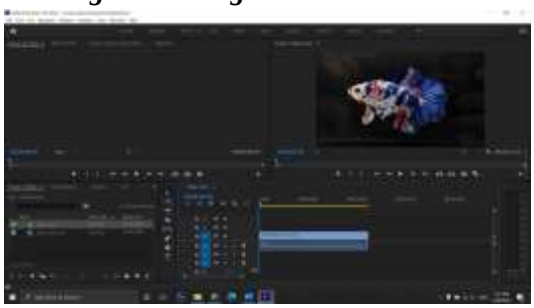

Image 4.4 Video Editing Process

In the next step, all the content that has been gathered will be applied to the catalog design. The author uses Photoshop software because it has many features and easy to use. In image 4.5, there is a screenshot of the Assembly Process.

Image 4.5 Assembly Proces

After the catalog has been created, the author and supervisor will evaluate the entire contents of the catalog. There will be a check on the image position, text format, and correcting errors in writing. The author will also test the AR features in the catalog. After the testing process is completed, the catalog will immediately move to the distribution process. In Table 4.1, there are details about what was checked at the testing stage.

Activity	Result
Placement Check	All text and images have been arranged according to the design.
Writing Check	There is no typo in the description text.
Augmented Reality test	All augmented reality videos can play well.

Table 4.1 Testing Detail

Finally, the author plans to distribute the catalog through various forums and groups of ornamental fish hobbyists on Facebook, Instagram, Telegram, Line, and WhatsApp. It is hoped that this catalog can help introduce the types of betta fish in Indonesia to many people.

LIMITATION

One of the limitations when making this catalog is the problem of funds. The cost of a good quality betta fish is usually substantial, especially for the type that is quite rare in the market, such as the double tail type. Therefore, the author can only afford betta fish with ordinary quality as a catalog model.

The other limitation is the difficulty of finding suitable betta fish. Since most betta fish breeders only focus on breeding one type of fish, the author had to buy fish from multiple stores to collect them all. Therefore, collecting all the betta fish requires quite a bit of time.

The last limitation is the difficulty of recording betta fish. When taking photos, betta fish often move quickly, so the images become blurry. Then, when taking videos, the betta fish often doesn't open its fin, so it requires a long time to take the videos.

CONCLUSION

By using the MDLC method to develop the catalog, it is concluded that this method simplifies and speeds up the catalog development process. In addition, the testing process can significantly reduce errors before catalog distribution. In addition, this research presents a catalog with augmented reality features to draw more readers' attention than conventional catalogs. The information in the catalog is written concisely and clearly, so the readers will have no problem understanding its contents. Furthermore, the augmented reality features are designed to be easy to use. As long the readers have a smartphone and an internet connection, they can access this feature at any time.

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