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Content Design Recommendation for Digital Product of Public Aquarium Using QFD (Case Study: SeaWorld Ancol, Indonesia)

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Abstract. Public aquariums as part of the tourism industry are ted by the pandemic conditions which have caused a decline in visits. Concerns are also still looming over whether there will be another closure policy or a change in consumer behavior in the future. Therefore, Public Aquarium had to change its products and services to adapt to the new habits. This study aims to give recommendation design content on digital products developed as an alternative product form offered to consumers. The research began with a customer survey, followed by an analysis with two levels of QFD involving interviews and discussions. As a result, customers expect digital products that encourage learning about aquatic animals that develop interactive and engaging content. Public aquariums can design educational and entertainment content to convey their collection products into information and interactive technical functions that add value to consumer interest in the content provided.

Keywords. Content Design, Digitalization, Digital Product, QFD

1. Introduction

In 2020 the world experience the Covid-19 pandemic, which has become a global pandemic. Based on data from UNWTO, the tourism industry is most affected by the COVID-19 crisis globally and regionally [1]. Public aquaria, as a part of the tourism industry, attracts a significant number of visitors. Sea World Ancol is one of the public aquariums in Indonesia, located in Jakarta, impacted by the pandemic condition, which has caused a decrease in visits and income to this recreational conservation and education-themed destination.

Based on visitor data in 2020, it was found that there was a decrease in visitors, especially when the Covid-19 case was announced which resulted in a sharp decline and loss of income during the lockdown conditions. **Figure 1** below indicates the existence of revenue after the permit to open a tourist destination. However, based on the category of visitors to the tourist attraction, it can be seen that there are groups of visitors who do not come back even though the opening of recreation is done, the number of visitors who come is still very low.

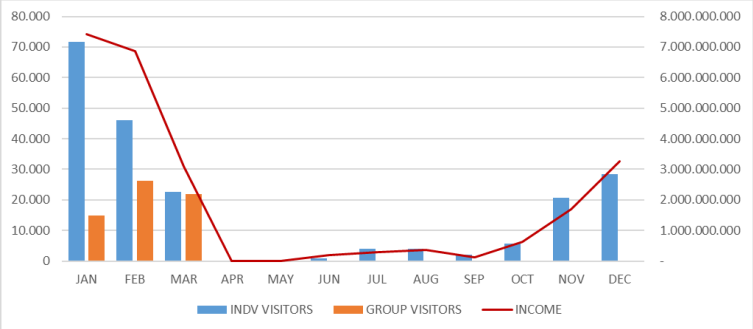

Figure 1. Graphic of Visitors Trend in 2020.

Concerns are also still looming if there is a re-closure policy in the future or changes in consumer behavior in the future. Therefore, Sea World Ancol must transform its products and services to adapt to new habits.

Apart from adopting the Covid-19 protocol for recreation, digital transformation is the right solution and can be developed during a pandemic and facing future challenges by packaging and developing Sea World Ancol product content, especially digital education of aquatic animal life. The goal is to still be able to reach consumers through digital devices even though they can't visit in person.

Therefore, the research aims to identify important digital content as product design recommendations that will be developed based on consumer desires. Digital content is the main focus because digital products need content that contains relevant and interesting knowledge and information. Content analysis will be based on evaluation results from consumers using the Quality Function Deployment (QFD) method. QFD is used to help understand consumer desires and effectively shorten product development time. This is because QFD will focus on communication and surveys to consumers to obtain Customer Requirements (CR) which are translated into Engineering Characteristics (ECs) as content design considerations for digital products being developed.

2. Literature reviewer

2.1. Digitalization in Public Aquarium Product. An aquarium is a building or institution where fish or animals are kept for display and study. The system can connect people to the environment. Public aquariums have developed three important justifications for keeping animals in captivity: conservation, education, and research [2], [3].

Public aquariums are ideal laboratories for studying aquatic animals in biology, ecology, behavior, diversity, disease treatment, reproduction, and conservation. It extends the aquarium's public mission to research, environmental education, diversity, and conservation missions. Public aquariums also have become educational goals at various levels, including increasing environmental awareness for general visitors, special programs for school students to training for students [4]. Compared to museums, aquariums have a dynamic content based on living organisms [5].

In the era of restrictions or physical distancing, tourist destination objects like the public aquarium, face a problematic situation with unprecedented uncertainty. The closure of almost all tourist destination objects is a challenge for maintaining a solid relationship with visitors who have become virtual [6]. The current world conditions and situations have turned into conditions and problems that emphasize digital technology. Therefore, digital transformation is a condition that can not avoid [7], [8].

Several studies related to the digitization of public aquarium products have been carried out, such as in [9], with his research about gamification to satisfy a visitor's desire to learn and enjoy the aquarium simultaneously. [10] conducted a study to design the online aquarium with an intelligent recommend system and OpenCart. They design the online aquarium by using use case, sequence diagram, and E-R diagram to meet the current e-commerce shopping model and the market demand. This was done because according to the study, with the rapid development of the Internet, the traditional offline aquarium has been unable to solve the various problems brought about by the growth of its demand. [11] in their research stated that digital solutions can be used to help in survival for the tourism sector, especially because of the pandemic that causes physical restrictions so that businesses that run become more creative and innovative.

This shows that digitalization can help develop and improve product offerings, connectivity, visits, and even track performance with data processing and help improve attraction management [12], [13].

2.2. Quality Function Deployment. An important industrial methodology to give direction to information flow is Quality Function Deployment (QFD), which is often employed to come along with design development. QFD is a way to transform customers' desires into suitable businesses' requirements at every step, from research through production design and development, to manufacture, distribution, installation, marketing, sales, and services. This method was developed to bring customized characteristics to innovative production and development processes. QFD aids designers in seeking both spoken and unspoken desires, translating these into actions and designs, and focusing various business functions toward attaining this common purpose [14].

This background is also the reason why QFD is used in developing products and services in the tourism industry as was done by [10] in their research to find Creative Product Design of Intangible Cultural Heritage of Yi Nationality and research by [15].

With QFD, the product or service development process or methodology is based on developing a sequence matrix known as the House of Quality (HoQ). The design flow for HoQ includes the customer attribute section of the matrix (horizontal), technical characteristics matrix (vertical), competitive customer evaluation, relationship matrix between (middle section), Co-relationship matrix (roof triangle shape), competitive technical analysis, absolute importance, relative importance and targets [16].

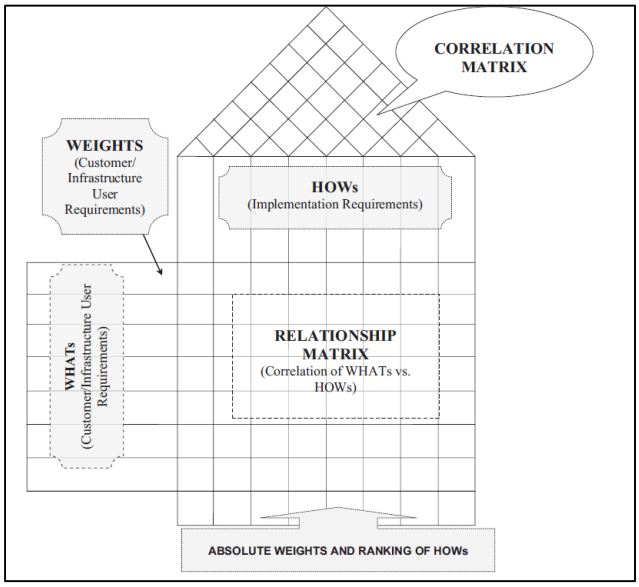

Figure 2. House of Quality [17]

A primary input to the QFD process is customer requirements that are normally based on surveys and questionnaires. The process, various terms, and their role in QFD are:

- Voice of Customer or "WHATs" is a structured list of requirements derived from consumer desires. This is the main input to the HOQ
- The primary input in the HOQ is a prioritized list of basic customer demands (requirements and needs) that are usually expressed in vague and imprecise terms

- Voice of Organization “HOW's” is a list of product characteristics that are relevant to consumer requirements. HOW's are design or technical characteristics intended to meet WHAT's.
- Relationship matrix: it indicates how product characteristics or decisions affect the satisfaction of each customer's need. It consists of relationships existing between eachWHAT and each HOW's attribute.
- Absolute weights and ranking of HOWs: it contains results of the prioritization of product characteristics to satisfy customer requirements. It represents the impact of each HOW's attribute on the WHATs and is the final step before ranking the weights for decision-making.
- Correlation matrix: it is the roof of the HOQ and represents the interdependencies among HOWs. "Roof matrix", is used to identify, where technical requirements support or interfere with each other in product design. This matrix can provide opportunities for innovation. It can play an important role in deciding on the number of HOWs that directly affect the cost, prioritizing WHATs and HOWs.

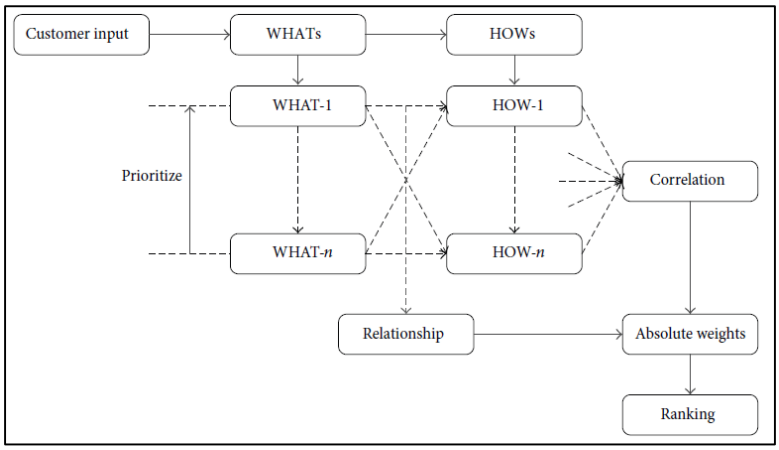

Figure 3. QFD-HoQ Matrix [17]

3. Methods

The methods used are qualitative and quantitative. The qualitative method is used to collect data related to the company's needs and capabilities through interviews, discussions, and observations. The primary purpose of the qualitative approach is to thoroughly describe the facts in the field and present them according to their conditions [18].

Due to The conditions of closure by the pandemic, a survey for the Voice of customers was carried out by distributing a link that was shared Online. Respondents are asked to fill out an online questionnaire with the answer in scale choices. Measurement on the questionnaire for this study uses a Likert scale as the assessment interval for each respondent's answer [19], [20].

Surveys were distributed to customers based on purposive sampling by selecting visitors’ category that those who disappeared or did not return even though Sea World Ancol was reopened under pandemic conditions. Because this category of visitors is visitors that asking for a different product to offer from SeaWorld Ancol. The data collected from the survey results are then processed with QFD as an analytical tool to define the product design based on the content desired by the customer.

Quantitative methods are used to solve primary data problems from survey answers that are scored and then calculated using analytical tools [21]. Analysis of the device used is Quality Function Deployment. QFD uses the House of Quality (HoQ) matrix (**Figure 3**), a graphical

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technique to define the relationship between customer desires and products or services, and designs products and processes with customer features [16], [22].

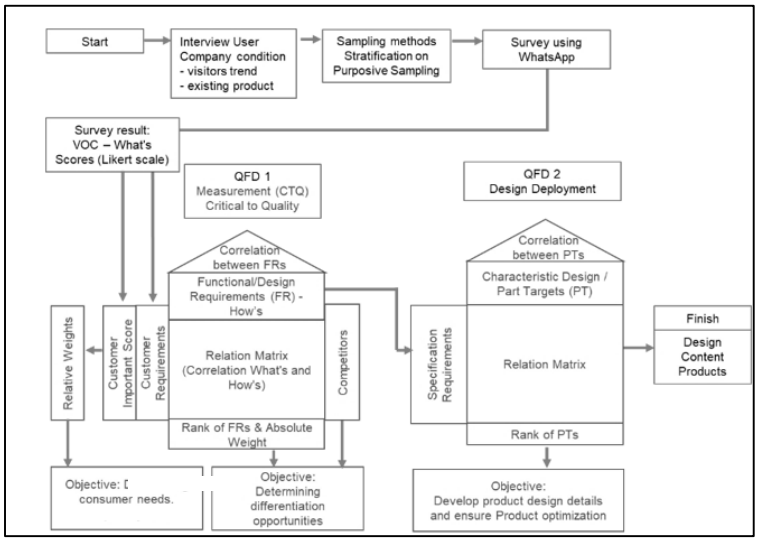

Figure 4. Research Framework

QFD Steps:

- The survey results become the Voice of Customer (VoC) attribute that fills the Customer Requirements (CRs) column. The value entered is the average value of each attribute as the Customer Important (CI) value which is processed to obtain the Relative Weight. Relative Weight is the CI value of the CRs compared to the overall CI value.
- The relative weight is then ranked to obtain priority CRs.
- The next step for each CRs is to determine its technical function as Functional Requirements (FR) through limited discussion with company representatives, in this study involving representatives from the operational and marketing departments.
- In determining the relationship between CRs (Whats) and FRs (Hows) symbols are used; – Strong relationship, - Moderate relationship, – Weak relationship. The numeric value for is 1, is 3, and is 9. Numeric values will be used in further calculations to produce the Technical Important Rating or Absolute weight and Relative weight values for each FR.
- After knowing the relationship between Crs and FRs. So it is important to know the correlation between the FRs themselves. The HOQ roof matrix becomes a tool to analyze the relationship between FRs. The relationship between FRs is depicted by symbols like; + positive, - negative, or O no relation. The relationship between FR is important as a consideration if there is a relationship between FR that has a negative correlation. The company will consider that FRs that have a negative correlation will still be carried out with modifications so as not to interfere with other FRs or should not be carried out if they are too risky.
- The HOQ matrix on QFD level one also considers markets that have similar businesses. In this case, the study considers three similar competitors which are taken into account in the way the competitor fulfills CR and FR.
- QFD level one then proceeds to QFD level two to detail the specifications or part characteristics of each FRs so that in designing digital product content the company has got its development limits. HOQ on QFD level two is analyzed with the same method as QFD level one, which will consider design specifications that will meet consumer desires.

- At the initial stage of QFD level two, the FR of QFD level one becomes Functional Target (FT).
- Each FT is determined by Part Characteristics (PC) by a discussion with company representatives.
- Then analyzed the relationship between each PC and FT. Those relationships are depicted by the symbols like; – Strong relationship, - Moderate relationship, – Weak relationship. The numeric value for is 1, is 3, and is 9. Numeric values will be used in further calculations to generate the Technical Important Rating (TIR) and Relative weight values for each PC.
- TIR is the absolute value of each relationship between PC and FT.
- Each PC is detailed to determine the Part Target (PT) which will be the focus of the digital content design of the product being developed.
- The weight chart used will help see which PT is a priority.

4. Result and Discussion

The study, which began with a survey, obtained data on visitor desires for digital products from 128 respondents who filled out online questionnaire links. The results obtained 19 categories of digital product content desires, namely:

Tabel 1. Customer Requirement Based On Survey

Streaming conditions in the area	Easy to learn certain material	Source information from expert
Digital games	Text information	Has different levels
Animal life videos	Audio explanation from speaker	Unique & distinctive
Animal animation	Interesting music back sound	Interaction with source persons
Real animal image	Personal exploration	Interesting visuals and audio
Moving animation	In line with the school curriculum	
Varying Content	Precise information	

The survey results are processed into QFD level one, resulting in levels of CRs based on the value of CI and Relative Weight.

Row #	Relative Weight	Customer Importance (1-5)	Customer Requirements
1	4.9%	3.938	Easy to learn certain material
2	4.7%	3.813	Lots of games
3	5.4%	4.383	Real animal image
4	5.1%	4.083	Includes text
5	5.5%	4.271	Audio explanation from the speaker
6	5.0%	4.063	Interesting music
7	5.4%	4.396	Animal life videos
8	5.1%	4.125	Streaming conditions in the area
9	5.5%	4.271	Animal animation
10	5.1%	4.083	Personal exploration
11	5.5%	4.28	In line with the school curriculum
12	5.4%	4.375	Precise information
13	5.5%	4.458	Source information from expert
14	5.6%	4.542	Varying Content
15	5.5%	4.292	Has different levels
16	5.4%	4.354	Unique & distinctive
17	5.1%	4.125	Interaction with source persons
18	5.5%	4.458	Interesting visuals and audio
19	5.5%	4.458	Moving animation

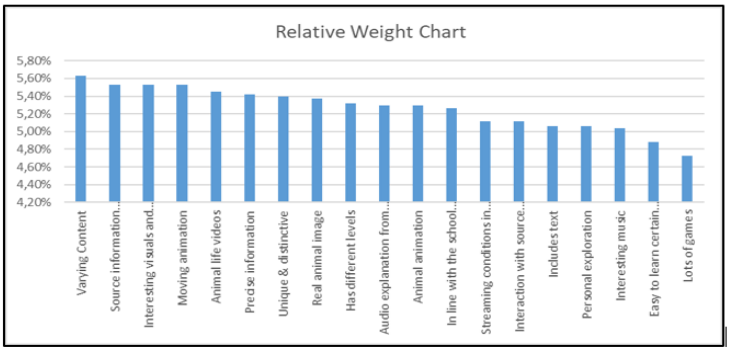

Figure 5. What's - Customer Requirements Score and Graph

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The table and graph in **Figure 5** above show the Value of Customer Importance from the highest to the lowest. The desire for varying content is in the highest rank, followed by information content from experts, interesting visual and audio content, and the lowest desire is content containing lots of games.

Tabel 2. Relation Matrix - Correlation between How's Vs What's

Customer Requirements / Functional Requirements	easy learning model	Game inside	Animal collection photos	Narrative	Audio speaker	Music backsound	Documentary Videos	Live Streaming	2D / 3D animation	User experience	Ministry of Education Standards	Information accuracy	expert source	mixed learning	Level Difference	Differentiation	Interactive	Creative videography	Moving Character
Easy to learn certain material	●	○	○	○	○	▽	○	●	○	○	●	○	○	●	●	●	●	○	○
Lots of games	○	●	○	▽	▽	○	▽	▽	●	○	▽	▽	▽	○	●	○	●	▽	●
Real animal image	○	▽	●	▽	▽	▽	●	○	▽	▽	○	●	○	▽	▽	○	▽	●	▽
Includes text	▽	▽	▽	●	○	▽	▽	▽	▽	▽	○	○	○	▽	▽	▽	▽	▽	▽
Audio explanation from the speaker	▽	▽	▽	▽	●	▽	▽	○	▽	○	▽	○	○	▽	○	▽	○	▽	▽
Interesting music	▽	▽	▽	▽	○	●	▽	▽	▽	○	▽	▽	▽	○	▽	▽	○	▽	▽
Animal life videos	●	▽	▽	○	▽	○	●	▽	▽	○	▽	○	○	○	○	○	○	○	▽
Streaming conditions in the area	●	▽	▽	▽	●	○	▽	●	▽	○	▽	●	○	○	○	○	●	▽	▽
Animal animation	●	▽	●	▽	▽	○	○	▽	●	▽	▽	▽	▽	○	▽	▽	▽	●	●
Personal exploration	●	▽	○	▽	▽	▽	▽	●	▽	○	▽	○	▽	○	○	○	●	▽	○
In line with the school curriculum	○	▽	○	●	▽	▽	○	○	▽	▽	●	●	○	○	●	○	●	▽	▽
Precise information	○	▽	●	○	▽	▽	●	○	▽	▽	●	●	●	▽	○	▽	○	▽	▽
Source information from expert	○	▽	○	○	○	▽	○	○	▽	▽	○	●	●	▽	○	○	●	▽	▽
Varying Content	●	○	○	○	○	○	○	○	○	○	○	○	○	●	○	●	●	●	○
Has different levels	●	●	▽	▽	▽	▽	▽	○	▽	○	●	○	○	○	●	○	▽	▽	▽
Unique & distinctive	●	●	○	▽	▽	○	○	○	○	○	○	○	○	○	▽	●	○	○	○
Interaction with source persons	○	▽	▽	▽	○	▽	▽	●	▽	▽	▽	●	●	○	○	○	●	▽	▽
Interesting visuals and audio	●	○	○	▽	●	●	○	▽	●	○	▽	○	▽	○	▽	●	○	●	○
Moving animation	○	○	▽	▽	▽	○	▽	▽	●	○	▽	▽	▽	▽	▽	○	○	○	●
Max Relationship	9	9	9	9	9	9	9	9	9	3	9	9	9	9	9	9	9	9	9
Technical Importance Rating	555,20	266,64	312,70	236,43	289,93	258,74	304,96	347,77	300,36	225,90	321,07	449,70	334,03	298,66	346,73	366,25	505,78	317,04	277,33
Relative Weight	9%	4%	5%	4%	5%	4%	5%	6%	5%	4%	5%	7%	5%	5%	5%	6%	8%	5%	4%

Table 2 shows the FR for each CRs and their relationship from the group discussion. **Figure 6** shows the highest till the lowest TIR value, where easy learning model is the highest and followed by: interactive functions, information accuracy to user experience.

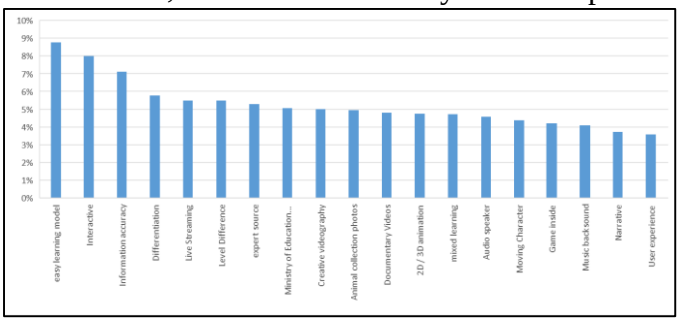

Figure 6. TIR of FR based on Relative Weights

The further analysis in developing content for aquarium public digital products is by considering the correlation between the FRs themselves in **Figure 7**.

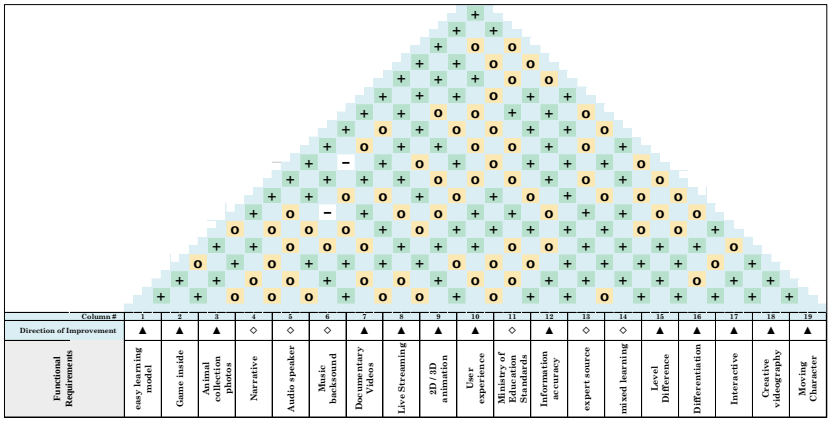

Figure 7. Roof Correlation Matrix between FR's

It can be seen that most of the correlations between FRs have a positive value or are not interconnected, this shows that the development of each FR can run well without disturbing the other FRs. The negative relationship with FR lies in making game insides which can be against the standards of the Ministry of Education. However, Game inside can be developed into content that contains messages from the Ministry of Education and even becomes part of learning. Such as research by [23] that examines appropriate forms of games as additional learning media for certain materials needs to be designed based on an analysis of learning needs, referring to learning outcomes and following the majority of prospective users' learning styles. In addition, product forms also need to be designed and developed based on studies of learning theory, principles of digital games and accompanied by continuous evaluation. Overall, developing digital content does not have problems that can affect other FRs.

After QFD level 1 is completed by knowing the required FR, further development on QFD level 2 to obtain details of the content design to be created, as follows:

Direction of Improvement	▲	▲	◇	◇	▲	▲	▲	◇	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Part Characteristics / Functional Targets	Clear and easy to understand	Puzzle/Role Playing	Photo database per species	Text font type (readable)	Recording	Instrumental music	Documentary of marine animal life	Actual conditions	min.2D marine animal animation	Open interaction with users (HIC)	Curriculum 2013	Reliable literature	Collaboration with experts/researchers	Collaborative learning	Content adjustments per level	Content specialization	User engagement	Professional manufacture	Moving image illustration
easy learning model	●	▽	○	▽	○	○	○	▽	○	○	○	▽	▽	○	○	○	○	▽	○
Game inside	○	●	▽	▽	▽	○	▽	▽	○	○	▽	▽	▽	○	○	○	○	○	▽
Animal collection photos	▽	▽	●	▽	▽	▽	▽	○	▽	▽	▽	▽	▽	○	▽	▽	▽	▽	▽
Narrative	○	▽	▽	●	●	▽	▽	▽	▽	▽	○	●	▽	○	▽	▽	▽	▽	▽
Audio speaker	○	▽	▽	▽	●	▽	▽	▽	▽	●	▽	○	▽	○	▽	▽	▽	●	▽
Music backsound	▽	○	▽	▽	▽	●	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	○	▽
Documentary Videos	○	▽	▽	○	○	○	●	○	▽	▽	▽	▽	○	○	○	○	▽	●	○
Live Streaming	▽	▽	▽	▽	▽	▽	▽	●	▽	●	▽	▽	○	○	○	○	○	▽	▽
2D / 3D animation	▽	●	○	▽	▽	▽	▽	▽	●	▽	▽	▽	▽	○	▽	▽	▽	○	▽
User experience	○	○	▽	▽	▽	▽	▽	▽	▽	●	▽	▽	▽	○	○	▽	●	▽	▽
Ministry of Education Standards	○	▽	▽	▽	▽	▽	▽	▽	▽	▽	●	▽	▽	○	▽	▽	○	▽	▽
Information accuracy	▽	▽	○	▽	○	▽	○	●	▽	▽	○	●	●	▽	▽	○	○	▽	○
expert source	○	▽	○	▽	○	▽	○	○	▽	▽	○	●	●	○	▽	●	●	▽	▽
mixed learning	○	○	○	▽	○	○	○	▽	▽	○	○	▽	▽	●	○	○	○	▽	○
Level Difference	●	○	▽	▽	▽	▽	▽	▽	▽	▽	●	▽	▽	○	●	▽	○	▽	○
Differentiation	▽	○	○	▽	▽	○	○	▽	○	○	○	○	○	○	○	●	○	○	○
Interactive	○	●	▽	▽	▽	▽	▽	▽	▽	●	▽	▽	○	○	○	○	●	▽	▽
Creative videography	○	▽	○	○	○	○	●	▽	○	▽	▽	▽	▽	○	○	▽	▽	●	●
Moving Character	▽	○	▽	▽	▽	▽	▽	▽	○	▽	▽	▽	▽	▽	▽	▽	▽	●	●
Part Targets	Unique fact	Ocean Ecosystem and Food Chain	Clear pixels	Informative and inclusive	Clear voice and diction	Good ambient and rhythm music	Footage of animals in the water	Exhibition exploration	Favourite marine animal	Question and answer session	Adjusting to the theme of the curriculum	Reference Validation	Veterinarian, researcher	Mixing of science content, games and interactions	Basic dan Middle	Live Science	peer interaction	Integrative storylines and attractive videos	Seaworld mascot figures
Max Relationship	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Technical Importance Rating	312,44	292,07	222,63	149,65	238,24	199,56	242,25	231,16	194,50	320,55	255,54	250,01	247,57	297,16	244,89	275,13	328,49	288,40	248,81
Relative Weight	6%	6%	5%	3%	5%	4%	5%	5%	4%	7%	5%	5%	5%	6%	5%	6%	7%	6%	5%

Figure 8. Relation Matrix QFD level 2

In the second level QFD, each FR of the first level QFD is used as a Functional Target (FT) which will then determine the characteristics of each content function to be developed and its design target. Based on the relationship between Part Characteristics (PCs) and FRs, the absolute value of TIR for each PC is obtained (**Figure 9**).

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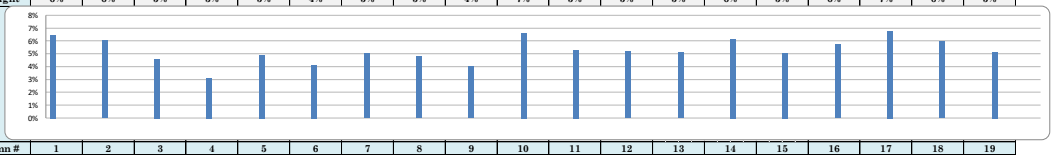
Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Direction of Improvement	▲	▲	◇	◇	▲	▲	▲	◇	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Part Characteristics	Clear and easy to understand	Puzzle/Role Playing	Photo database per species	Text font type (readable)	Recording	Instrumental music	Documentary of marine animal life	Actual conditions	min.2D marine animal animation	Open interaction with users (HIC)	Curriculum 2013	Reliable literature	Conaroration with experts/researche rs	Collaborative learning	Content adjustments per level	Spesialisasi konten	User engagement	Professional manufacture	Moving image illustration
Part Targets	Unique fact	Ocean Ecosystem and Food Chain	Clear pixels	Informative and inclusive	Clear voice and diction	Good ambient and rhythm music	Footage of animals in the water	Exhibition exploration	Favourite marine animal	Question and answer session	Adjusting to the theme of the curriculum	Reference Validation	Veterinarian, researcher	Mixing of science content, games and interactions	Basic dan Middle	Live Science	peer interaction	Integrative storylines and attractive videos	Seaworld mascot figures
Max Relationship	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Technical Importance Rating	312,44	292,07	222,63	149,65	238,24	199,56	242,25	231,16	194,50	320,55	255,54	250,01	247,57	297,16	244,89	275,13	328,49	288,40	248,81
Relative Weight	6%	6%	5%	3%	5%	4%	5%	5%	4%	7%	5%	5%	5%	6%	5%	6%	7%	6%	5%
Weight Chart																			
Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Figure 9. Table and Graphic of PCs and PTs in QFD level.

By looking for the relationship between PC's and FT's, we found that the content design that has the most relation to FR's is content with characters that have user engagement with a target of developing peer interaction with a TIR value of 328.49 and RW 7%. Followed by the content character with RW 7% is the need for a content character in the form of Open Interaction with Users (HIC) with the target in the form of Question and Answer Session.

Furthermore, to design a content character that is clear and easy to understand, the company needs to target developing unique facts. Being at RW 6% and a TIR value of 297.16 is to develop characteristics content of collaborative learning with the target of packaging learning between science, games, and interaction. Further development of target content is to design ocean ecosystem and food chain materials packaged that can be puzzles or role-playing. The part target of content is also to alignment or the need for integration between interesting storylines and videos based on life science. The content design is also necessary to adjust to the existing theme in the curriculum. And, to ensure quality content, reliable literature is needed with validation on the references provided. An attractive design also requires identity characteristics so that the content in the form of illustrations needs to develop a figure of the company's, such as the SeaWorld mascot. Content that requires collaboration from an expert has a part target the veterinarians or researchers because they are the one who does have direct experience with materials related to SeaWorld products. For the level of the content itself, it is still in the basic and middle. Furthermore, the content for the documentary is focused on animals in the water and their activities in SeaWorld.

In every content creation in the form of recording or direct coverage in the exhibition area, sound and image clarity is a must, and the addition of music must pay attention that the background music has good ambient so that it does not interfere with the explanation or the original sound of the animal. The content of animations is limited to favorite animals recognized by consumers and adding text if needed. The text is not too long and focuses on inclusively informative explanations.

The results of the recommendation for digital product content design indicate that the development of digital products in types of tourist destinations such as public aquariums is possible. As stated by [5], aquariums have a dynamic content-based enhanced experience centered on education and entertainment. Another aspect of interactive products is the availability of content updates and data collection properties.

Education-based content will also be featured and attached to various public aquarium products because people still consider public aquaria able to improve their levels of interpretation about natural life and provide more information on conservation aspects [4].

Therefore, public aquariums such as Seaworld Ancol can design educational and entertainment content to convey their collection products into information to be accepted by the public. Design development with interactive technical functions will also add value to consumer interest in the content provided, as digitalized companies must pay attention to content with open interaction to users should remain humane. The object exhibited or displayed must be combined with interactive experiences following actual natural objects [24].

5. Conclusion

- QFD produces recommendations for content design for aquarium public digital products as an alternative product form offered to consumers during the adaptation period of new habits, especially in conditions of not being able to visit directly.
- Analysis using two levels of QFD produces a more detailed recommendation design and makes it easier to develop content that meets consumer needs.
- Public aquarium such as Seaworld has dynamic content based on living organisms where can be designed in digital products, will offer a great deal towards enhanced experience centered on education and entertainment.
- The content design is upon nineteen requirements and targeting on developing peer interaction, easy to understand, with packaging in attractive variation

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