Theoretical Framework.

According to Helmenstine, A. (2019), Filtration is a process that uses a filter medium to isolate solids from liquids or gasses, allowing the fluid to move through but not the solid. The Filtration theory states that the term clarification is used when the proportion of the solids in a liquid is less. It is a common procedure commonly used in bulk drug production and oral liquid formulation. The suspension which is to be filtered is called slurry. The porous material used to preserve the solids is known as the filter media. The accumulated solids on the filter are referred to as filter cake and filtrate is the clear liquid which passes through the filter. The fine apertures required for filtration are provided through fabric filter cloths, plastic or metal meshes and screens, or solid particle beds. In some cases, before the main filtration process a thin preliminary coat of cake, or other fine particles, is placed on the cloth. A preliminary coating is put on to ensure that the filter has enough fine pores and it is known as a pre-coat (Willis, Bybyk, Collins, & Raviprakash, 1987).

The study will be utilizing the filtration theory in order to keep and maintain the water in the fish tanks. With the help of this theory, our filtration technology would be more efficient in order to keep the water safe for the aquatic animals. Hence, water filtration is to be conducted to be part of the project.

The theory of feeding strategies of Schoener, T. (1971) stated that Natural history is full of observation on feeding, yet only recently researchers have started to view feeding as a tool whose efficiency (as measured in net energy yield / feeding time or some other units presumed commensurate with fitness)

may be maximized through natural selection. The primary task of a feeding strategy theory is to determine for a specific animal that behavioral and morphological complex is best suited for collecting food energy in a particular environment. Therefore, the job is one of optimization, and like all problems of optimization, it can be trisected. The task is one, therefore, of optimization, and like all optimization problems, it may be trisected: 1. Choosing a currency: What is to be maximized or minimized? 2. Choosing the appropriate cost-benefit functions: What is the mathematical form of the set of expressions with the currency as the dependent variable? 3. Solving for the optimum: What computational technique best finds extrema of the cost-benefit function?

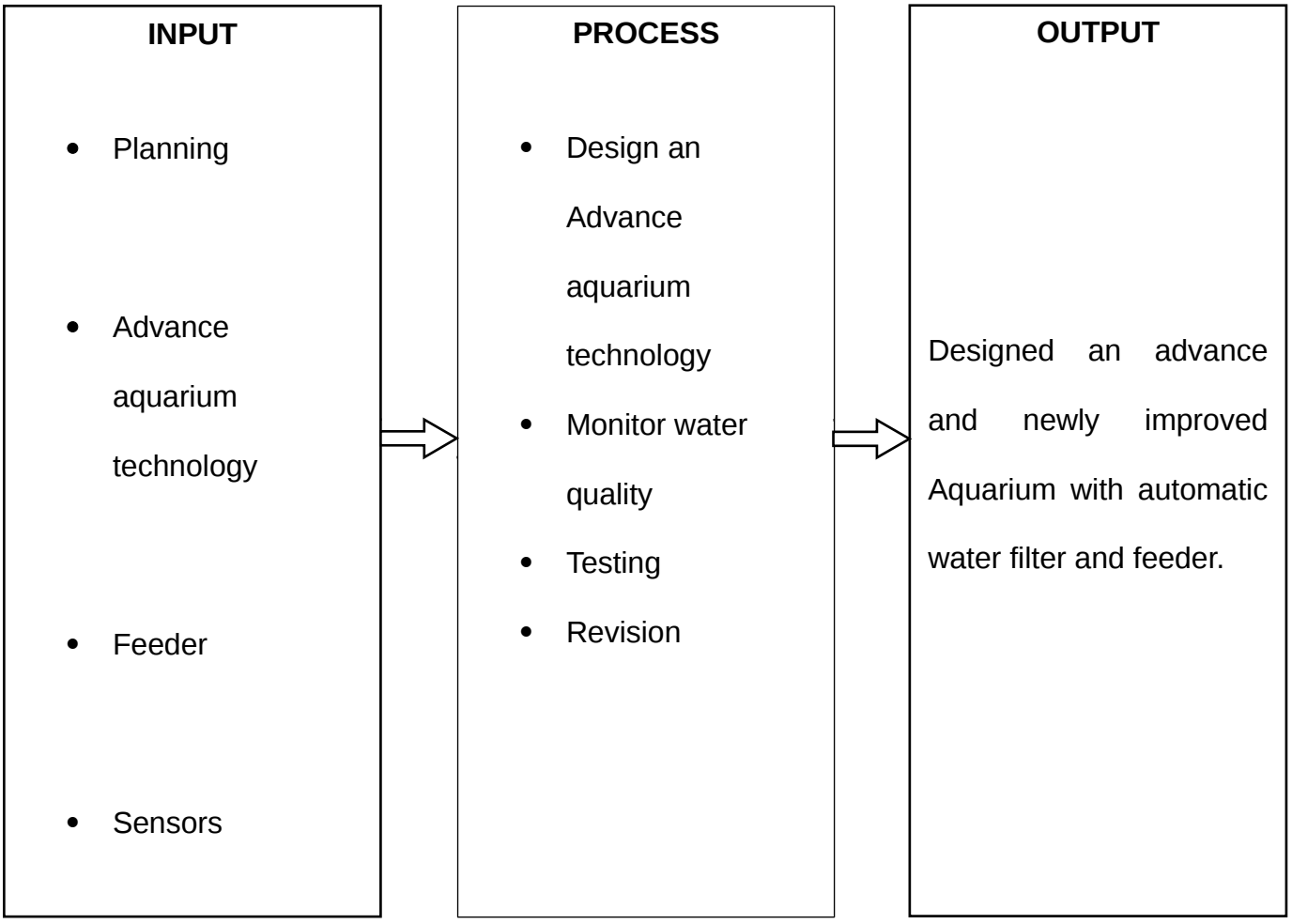
The theory of feeding strategies will be used in order for the researchers know the best suited strategies in feeding the fishes in a fish tank. With the help of this theory, the researchers would be able to know the best time for the food intake of the fishes and be able to give the right amount of food to them.

Conceptual Model of the Study

The conceptual model is the structure for describing a process. It contains (IPO) model, or input-process-output pattern, is an analysis of performance and processing systems that materials (inputs) are transformed to generate results (output). A conceptual model is a representation of a framework, made of the synthesis of ideas which are utilized to help individuals know, comprehend, or understand our model.

The input–process–output (IPO) model is a widely used approach in systems analysis. Input part is where we gather our thoughts, materials and brainstorming ideas.

In this part we introduced our ideas that allows us for designing our model and understand how to do it in the process part. On the other side, process part is where we prepare everything and study on how our output should be done. Process part is the time when we identify and develop our topic to do a preliminary research for more information about our output. Lastly, output is the final stage or the results section where we report the findings of our model. It presents the core information of our model if it works or not.



Operational Definition of Terms

The following operational terms are defined in the study.

Aquarium. Where the aquatic animals are kept and displayed

Arduino. Refers to an open source hardware that designs and manufactures single-board micro-controllers kits for building for some devices.

Automatic Feeder. Automatically provides food for the fish.

Automatic Water Filter. It automatically filter out particles and pollutants from water in the aquarium.

Sensor. Device that detects and responds to some type of input from the physical environment.

References

Attia, J., Milliot, S., Noble, C., & Terova, G. (2011, June 20). *https://s3.amazonaws.com/academia.edu.documents/49995429/Demand_feeding_and_welfare_in_farmed_fis20161030-1040-13yys79.pdf?response-content-disposition=inline%3B%20filename%3DDemand_feeding_and_welfare_in_farmed_fis.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-*. Retrieved from Demanding Feeding and Welfare in Farmed Fish.

Dada, E. G., Theophine, N. C., & Adekunle, A. L. (2018). *https://www.researchgate.net/profile/Emmanuel_Dada6/publication/327802412_Arduino_UNO_Microcontroller_Based_Automatic_Fish_Feeder/links/5ba57e6d45851574f7dd1bd2/Arduino-UNO-Microcontroller-Based-Automatic-Fish-Feeder.pdf*. Retrieved from Arduino UNO Microcontroller Based Automatic Fish Feeder.

Dhavale, S. D., Sagar, A. C., Chavan, M. S., & Jagtap, S. C. (2019, February). *https://www.ijresm.com/Vol,2_2019/Vol2_ISS2_February19/IJRESM_V2_I2_199.pdf*. Retrieved from A Literature Survey on Automatic Fish Feeder.

Hnatuic, M., & Caracostea, M. (2017). *https://pdfs.semanticscholar.org/8158/e577b28b08f90d92ad4952d3942853d874a0.pdf*. Retrieved from Automatic Calf Feeder System.

Mohammed, A. A., & Maheta, V. D. (2017). *https://jofsr.org/index.php/path/article/download/574/283*. Retrieved from Smarrt Aquarium Kit.

Mohammed, A. Y., & Maheta, V. D. (2017). *https://jofsr.org/index.php/path/article/view/574*. Retrieved from Smart Aquarium KIt.

O, Odum, R. A., & Zippel, K. C. (2010, February 5). *https://www.amphibianark.org/wp-content/uploads/2018/08/IZY-Water-Quality.pdf*. Retrieved from Amphibian Water Quality: Approaches to an Essential Environmental Parameter.

Ramya, A., Rohini, R., & Ravi, S. (n.d). *http://iejrd.com/Volume4/Issue2/ramya.pdf*. Retrieved from IOT Based Smart Monitoring System For Fish Farming.

Savitha, V., Sabari, A. K., VInithra, N., & Dhanasekar, J. (2017, April). *https://s3.amazonaws.com/academia.edu.documents/53207722/CSEIT172230.pdf?response-content-disposition=inline%3B%20filename%3DSmart_Fish_Feeder.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-*

Credential=AKIAIWOWYYGZ2Y53UL3A%2F20200124%2Fus-east-1%2Fs3%2Faws4_re. Retrieved from Smart Fish Feeder.

Smith, K. F., Schmidt, V., Rosen, G. E., & Amalar-Zettler, L. (2012, September 6). *https://journals.plos.org/plosone/article?id=10.137L/journal.pone.0039971*. Retrieved from Microbial Diversity and Potential Pathogens in Ornamental Fish.

Zaini, M. F. (n.d.). *http://umpir.ump.edu.my/id/eprint/8440/1/cd8144.pdf*. Retrieved from Àutomatic Solar Power for Feeding System for Aquaphonic Farming.