**STAKEHOLDERS PARTICIPATION ON THE PERCEIVED MARINE POLLUTION CONTROL MEASURES**

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**Abstract**

Water is the most important substance in the world and a basic need utilized by living things for survival. It is one of the most important resources and very essential to all aspects of life. Water covers seventy percent of the earth’s surface and is significant for both people and environment.

The study was conducted to determine the participation of the stakeholders on the control of marine pollution. The study was also conducted to determine whether the respondents are practicing the proper waste management for which they are aware of. Employing the descriptive correlational design, this study involved of seventy (70) respondents in total. Analysis of data involved the use of frequency and percentage, mean, standard deviation and chi-square for the descriptive statistics. Results of the study showed that when taken as a whole, the resident of both barangays were highly aware of the activities undertaken in marine and coastal areas. When they grouped according to age, sex, civil status and educational attainment, respondents were also aware of these activities. The residents of both barangays also practiced this kind of activities that they were aware most of the time. It was also found out that there is no significant difference in Stakeholders Participation on Marine Pollution Control Measures as a whole. Furthermore, the null hypothesis which state that there is a significant difference in the level of practices in recycling plastic bottles, car tires and other items that are still usable when grouped according to educational attainment.

Based on the findings and conclusions of the study, the following are hereby recommended. To the Barangay Officials of Brgy. Villa Baybay and Calumpang of Iloilo City, that the barangay should continue and sustain their activities to control pollution in marine and coastal areas because it yielded good results. To the City Government of Iloilo City, that the findings of the study will be considered in their planning to further enhance the solid waste management program of other barangays of Iloilo City. To the Residents of Brgy. Villa Baybay and Calumpang of Iloilo City, that they have to sustain their practices to further strengthen the ability of the residents to maintain solid waste management in the barangay.

**INTRODUCTION**

**Background of the Study**

Water is the most important substance in the world and a basic need utilized by living things for survival. It is one of the most important resources and very essential to all aspects of life. Water covers seventy percent of the earth’s surface and is significant for both people and environment. There is no life on earth without water.

Certainly, the ocean, the origin of life, is the biggest area and most important part of this planet. It has a huge amount of water storage which is considered to be the most stable ecosystem in which we live right now. Indeed, our planet is composed mostly with water that is why human beings are dependent on it as natural resource in order to live. In addition, our daily life is also closely linked with the ocean, river, lakes, ponds, spring, streams and other marine related products that make our living more integral to all known life. Some invaluable benefits and services of these marine resources include food, transportation, recreation, medicine, climate regulation and the benefits to economic development.

However, in recent decades, the situation of marine environment is not optimistic since the drastic growth of the world industry is becoming more serious and immense. Marine environment becomes polluted and pollution is becoming more serious. Marine pollution is a major threat to both marine life and marine ecosystem. It has wide reaching effects that it harms the environment, ecosystem, and wildlife. It also affects the ease of use of water, and damages many precious resources. These effects of marine pollution are felt by every living thing including humans.

Marine pollution was ignored for years but the consequences have become more visible in recent decades. It takes many forms with varying effects on the environment. Any form of marine pollution is serious in its own way and it has a negative impact on the natural world. It can cause detrimental effects to the activities, on the health of human being, and to the survival of marine organisms. Notwithstanding, marine pollution also threatens biodiversity, climate, resources prevention, tourism revenue and economic activities.

As human population increases, so is our resource consumption and creation of waste products. Since everything flows downhill, much of our waste ends up in the ocean. At one time, people thought the ocean’s vastness could dilute waste well enough to eliminate its impacts. However, we now know that some pollutants remain in the environment for years, decades, or even centuries, and can significantly alter marine ecosystems. The ocean is not able to convert, assimilate, or otherwise rid itself of all the waste we produce (Marine Conservation Research Institute of the Aquarium of the Pacific, 2010).

**Statement of the Problem**

This study sought to find out the participation of the concerned selected coastal residents and government agencies as identified stakeholders on marine pollution control measures.

Specifically, this study sought to answer the following questions:

1. What are the perceived participating activities undertaken as marine pollution control measures of coastal residents of Villa Baybay, Calaparan, and Calumpang when grouped according to sex, age, civil status, educational attainment?
2. Is there a significant difference in these perceived control measures of Villa Baybay, Calaparan, and Calumpang when grouped according to sex, age, civil status, educational attainment?
3. What is the participation of the lead agencies such BFAR, DENR, LGU-CENRO Iloilo City, PCG, and PPA on the marine pollution control measures?
4. What programs can be further developed or created out of the results of the control measures of marine pollution?

**Null Hypothesis**

There is no significant difference in these perceived control measures of Villa Baybay, Calaparan, and Calumpang when grouped according to sex, age, civil status, educational attainment.

**Definition of Terms**

The following terms are defined conceptually and operationally for better understanding.

**Awareness.** The state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns. In this level of consciousness, sense data can be confirmed by an observer without necessarily implying understanding. More broadly, it is the state or quality of being aware of something. Awareness is defined as a human’s perception and cognitive reaction to a condition or event (Definitions.net, 2019).

In this study, awareness is related to the perception of the selected stakeholders and how well the involved stakeholder is informed about the source, cause and impacts of the marine environment issues, and how well the involved stakeholder perceived the marine pollution control measures in Iloilo City.

**BFAR (Bureau of Fisheries and Aquatic Resources)** is the government agency responsible for the development, improvement, management and conservation of fisheries and aquatic resources in the Philippines. BFAR is a line bureau under the Department of Agriculture. As a government agency, the bureau carries out a variety of functions aimed at the proper management and conservation of aquatic resources. BFAR aims to alleviate poverty through improved livelihoods, expanded sustainable access to offshore and deep-sea resources, and increased economic opportunity through improved aquaculture productivity and upgraded post-harvest technologies. BFAR aims to make national fisheries both sustainable and globally competitive (Worldfish, 2019).

**Control Measures.** These refer to the actions that can be taken to reduce the potential of exposure to hazards, to remove the hazard or to reduce the likelihood of the risk of the exposure to that hazard being realized (Health and Safety Authority, 2019).

In this study, control measures mean methods, actions, or essential task to eliminate or prevent the hazard completely particularly in marine biodiversity. Those control measures which help to prevent pollution in Iloilo by various methods of operations.

**DENR (Department of Environment and Natural Resources**). It is the primary agency responsible for the conservation, management, development, and proper use of the country’s environment and natural resources, specifically forest and grazing lands, mineral resources, including those in reservation and watershed areas, and lands of the public domain, as well as the licensing and regulation of all natural resources as may be provided for by law in order to ensure equitable sharing of the benefits derived therefrom for the welfare of the present and future generations of Filipinos (E.O. 192, s. 1987).

In this study, DENR (Department of Environment and Natural Resources) is the selected stakeholder, a group which involved in a certain issue pertaining to marine pollution and control measures.

**LGU – CENRO ILOILO CITY**. LGU refers to Local Government Unit either at the barangay, municipal, city or provincial level. Local Government Units under Community Environment and Natural resources Office (CENRO) refers to the DENR Office, headed by a Community Environment and Natural Resources Officer Appointed by the Secretary of DENR, which is responsible for the implementation of DENR policies, programs, project and activities and the enforcement of ENR laws and regulations in the community level (DENR-DILG Joint Memorandum Circular No. 98-01).

In this study, CENRO (Community Environment and Natural resources Office) Local Government Unit of Iloilo City) as stakeholder, oversee local governance of the city of Iloilo and responsible for ordinances and resolutions for an effective and efficient city government and shall implement national and local programs related to general hygiene and sanitation, beautification, solid waste disposal system, environmental management system such for marine pollution. LGU CENRO Iloilo City is responsible to protect the environment and impose penalties for acts which endanger the environment. CENRO local government unit be obliged to coordinate with government agencies and nongovernmental organizations in the implementation of measures to prevent and control water pollution, and provide assistance for natural resources related conservation and utilization activities consistent with ecological balance in the Iloilo City.

**MARINA (Marine Industry Authority).** MARINA administers the promotion and development of the marine industry and also provides effective regulation of shipping enterprises. Since its establishment in June 1994, MARINA was granted the authority to issue Certificates of public Convenience (CPC), Permitting the operation of domestic and overseas water carries. Other functions of the agency include the registration of vessels, the issuance of licenses, the addressing of safety concerns pertaining to vessel construction, and the enforcement of maritime law (Civil Aeronautics Board, 2019).

In this study, (MARINA) Marine Industry Authority as stakeholder responsible for the implementation of safety standards for vessels, and ascertain compliance for safety and environmental standards. Marine Industry Authority promotes and strengthens maritime policies, programs and projects in Iloilo City.

**Marine Pollution.** This refers to the introduction of substances or energy from humans into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of seawater, and reduction of amenities (Beiras, 2018).

In this study marine pollution is the main concern seen in the residents living in the coastal of Iloilo City’s barangay. Marine pollution results in damage of the environment, to the health of all organisms and to economic structures in Iloilo City and its coastal Barangay.

**Participation.** Participation in social science refers to different mechanisms for the public to express opinions - and ideally exert influence - regarding political, economic, management or other social decisions. Participatory decision making can take place along any realm of human social activity, including economic, political, management, cultural or familial. For well-informed participation to occur, it is argued that some version of transparency, e.g. radical transparency, is necessary, but not sufficient. It has also been argued that those most affected by a decision should have the most say while those that are least affected should have the least say in a topic (Fadul, 2010).

**PCG (Philippine Coast Guard).** The Philippine Coast Guard under RA 9993 is the sole agency responsible for the Philippine implementation of the Conventions with regards to oil pollution, prevention, mitigation and control through the conduct of marine pollution monitoring and control, enhancement of PCG capability and oil spill response operations and enforcement of all marine environmental laws and regulations. The Philippine Coast Guard is mandated to enforce regulations in accordance with all relevant maritime international conventions, treaties or instruments of which the government is signatory and national laws (Coastguard.gov, 2020).

In this study, Philippine Coast Guard is government agency responsible for protecting marine resources from and environment from pollution. This agency supports the maritime laws, implements laws on fisheries, and contributes to maintain good order at sea.

**Perceived.** This refers to a mode of perception or apprehending reality and experience through the senses, thus enabling discernment of figure, form, language, behavior, and action. Influences opinion, judgment, understanding of a situation or person, meaning of an experience, and how one responds to a situation. To notice or become aware of something (Given, 2008).

In this study, perceived means an overview of knowledge, understanding, awareness, responsibility and actions connected to the stakeholder towards marine pollution control measures.

**PPA (Philippine Port Authority).** The primary government agency concerned with the planning and development of the country’s seaports. Established in 1974, the PPA’s charter was amended by Executive Order 857, which expanded its functions to include the integration and coordination of port nationwide (Civil Aeronautics Board, 2019).

In this study Philippine Port Authority as government agency is responsible for the implementation of policy and strategy on environmental protection. Philippine Port Authority of Iloilo City is responsible for providing guidelines for the compliance by port stakeholders in adopting environmental protection and preservation in the City and City Barangay.

**Stakeholders .** They are individuals, groups, or organizations that can benefit from an evaluation or those who can affect or may be affected by an evaluation process or its findings (Frey, 2018).

In this study, it refers to the involvement of concerned government agencies such as BFAR, DENR, LGU - CENRO Iloilo City, MARINA, PPA, and PCG which are in-charge in marine pollution control.

**Significance of the Study**

The result of the study may be beneficial to the following:

**Residents of the Barangay.** This study could be beneficial to all residents of the barangay in Iloilo to be aware of such many forms of pollution including marine pollution and its harmful effect to everyone such as diseases, illnesses and other epidemics that threaten everyone’s health.

**Individuals.** The result of the study may inform every individual to avoid creating pollutions and could also put an end to many forms of pollution. There is no change if there is only individual effort. This study could help them analyze that the best way to influence others to stop pollution is to lead by example and this will contribute positive effect on multiple fronts.

**Schools.** Schools offering hospitality, laws, forestry, and agriculture will benefit from this study by having knowledge in terms of the harmful effects of marine pollution in our environment and ecosystem. This will give them insights on the cause, impact, and effects of marine pollution for every living thing and for the next generation.

**Department of Tourism (DOT).** This study could be beneficial to the Department of Tourism since this sector is in-charge and responsible for the promotion of many marine related tourist spots and destinations. This could challenge the sector and take action based on findings and recommendations for the betterment, improvement and sustainability of the natural resources as tourists’ destination.

**DENR (Department of Environment and Natural Resources).** This study is beneficial to this sector to enhance and embrace more ideas, acquire learning’s and awareness about marine pollution. The result of the study could challenge them to establish strong planning for frameworks with regards to marine pollution control measures and promote human well-being and environmental quality and ensured sustainability of marine environment.

**Local Government.** The study is beneficial for local government; for this could provide them another new learnings and information about prevention of marine pollution and the importance of water in everyday life. This will guide the local government to strictly impose ordinances, laws, and policies with regards to marine pollution and use of control measures to prevent marine pollution that cause threat to local residents.

**Future Researchers**. Future researchers may gain insights from the results of the study as basis for future studies which may be wider in scope but still relate to marine pollution and control measures. This may help them investigate other topics related to marine pollution in different setting.

**Scope and Limitation of the Study**

This study aimed to determine the perceived extent of implementation and the level of awareness of the DENR (Department of Environment and Natural Resources) and other as stakeholders about marine pollution control measures in Iloilo. The researchers-made an interview guide used during the survey of the study.

The study was limited to the selected stakeholders which are DENR, BFAR, MARINA, PPA, PCG and coastal residents of Villa Baybay, Calaparan and Calumpang. The seventy (70) participants of this of this research were randomly selected coastal residents of Villa Baybay, Calaparan, and Calumpang and the executives of LGU – CENRO Iloilo City, DENR, BFAR, MARINA, PPA, PCG and costal residents of Villa Baybay, Calaparan and Calumpang.

Random sampling method was employed in the selection of the participants who were the officials in charge of marine pollution control environmental offices who work for them. Perceptions on the awareness about marine pollution control measures were identified through the answers of the respondents to the items stated in the interview guide. This study was conducted in November 2019 onwards.

Frequency count, percentage analysis and Chi Square were used as statistical tools.

**REVIEW OF RELATED LITERATURE**

**Conceptual Literature**

Marine pollution is now ubiquitous and a serious threat to the economy. Pollution, including marine litter, plastics, sewage, oil and chemicals, impacts the value of the goods and services provided by the oceans, including quality of fisheries and the pristine marine environment highly valued by the tourism sector. The region is extremely vulnerable to the impacts of marine pollution due to the dependence of its people on natural resources in combination with its vast exposed coastlines. Understanding and addressing marine pollution in the region is an economic and social priority in addition to the environmental threat. Countries now recognize the potential of the ocean and are weighing policy shifts to protect their valuable coastal and marine natural capital to reap the full benefits of the economy (Robin, D. et. al., 2019).

Marine pollution starts on land, and make their way into open waterways, groundwater and take place in oceans, rivers, lakes, and underground reservoir, and as different water sources flow together through the water cycle the pollution can spread.

Marine pollution has become a very important topic in today's society. In this study, local governments units and the Department of Environment and Natural Resources (DENR) are concerned with the marine pollution which results in instant and long term damages to coastal and marine habitats and ecosystem. In Iloilo, marine pollution results from direct and indirect discharge of solid and liquids from land-based source. Solid waste and wastewater are the most pervasive sources of marine pollution. Towns and barangays along the coast and riverbank are particularly problematic sources of untreated wastewater and litter due to inadequate waste collection, disposal, and treatment facilities. Due to increase of population in the province of Iloilo and the development of the industry, a waste management system remains a major challenge.

In this study, there are (6) government agencies identified as chosen stakeholders which have involvement in the marine environment and marine pollution issues who will serve as respondents. These are; (1) Bureau of Fisheries and Aquatic Resources (BFAR); (2) Department of Environment and Natural Resources VI (DENR-VI); (3) Local Government Unit- City Environmental and Natural Resources Office Iloilo City (LGU-CENRO); (4) Marine Industry Authority (MARINA); (5) Philippine Coast Guard (PCG); (6) Philippine Ports Authority (PPA).

In this perspective, this study aims to find out the perception, vision, and responsibilities of the concerned agencies towards strict implementation of marine pollution control measures in Iloilo. Likewise, it also seeks to find out the extent of effective implementation of Clean Water Act.

The Iloilo City region as the center of marine shore fish biodiversity due to its rich marine diversity faces issues right now. Iloilo City marine environment is becoming polluted and considered as the worst among developing provinces concerning marine and coastal resources because of intense pressure from urbanization and development activities. Its marine environment and resources are suffering right now. Thus there is a need for DENR (Department of Environment and Natural Resources) as a stakeholder together with other concerned agencies to stress the importance of strengthening marine pollution control measures, integrate marine pollution prevention into broader context, control policies, knowledge, raise public awareness about the importance of water and marine ecosystems to induce behavioral change, planning framework, and responsibilities in conserving coastal and marine ecosystem and its sources to ensure food security especially at seas.

Marine pollution is the introduction of substances or energy from humans into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of seawater, and reduction of amenities. The first inherent part of pollution is its human origin, i.e., pollution is an anthropogenic process derived from human activities. Pollution is a function of human population density, directly related to the degree of industrialization, and inversely related to cultural level. The second aspect inherent to pollution is the deleterious effects caused to organisms or humans. The most feared pollutants are the persistent, bio accumulative, and toxic substances. From shorter to longer environmental half-life pollutants can be dissipating, such as heat or nutrients; biodegradable, such as organic matter; or persistent, such as trace metals or organochlorines. Coastal ecosystems are more polluted than oceanic waters because of the proximity to point sources. Estuaries, and particularly their sediments, concentrate pollutants coming from continental waters due to geochemical processes such as precipitation and sedimentation (Beiras, 2018).

Marine pollution, in its many forms, alters the physical, chemical, and biological characteristics of the ocean and coastal areas, negatively impacting the health of biodiversity and ecosystems (Wowk, 2013).

Overall, the most significant of these threats comes not from actions at sea but on land, with land-based activities contributing about 80% of all pollution entering the ocean. Due to a lack of data and long-term observations, as well as complex interactions that occur in the environment, it is difficult to estimate the amounts and impacts of specific pollutants, including how they interfere with ecosystem processes, especially at sea-land and sea-atmosphere boundaries. Nevertheless, enough is known about the sources, pathways, and threats of pollutants to advance actions to address harmful effects. We have long known some of the negative consequences of chemical and metal contamination in the marine environment, which in many instances has resulted in toxic effects in wildlife and humans. Humans are especially susceptible to toxicity through the consumption of contaminated seafood, leading to health effects including sensitization, allergy, neurological development deficits, and disturbance of the hormone system.

According to Wowk (2013), marine ecosystem services support our daily lives in a number of ways. Yet, multiple stressors acting on the marine environment, such as climate change, ocean acidification, pollution, and the overuse of marine resources threaten the continued provision of these services. While targeted actions are needed to address issue-specific threats, decision makers and the public must also concert efforts toward governance regimes that account for multiple stressors and foster ecosystem resilience. Further, while research is needed to better understand the impacts of multiple stressors, insurance-based models can be adopted to reduce risk by accounting for combined conditional probabilities of the effects of multiple stressors, including low probability but high-impact events. We must not allow the complexity of today’s challenges chart our future. We can act to avoid potentially disastrous loss and substantial costs through taking proactive measures now.

**Source of Marine Pollution**

The three primary sources of marine pollution stem from direct discharge of effluents and solid waste on land and at sea, runoff from rivers, and atmospheric deposition (Wowk, 2013).

The sea is the final resting place for much of our litter. Common items of marine litter include cigarette butts, crisp/sweet packets, cotton bud sticks, bags and bottles. Man-made items of debris are found in marine habitats throughout the world, from the poles to the equator, from shorelines and estuaries to remote areas of the high seas, and from the sea surface to the ocean floor. Approximately 80% of marine litter comes from land-based sources (eg. through drains, sewage outfalls, industrial outfalls, direct littering) while 20% comes from marine-based activities such as illegal dumping and shipping for transport, tourism and fishing. Plastics are estimated to represent between 60 and 80% of the total marine debris. Manufactured in abundance since the mid-20th century, most of the plastics that have been produced are still present in the environment. The cumulative amount of plastic produced since the mid-20th century is of the order of 5 billion tons, enough to wrap the Earth in a layer of plastic wrap. The amount projected by 2050, on current trends, is about 40 billion tons, which is enough to wrap 6 layers of plastic wrap around the planet (Sea change, 2018).

**Types of Marine Pollution**

**Plastic Pollution.** The majority of the garbage that enters the ocean each year is plastic—and here to stay. That’s because unlike other trash, the single-use grocery bags, water bottles, drinking straws, and yogurt containers, among eight million metric tons of the plastic items we toss (instead of recycle), won’t biodegrade. Instead, they can persist in the environment for a millennium, polluting our beaches, entangling marine life, and getting ingested by fish and seabirds. Where does all this debris originate? While some is dumped directly into the seas, an estimated 80 percent of marine litter makes its way there gradually from land-based sources―including those far inland―via storm drains, sewers, and other routes (Denchak, 2018).

Marine pollution is a major threat for marine ecosystems and plastic pollution is being heavily studied and widely reported. Currently, microplastic contamination has moved into the focus of environmental research, with numerous studies addressing the occurrence of microplastics in the water column, in sediments, and in filter-feeding organisms. A major challenge is to identify the effects of micro plastics on wild fauna, as well as to understand the trophic transfer of the particles among trophic levels (Ostiategui-Francia, et al., 2017).

**Surface Water Pollution.** Surface water includes natural water found on the earth's surface, like rivers, lakes, lagoons and oceans. Hazardous substances coming into contact with this surface water, dissolving or mixing physically with the water can be called surface water pollution.

**Oxygen Depleting.** Water bodies have micro-organisms. These include aerobic and anaerobic organisms. When too much biodegradable matter (things that easily decay) end up in water, it encourages more microorganism growth, and they use up more oxygen in the water. If oxygen is depleted, aerobic organisms die, and anaerobic organisms grow more to produce harmful toxins such as ammonia and sulfides.

**Ground Water Pollution.** When humans apply pesticides and chemicals to soils, they are washed deep into the ground by rainwater. This gets to underground water, causing pollution underground. This means when we dig wells and bore holes to get water from underground, it needs to be checked for ground water pollution.

**Microbiological.** In many communities in the world, people drink untreated water (straight from a river or stream). Sometimes there is natural pollution caused by microorganisms like viruses, bacteria and protozoa. This natural pollution can cause fishes and other water life to die. They can also cause serious illness to humans who drink from such waters.

**Suspended Matter.** Some pollutants (substances, particles and chemicals) do not easily dissolve in water. This kind of material is called particulate matter. Some suspended pollutants later settle under the water body. This can harm and even kill aquatic organisms that live at the bottom of water bodies.

**Nutrients Pollution.** Some wastewater, fertilizers and sewage contain high levels of nutrients. If they end up in water bodies, they encourage algae and weed growth in the water. This will make the water undrinkable, and even clog filters. Too much algae will also use up all the oxygen in the water and other water organisms in the water will die out of oxygen starvation (eSchooltoday, 2019).

Chemical contamination, or nutrient pollution, is concerning for health, environmental, and economic reasons. This type of pollution occurs when human activities, notably the use of fertilizer on farms, lead to the runoff of chemicals into waterways that ultimately flow into the ocean. The increased concentration of chemicals, such as nitrogen and phosphorus, in the coastal ocean promotes the growth of algal blooms, which can be toxic to wildlife and harmful to humans. The negative effects on health and the environment caused by algal blooms hurt local fishing and tourism industries (National Geographic Org., 2019).

**Chemical Water Pollution**. Many industries and farmers work with chemicals that end up in water. This is common with Point-source Pollution. These include chemicals that are used to control weeds, insects and pests. Metals and solvents from industries can pollute water bodies. These are poisonous to many forms of aquatic life and may slow their development, make them infertile and kill them.

Chemical such pesticides have been an essential part of agriculture to protect crops and livestock from pest infestations and yield reduction for many decades. Despite their usefulness, pesticides could pose potential risks to food safety, the environment, and all living things. Pollution due to the uncontrolled use of pesticides has become one of the most alarming challenges when pursuing sustainable development. Pesticide chemical residues in soil and water are significant environment threats and have been classified as carcinogen pollutants in many countries. There have been numerous reports regarding pesticide residues detected in grains, milk, vegetables, and fish (Özkara. Akyıl, and Konuk, 2016).

**Oil Spillage/ Pollution**. Oil spills usually have only a localized effect on wildlife but can spread for miles. The oil can cause the death to many fish and get stuck to the feathers of seabirds causing them to lose their ability to fly.

Environmental pollution caused by petroleum is of great concern. This is because petroleum hydrocarbons are toxic to all forms of life and harm both aquatic and terrestrial ecosystems. The pollution of marine habitats has caught the attention of researchers and environmentalists. This is due to the serious impact of oil spills on marine life, as well as on people whose career relies on the exploitation of the sea’s resources. Additionally, marine life may be affected by clean-up operations. It may also be indirectly affected by the physical damage to the habitats in which plants and animals live in.

Petroleum marine fuel spills, which result from damage, transportation accidents and various other industrial and mining activities, are classified as hazardous waste. They are considered to be the most frequent organic pollutants of aquatic ecosystems (Saadoun, 2015).

Oil pollution in coastal waters causes severe environmental, ecological, economic, and other consequences. Oil spill environmental sensitivity and risk assessment mapping is to assess the susceptibility of the coastal resources and aid effective decision-making in minimizing the long-term effect (Arockiaraj and Kankara, 2019). Oil pollution is an ever present threat in the marine environment with large numbers of spills, both large and small, being recorded every year. When spills impact on the coast, there is major public and political concern, and pressure for cleanup to occur (Adam, 2019).

Ships pollute oceans in devastating ways. Polycyclic aromatic hydrocarbons (PAHs) in crude oil which is not only toxic but also don’t degenerate easily as they stay as sediments in the marine ecosystem. Oil spills are the worst marine pollutants. Oil spills from tankers that contains untreated water on return ships and leaking pipes and engine oil disposed into sewers can cause a great deal of damage as well.

**Thermal Pollution**. Thermal pollution affects the ocean in a negative way. An increase in water temperature causes a change (lowering) of dissolved oxygen levels. This disrupts the body of water's ecological balance, resulting in the suffocation of some plant and animal species while encouraging the overgrowth of others. The overgrowth and suffocation causes a cascade reaction with other organisms that are dependent on the ones that don't survive and with organisms that now have to compete with the overgrowing organisms.

**Sewage Pollution**. The most important primary feature of raw sewage from a disposal point of view is its 'oxygen demand'. The oxygen demand is the amount of oxygen that will be consumed by bacteria as they feed on and degrade the sewage waste. If the amount of oxygen required is similar to, or greater than, the amount of oxygen avail-able then serious problems may arise. Sewage generally contains large amounts of nitrogen and phosphates, which can lead to phytoplankton blooms. Usually excessive nutrient discharge into the coastal waters will result in eutrophication. Red tides are caused by phytoplankton blooms, which deplete oxygen in coastal waters causing the mass death of aquatic organisms. In addition, the algae may produce toxins, which cause shellﬁsh poisoning and pre-sent a serious health hazard to consumers. Red tides have become a major concern in several countries (Krishnakumar, 2017).

**Solid Wastes.** The environmental degradation and energy crisis are two significant issues for global sustainable development. Due to rapid urbanization, industrialization and increase of the growth of population have led to severe substantial waste management problems in several developing countries. As the village develops into towns and cities, in developing countries the disposal of solid waste onto access ways, empty lands, and waterways has been witnessed. Presently, more materials are consumed than required to meet their daily needs by a greedy human. Human beings generate domestic, agricultural, industrial, and medical wastes at every level of development. This waste comprises of both solid and semisolid organic wastes, which may be biodegradable and non-biodegradable. Once the solid waste is collected from the different sectors of the community, the next problem is regarding the safe, economical, and efficient disposal options. Suitable decisions have to be made in this regard to avoid illegal dumping and open dumping of solid wastes that are dangerous and a threat to the environment (Naveen and Sivapullaiah, 2020)

**Deep Sea Mining**. Deep sea mining is the mineral extraction process that is carried out on the ocean floor. These mining sites are mainly found in areas of polymetallic nodules or active &extinct hydrothermal vents below the ocean’s surface. Because of this, now there are sulphide deposits which contain cobalt, copper, silver, gold, zinc and manganese. Deep sea mining has raised concerns about the damage it causes to its surroundings. There are several unanswered questions about the exact consequences which need to be answered and discovered. The toxicity of water and sediment plumes from tailings also increases because of removal of sea floor parts. This also harms the benthic layer. The tailings from mining when dumped back into the ocean forms clouds of particles floating in the water.

**Land Runoff**. There is a huge amount of surface runoff taking place from farming, urban areas, construction of roads, building, ports and harbors which carry soil and particles full of carbon, nitrogen, phosphorus and other minerals. This water rich with nutrients is great for algae and phytoplankton to live in coasts causing algal bloom which is using up all the available oxygen.

**Ocean Acidification.** When carbon dioxide (CO2) is absorbed by seawater, chemical reactions occur that reduce seawater pH, carbonate ion concentration, and saturation states of biologically important calcium carbonate minerals. These chemical reactions are termed "ocean acidification" or "OA" for short. Calcium carbonate minerals are the building blocks for the skeletons and shells of many marine organisms. In areas where most life now congregates in the ocean, the seawater is supersaturated with respect to calcium carbonate minerals. This means there are abundant building blocks for calcifying organisms to build their skeletons and shells. However, continued ocean acidification is causing many parts of the ocean to become under saturated with these minerals, which is likely to affect the ability of some organisms to produce and maintain their shells. Ocean acidification is expected to impact ocean species to varying degrees. Photosynthetic algae and sea grasses may benefit from higher CO2 conditions in the ocean, as they require CO2 to live just like plants on land. On the other hand, studies have shown that lower environmental calcium carbonate saturation states can have a dramatic effect on some calcifying species, including oysters, clams, sea urchins, shallow water corals, deep sea corals, and calcareous plankton. Today, more than a billion people worldwide rely on food from the ocean as their primary source of protein ([https://www.pmel.noaa.gov](https://www.pmel.noaa.gov/)).

**Noise Pollution.** Noise pollution is generally defined as regular exposure to elevated sound levels that may lead to adverse effects in humans or other living organisms. According to the World Health Organization, sound levels less than 70 dB are not damaging to living organisms, regardless of how long or consistent the exposure is. Exposure for more than 8 hours to constant noise beyond 85 dB may be hazardous.

Our oceans are no longer quiet. Thousands of oil drills, sonar’s, seismic survey devices, coastal recreational watercraft and shipping vessels are now populating our waters, and that is a serious cause of noise pollution for marine life. Whales are among the most affected, as their hearing helps them orient themselves, feed and communicate. Noise pollution thus interferes with cetaceans’ (whales and dolphins) feeding habits, reproductive patterns and migration routes, and can even cause hemorrhage and death.

Other than marine life, land animals are also affected by noise pollution in the form of traffic, firecrackers etc., and birds are especially affected by the increased air traffic (Environmental Pollution Centers, 2017)

**Sedimentation**. Sediments in the aquatic ecosystem are analogous to soil in the terrestrial ecosystem as they are the source of substrate nutrients, and micro- and macro flora and -fauna that are the basis of support to living aquatic resources. Sediments are the key catalysts of environmental food cycles and the dynamics of water quality. Aquatic sediments are derived from and composed of natural physical, chemical, and biological components generally related to their watersheds.

Sedimentation is the direct result of the loss (erosion) of sediments from other aquatic areas or land-based areas. Sedimentation can be detrimental or beneficial to aquatic environments. Moreover, sediment impoverishment (erosion or lack of replenishment) in an area can be as bad as too much sedimentation. Sedimentation in one area is linked to erosion or impoverishment in another area and is a natural process of all water bodies (i.e., lakes, rivers, estuaries, coastal zones, and even the deep ocean). As an example, detrimental effects can be related to the burial of bottom-dwelling organisms and beneficial effects can be related to the building of new substrates for the development of marshes. These natural physical processes will continue whether or not they are influenced by the activities of humankind.

Human activities, however, have significantly enhanced sedimentation as well as sediment loss. Sedimentation activities can be land-based (i.e., agriculture, forestry, construction, urbanization, recreation) and water-based (i.e., dams, navigation, port activities, drag fishing, channelization, water diversions, wetlands loss, other large-scale hydrological modifications). Sediment impoverishment or loss is generally due to retention behind dams, bank or beach protection activities, water diversions, and many of the aquatic activities cited here. Morphological changes (physical changes over a large area) to large aquatic systems can also result in major changes in natural sediment erosion and sedimentation patterns. As an example, the change in the size and shape of a water body will result in new water flow patterns leading to erosion or sediment removal from sensitive areas.

The environmental impacts of sedimentation include the following: loss of important or sensitive aquatic habitat, decrease in fishery resources, loss of recreation attributes, and loss of coral reef communities, human health concerns, changes in fish migration, increases in erosion, loss of wetlands, nutrient balance changes, circulation changes, and increases in turbidity, loss of submerged vegetation, and coastline alteration (Pollution Issues, 2019).

**Danger in Marine Life**

Observed effects in wildlife attributed to micro contaminant exposure (a diverse class of chemicals including pharmaceuticals, pesticides and industrial chemicals) include reproductive abnormalities and behavioural effects. All sea turtle species, 45% of all species of marine mammals, and 21% of all species of sea birds have been affected by ingestion of or entanglement in marine debris, with plastic items being the most frequently documented. Plastics can absorb toxins from surrounding seawater, such as pesticides and those in the class of chemicals known as Persistent Organic Pollutants (POPs). They can also release harmful constituents such as Bisphenol A (known to mimic the hormone estrogen), as they degrade. Because of their small size, microplastics (plastic fragments < 5mm) can be ingested by a wide range of organisms. This can cause physical damage from abrasions, blockages or accumulation of toxins in organisms (Seachange, 2016).

**Marine Pollution – The Connection to Human Health**

Human health can be directly influenced by marine litter in the form of physical damage, e.g. injury from debris such as broken glass, medical waste or entanglement in floating or submerged debris. Indirect health effects can be caused by chemicals, toxins or other harmful particles such as viruses or bacteria in the water. For example, medical waste (syringes, bandages, etc.) and sewage pose a public health hazard through transmission of infectious diseases. People’s livelihoods are affected by marine pollution. For example, littered beaches or polluted water does not attract tourists. Fewer tourists mean less income for coastal communities.

Plastic particles have been found in a wide variety of species including some that we eat such as bivalves (e.g. mussels), crustaceans (e.g. crabs) and fish. The risk of chemicals adhered to plastics transferring through the food web from marine organisms to humans has not yet been conclusively established and represents an important knowledge gap (SeaChange, 2018).

**Consequences of Pollution**

Ocean pollution was ignored for years, but in recent decades the consequences have become more visible. On an individual level, pollutants can cause detrimental effects to the activities, health, and survival of marine organisms and humans. On a larger scale, it threatens biodiversity, climate, and the preservation of some of the most treasured locations on the planet. Notwithstanding, pollution costs us billions in terms of tourism revenue, coastal economic activities, and lost resources.

**Pollution Control**

Pollution control is an essential task. There are four types of control: legal, social, economic, and technological measures, which help to prevent the pollution by various methods of operations. Waste products enter the environment in various forms and threaten the quality of the air, land, and water. The presence of waste products in water is especially serious, as many of these products can enter the food chain, where the biochemical processes can rapidly increase their concentration to toxic level. Hence, it is extremely important to study the methods of treating waste products and eliminating them from aqueous system. The US Environmental Protection Agency has listed copper as a priority pollutant.

Pollution control has almost become an integral part of the process of industrialization. Appropriate laws have been passed that restricts and regulates the growth of pollution intensive industries, especially in metropolitan cities. It has been made obligatory for industrial units to adopt measures to control pollution (Patel and Vashi, 2015).

Solutions for marine pollution include prevention and cleanup. Disposable and single-use plastic is abundantly used in today’s society, from shopping bags to shipping packaging to plastic bottles. Changing society’s approach to plastic use will be a long and economically challenging process. Cleanup, in contrast, may be impossible for some items. Many types of debris (including some plastics) do not float, so they are lost deep in the ocean. Plastics that do float tend to collect in large “patches” in ocean gyres (National Geographic Org., 2019).

**How dirty is the Iloilo River?**

The Iloilo River is among the trademarks of this capital city. It is an estuary – an arm of the sea – which now became an attraction with kilometer-long esplanades built on its banks. Locals and non-locals enjoy a walk or a jog at the river park that is the Iloilo River Esplanade. Its landscape primarily depends on the natural beauty of the river, which traverses through the City of Love’s six districts – Lapuz, La Paz, Mandurriao, Molo, Arevalo, and City Proper. Being one of the city’s gems, the river is praised for its exquisiteness. But little ugly creatures hide within its waters – hundreds of thousands of coliform bacteria.

Based on the latest laboratory test results of the Environmental Management Bureau (EMB) Region 6’s Ambient Water Monitoring Unit, Iloilo River’s coliform level is way far above the standard, which is 200 MPN (most probable number) per 100 milliliter (mL). Coliform bacteria are microorganisms that usually occur in the intestinal tract of animals including humans. They are the most widely accepted indicators of water quality. A high coliform count suggests sewage pollution. EMB’s five-year physico-chemical and bacteriological study showed that Iloilo River’s coliform level had been consistently high since 2013. The EMB 94,524 MPN/100 mL in 2016; and 352,917 MPN/100 mL in 2017.

Atty. Ramar Niel Pascua, chief of EMB Region 6’s Legal Division, said no water samples from the river were collected this year as the scheduled collection was cancelled due to the need of manpower in the water quality analysis and monitoring in Boracay.

EMB Region 6’s technical support specialist Catherine Murcia-Moleta said the high coliform count is due to the residential houses along the Iloilo River having no standard septic tanks. Some residents resort to open defecation and yet some dump their waste to the river.

Engineer Noel Hechanova, chief of the (CENRO) City Environment and Natural Resources Office, also said the main culprit in Iloilo River’s pollution is the waste from septic tanks.

The EMB Region 6 has recommended strengthening the information education campaign on solid waste management in the river. It also urged the city government to conduct mitigating measures to reduce the coliform concentration in the river through the proper installation of septic tank in every household, provision of a public communal toilet for those who do not have access to sanitary toilet, and strictly imposing the zero open defecation of humans and domesticated animals along the riverbank and within the river. The EMB also said industries and commercial establishments must comply with the DENR-AO 2016-08 General Effluent Standards that covers the discharge of waste to bodies of water. The city government leads cleanup drives for the Iloilo River. But Hehanova said there must be a regular cleanup of septic tanks along the river.

An ordinance authored by Councilor R Leone Gerochi passed in August 2017 established the Septage Management Program in the city. The ordinance requires all households, businesses and institutions to have their standard septic tanks. They are also required to clean these waste facilities every three to five years. The septage management system is mandated by Republic Act 9275, or the Clean Water Act of 2004.

Under the ordinance, waste materials from septic tanks must be removed and transferred by a duly-accredited hauler/pumper to a treatment facility following the Department of Health guidelines and other government regulations on dislodging and transport of sludge, except those that are operating under the supervision of the Metro Iloilo Water District.

No septage hauler/pumper shall unload or dispose untreated septage in any other place except through accredited septage treatment facilities including, but not limited to bodies of water, agricultural fields and the drainage system within the city, the ordinance stated. Hechanova said they are conducting a survey on the septic tank situation in the city, among others, before implementing the ordinance. He added that City Health Office records showed that around 80 to 85 percent of the residential houses in the city have septic tanks. The rest have informal comfort rooms, using public toilets or dumping their waste directly to the river. “Our ultimate goal is to reduce the pollution load at the Iloilo River because it is suffering right now,” said Hechanova (Tayona-Panaynews, 2018).

**Coastal Cleanup Collects 18 Tons of Trash**

Volunteers gathered six truckloads or 18 tons of garbage during Iloilo City’s “One Time, Big Time” Coastal Cleanup on March 30, 2019. Mayor Jose Espinosa III thanked various sectors, non-government organizations, national agencies, public and private schools, and City Hall employees that supported the cleanup drive along the coastal areas from Barangay Boulevard in Molo district to Barangay Sto. Niño Sur in Arevalo district.

The city collects an average of 300 tons of garbage every day.

“The coastal cleanup raised awareness among residents especially those who are living along the shorelines on the importance of having a clean sea,” said Renan Escoto, City Environment Management specialist.

“Their main source of livelihood is also from the sea. If the sea is dirty, fishing and tourism industries will be affected. If we could not keep our coastal communities clean, our garbage will go back to us especially during typhoon,” Escoto added.

In order to sustain the cleanliness of shorelines, Escoto said the City Environment and Natural Resources Office will create a team to ensure that the shorelines will be free of garbage and penalties will be imposed to litterbugs (Sunstar Iloilo, 2019).

**Republic Act 9275: The Philippine Clean Water Act**

The Philippine Clean Water Act of 2004 aims to protect the country’s water bodies from pollution from land-based sources (industries and commercial establishments, agriculture and community/household activities). It provides for a comprehensive and integrated strategy to prevent and minimize pollution through a multi-sectoral and participatory approach involving all the stakeholders

*Overview:*

As early as 1996, monitory of the country’s rivers showed that only 51% of the classified rivers still met the standards for their most beneficial use. The rest were polluted from domestic, industrial and agricultural sources

Most studies point to the fact that domestic wastewater is the principal cause of organic pollution (at48%) of our water bodies. Yet, only 3% of investments in water supply and sanitation were going to sanitation and sewage treatment.

A recent World Bank report pointed out that Metro Manila was second to the lowest in sewer connections among major cities in Asia and less that 7% compared to 20% for Katmandu, Nepal and 30% for Dhaka, Bangladesh.

Thirty-one percent (31%) of all illnesses in the country are attributed to polluted waters. Clearly, to ensure access to clean water for all Filipinos, it was imperative that government put together a comprehensive strategy to protect water quality.

*Feature:*

Management of water quality will either be based on watershed, river basis or water resources region. Water quality management areas with similar hydrological, meteorological or geographic conditions which affect the reaction and diffusion of pollutants in water bodies are to be designated by the DENR in coordination with the National Water Resources Board (NWRB)

Management will be localized. Multi-sectoral governing boards will be established to manage water quality issues within their jurisdiction.

Governing Boards shall be composed of representatives of mayors and governors as well as local government units, representatives of relevant national government agencies, duly registered non-government organizations, the concerned water utility sector and the business sector.

The governing boards will formulate strategies to coordinate policies necessary for the effective implementation of this Act. They will create a multi-sectoral group to establish and affect water quality surveillance and monitoring.

All owners or operators of facilities that discharge wastewater are required to get a permit to discharge from the DENR or the Laguna Lake Development Authority.

Existing industries without any permit are given 12 months from the effectivity of the implementing rules and regulations (IRR) promulgated pursuant to this Act to secure a permit to discharge.

The Department of Public Works and Highways (DPWH), in coordination with local government units will prepare a national program on sewage and septage management not later than 12 months from effectivity of this Act. A priority list will likewise be prepared which will be the basis for the allotment of funds on an annual basis by the national government for the construction and rehabilitation of required facilities.

Local-government units will provide the land including road right of the way for the construction of sewage and/or septage treatment facilities and raise funds for the operations and maintenance of said facilities.

The Department of Health (DOH) will formulate guidelines and standards for the collections, treatment and disposal of sewage as well as the guidelines for the establishment and operation of centralized sewage treatment system. The MWSS and other agencies mandated to provide water supply and sewerage facilities are required to connect existing sewage lines, subject to the payment of sewerage service charges/fees within five years following effectivity of this Act.

All sources of sewage and septage are required to comply with the law.

Anyone discharging wastewater into a water body will have to pay a wastewater charge. This economic instrument which will be developed in consultation with all concerned stakeholders is expected to encourage investments in cleaner production and pollution control technologies to reduce the amount of pollutants generated and discharged.

Rewards will also be given to those whose wastewater discharge is better that the water quality criteria of the receiving body of water. Fiscal and non-fiscal incentives will also be given to LGUs, water districts, enterprise, private entities and individuals who develop and undertake outstanding and innovative projects in water quality management.

All possible discharges are required to put up an environmental guarantee fund (EGF) as part of their environmental management plan. The EGF will finance the conservation of watersheds and aquifers, and the needs of emergency response, clean up or rehabilitation.

Among other, the Act prohibits the following:

* Discharging or depositing any water pollutant to the water body, or such which will impede natural flow in the water body
* Discharging, injecting or allowing to enter into the soil, anything that would pollute groundwater
* Operating facilities that discharge regulated water pollutants without the valid required permits
* Disposal of potentially infectious medical waste into sea by vessels
* Unauthorized transport or dumping into waters or sewage sludge or solid waste
* Transport, dumping or discharge of prohibited chemicals, substances or pollutants listed under Toxic Chemicals, Hazardous and Nuclear Wastes Control Act (Republic Act No. 6969)
* Discharging regulated water pollutants without the valid required discharge permit pursuant to this Act
* Noncompliance of the LGU with the Water Quality Framework and Management Area Action Plan
* Refusal to allow entry, inspection and monitoring as well as access to reports and records by the DENR in accordance with this Act
* Refusal or failure to submit reports and/or designate pollution control officers whenever required by the DENR in accordance with this Act
* Directly using booster pumps in the distribution system or tampering with the water supply in such a way to alter or impair the water quality
* Operate facilities that discharge or allow to seep, willfully or through grave negligence, prohibited chemicals, substances, or pollutants listed under R.A. No. 6969, into water bodies
* Undertake activities or development and expansion of projects, or operating wastewater treatment/sewerage facilities in violation of P.D. 1586 and its IRR.

Anyone who commits prohibited acts such as discharging untreated wastewater into any water body will be fined for every day of violation, the amount of not less than Php 10,000 but not more than Php 200,000. Failure to undertake clean-up operations willfully shall be punished by imprisonment of not less than two years and not more than four years. This also includes fine of not less than Php 50,000 and not more than Php 100,000 per day of violation. Failure or refusal to clean up which results in serious injury or loss of life or lead to irreversible water contamination of surface, ground, coastal and marine water shall be punished with imprisonment of not less than 6 years and 1 day and not more than 12 years and a fine of Php 500,000/day for each day the contamination or omission continues. In cases of gross violation, fine of not less than Php 500. 00 but not more than Php 3,000,000 will be imposed for each day of violation. Criminal charges may also be filed.

**Environment Advocates Gather in Iloilo to Discuss Protection of Marine Resources**

ILOILO CITY — Experts and marine environment advocates from 19 countries are in this city to discuss ways to protect and manage marine resources in the East Asian region. About 1,000 local and international delegates are attending the triennial East Asian Sea Congress (EAS) which will run until November 29 at the Iloilo Convention Center.

The participants include environment ministers from 11 nations who will meet at the 6th Ministerial Forum and come up with a declaration on its plans and actions.

Among the key issues to be deliberated are climate and blue carbon, marine pollution and clean water, biodiversity and coastal management, governance and partnerships, research and tools, ocean industry and finance, and blue economy, according to a conference briefer.

In his welcome remarks, Environment Secretary Roy Cimatu stressed the importance of strengthening measures in conserving coastal and marine ecosystems and its resources “to ensure food security and improve poverty reduction.” He cited the importance of the region as the center of marine shore fish biodiversity due to its rich marine diversity.

Antonio La Viña, chair of the EAS Partnership Council, said that among the main issues are the impact of climate, overfishing, marine litter, especially plastics, and land conversion including reclamation.

He said two provinces in the entire region were involved in Integrated Coastal Management 25 years ago. It has grown to 18 percent of the region’s coastal areas today. He said the region is among the worst among developing regions concerning marine and coastal resources because of intense pressure from urbanization and development activities. But he said there had been successes in bringing united efforts. “We are making progress, but we still need to do a lot more,” he told the INQUIRER.

“It should be 25 to 50 percent… It’s slow, and we might not succeed. We need to accelerate our response,” he said.

In his speech, Cimatu cited the six-month closure of Boracay Island, the country’s prime tourist destination, to undergo rehabilitation.

He said the closure and rehabilitation of the island exemplify “political will that targets to rectify the abuse and mismanagement of the environment. (Burgos, Nestor – Inquirer.Net, 2018).

**Iloilo City to Monitor Coastal Cleanliness**

ILOILO CITY -- The City Environment and Natural Resources Office (CENRO) committed to monitor the cleanliness of the coastal villages after the “One Time, Big Time” coastal cleanup initiated by the city government on Saturday.

Engr. Noel Hechanova, head of CENRO, said that they will partner with the Department of Environment and Natural Resources (DENR) in Region 6 (Western Visayas) in monitoring the cleanliness of the coastlines.

Monitoring teams will be formed and they will tap village officials and seek the cooperation of every resident for the coastlines to be litter-free. The clean-up drive kicked off at Barangay Bitoon in Jaro and moved towards Sto. Niño Sur in Arevalo district to raise awareness on coastal villages, he said.

“It started with the clean-up drive and will soon be followed by information-education materials distribution, and campaigns on anti-littering, seepage management, mangrove protection, among others,” he said.

Around 800 volunteers from non-government organizations, national agencies, public and private schools, city employees, residents, and village officials took part in the drive.

The personnel of the Maritime Police, and Philippine Coast Guard (PCG), and industry partners also did an offshore cleanup.

However, Hechanova admitted that Iloilo's 20-kilometer coastline is now polluted as coastal villages have increasing levels of coliform bacteria. “Septic tanks are the major contributor of water pollution,” he said, adding that a sewerage system can address the problem.

Iloilo City Mayor Joe Espinosa III, in his speech, said the city hopes to replicate the environmental rehabilitation efforts done on Boracay Island and Manila Bay.

“We do this for the Filipinos, for the Ilonggos. President Duterte had proved to us that extra-ordinary measures can solve problems and improve our country,” he said (Momblan-Panay News Agency, 2019).

**Related Foreign Studies**

According to the study done by Mangubhai et al. (2019) entitled “**Fiji: Coastal and Marine Ecosystems**”, stated this Fiji is one of the most developed of the Pacific Island economies and its people are highly dependent on the country’s rich biodiversity and natural resources for food, agriculture, tourism, culture, coastal protection, shelter, recreational sports, and other vital human needs. The country has undergone rapid changes in growth and development and the coastal ecosystems are increasingly threatened by a number of anthropogenic activities (e.g., overharvesting and overexploitation of land and sea resources, mining, coastal development) and their associated impacts (e.g., sedimentation, eutrophication, and pollution). Marine pollution is a long standing and growing issue in Fiji and includes the entry of chemicals, industrial waste, sewage, nutrients, and pesticides into the ocean as well as noise. Solid waste and plastic litter are the most visible form of pollution, largely a result of the inability of Fiji’s municipal governments and infrastructure to keep pace with rapid urbanization. Most pollution studies in Fiji focus on the capital Suva’s harbor and on waterways emptying into both sides of the Suva Peninsula. Heavy metal concentrations of lead, copper, zinc, and iron have been consistently 2–6 times higher than accepted background reference levels in harbor sediments since the early 1980s (Park, Wilson, Choi, Wilson, & Ueno, 2013), and are likely a result of numerous industrial and commercial activities at Wailada and Walu Bay industrial areas, shipyards, oil storage depots, food-processing industries and the Suva wharf plus high human population density in Suva city. Copper, lead, zinc, and arsenic contamination have been detected in coastal sediments in Lami (adjacent to Suva) which exceed local and global average background concentrations, and which extend further away from the shore, and organochlorine pesticides and polychlorinated biphenyls were detected in sediments and shellfish in the ports of Suva and Lautoka. Tributyltin in the Suva Harbor and Laucala Bay sediments are among the highest in the world, and are a threat to local invertebrates because of accumulation of toxins.

Along the Coral Coast of Viti Levu, nutrient levels (nitrate and phosphate) in sea and river water exceed levels considered harmful to coral reefs (Mosley & Aalbersberg, 2003), and this triggered the first integrated coastal management work in Fiji, in partnership with the Ministry of Tourism who worked with hotels to clean up their wastewater systems. Fertilizers, herbicides, and pesticides are widely used in Fiji’s agriculture industry, but their use is not regulated. Runoff from the sugarcane farming areas on the islands of Viti Levu and Vanua Levu increases soil acidity and may be a substantial source of pollutants but is poorly documented. Wood and chemical waste containing copper, chromium, and arsenic produced from sawmills present an additional source of pollution. Given the absence of appropriate disposal facilities and management mechanism, many of these hazardous chemicals have found their way into coastal ecosystems and waterways via leachate from rubbish dumps, or through intentional dumping.

This study is relatively related to the current study because it emphasized that marine pollution is a long standing and growing issue that includes the entry of chemicals, industrial waste, sewage, nutrients, and pesticides into the ocean. In Iloilo City, plastic waste and solid waste are the most visible form of pollution found in Iloilo waters. Iloilo waters have rapid changes over the past years that cause detriment its marine ecosystem due to numbers of activities and its linked impacts such pollution.

Another study ofThreadgill (2019) entitled “**Plastic Waste in the Marine Environment in Northern Ireland**”, stressed out the extent of marine plastic pollution, both globally and around Northern Ireland (NI), and discusses potential impacts such as detrimental effects on local marine wildlife, the fishing industry and the use of the NI coastline for tourism and recreation. It considers the roles of different countries and industrial sectors in plastic waste production and loss into oceans, as well as the relative importance of land- and sea-based sources of plastic pollution. The study proposed policies for tackling marine plastics in NI, other UK legislatures and the Republic of Ireland, and outlines strategies adopted further afield. Finally, it highlights a range of local, national and international initiatives run by local councils, industry and voluntary organizations that are currently operating in NI.

Since large scale plastic manufacturing began in the 1950s, global production has expanded from 2 million to over 300 million tonnes each year. In total, it is estimated that approximately 8 billion tonnes of plastics have been produced since plastic production began, over half of which has ended its life discarded or in landfill. In 2015, 275 million tonnes of plastics were discarded as waste.

Of the plastic waste produced on land, it is estimated that between 4.8 and 12.7 million tonnes enter oceans each year. On top of this, the loss/discarding of fishing gear at sea also contributes to total levels and these can be particularly hazardous to wildlife. As plastics can take hundreds to thousands of years to degrade, the plastics in oceans are effectively permanent without further action. The abundance of plastics in the world’s oceans, and particularly its impact on marine wildlife, is an issue of which public awareness has expanded rapidly in recent years.

Within NI, the presence of plastic waste is well documented on beaches (through regular litter surveys) and on the seafloor (by recording plastic items caught in bottom trawls). It is also reasonable to assume that NI has a greater impact on marine plastic pollution than assessed in these surveys alone. Plastics originating from NI can travel thousands of miles across the world, whether by transportation on ocean currents or by the global trade of plastic waste.

The UK Government has recently proposed three new UK-wide policies to tackle plastic waste: a plastic bottle Deposit Return Scheme, a plastic packaging tax, and reforms to the packaging producer responsibility system. In some aspects of plastics policy, strategy has diverged across UK devolved administrations e.g. a levy on disposable cups has been ruled out in England, is under consideration in Wales and has been pledged as part of a cross-party political deal in Scotland. Plastics policy in the Republic of Ireland (RoI) is less extensive than in the UK. There is no legislation on microbeads (although it is expected in Summer 2019) and proposals for a deposit return scheme, a plastic packaging tax, a disposable cup levy and a single-use plastics ban have all been either ruled out or delayed by government. Across the world, policies which could address marine plastics by tackling plastic production and use, generally focus on improving collection rates for recycling or banning/taxing specific plastic products or materials. Across the EU, policies addressing plastics already in oceans are commonly based on principles from international conventions (e.g. MARPOL) and EU Directives. Local councils, industry and voluntary groups have also developed a wide variety of initiatives within NI and across the whole of the UK. These operate from the level of international industrial collaboration, to local community-led activities.

This study conducted by Threadgill is relatively related to the current study strongly due to the potential impacts of plastic waste such as disadvantageous effects on local marine wildlife, the fishing industry and the use of the coastline for tourism and recreation. This is beneficial for Iloilo people and the government to be aware of the harm effects cause of marine pollution and to implement and prevent things that may cause harm to marine waters. Collaboration of local communities and local government of Iloilo City and other stakeholders may promote the strict plastic policy and programs.

A study conducted by Tarigan et al. (2019) entitled **“Sea Dump; Multi-Function Waste Supply Tool Design to Reduce Belawan Sea Pollution**”, pointed out that Belawan Sea are a very dense water area with industrial activities, shipping and human activities. Damage to marine ecosystems continues to increase as the amount of marine waste increases. It is estimated that around 80% of the waste in the sea comes from human activities on land and the remaining 20% comes from activities in the sea. The presence of plastic waste as solid waste is very dominant, with almost 60-80% of the total marine waste. Other marine waste which is a serious concern is oil and heavy metal waste originating from industrial activities. Belawan Sea as an international standard port area is flanked by the mouth of the Belawan River and Deli River and receives domestic and non-domestic industrial waste from the river flow.

Marine pollution is one of the important issues that are being actively discussed in Indonesia. In North Sumatra Province, the coastal and marine areas that were damaged due to pollution are the Belawan Port. The destruction of the marine ecosystem continues to increase as the amount of marine waste increases in the form of liquid waste in the form of industrial waste and solid waste in the form of plastic, paper, glass and wood branches with an estimated amount of between 7,000 and 35,000 tons. It is estimated that around 80% of the waste in the sea comes from human activities on land which are mobilized into the sea such as deforestation, industrial and agricultural waste disposal, domestic liquid waste, and solid waste. Meanwhile, the remaining 20% comes from activities in the sea such as transportation service activities, shipping, mining, oil and gas exploration and exploitation, and tourism. The existence of plastic waste as solid waste is very dominant, with almost 60-80% of the total marine waste. According to the results of Jeena Jambeck's research in 2015, Indonesia was the second country in the world to produce the largest amount of plastic waste to the sea reaching 187.2 million tons. Pollution of plastic waste will have a negative impact in the form of decreasing the quality and quantity of marine biota, especially fish catches by fishermen and deterioration in the quality of sea water. Another marine waste that is a serious concern is an oil spill. Oil pollution in the sea area is caused by tanker operations, scrapping ships, fishing boat operations, oil leaks, and the use of oil waste from factory tools that are intentionally dumped into the sea. According to IPIECA (2000) that oil pollution will cause the penetration of sunlight to decline so that it does not support aerobic marine life and the physical closure of the surface of the water by oil layers so that plants and animals are no exception fish will be contaminated with the most severe impact is direct death. The marine environment of Belawan Sea also receives a lot of waste in the form of lead heavy metal waste comes from industrial activities. The lead heavy metal waste comes from industries in the city of Medan and its surroundings which are dumped directly into water bodies in the form of tributaries which eventually empties into the waters of the Belawan Sea. Belawan sea waters as an international standard port area are flanked by the mouth of the Belawan River and Deli River and receive domestic and non-domestic industrial waste from the river flow. In addition to originating from industrial waste disposal, heavy metal lead (Pb) is also caused by household activities of residential villages. Heavy metal lead (Pb) contaminated in the waters of fish habitat can cause bioaccumulation in the body of the fish, entering the food chain, so that it can be dangerous when consumed by humans. Therefore, to overcome the problem of sea pollution, we designed Sea-Dump. This tool with the principle of dislodging is multi-functional because it can carry out solid waste screening operations and the absorption of liquid waste at once. This tool is equipped with spoon / sondong a net which serves to filter plastic waste and other solid waste from water, as well as bio sorbent of coconut fiber which serves to set aside water from oil and heavy metal Pb through the adsorption mechanism. Sea-Dump is applicable, effective, and economical because fishermen can reduce marine pollution independently through its installation on fishing boats. In addition, it will also improve the quality of marine environmental sanitation and settlements. Thus, the condition of the marine environment becomes conducive and beneficial for marine biota, fishermen, and surrounding communities.

This study is related to the current study because it discusses about seaport water that is contaminated with industrial activities, shipping and human activities. Iloilo City seaports are very dense and contaminated because of the plastic litter caused by human itself, heavy metal waste, oil pollution, solid waste, liquid waste and other threats that may harm the marine environment of Iloilo.

Another study conducted by Moroni et al. (2019) entitled “**Environmental Decision Support Systems for Monitoring Small Scale Oil Spills: Existing Solutions, Best Practices and Current Challenges”,** stressed out that the large spills of oil and related petroleum products in the marine environment can have serious biological and economic impacts. According to, the 2010 Deepwater Horizon disaster is still exacting an ongoing and largely unknown toll. Public and media scrutiny is usually intense after a spill, demanding that the location and extent of the oil spill be properly identified and quantified. Remote sensing is playing an increasingly important role in oil spill response efforts. Through the use of modern remote sensing instrumentation, oil can be continuously monitored on the open ocean. With knowledge of slick locations and movement, response teams can more effectively plan countermeasures in an effort to curtail the effects of the induced pollution. Pollution sources in the sea are disparate in size, origin, and nature of the pollutants, and are not limited to major accidents. It is possible to distinguish several classes of pollution sources and to evaluate the impact of each class. Particular classes are: (i) pollution sources caused by oil exploration and production; (ii) pollution sources caused through transporting oil by sea; (iii) natural oil pollution sources; (iv) pollution sources generated by general maritime traffic and shipping operations; and (v) pollution sources caused by coastal activities. While events deriving from (i) and (ii) might produce accidents of great impact to coastal populations, they are relatively rare compared to pollution events, due to the general shipping traffic and coastal activities. Although operational discharges may be considered small when compared to spills caused by shipping accidents, they tend to be repetitive and even chronic, being concentrated in ports and along shipping routes. Therefore, these spills will have an impact on local marine habitats, including physical disturbances, toxic inputs to sensitive species, and organic sediments enrichment. Ships of all kinds discharge oily residues into the sea during routine operations. Further, ships periodically clean their ballast and bilge water tanks, comprising a considerable source of pollution. It has been estimated that most oil spills are the result of daily operations, most often occurring in oil or port terminals. Indeed, the International Tanker Owners Pollution Federation Limited (ITOPF) reports that small and medium-sized spills account for 95% of the total number of all the incidents recorded. Furthermore, the impact of coastal activities as a source of oil spills does not yet seem to be too well-understood.

Operational oil spills pose a serious threat to the environment, especially because attention and mitigation measures tend to be focused on large accidental spills. Most of the existing frameworks based on remote sensing and systems for environmental decision support are mainly focused on large catastrophic events, while small-scale oil spills have received somewhat less attention. For instance, the European Maritime Safety Agency (EMSA) provides the Clean Sea Net service, covering all European sea areas, which are analyzed in order to detect and track possible oil spills on the sea surface. Besides operational services, the interest of the research community is witnessed by the numerous projects and prototypical systems for marine pollution monitoring. Recent works include cloud-based solutions, in which a cloud-based image processing the facility for oil spill detection is integrated with a web-based geographical information system, and the framework is introduced in which a high-resolution hydrodynamic model is used for accurately forecasting oil spill evolution and weathering.

Addressing small and micro oil spills exhibits some challenging differences with respect to large ones. For example, they are on a small spatial scale, and most of them are difficult to detect solely on the basis of remote sensing. For instance, aerial surveys of the North Sea have shown that between 500 and 1200 oil spills have been observed each year, with 73–88% of oil spills having a volume less than 1 cubic meter, which make them difficult to be accurately detected and analyzed by satellite-borne sensors alone. One possible approach to the problem of small-scale oil pollution monitoring is to fuse satellite images with other data sources. For instance, integrating data collected in situ by a suitable network of sensors may improve the pervasiveness of monitoring in a marine area of particular environmental value, while simultaneously helping to resolve ambiguities and filtering false positives deriving from the analysis of data coming from a specific and single modality, i.e., the use of data acquired and processed from only one source. Multisource, i.e., more sensors that can be from different devices that can offer the same typology of data (e.g., SAR with different resolutions or from different satellites), and multimodal, i.e., with reference to the physical features recorded by devices using different typologies for acquisition (e.g., buoys, in situ, airborne, AIS, satellite, SAR/optical), surveillance of the sea thus has good capabilities in addressing small-scale oil spills, but it demands for additional problems to be solved. Collection, cross-correlation, and comparison of multiple data sources cannot be routinely performed manually by authorities and stakeholders in charge of the intervention and remediation operations. For instance, it is difficult to establish possible correspondences between vessels and oil slick positions sampled at different times by: (a) satellite-borne sensors, (b) Automatic Identification System (AIS), and (c) in situ devices, without including and integrating the data into a single information system endowed with models where all-encompassing forecasting and retrodiction of slick and ship positions are available. Furthermore, while major pollution events are managed by special contractors for carrying out intervention and remedy actions, small ones are addressed—at least in the first stages—primarily through the use of local monitoring and remedy resources. The orchestration and optimization in the use of such resources also poses some problems in the routine management of small pollution events. From the above considerations, it may be evinced that while multimodal data integration has strong potential in dealing with small and micro oil spills, suitable algorithms and models are needed to properly exploit such data and optimize the use of both a monitoring network and a local intervention chain. The main contribution of this paper is to review the relevant literature concerning decision support in environmental monitoring, especially for the marine and maritime domain, and then to establish a rationale for the design and integration of an Environmental Decision Support System (EDSS) devoted to oil spill management. Advanced data gathering functionalities and coordinated management of available models emerge as key components for the design of successful and useful Information and Communication Technologies (ICT) system. On the basis of the proposed analysis, guidelines are suggested for steering the design of an EDSS, as well as for defining its functional requirements. Such guidelines are then put into practice and properly demonstrated in a case study. EDSS is designed and integrated into the Marine Information System (MIS) presented in. Such integration shows the advantages of decision support services for more efficient management of small and micro oil spills.

Improvements and advances in monitoring programs have also been considered—this allows for a more accurate assessment of changes and for a more effective dissemination of such information to policy-makers who would implement science-based management actions. Tools have been developed, along with the knowledge, to design an instrument for the support of policy-making that increases the ability of tomorrow’s generation to understand its position in the local, global, coastal, and marine environment, and to sustain that position. The produced tools and instruments proved to be effective and of actual use within the intervention chain of an oil-spill event, when these tools can act as a valuable Environmental Decision Support System for the deputed authorities and stakeholders involved.

This study is related to the current study it stressed out the effect of oil pollution in marine waters and its impact to the economy. MARINA, PCG, PPA and DENR Region 6 as stakeholders involve in marine responsibility must have this decision support in regards to environmental monitoring. These stakeholders must establish and strictly implement the Environmental Decision Support System (EDSS) devoted to oil spill and other tools for the improvement and advances in monitoring programs, and assessments related to marine policy and environment.

A study conducted by Artis (2017) entitled “**Examining Stakeholder Perspectives of Large Marine Protected Areas: A Q-Method Study**”, examines stakeholders’ perspectives of large marine protected areas (marine protected areas greater than 100,000km2). Despite awareness that studying people’s perspectives can improve conservation initiatives, there has been little research on perspectives of large marine protected areas (LMPAs). Drawing on two conservation social science fields – human dimensions of conservation and political ecology – this thesis uses Q-Method to elicit the perspectives of forty stakeholders involved with five LMPA sites (three established and two proposed). The results identify five distinct perspectives of LMPAs, illustrating that stakeholders are not simply either for or against LMPAs but have nuanced opinions that vary across and within sites and stakeholder groups. LMPAs are not inherently strong or weak approaches for marine conservation; what matter is the perspective of people involved and the execution of particular LMPAs. Such understanding is required to ensure these grand initiatives in marine conservation are both effective and equitable.

LMPAs are frequently promoted as the solution to addressing challenges facing our ocean and meeting global conservation targets, such as Aichi Target 11 of the Convention on Biological Diversity (Toonen et al. 2013; Wilhelm et al. 2014). If this target is to be met, large areas of ocean need to be effectively and equitably managed (UNEP 2016). While there are various research approaches that can assess equitability and effectiveness of LMPA management, it is important to do conservation social science research. This is because conservation social science research helps increase our understanding of the perspectives of people involved with LMPAs and what impact these perspectives may have (Bennett et al. 2017a; Sandbrook et al. 2013a).

The Q-Method study demonstrated the value and suitability of mixed methods approaches for the study of stakeholder perspectives of LMPAs and the human dimensions of LMPAs. The results and our interpretations in the manuscript show these views of LMPAs holistically, by demonstrating how they are informed by many and various perceived beliefs and opinions that when evaluated by a participant relative to each other, come together to form a distinct view. Of the views identified in this study and shared by sub-sets of our participants, three are more optimistic. The win-win-win view of LMPAs is the most supportive; they perceive LMPAs as leading to ecological, economic and sociocultural wins. From the LMPA idealist view, there is a strong perception that LMPAs are apolitical conservation tools unimpeded by geopolitical incentives. While the empty of people view of LMPAs perceives certain LMPAs as successes by protecting areas without people, but questions the reach of such a method. Alternatively, two views were more pessimistic. The LMPA skeptic view of LMPAs perceives LMPAs as good tools for certain ecological conservation goals if LMPAs are no-take, well monitored and enforced. Yet, the loss of local control view perceives LMPAs not only as insufficient conservation tools but also undermining the ability of local actors to take charge of, conserve and utilize their ocean resources as they see fit.

Further interpretation of the results through political ecology provided even more insight into the perspectives of LMPA stakeholders and the potential consequences of certain views. The results of the political ecology assessment contribute recommendations and warnings of the potential impact of LMPAs on people to the conservation social sciences as well as nuanced understanding of stakeholder perspectives of LMPAs and conservation discourses to political ecology. Of the shared views identified in this study, the loss of local control perspective indicates people are wary of the impact of LMPAs similar to concern of ‘blue grabs’. The win-win-win perspective relates to a discourse of ‘win-win’ conservation, and the empty of people perspective embraces the ‘wilderness’ discourse of LMPAs as ‘empty of people’ but with a limited reach. Of the final two shared views, the LMPA skeptic perspective supports the ‘no-take’ model of LMPAs, while the LMPA idealist perspective denies LMPAs are political tools. The fact that four out of the five perspectives relate to certain conservation discourses and do not perceive LMPAs as leading to inequity gives rise to concern through the lens of political ecology. This is because one perspective, the loss of local control does, and so it is argued that this perspective needs to be seriously considered at all LMPA sites included in this study and others. Neglecting to do so may result in LMPAs that lead to inequitable outcomes and increased risk of social and ecological failure.

A study conducted by Artis is relatively related to the current study strongly due to the stakeholder perceptions about large marine protected areas discussed. Despite awareness of many people in Iloilo City, stakeholders and other agencies perspective can improve the preservation initiatives in regards to marine areas. Perspective and understanding is necessary to make sure the initiatives in preservation of marine environment and initiatives in awareness regarding marine pollution.

Another study conduct by Dong (2017) entitled “**Analysis of Global Marine Environmental Pollution and Prevention and Control of Marine Pollution**”, emphasized that Marine pollution occurs mainly in the gulf near the mainland. Due to intensive population and industry, a large number of waste water and solid waste dumped into the sea water, coupled with the twists and turns of the coast caused by poor water exchange, making the temperature, pH, salt content, transparency, biological species and quantity of traits change, the ecological balance of these a constitutes a hazard. Marine pollution is characterized by oil pollution, red tide, accumulation of toxic substances, plastic pollution and nuclear pollution, etc; the most polluted waters are the Baltic Sea, the Mediterranean, Tokyo Bay, New York Bay, and the Gulf of Mexico and so on. As far as the country is concerned, coastal pollution is serious in Japan, the United States, Western European countries and the former Soviet Union countries. Pollution in Bohai Bay, the Yellow Sea, the East China Sea and the South China Sea is also very serious in China. In the Bohai Sea, which is the most polluted, the fishing grounds have been relocated, the fish have died, the red tide has spread. Some of the aquatic wasteland has been abandoned. Resources are being lost. In the course of human production and life, the large amount of pollutant nuclei produced in the sea enters the ocean through various channels. The damage to the marine biological resources, marine development and marine environmental quality will endanger the mankind. Therefore, the marine environmental protection is imminent; in this paper researcher will analyze some world’s major marine environmental pollution accidents and put forward specific programs for the protection of the marine environment.

Too strengthen China's legislation on ship pollution prevention and control, establish and improve the marine environmental law system in China, adhere to the legislation of ship pollution prevention and control and the uniformity of the environmental legal system, especially marine environmental legal system, and correctly handle ship pollution prevention and control legislation and related marine environmental law and the relationship between the characteristics and adhere to the comprehensive and systematic review of existing ship pollution control legislation on the basis of the necessary amendments and additions, the key legislation and general legislation combined to improve the marine pollution prevention legislation at the same time Formulate national laws and regulations on prevention and control of pollution from inland waters. While strengthening the domestic legislation on ship pollution prevention, we should study and learn from the advanced experience and effective management methods of foreign ship pollution prevention legislation, adopt the system and measures of pollution prevention and protection of marine environment prevailing in various countries, and make the best according to actual needs. Possible participation in the relevant conventions should make every effort with international standards, the international conventions of the specific, domestic. International treaties are an important manifestation of modern international law. In international relations, the state has an international obligation under international treaties. It has the duty to make its domestic law consistent with its international obligations. Therefore, the marine environmental protection law is made according to the relevant international conventions. Amendments are absolutely necessary. The 21st century is the era of great development of marine industry, which requires us to be from a strategic perspective, attention to the ocean, treats the sea. The implementation of the revised law not only improves China's legislation on marine environmental protection, but also plays an important role in strengthening marine environmental management, further protecting and improving the marine environment, protecting ecological balance and promoting sustainable economic and social development of our country.

On the world level, on the basis of the above, countries should develop a complete system of marine environmental law, for those of the marine environment pollution caused by the ship should be punished.

To further improve the marine environmental protection awareness, to minimize or avoid human factors caused by pollution. For the operational pollution of ships, strengthen the publicity and education, so that the majority of the crew fully aware of the dangers of pollution in the waters, to help them understand the prevention of pollution, the protection of the marine environment of great significance and enhance anti-pollution awareness. Increase penalties, illegal operations or bring the pollution of the re-incorruptible vessels, punish them to take measures to strengthen the supervision and inspection of water pollution, efforts to minimize sea pollution. Strictly abide by the laws and regulations on the prevention of pollution from ships, and improve management standards, improve the allocation of anti-fouling equipment for ships, so that ships have a strong ability to deal with waste in accordance with the requirements of the relevant international conventions. All types of ships should be equipped with oil and water separation equipment, port construction of oil containing sewage treatment facilities and emergency equipment. At the same time, it is necessary to increase public awareness and public awareness of environmental protection and stimulate public participation in marine environmental protection for the most effective prerequisite for the complete eradication of marine pollution.

This study presented by Dong is related to current study, it stressed out the bring pollutions of ships. Iloilo Shipping Company must strictly abide the laws and regulation on the prevention of pollution coming from their ships. Imposed management standard and improve anti-fouling equipment to deal with waste that causes marine pollution. Iloilo city government should develop a complete system of marine environmental law to protect the marine environment from pollution and other contaminants.

Another study conducted by Mujahidawati et al. (2018) entitled “**Strategy of Marine Environmental Management at Bintan Waters**”, highlighted that sustainable management has been becoming a global development mainstream. The concept of sustainable development has become a middle way towards development and environment, as well as coastal and marine resources management. Various development activities at marine sectors such as: captured fisheries, marine tourism, sea transportation etc, shall always cause influence and stress towards resources and environment. Management is defined as systematic and planned effort which is conducted to ensure the sustainability of a program or activity. The approach of AHP (Analytic Hierarchy Process) analysis is aimed to obtain a strategic marine environmental management priority. From the result of analysis, priorities for actors/stakeholders were obtained in managing marine environmental of Bintan Waters in order to prevent the marine pollution caused by oil spill sequentially as follows: Regional Government (0.497), NGO (0.246), Universities (0.121), Local Community (0.076) and Tour Management (0.060). First priority related to Marine Environmental Resources Utilization Criteria at Bintan Waters is captured fisheries (0.540), second priority is tourism (0.297) and third priority is sea transportation (0.163). First priority on marine environmental resources utilization criteria at Bintan Waters is Coordination Improvement among Related Institutions with score of 0.630, second priority is Monitoring Improvement of Pollution Control with score of 0.218 and third priority is Technology Improvement of Pollution Control with score of 0.151.

Pollution at coastal environment may occur at any waters in the world especially when oil spills occurs and may cause pollution which is an intrusion of undefined substances into environment that change physical, chemical and biological characteristics of the environment. Specific impact of oil spill towards marine and coastal waters environment depends on the amount of oil spill, location of incident and time of incident. In line with this, stated that level of damage caused by oil spill depends on the amount of oil spill, its type and chemical compound characteristics contained in the spilled oil, as well as the ecosystem sensitivity and so the oil spill may cause more widespread marine pollution due to sea current and sea wave.

Thus, in managing marine environment at Bintan Waters, an approach of sustainable development is needed together with the formula of various marine environment management strategy alternatives at Bintan Waters. Therefore, AHP approach becomes analytic tools to answer the goal mentioned above. This model shall outline multifactor’s issue as well as complex multi criteria into something hierarchical.

Types of data used in alternative assessment of marine environmental management strategy at Bintan Waters were primary data. It was collected in situ from assessment objects, as in measurement, observation as well as interview. Data source was collected from experts/respondents opinions as the representatives of actors, consisting of; Regional Work Unit, Entrepreneur Association, Universities, NGO and community.

Methodology of data analysis on Alternative Assessment of Marine Environmental Management Strategy at Bintan Waters was conducted using AHP approach (Analytic Hierarchy Process). AHP is a support model developed by Thomas L. Saaty in 1994. This decision support model will outline multifactor’s issues as well as complex multi criteria’s into something hierarchical. According to, hierarchy was defined as a representation of a complex issue in a multi-level structure, where the first level is the objective/focus; followed by next level, which is criteria, sub criteria, etc. up to the last level as alternatives. Further, AHP is a decision making method that involves numbers of criteria’s and alternatives chosen based on decision of all related hierarchical criteria’s. By using hierarchy, a complex issue can be outlined into groups which are later hierarchically arranged so that an issue will be more structured and systematic. According to, AHP has several advantages in explaining decision making process because it can be described graphically in order to make it easy to understand by all stakeholders involved in making the decision.

The first priority of actors/stakeholders in marine environmental management including at Bintan Waters in order to prevent marine pollution due to oil spill sequentially are; Regional Government, NGO, Universities, Community and Tour Management. The first priority related to criteria of marine environmental management including Bintan Waters are captured fisheries, second priority is tourism, and third priority is sea transportation. The first priority for alternative strategy of marine environmental management at Bintan Waters is Coordination Improvement among Related Institutions; second priority is Monitoring Improvement of Pollution Control, while the third priority is Technology Improvement of Pollution Control.

This study is related to the current study because it discusses more on stakeholders and environmental management in order to prevent marine pollution. Iloilo shipping industry must consider the cause and effects of marine pollution in Iloilo waters. Iloilo as tourist destination may increase mode of transportation, including sea/ship transport. Oil spill from ship may danger the marine environment. Iloilo Regional Government, NGO, Universities, Community and Tour Management and other related institutions must have coordination improvement in monitoring improvement of marine pollution and technology improvement of pollution control.

**Related Local Studies**

According to the study of Andrews (2018) entitled “**Resolving the Water Pollution Crisis in the Philippines: The Implications of Water Pollution on Public Health and the Economy**”, stated that an eighth percent of the Philippines’s rivers are considered too toxic for human and animal ingestion or contact and are unable to support most forms of life. Moreover, fewer than half of the total number of rivers in the Philippines has water safe enough for consumption. In recent years, contaminants found in large and small bodies of water contributed to one third of the reported illnesses in the Philippines. More surprisingly, the response by the Filipino government to combat this epidemic remains limited.

The Philippines, a Southeast Asian nation, is a collection of 7,107 islands surrounded by the Luzon Strait, South China Sea, Sulu Sea, Celebes Sea, and Philippine Sea. The Philippines is only a small exporter of agricultural goods and livestock. Even though trade has helped to develop the economy in the Philippines, the country has also experienced some negative impacts of globalization; pollution of the lakes and rivers has become a serious topic of concern. Currently, manufacturers are openly dumping hazardous chemicals into Laguna Lake and the Pasig River. An article published by Greenpeace states that 50 out of 421 rivers in the region are considered biologically dead, meaning that the rivers do not contain any oxygen and are unable to support most species of life. The Environmental Management Bureau (EMB) determined that only 47% out of the Philippines’ 127 freshwater bodies retain good water quality. Also, 58% of groundwater reserves tested positive for coliform contamination. Even the Marilao River, which runs through the capital city, Manila, was featured on Soapboxie’s list of Top 10 Most Polluted Rivers in the World. The water pollution crisis within the Philippines has been estimated to cost $1.3 billion USD annually. The abundance of pollutants in the local water supply has negatively impacted the standard of life in this Southeast Asian country.

Sources of water in the Philippines suffer from a range of contaminants. Industrial water waste contains chemical pollutants such as chromium, cadmium, lead, mercury, and cyanide. These pollutants persist over long periods of time and are often referred to as stock pollutants, but their origins from industrial sources also allow them to be characterized as point-source pollution. Other harmful wastes, such as decayed plants, livestock manure, dead animals, soil runoff, and residue, are organic wastes that have contributed to the Philippines’ pollution problem. Because they do not originate from industrial sources, these specific pollutants are commonly called nonpoint source pollution. Other water pollutants, which exacerbate the Philippines’ water crisis, are accidental oil and chemical spills and illegal dumping of waste. The presence of these pollutions has deeply impacted the daily lives of Filipino people.

As time passes, the health of the Filipino people continues to suffer. Within a five-year span, exposures to waterborne contaminants were the cause of approximately one third of illnesses in the Philippines. An abundance of waterborne viruses and bacteria in drinking water leads to the contraction of afflictions such as diarrhea, cholera, and various skin diseases. People, as well as other animals, also experience the buildup of toxins over time within the fatty tissue of their bodies, known as bioaccumulation. In urban areas with inadequate sewage systems, cancer mortality rates are high.

Aside from its impacts on public health, water pollution also causes irreversible damage to the environment. A common problem is eutrophication, which occurs when organic materials deposited within the water deplete the oxygen available, causing anaerobic algae blooms. Other pollutants stimulate the consumption of oxygen, which creates stress on specific organisms, while decreasing the overall ability to survive. The lack of oxygen available within the lakes, rivers, ponds, and streams causes river-dwelling creatures, such as fish, to decrease, and species that rely on streams to become endangered. Pollutants can also change the physical properties of water itself. Certain pollutants shift the pH of the water, which causes many plants and animals to die because they are unable to adapt to the new pH balance. Local economies are severely impacted by water pollution, and the Filipino economy is no exception.

The first criterion is that the best solution must be relatively inexpensive to implement. The budget limitations on implementation must be acknowledged. Second, the plan must also be cost-effective in the long term. This is to reduce long-term costs, more potential waste, and further implications from the lack of available clean water. Third, the ideal option must attempt to reach the majority of, if not all, citizens affected by the problem. The inability to access clean water is a national problem, and therefore all citizens are affected and deserve relief. Finally, the option chosen must strive for longevity, meaning that the option must seek a permanent solution to the current problem. These criteria will help assess which option is the most effective solution for the current crisis.

The first policy option is for the government to take action now by expanding the current water sanitation system to include more water treatment plants. This will increase the scope of sewage plant coverage while decreasing the amount of water processed by each plant. This option would meet many of the criteria of an ideal plan. Replacing the current water sanitation system is an effective way to achieve a long-term solution to the problem.

A second policy option is to increase fines for pollution and to deposit the revenue from the fines into a fund designated for water pollution prevention. This is a very similar option to the current water policy implemented in the Philippines. However, increasing the fines placed upon polluters would provide more funds to help clean up the current buildup of sludge within the septic tanks.

The third policy option for the Philippines is to leave this problem for international organizations. This does not necessarily unburden the Filipino government of its environmental responsibilities. Instead, the government would fund environmental programs through grant initiatives as a means of educating people of the Philippines about the water crisis.

Though all policy options have their own specific drawbacks, the most practical solution is to limit government involvement and leave the majority of the responsibility to international organizations such as Greenpeace, Earth First!, or the World Business Council for Sustainable Development. The Filipino government has already provided limited assistance in reducing the water pollution crisis. They should make an effort to provide grants to the international organizations that promote environmentally-conscious practices but specify that the grants are to be used for educational resources for the Filipino people. Currently, the government does not have the resources to change all water sewage systems or provide economic incentives, but promoting transparency and education may save millions of lives. Leaders in government should approach these organizations with the idea for them to lead the reforms with supplementary government funding. Meetings should be held to discuss scheduling, progress, and so forth. This will instill trust between the entities involved, while publishing the meeting minutes will promote transparency. It is likely that this process will yield the desired results. It is important for the Filipino government to act now, before the damage done to their water sources becomes irreversible.

The study of Andrews is related to the current study because it pertains to water, environment and government responsibilities. It discussed the importance of clean water in everyday life. Iloilo City local government and other agencies must provide and promote transparency and education, strict policies and laws, and environmental programs about water and cause of water/marine pollution. Ilonggos deserve clean and healthy water.

Another study conducted by Garcia (2016) entitled “**Beach Resorts Operation as Potential Lake Water Pollutants: Sketches on Synergy among Stakeholders**”, stressed out that Talisay, Batangas and the rest of the towns surrounded by Taal Lake the potential to become one of the most important tourist destination of the country. The increasing demands of tourist give ways to more potential businessmen to operate beach resorts and to be considering as one of the income generating source of the town. Consequently, considers the impact of tourism at two levels, the uncontrollable numbers of tourists that exceeds carrying capacity and the possible pollution brought by them. Tourism has long been considered as a clean industry with almost no negative effects on the environment worth considering. However, human populations are still increasingly concentrating in the coastal zone and the beaches are subjected to ever-expanding pressures from recreational activities, leading to environmental destruction if not manage (Gheskiere, Vincx, Marcin, Scapini, & Degraer, 2005).

According to (Ã, 2012) the government can avoid the dilemma of encouraging destructive development, and instead protect the environment by clearly announcing the sustainable development concept in all its authorities. Commitment towards protecting the nature and culture are required in order to harmonize development and environment protection. In the context of tourism in Vietnam, economic and social considerations may influence sustainable development. The tourism industry must generate more employment than it destroys, compliment local and domestic industries and maintain the physical and cultural environmental integrity (Haley, Haley, & Haley, 1997).

Recreational waters can contain various toxic chemicals and pathogenic microorganisms, which are a potential threat for human health and can cause beach closures (Schernewski, Fischer, Huttula, & Jost, 2016). In the Philippines, disposal of wastewater is turning to be an enormous challenge. Untreated wastes are hazards to health and environment and may lead to epidemics, fish kills, and other related disasters. In line with this, the Philippine government has formulated policies and guidelines that will ensure proper management of the country's wastewater (Environment & Series, n.d.). In relation to increasing demand of beach resort industries, understanding the development of large-scale and complex socioecological systems requires long-term knowledge and cross-disciplinary analysis. Therefore, there is a clear need to discuss the relation between environment (discharges) and society (legislation) in terms of the structures of wastewater treatment and resulting load to water bodies (Academy, 2016).

The significant information about the available resources for supporting life in an ecosystem will determine by the quality of water in any given ecosystem. Physico-chemical parameters and biological characteristics are dependent on good quality of water resources. Assessment and monitoring of these parameters is essential to identify the magnitude and source of any presence of pollution. These characteristics can identify certain condition for the ecology of living organisms and suggest appropriate conservation and management strategies (Thirupathaiah, Samatha, & Sammaiah, 2012). The Physico-chemical tests necessary to assess lake water quality are dissolved oxygen, pH, chlorides, phosphates and nitrates Oxygen are important parameters of the lake water ecosystem which is essential to the metabolism of all aquatic organisms that possess aerobic respiration (Mercene, 2015). Dissolved Oxygen (DO) is measured in its dissolved from organic oxygen. Nitrate on the other hand, is a form nitrogen and vital nutrient for growth and reproduction of water organism while phosphorus was considered to be the most significant nutrients responsible for eutrophication of lake (Adeyemo, Adedokun, Yusuf, & Adeleye, 2008). The pH controls the chemical state of many nutrient including dissolved oxygen, phosphate, nitrate etc. It regulates most of the biological processes and biochemical reaction. Chloride is essential for natural balance of water electrolytes but excessive amount will be damaging and killing some parts of the body each time one bathes or swims in the river. High chloride content can also cause poisoning of aquatic organisms (Hallare et al., 2009).

The Department of Environment and Natural Resources (DENR), in coordination with the Committees on Environment and Ecology of the Senate and the House of Representatives, respectively and other concerned agencies, shall promulgate the implementing rules and regulations issued by other government agencies and instrumentalities for the prevention and/or abatement of water pollution. Determination of the water pollution from irregularities of environmental protection law was one of the major objectives of this study. The cooperation of all concern stakeholders in the protection of natural lake environment was necessary to the everlasting greater harmony between the lake environment and its residents. “State-society synergy” can be a promoter for development. Rules of cooperation and networks of municipal engagement among ordinary citizens can be promoted by public agencies and used for developmental ends.

This study examines the potential lake water pollution of the local beach resorts operations in Talisay, Batangas, Philippines. Specifically, it aims to determine the Talisay beach resorts compliance checklist on Local Sanitation Code; identify and categorize the lake water quality of Talisay beach resort sites; test the difference of water quality of two compared sites and sketch synergy among stakeholders in protecting Taal Lake waters.

Water samples were collected randomly in a three trial dates. The collected water samples were immediately tested to find the results of the physico-chemical analysis. The approved methods of analysis set by the DENR (“PRIME - M4 Page 1 of 11,” 1990) were used. Interview and observation were done in determining the Talisay beach resorts compliance checklist on Local Sanitation Code. Weighted mean of each physico-chemical analysis were compared against the standard set by the Department of Environment and Natural Resources- Environment. T-test for equality of means were used to test the difference of water quality of two compared sites and link the results to Peter Evans “state-society” synergy methods and evidence pertaining to institutional partnerships and embeddedness of actors’ relations, among others.

The main stakeholders concerned in the protection of Taal Lake waters are: Local Government Unit (LGU), locals/entrepreneurs, beach owners/operators, and tourists. The Local Government Unit (LGU) primarily has the obligation to strict the implementation of the policy regarding sanitation code. The goal of sustainable development in the area of lake waters will have a great effect in the improvement of tourism industry that’s benefits all the stakeholders. Beach owners, on the other hand must comply in the national sanitation code for the continuous effort of maintaining the required water quality of the beach waters. Lake water pollution includes wastes from sewage system; boating, beach goers, fresh water debris, and plastic pollution pose a great threat in the water quality of the lake. Problems of pollution will greatly affect the local economy resulting from decreasing number of tourists as well as quality of catcher fishes affected by water pollution. Locals/entrepreneurs and tourists also has a great contributions of lake water pollution. The concerned stakeholders can be controlled by both LGU and beach resorts owners as they have a great influence in imparting sustainable development practices.

In relation, “State-society synergy,” that active government and mobilized communities can enhance each other’s developmental effort and it can be also a promoter for progress. Rules of cooperation and networks of civic engagement among ordinary citizens can be promoted by public agencies and used for developmental ends. Figuring out how such public private cooperation might flourish more widely should be a priority for those interested in development (Evans, n.d.)

Majority of the beach resorts in Talisay Batangas were not completely complied with the local sanitation code. Improvement in drainage provisions and sewage disposal will be necessary to avoid water pollution. All water quality tests conducted in Site B which represents the west side and the concentrated area of beach resorts do not conform in the standards set by DENR. T-test for equality of means shows significant difference in phosphates (.005) and dissolved oxygen (.035) level which considers as sign of water pollution. Since dissolved oxygen and phosphates has no direct health implications, but an important indicator of overall water quality, Taal Lake, particularly beach resorts in Talisay can still be used for primary contact recreation such as bathing, swimming, and skin diving. The four main stakeholders—the local government, the locals/entrepreneurs, beach resort owners and the tourists—need to create a synergy. This synergy, following Peter Evans, pertains to institutional partnerships and embeddedness of actors’ relations, among others. Responsible agencies must have a frequent monitoring of water quality and immediate action to mitigate the subsequent problems. A follow-up study on synergetic relationship among stakeholder in protecting Taal lake waters will also be recommended.

The study conducted by Enrico Garcia is related to the current study strongly due to the discussions about the role of stakeholders in relation to environment and tourism. Iloilo beach resorts operators must completely complied with the local sanitation code. Iloilo LGU’s must be responsible in implementing actions in relation to marine pollution. Collaboration of local government of Iloilo, beach resort owners, and tourist will create relationship, an impact to minimize or prevent marine pollution in Iloilo’s beach destinations.

Another study conducted by Cebu et al. (2019) entitled “**Solid Waste Disposal Practices of Green Mussel Farmers in Samar Philippines**”, emphasized that traces of waste in food is one of the primary concerns of consumers today (Naidu, 2019; Setala et al., 2018; Koironi et al., 2018; Polidoro et al., 2017; Rist et al., 2016; EPA, 2002). This concern is attributed to human activities such as improper waste disposal (Baudrimont, et al., 2019; Smith, et al, 2018; Rochman et al., 2015). Most vulnerable to waste are marine based food products and other aquatic life. Particular human activity that threatens marine life (which some of it is food for many) is the improper waste disposal that either is thrown directly into the waters or find its way to the sea (Marine Bio, 2019). Challenges in waste disposal are one of critical issues being faced by most Philippines’ Local Government Units (LGUs) attributable to many factors. This issue is prevalent to date despite the many laws/policies that have been formulated by the government, such as the RA 9003 or the Ecological Solid Waste Management Act of 2000. The law explicitly states the responsibilities of local government units in ensuring proper waste disposal practices are implemented (Congress of the Philippines, 2000). Even with the threats of penalties stipulated in the law, majority of the Local Government Units (LGUs) in the country have failed to comply most of its provisions and consequently its people. Some of the Philippine coastal waters have poor water quality that sometimes ends up having mass mortality of fish and other marine resources. Wastes carry with it nutrients which encourages algal blooms; some of it are harmful like red tide. This situation is particularly critical as the Philippines is one of the major fish producing countries in the world. Furthermore, the Philippines demand for food has increased as a consequence of population growth, and coastal villages have made fishing as their source of livelihood (PSA, nd). Its aquaculture sector industry employed about 1.5 million in 2010, contributing around 1.8 percent of the country’s GDP in 2012. . Mass mortality and/or unfitness of the marine resource for food consumption due to poor quality of the environment have huge impact to the farmers and the local economy.

Samar is one of the provinces heavily dependent on marine resources for food and livelihood. It is a coastal province with 22 out of 26 towns and cities are found with villages and town/city centers situated along its coasts. In 2014, Samar marine products are about 24.6 percent of the total production of Eastern Visayas Region valued at around 6.87 billion. One primary product of the EV is green mussel produced only in Samar. The province is the second major supplier of green mussel in the Philippines with a total production of 4.66 metric tons in 2014 with a value of about PhP 44.4 M (ibid). In the first decade of 21st century, the green mussel production was almost wiped out due to attribute to a variety of reasons. After the many interventions initiated by the government such as massive cleanup, the green mussel industry has recovered (PNA, 2019).

One feature of RA 9003 is to ensure proper segregation of waste for recycling and reuse of resources to reduce the volume of waste for collection and disposal. Section 21 of the law mandates that segregation of solid waste is mandatory to be implemented and primarily conducted at the source. This means that at the household level, segregation of waste must be practiced. According to the law, wastes are segregated as biodegradable, compostable, and reusable (ibid). Catbalogan City in Samar, for example, is producing about 0.41 to 0.66 kg/capita per day and about 69% of waste generated is organic wastes and major contributors are households.

Respondents revealed that some of their wastes such as paper and dry wood are used as fuel (e.g. firewood) for cooking. Other wastes are burned to reduce waste volume, most communities don’t have approved communal disposal site. Burning is widely practiced despite being against the law. According to RA 9003 and RA 8749 or the Clean Air Act, open burning is prohibited with corresponding fines and penalty including imprisonment. There are more farmers throwing their wastes along the shore which is a heavy contrast to waste disposed to LGU designated dumpsites. The improper waste disposal practices exist primarily because most of the farmers do not have access to waste disposal facilities of LGUs. First, communities are off track, meaning there are usually no available roads for dump trucks to collect wastes. Environmental laws are not seriously imposed to everyone, they said, none of them have been penalized (except for some slight reprimand) because of improper waste disposal by authorities. Only one in every five has access to dumpsites while almost four in every five freely throw their waste along the coast/shorelines. Throwing of garbage along the coast or on-waters are still being practiced even by urban centers like Catbalogan despite having more established waste disposal infrastructure.

Common solid waste accumulated in mussel farms were the use of bamboo poles used in green mussel farming. Some poles can be used 2 to 3 times for stronger species while others are used only once. Based on the survey made, it appears that there are two major disposal practices observed. These poles are either left where it was erected or brought to the shores for possible re-use or other purposes including to decay. Despite the information drive given to the farmers related to the possible causes of mass mortality, it appears that these have not totally shifted practices of green mussel farmers. Green mussel farmers reveal that during the harvest season, they usually throw the used materials to the sea after detaching the colony of mussels from bamboo poles and/or keep the raft from being overloaded. Furthermore, some respondents affirm that they do the same practice especially when packing (or sacking) of harvests is conducted at the farm site. They give more priority on the loading of the harvested mussels than on the proper disposal of farm waste materials, especially those that could no longer be recycled. Those brought offshore are mostly those which can be reused. Some village chief expressed that if they brought back the poles offshore will also create problems to communities. Decomposition of these unused materials, the bacteria reacting on the biofouling organisms in the used bamboo poles produces foul odor which will become a health hazard to the residents of the community. Despite the mass mortality of green mussel experienced by the farmers in the past, improper treatment of wastes are still being practiced such throwing of household wastes along coastal zones and leaving of decaying bamboo poles on-farm site. The improper waste disposal is attributable to farmers' inadequate access to waste disposal facilities, including the road to these facilities and poor enforcement/implementation of environmental laws on the part of the local government units.

The study presented by Cebu and Orale is related to the current study strongly due to the discussions about the solid waste disposal practices. Humans can be an instrument to stop and implement pollution likewise can be the cause of contaminants in water. Imposing proper and correct solid waste disposal practices with the help of local government units of Iloilo City such as implementing environmental laws will prevent marine pollution. Ilonggos living near the rivers and shores must abide by the laws in regards to living healthy and clean environment.

Another study conducted by Bayate et al. (2017) entitled “**Pollution in Manila Bay Aquaculture Farms**”, pointed out that aquaculture farms around Manila Bay and the species reared therein are contaminated with nutrients, heavy metals, and coliform bacteria. The levels of ammonia, nitrite, nitrate and phosphorus varied widely in fish ponds and coastal areas including shellfish growing areas and fish pens of the different blocks. Ammonia levels, which ranged from 0.0781 - 3.7455 μg/ml, were higher compared to the other nutrient species. Next is total phosphorus (range of 0.0080 - 2.0116 μg/ml), then nitrate (range of ND - 0.4459 μg/ml), and lastly, nitrite (range of ND - 0.1290 μg/mL). In addition, all of the aquaculture farms monitored failed to meet the standard for ammonia in water by 1.56 to 74.91 times while 11.53% exceeded standard for total phosphorus in water by 1.04 to 4.02 times (DAO 2016-08).

Preliminary determination of nutrient loading showed ammonia and TKN concentrations were significantly higher (p<0.05) during the flooding (ranges = 0.81 – 4.63 μg/mL and 1.72 – 6.76 μg/mL, respectively) compared to the draining (range = 0.79 – 2.43 μg/mL and 1.56 – 2.91 μg/mL, respectively) while nitrate levels were significanlty higher (p<0.01) during the draining (range = 0.06 – 1.34 μg/mL) compared to the flooding (range = ND – 0.97 μg/mL). On the other hand, nitrite levels during the draining (range = 0.03 – 0.06 μg/mL) and flooding (range = 0.01 – 0.06 μg/mL) were comparable with each other. Ammonia levels in both flooding and draining exceeded the standard by 15.8 to 92.6 times while nitrate levels are within the standard (DAO 2016-08). Phosphorus was not detected in any of the samples collected.

Heavy metals, specifically mercury analysis of pond water samples showed that 3 out of 46 sampling sites, all from Southern Bataan during the wet season and 14 out of 47 sites (three from Eastern Bulacan, one in Western Bulacan, Northern Bataan, and Southern Bataan, and eight in Cavite) during the dry season failed to meet the DENR regulatory limit (DAO No.34, 1990). For lead, 3 out of 46 samples exceeded the regulatory limit, all from Bataan during the wet season. In contrast, all sites were below the regulatory limit for cadmium. On the other hand, 1 out were found to exceed the regulatory limit for mercury (EC 1881/2006). Analysis of lead in aquaculture commodities showed that 2 out of 12 milkfish samples, collected from Eastern Bulacan and Pampanga, and 1 out of 9 tilapia samples, from Pampanga, failed to meet the regulatory limit.

Total coliform, fecal coliform, and Escherichia coli were also detected in water with levels ranging from <1.8 to >160,000 MPN/mL, <1.8 to 54, 000 MPN/100mL, and <1.8 to 49, 000 MPN/100mL, respectively. Moreover, 6.67% of the milkfish samples, 16% of the tilapia samples, 24.44% of the shrimp samples, 8.89% of the crab samples, 14.67% of the oyster samples, and 25% of the mussel samples exceeded the standards for E. coli concentration in seafood (FDA, 2013).

These relatively high levels of contaminants were attributed to the incompliance of most farmers to the proper guidelines on good aquaculture practices as reviewed also by the team. For example, 66% of the aqua farms do not observe proper buffer zoning. Moreover, 72% of the pond owners do not monitor water quality or utilize improper monitoring methods due to lack of proper equipment. Important pond preparation activities, like soil testing, are also bypassed by 89% of the respondents. Uses of illegal and noxious chemicals, e.g. cyanide, were also noted in 47% of the sites. Farmers domesticated and/or allowed wading of animals on pond embankments that could cause contamination in the water and culture species. Anthropogenic activities such as sewage and garbage disposal, industry and agriculture could have also contributed to the water quality deterioration. This is further complicated by the fact that available guidelines are nonspecific and vague. In addition, fish farming manuals available in the country contain varying techniques.

River tributaries where farmers source their water may be already contaminated before entering the aquaculture farms. The statistically similar contamination levels in pond and water source in most of the sites imply that equilibrium in both locations is either due to the amount of contaminants coming in from the river during pond water intrusion or going out to the river during water discharge. Moreover, amount of rainfall, temperature, tidal state, water quality parameters, climatic conditions and other external factors may also have an effect on the levels of contaminants.

The Department of Agriculture instructed BFAR-NFRDI together with BSWM, BPI, FPA, BAI, PFDA, PhilRice, ATI, LDC, NMIS, SRA, and RFOs III and IVA to implement measures towards improving the overall management of agricultural activities (croplands, livestock, and aquaculture farms) within the Manila Bay region and to conduct IEC activities for the current period. This compelled the DA-BFAR to conduct a study to assess the possible contribution of aquaculture farms and the fisheries sector to the pollution loading of Manila Bay. Specifically, it aimed to establish a baseline data on the pollution levels in Manila Bay aquaculture farms, and to formulate appropriate interventions/measures.

This study is related strongly to the current study since it pointed out that water entering the aqua farm is already contaminated with nutrients, heavy metals, and coliform bacteria and other external factors. Iloilo LGU’s must strictly implement measures about these factors that are sources of marine pollution. Also, mostly Ilonggos are dependent on aqua farming. Local government or agency must assess the impact of aqua farming to the pollution loading of Iloilo City.

Another study of Raña et al. (2017) entitled “**Contamination of Coliform Bacteria in Water and Fishery Resources in Manila Bay Aquaculture Farms**”, point out that the coliform group of bacteria is widely used as an indicator of pollution related to the presence of pathogenic bacteria linked to fecal contamination, which poses great health risk. Coliforms are facultative anaerobic, gram-negative, lactose-fermenting, non-spore-forming rods present in the environment and in the intestinal tract of humans and other animals in large numbers. Widely used as an indicator of microbial contamination, the coliform group of bacteria includes both the pathogenic and non-pathogenic forms. Total coliforms, which encompass bacteria common in soils, plants, and animals, including both fecal coliforms and Escherichia coli, react to the natural environment and treatment processes similar to pathogens; the reason they are the primarily used indicators of contamination simple enough to identify. Taking a closer look at the coliform bacteria gives an estimate of the number/concentration of pathogenic bacteria in the sample.

Escherichia coli, commonly known as E. coli, is a typically harmless bacterium naturally found in the intestines of warm-blooded animals including humans, and plays a vital role in the digestion, absorption of essential nutrients, and production of Vitamin K and B. Characterized by its ability to utilize sugars as a source of energy, E. coli can live with or without oxygen.

Manila Bay is a semi-enclosed estuary highly regarded for its usefulness to different industries including aquaculture. Fish, fish pens, and shellfish-growing areas are widespread in provinces along the bay covering an aquaculture area of almost 60,000 ha. According to the valuation study of PEMSEA (2006), 59% of Manila Bay’s current economic value of 8.3 billion pesos is accounted for by aquaculture alone. However, the bay is currently beset with environmental problems due to pollution. Runoffs from agricultural, domestic, and industrial wastes are concentrated in the bay area most likely indicating presence of pathogenic microorganisms in the water as well as in the fishery resources therein.

This study aimed to detect and quantify coliform, fecal coliform, and Escherichia coli levels in water and fishery resources in aquaculture farms around Manila Bay. Results gathered will be compared with existing standards and will serve as a significant baseline data for the establishment of limits for fecal coliform and E. coli in fishery water. The study also intends to determine and compare the spatial and seasonal (wet and dry) microbial distribution in water and fishery resources in aquaculture farms around Manila Bay.

Water samples and major aquaculture commodities were collected twice per season from representative aqua farms in the coastal provinces of the bay and were analyzed for total coliform (TC), fecal coliform (FC), and E. coli (EC) using the Multiple Tube Fermentation method of the Bacteriological Analytical Manual. TC, FC, and EC in water were found higher during the wet season, their average concentrations being 8,747, 2,808, and 1, 216 MPN/100mL, respectively; while those in the dry being 6,255, 1,223, and 286 MPN/100mL, respectively. More samples exceeded the DENR Standard Limit for TC (5,000 MPN/100mL) in the wet season than in the dry season (roughly 25% vs. 10%). Farmed fishery resources, on the other hand, had higher EC concentrations during the dry season. The following are the percentages of samples that exceeded DENR Standards: 25% of mussels, 24.44% of shrimps, 16% of tilapia, 14.67% of oysters, 8.89% of crabs, and 6.67% of milkfish.

This study is relevantly related to the current study because it purely discussed about the coliform, fecal coliform, and Escherichia coli levels in water and fishery resources that causes so much threat in marine environment and human health. Iloilo River is considered biggest septic tank and it is contaminated with these bacteria, another cause of marine pollution.

Another study conducted by Taberna et al. (2016) entitled “**Distribution and Geochemical Behaviour of Heavy Metals (Cr, Cu, Ni and Pb) in Iloilo River Estuarine Sediments**”, stressed that Heavy metals released to the estuarine ecosystem usually bind and enriched in sediments by means of various processes. These metals can exist in various forms in sediments and are kept bound by different forces depending on the existing environmental conditions. It is essential to study the geochemical behaviour of metals in sediments because the accumulated metals may be subsequently released to the water column by various processes of remobilisation and in changing form can move up to the food chain manifesting toxic effects.

Iloilo river is an estuarine ecosystem in the southern portion of Iloilo City in the central islands of the Philippines between latitudes N 10°41’35” and 10º42’30” and longitudes E 122º30’ and 122º35’. Located along the 11-km stretch of the river are the domestic port of Iloilo City, fuel bulk depots, fuel-based electric power generator plant, fishponds, hospitals, private residential houses and several commercial and food establishments. Its major tributaries are the Calajunan and Dungon Creeks. These creeks also receive domestic and commercial wastes, leachates from garbage disposal sites, agricultural runoff, commercial and industrial wastes. All wastes are discharged directly into the river without treatment. As such, the Iloilo river estuary acts as a sink for various pollutants, including metals. Under favorable environmental conditions, metals could be released to the water column and become serious environmental and health concerns.

The behaviour and concentration of metals in sediments are among the major considerations in detecting sources, degree of pollution and distribution mechanism. In addition to the total metal concentration, the chemical form of the metal best describes its bioaccumulation, availability and mobility in the environment. Sequential extraction has been successfully applied in determining sources, partitioning and potential hazards of metals in soil and sediments.

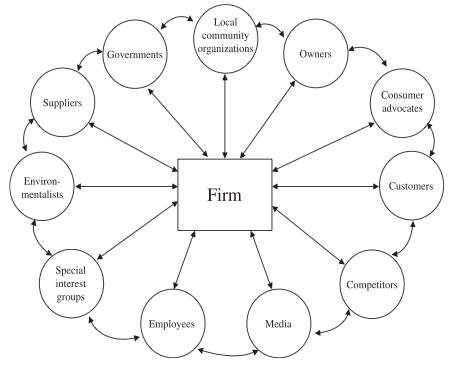
In this study, surface sediments collected from the Iloilo river estuary were analyzed using a modified Tessier’s sequential extraction method to obtain the metal speciation (geochemical association and distribution) pattern. Speciation studies on sediments will help delineate the natural background levels from the anthropogenic input of metal pollutants and determine the likely behavior of metals in the environment. Chemical speciation studies such as this are valuable in describing the fate and transport of metals in aquatic environment. Iloilo River is a site of interest because of its great economic and environmental importance.

Results show that most of the Cr (chromium) present in sediments was associated with the residual fraction (66- 74%), indicating that it is not likely to be released to the water column under normal conditions. The remaining 15-24% was found bound to Fe-Mn oxide (reducible fraction) and could be released to the water column under anoxic conditions. Only a small amount of the total Cr in the sediments was found bound to organic matter (8-13%) and exchangeable/carbonate (0-3%) fractions. Metals bound to organic matter fraction could be released under anoxic conditions while those associated with exchangeable/carbonate fractions could be leached out by changes in the ionic composition and pH of the water. Cu (copper) was mainly associated to organic matter (36-52%) and residual (39-47%) fractions. Three to eleven percent (3-11%) of the total Cu was bound to Fe-Mn oxide while 0-17% was bound to exchangeable/carbonate fraction. The same geochemical association pattern was observed with Ni (nickel), which was found mainly bound to the organic fraction (43-57%), while 25-39% bound to residual fraction. Only 6-14% of the total Ni was bound to Fe-Mn oxide and 5-13% bound to exchangeable/carbonate fraction. Pb (lead) was mainly associated with the residual (48%) and organic matter (39%) fractions. Only 7% was found associated with Fe-Mn oxide fraction, and 6% with exchangeable/carbonate fraction. Overall, almost 50% of all the metals found in the Iloilo River sediment has the potential to be released to the water column and may become available to aquatic organisms under favorable environmental conditions. These sediment-bound metals could be released to the water column, under favorable conditions, and become bioavailable and can enter the food chain, thus posing danger not only to the aquatic life in the river but also to human health.

The study related strongly to the current study due to the topics discussed about the effects of the heavy metals such as Cr (chromium), Cu (copper), Ni (nickel) and Pb (lead) found in the Iloilo estuary. Heavy metals stated above contributed too much toxic in marine life and the marine environment, and cause marine pollution.

**Theoretical Framework**

This study was based on the **Stakeholders Theory** of Edward Freeman (1984). The theory states that the stakeholder ecosystem, involves anyone invested and involved in, or affected by, these groups: employees, customers, environmental groups, supplier, political action group, the media, institutions, vendors, farmers, local communities, government groups/agencies and more. The stakeholder theory is responsible for preserving the environment and value life in the future. The government agencies or groups as stakeholders should preserve the environment by addressing many forms of pollution, using sustainable extraction from the biosphere and more. The government agencies or groups as stakeholder must act in a way that everyone hopes to express values and produce outcomes and positive change. The theory described that the city, country, and state likely have density, environmental, and other concerns. Even with governmental approval, a program, projects, and policy need regular check-ins and monitor with governmental bodies, regulated agencies, private sectors, and more. The government agencies or group, private sectors and institutions are/must shaped by stakeholder theory which asserts that an organization, agencies, bureaus, private groups and local groups are accountable to all parts of the society including the protection of environment. They must blend and balances the best of many kinds of groups or organization, from the public and private sectors, international and local organizations and academic institutions. The purpose for formulating the theory presented in this paper is to enlighten the government agencies and other groups responsible for the protection, preservation and sustainability of the marine ecosystem and marine life. In discussing the theory’s contributions, emphasis on stakeholder participation is a key element for preventing environmental risk. Therefore plan meaningful participatory process will strengthen and promote more horizontal and integrated ocean, river and other marine governance approaches.



**Stakeholders Theory of Edward Freeman (1984)**

**Conceptual Framework**

This study determined the Stakeholders Participation on the Perceived Marine pollution Control Measures.

Then diagram shows the flow of the relationship between the variables of the study. The independent variables of the study are the respondents grouped according to age, gender, civil status, and educational attainment, while the dependent variables is the perceived extent of implementation of marine pollution control measures of the DENR, BFAR, LGU-Cenro Iloilo City, MARINA, PPA, and PCG as stakeholder.

**Research Paradigm**

**Independent Variables**

**Dependent Variable**

**Personal Factors:**

Age

Gender

Civil Status

Educational Attainment

The perceived extent of implementation of marine pollution control measures of the DENR, BFAR, LGU-Cenro Iloilo City, MARINA, PPA, and PCG as stakeholder

***Figure 1. Shows the relationship between the independent variables and dependent variable.***

**METHODOLOGY**

**Nature of Research Design**

This study was conducted to determine the perceptions of the concerned government agencies as identified stakeholders on marine pollution control measures. This study employed the Q-Method (quanti-quali) research design. Qualitative research methodology is one of the two core forms of tourism research methodology. It aimed at developing a deeper understanding of human behavior by categorizing data, usually in the form of words, picture or objects, into patterns as the primary basis for organizing and reporting results (Buckinghamshire-Chilterns University College, 2000). Bowen (2002) states that this methodology involves collecting data on the meaning of phenomena. Qualitative research is rooted in the participant observation and perception approach of ethnologists and the concepts of interactionism and phenomenology.

Q-Method is a mixed, quantitative and qualitative research technique designed to empirically elicit points of view on a topic held by a select group of people (Stephenson 1953; Brown 1980). It uses factor analysis to statistically identify ‘factors’ or patterns within participants’ rank-sorting of items (Watts and Stenner 2012). These factors represent distinct points of view on a topic shared by a sub-set of actors that can then be interpreted and compared to the other factors or points of view identified. Several authors have demonstrated the utility of Q-method for eliciting, comparing and evaluating views held by groups of people on controversial environmental issues (e.g. Webler et al. 2009; Barry and Proops 1999) and for understanding differences within stakeholder groups involved in protected areas (Robbins 2000; Robbins 2006).

The survey-correlational method of research was employed in this investigation. According to Mills (2011), survey study determines and report the way things are and it involves collecting numerical data to test hypotheses. The focus is on the prevailing conditions or how a person, group or thing behaves or functions at present. It often involves some type of comparison or contrast. Survey research involves the collection of information from sample individuals through their responses to questions according to Check and Schutt (2012). Correlational research, on the other hand, describes the degree to which two or more quantifiable variables are related (Frankel et al, 2012). It investigates the probability of relationship among two or more variables without an attempt to influence them.

In this study, the dependent variables are the personal factors which include age, gender, civil status, and educational attainment; the dependent variables were the perceptions on the implementation of marine pollution control measures of the DENR, BFAR, MARINA, PPA, and PCG as stakeholders.

**Sampling Techniques**

The study employed a purposive sampling approach. This sampling approach means each member of the population gets a chance of being selected (Bueno & Matriano, 2016). A purposive sampling approach was used to determine seventy (70) respondents from various stakeholder groups that have well-formed opinions, awareness and perceptions about marine pollution control measures.

Watts and Stenner (2012) suggests anywhere from 40-60 people, though less is still possible. Determining the participants or respondents and conducting survey correlational method reveal depictions of points of view that exist within a particular situation as understood by the selected participants themselves and so these participants should be selected carefully (Dryzek and Berejikian 1993).

In this study, a total of seventy (70) respondents from selected stakeholder were included as subjects of the study that were categorized according to age, gender, civil status, and educational attainment.

**Respondents of the Study**

The respondents of this study were the selected stakeholders from selected government agencies. The government agencies were DENR (Department of Environment and Natural Resources), BFAR (Bureau of Fisheries and Aquatic Resources), MARINA (Maritime Industry Authority), PPA (Philippine Port Authority), PCG (Philippine Cost Guard) and the selected coastal residents as stakeholder in Iloilo City. Respondents were selected using the purposive sampling approach. According to Gall et al (2003), in purposeful sampling strategy researchers are seeking one or more specific predefined groups.

Seventy (70) respondents were included in this study. When grouped according to age, results revealed that, 10.00% (N=7) were 18-25 years old, 22.90% (N=16) were 26-30 years old and 67.10% (N=47) are age 31 years old and above.

When grouped according to gender, results revealed that, 67.10% (N=47) were females while 32.90% (N=23) were males.

When grouped according to the civil status, results revealed that 30.00% (N=21) were single, 61.40% (N=43) were married, and 8.60% (N=6) were widow.

When grouped according to educational attainment, results revealed that 8.60% (N=6) were elementary, 45.70% (N=32) were high school, and 45.70% (N=32) were college.

**Table 1. Respondents’ Profile**

|  |  |  |
| --- | --- | --- |
| **Category** | **N** | **Percentage (%)** |
| **Age** |  |  |
| 18-25 years old | 7 | 10.00% |
| 26-30 years old | 16 | 22.90% |
| 31 years old and above | 47 | 67.10% |
| **Total** | **70** | **100%** |
| **Gender** |  |  |
| Female | 47 | **67.10%** |
| Male | 23 | **32.90%** |
| **Total** | **70** | **100%** |
| **Civil Status** |  |  |
| Single | **21** | **30.00%** |
| Married | **43** | **61.40%** |
| Widow | **6** | **8.60%** |
| **Total** | **70** | **100%** |
| **Educational Attainment** |  |  |
| Elementary | 6 | 8.60% |
| High School | 32 | 45.70% |
| College | 32 | 45.70% |
| **Total** | **70** |  |
| **Total** | **70** | **100%** |

**Research Instrument**

The data gathering instrument used in this study is an interview guide survey which gathered information from the respondents that were needed to provide a deeper understanding of, awareness or insights as stakeholders perceptions, particularly around the factors that influence stakeholders decision-making. In this case, the perception and awareness about marine pollution control measures.

The data-gathering instruments was distributed among the participants together with the personal data sheet which gathered the needed personal profile of the participants.

**Validity of the Instrument**

According to Fraenkel and Wallen (2010), validity refers to the appropriateness, meaningfulness, correctness, and usefulness of the inferences a researcher makes.

To determine the truthfulness or the validity of the instrument, the researchers submitted the draft to three validators who are experts in the field of tourism, environment study, maritime, as well as in research. Validation is based on the 8-point Criteria developed by Good and Scates (1972). Corrections, suggestions and comments that arose during the data gathering were deliberately considered.

**Data Gathering Procedure**

In creating the questionnaire or the survey form, the researchers created a rough draft as their first basis on the questions they would need to use. Revising and adjusting the criteria guide for the respondents selected was done later. Corrections, suggestions and comments were accredited when the researchers revised the new research instrument.

In conducting the survey, the researchers wrote a letter to the Research and Development Office informing and requesting to perform the survey, thus the Research and Development Office created the letter request sent to the stakeholders to allow the researchers to visit and conduct the survey in their offices.

The researchers also wrote a letter requesting for permission to perform the survey in selected stakeholder premises. The approval was given and the researchers were able to proceed the survey.

As for the final results, the coding sheet and manual were used in the statistical results. The data gathering procedure were conducted by distribution of the research instrument or survey/questionnaire that to be answered by the respondents. After the respondents answered the questionnaire the data generated from their responses were tabulated, analyzed and interpreted.

**Statistical Tools Used**

The data gathered through the responses from the stakeholder’s survey questionnaire were subjected to the following statistical treatments:

**Frequency.** It is to determine number of respondents belonging to categories from independent variables of the study.

**Percentage.** To express the population responding to particular item. It is used to evaluate whether the responses are of the majority’s choice.

**Chi Square.** This tool was used to determine if there is a significant difference in the variable when the data is a nominal form and was expressed in cross tabulation.

**PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA**

This chapter presents the data gathered, consolidated, presented in tables, analyzed and interpreted to answer the objectives of the study.

The study sought to assess the stakeholders’ participation on the perceived marine pollution control measures, in Iloilo City.

Specifically, the study aimed to answer the following questions:

1. What are the perceived participating activities undertaken as marine pollution control measures of coastal residents of Villa Baybay, Calaparan, Calumpang and when grouped according to sex, age, civil status, educational attainment?
2. Is there a significant difference in these perceived control measures of Villa Baybay, Calaparan, Calumpang and when grouped according to sex, age, civil status, educational attainment?
3. What is the participation of the lead agencies such BFAR, DENR, LGU-CENRO Iloilo City, PCG, and PPA on the marine pollution control measures?
4. What programs can be further developed or created out of the results of the control measures of marine pollution?

**Part I. Stakeholders Participation on the Perceived Marine Pollution Control Measures, when taken as a whole and when grouped according to age, sex, civil status, and educational attainment**

Tables 2 to 2.D shows the Stakeholders Participation on the Perceived Marine Pollution Control Measures when taken as a whole and grouped according to age, sex, civil status, and educational attainment.

When the respondents were taken as a whole, the data revealed that 100% (N=70) of the respondents said no that they are not engaging in cyanide/ dynamite fishing and protecting seas by not spilling crude oil, 99% (N=69) said that they are participating in clean-up drive in their Barangay, while 96% (N=67) that they practice proper waste disposal. A closer look at the table showes that majority of the respondents said that they were aware of all the practices indicated in this paper. On the other hand, 8% to 12% of the respondents said that they are not aware disposing and segregating properly their waste and practicing the 3 R's: (a) Reuse (b) Reduce (c) Recycle of their waste.

**Table2. Stakeholders Participation on the Perceived Marine Pollution Control**

**Measures when taken as a whole**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indicator | No | % | Yes | % |
| 1 Practice proper waste disposal | 13 | 18.6 | 67 | 95.7 |
| 2 practice segregation in your household? | 3 | 4.3 | 57 | 81.4 |
| 3 practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste | 9 | 12.9 | 61 | 87.1 |
| 4 dispose and segregate properly their waste | 6 | 8.6 | 64 | 91.4 |
| 5 recycle of plastic bottles, car tires, and other item that are still usable | 4 | 5.7 | 66 | 94.3 |
| 6 protect seas by not spilling crude oil | 0 | 0 | 70 | 100 |
| 7 engage in cyanide/ dynamite fishing | 70 | 100 | 0 | 0 |
| 8 Participate in clean-up drive | 1 | 1.4 | 69 | 98.6 |

In terms of **sex**, 100% (N=22) to 100% (N=23) of the male respondents were practicing proper waste disposal, proper waste segregation in households, by recycling of plastic bottles, car tires, and other item that are still usable, by protecting seas by not spilling crude oil, by not engaging in cyanide/dynamite fishing and participating in clean-up drive.

In the case of female respondents, 98% (N=46) to 100% (N=47) said yes, that they dispose and segregate properly their waste, recycle of plastic bottles, car tires, and other item that are still usable, practicing proper waste disposal, participating in clean-up drive, and they really protecting seas by not spilling crude oil and not engaging in cyanide/ dynamite fishing.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 2.A Stakeholders participation on the perceived marine pollution control measure when grouped by Sex** | | | | | | | | |
|  | **MALE** | | | | **FEMALE** | | | |
| **Indicator** | **No** | **%** | **Yes** | **%** | **No** | **%** | **Yes** | **%** |
| 1 Practice proper waste disposal | 1 | 1.4 | 22 | 31.4 | 2 | 2.9 | 45 | 64.3 |
| 2 Practice segregation in your household | 1 | 1.4 | 22 | 31.4 | 12 | 17.1 | 35 | 50 |
| 3 practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste | 3 | 4.3 | 20 | 28.6 | 6 | 8.6 | 41 | 58.6 |
| 4 dispose and segregate properly their waste | 2 | 2.9 | 21 | 30 | 4 | 5.7 | 43 | 61.4 |
| 5 recycle of plastic bottles, car tires, and other item that are still usable | 1 | 1.4 | 22 | 31.4 | 3 | 4.3 | 44 | 62.9 |
| 6 protect seas by not spilling crude oil | 0 | 0 | 23 | 32.9 | 0 | 0 | 47 | 67.1 |
| 7 engage in cyanide/ dynamite fishing | 23 | 32.9 | 0 | 0 | 47 | 67.1 | 0 | 0 |
| 8 Participate in clean-up drive | 0 | 0 | 23 | 32.9 | 1 | 1.4 | 46 | 65.7 |

When the respondents were grouped according to age, 86% (N=6) to 100% (N=7) of the respondents aging 18-25 years old said yes, that they were practicing proper waste disposal, practicing segregation in your household, practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of waste, dispose and segregate properly the waste, recycling of plastic bottles, car tires, and other item that are still usable, protect seas by not spilling crude oil, by not engage in cyanide/ dynamite fishing and participating in clean-up drive.

In the case if respondents aging 26-30 years old, 93% (N=15) to 100% (N=16) of them said yes, that they were practicing proper waste disposal, practicing segregation in your household, practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of waste, dispose and segregate properly the waste, recycling of plastic bottles, car tires, and other item that are still usable, protect seas by not spilling crude oil, by not engage in cyanide/ dynamite fishing and participating in clean-up drive.

For the respondents aging 31 years old and above, 98% (N=46) to 100% (N=47) of them said that that they were practicing proper waste disposal, practicing segregation in your household, practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of waste, dispose and segregate properly the waste, recycling of plastic bottles, car tires, and other item that are still usable, protect seas by not spilling crude oil, by not engage in cyanide/ dynamite fishing and participating in clean-up drive.

Further investigation of data revealed that they are much aware of protecting the seas by not spilling crude oil and not engaging in cyanide/ dynamite fishing. Nevertheless, majority of them are aware of the activities undertaken to control pollution in marine and coastal areas.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 2.B Stakeholders participation on the perceived marine pollution control measure when grouped by Age** | | | | | | | | | | | | |
|  | **18-25** | | | | **26-30** | | | | **31 above** | | | |
| **Indicator** | **No** | **%** | **Yes** | **%** | **No** | **%** | **Yes** | **%** | **no** | **%** | **yes** | **%** |
| 1. Practice proper waste disposal | 1 | 1.4 | 6 | 8.6 | 0 | 0 | 16 | 22.9 | 2 | 2.9 | 45 | 64.3 |
| 1. Practice segregation in your household | 1 | 1.4 | 6 | 8.6 | 3 | 4.3 | 13 | 18.6 | 9 | 12.9 | 38 | 54.3 |
| 1. practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste | 0 | 0 | 7 | 10 | 1 | 1.4 | 15 | 21.4 | 8 | 11.4 | 39 | 55.7 |
| 1. dispose and segregate properly their waste | 1 | 1.4 | 6 | 8.6 | 0 | 0 | 16 | 22.9 | 5 | 7.1 | 42 | 60 |
| 1. recycle of plastic bottles, car tires, and other item that are still usable | 0 | 0 | 7 | 10 | 0 | 0 | 16 | 22.9 | 4 | 5.7 | 43 | 61.4 |
| 1. protect seas by not spilling crude oil | 0 | 0 | 7 | 10 | 0 | 0 | 16 | 22.9 | 0 | 0 | 47 | 67.1 |
| 1. engage in cyanide/ dynamite fishing | 7 | 10 | 0 | 0 | 16 | 22.9 | 0 | 0 | 47 | 67.1 | 0 | 0 |
| 1. Participate in clean-up drive | 0 | 0 | 7 | 10 | 0 | 0 | 16 | 22.9 | 1 | 1.4 | 46 | 65.7 |

In the case of respondents grouped by civil status, 93% (N=40) to 100% (N=43) of respondents are married said that they were practicing proper waste disposal, dispose and segregate properly the waste, recycling of plastic bottles, car tires, and other item that are still usable, protecting seas by not spilling crude oil, not engaging cyanide/dynamite fishing and participating in clean-up drive. Whereas,­ 81% (N=35) of them said that they are not practicing segregation in their households and not practicing the 3 R's: (a) Reuse (b) Reduce (c) Recycle of their waste.

In the case of respondents that are single, 95% (N=20) to 100% (N=21) said that they are practicing the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste, recycling of plastic bottles, car tires, and other item that are still usable, protecting seas by not spilling crude oil, and participating in clean-up drive.

Furthermore, the respondents that are widow, 83% (N=5) to 100% (N=6) said that they are practicing the segregation of waste in household.

**Table 2.C Stakeholders participation on the perceived marine pollution control measure when grouped by Civil Status**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Married** | | | | **Single** | | | | **Widow** | | | |
| **Indicator** | **No** | **%** | **Yes** | **%** | **No** | **%** | **Yes** | **%** | **no** | **%** | **yes** | **%** |
| 1 Practice proper waste disposal | 1 | 1.4 | 42 | 60 | 1 | 1.4 | 20 | 28.6 | 1 | 1.4 | 5 | 7.1 |
| 2 Practice segregation in your household? | 11 | 15.7 | 32 | 45.7 | 2 | 2.9 | 19 | 27.1 | 0 | 0 | 6 | 8.6 |
| 3 practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste | 8 | 11.4 | 35 | 50 | 0 | 0 | 21 | 30 | 1 | 1.4 | 5 | 7.1 |
| 4 dispose and segregate properly their waste | 3 | 4.3 | 40 | 57.1 | 2 | 2.9 | 19 | 27.1 | 1 | 1.4 | 5 | 7.1 |
| 5 recycle of plastic bottles, car tires, and other item that are still usable | 3 | 4.3 | 40 | 57.1 | 0 | 0 | 21 | 30 | 1 | 1.4 | 5 | 7.1 |
| 6 protect seas by not spilling crude oil | 0 | 0 | 43 | 61.4 | 0 | 0 | 21 | 30 | 0 | 0 | 6 | 8.6 |
| 7 engage in cyanide/ dynamite fishing | 43 | 61.4 | 0 | 0 | 21 | 30 | 0 | 0 | 6 | 8.6 | 0 | 0 |
| 8 Participate in clean-up drive | 1 | 1.4 | 42 | 60 | 0 | 0 | 21 | 30 | 0 | 0 | 6 | 8.6 |

In terms of educational attainment, for the respondents who are categorized to have finished their elementary, 83% (N=5) to 100% (N=6) of them said that they were practicing proper waste disposal, dispose and segregate properly the waste, practice segregation in their household, protecting seas by not spilling crude oil, not engaging cyanide/dynamite fishing and participating in clean-up drive.

In the case of respondents who were able to earn high school education, 96% (N=31) to 100% (N=32) of them said that they are practicing proper waste disposal, recycling of plastic bottles, car tires, and other item that are still usable, protect seas by not spilling crude oil, by not engage in cyanide/ dynamite fishing, and participate in clean-up drive.

Moreover, for respondents who have earned a college education, 96% (N=31) to 100% (N=32)of them said that they actively participate in clean-up drive, recycling of plastic bottles, car tires, and other item that are still usable, protect seas by not spilling crude oil, by not engage in cyanide/ dynamite fishing, and participate in clean-up drive. While 78% (N=25) of them said that they are not practicing segregation in their household.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 2.D Stakeholders participation on the perceived marine pollution control measure when grouped by Educational attainment** | | | | | | | | | | | | |
|  | **Elementary** | | | | **High School** | | | | **College** | | | |
| **Indicator** | **No** | **%** | **Yes** | **%** | **No** | **%** | **Yes** | **%** | **no** | **%** | **yes** | **%** |
| 1 Practice proper waste disposal | 0 | 0 | 6 | 8.6 | 1 | 1.4 | 31 | 44.3 | 2 | 2.9 | 30 | 42.9 |
| 2 Practice segregation in your household | 1 | 1.4 | 5 | 7.1 | 5 | 7.1 | 27 | 38.6 | 7 | 10 | 25 | 35.7 |
| 3 practice the 3 R's: (a) Reuse (b) Reduce (c) Recycle of your waste | 3 | 4.3 | 3 | 4.3 | 3 | 4.3 | 29 | 41.4 | 3 | 4.3 | 29 | 41.4 |
| 4 dispose and segregate properly their waste | 1 | 1.4 | 5 | 7.1 | 3 | 4.3 | 29 | 41.4 | 2 | 2.9 | 30 | 42.9 |
| 5 recycle of plastic bottles, car tires, and other item that are still usable | 2 | 2.9 | 4 | 5.7 | 0 | 0 | 32 | 45.7 | 2 | 2.9 | 32 | 45.7 |
| 6 protect seas by not spilling crude oil | 0 | 0 | 6 | 8.6 | 0 | 0 | 32 | 45.7 | 0 | 0 | 32 | 45.7 |
| 7 engage in cyanide/ dynamite fishing | 6 | 8.6 | 0 | 0 | 32 | 45.7 | 0 | 0 | 32 | 45.7 | 0 | 0 |
| 8 Participate in clean-up drive | 0 | 0 | 6 | 8.6 | 0 | 0 | 32 | 32.9 | 1 | 1.4 | 31 | 44.3 |

**Part II. Test of Significant Difference on the Practices**

Tables 3.A to 3.D show the results of the test of the hypothesis on the significant difference on the level of practices using the Chi-square.

The result of the test on Table 3.A on respondents when grouped by sex revealed that there is no significant difference in the level of practice (p>0.05). these significant that (a) do you practice proper waste disposal (b) do you practice segregation in your household (c) do you practice 3R’s of your waste (d) do people in your Barangay dispose and segregate properly their waste (e) do you recycle your plastic bottles, car tires and other item that are still useable (f) do you protect the seas by not spilling crude oil (g) do you engage in cyanide/ dynamite fishing (h) do you participate in clean-up drive.

**Table 3.A. Stakeholders Participation on the Perceived Marine Pollution Control Measures by Sex**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicator** | **Chi-Square** | **df** | **Asymp. Sig.** | **Interpretation** | **Decision** |
| 1. Practice proper waste disposal | 0 | 1 | 0.986 | Not Significant | Do not reject Ho |
| 2. Practice segregation in your household | 4.583 | 1 | 0.032 | Not Significant | Do not reject Ho |
| 3. Practice 3R's | 0.001 | 1 | 0.974 | Not Significant | Do not reject Ho |
| 4. People in your barangay dispose and segregate properly their waste | 0.001 | 1 | 0.979 | Not Significant | Do not reject Ho |
| 5. Recycle your plastic bottles, car tires, and other items are still useable | 0.119 | 1 | 0.73 | Not Significant | Do not reject Ho |
| 6. Protect the seas by not spilling crude oil | - | - | - | Not Significant | Do not reject Ho |
| 7. Engage in cyanide/dynamite fishing | - | - | - | Not Significant | Do not reject Ho |
| 8. Participate in clean-up drive | 0.496 | 1 | 0.481 | Not Significant | Do not reject Ho |

**Significant level=0.05**

The result of the test on Table 3.B on respondents when grouped by age revealed that there is no significant difference in the level of practice (p>0.05) these indicators (a) do you practice proper waste disposal (b) do you practice segregation in your household (c) do you practice 3R’s of your waste (d) do people in your Barangay dispose and segregate properly their waste (e) do you recycle your plastic bottles, car tires and other item that are still useable (f) do you protect the seas by not spilling crude oil (g) do you engage in cyanide/ dynamite fishing (h) do you participate in clean-up drive.

**Table 3.B Stakeholders Participation on the Perceived Marine Pollution Control Measures by Age**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicator** | **Chi-Square** | **df** | **Asymp. Sig.** | **Interpretation** | **Decision** |
| 1. Practice proper waste disposal | 2.423 | 2 | 0.298 | Not Significant | Do not reject Ho |
| 2. Practice segregation in your household | 0.096 | 2 | 0.953 | Not Significant | Do not reject Ho |
| 3. Practice 3R's | 2.384 | 2 | 0.304 | Not Significant | Do not reject Ho |
| 4. People in your barangay dispose and segregate properly their waste | 2.048 | 2 | 0.359 | Not Significant | Do not reject Ho |
| 5. Recycle your plastic bottles, car tires, and other items are still useable | 2.076 | 2 | 0.354 | Not Significant | Do not reject Ho |
| 6. Protect the seas by not spilling crude oil | - | - | - | Not Significant | Do not reject Ho |
| 7. Engage in cyanide/dynamite fishing | - | - | - | Not Significant | Do not reject Ho |
| 8. Participate in clean-up drive | 0.496 | 2 | 0.78 | Not Significant | Do not reject Ho |

**Significant level=0.05**

The result of the test on Table 3.C on respondents when grouped by civil status revealed that there is no significant difference in the level of practice (p>0.05) these indicators (a) do you practice proper waste disposal (b) do you practice segregation in your household (c) do you practice 3R’s of your waste (d) do people in your Barangay dispose and segregate properly their waste (e) do you recycle your plastic bottles, car tires and other item that are still useable (f) do you protect the seas by not spilling crude oil (g) do you engage in cyanide/ dynamite fishing (h) do you participate in clean-up drive.

**Table 3.C. Stakeholders Participation on the Perceived Marine Pollution Control by Civil Status**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicator** | **Chi-Square** | **df** | **Assymp. Sig** | **Interpretation** | **Decision** |
| 1. Practice proper waste disposal | 2.656 | 2 | 0.256 | Not Significant | Do not reject Ho |
| 2. Practice segregation in your household | 3.902 | 2 | 0.142 | Not Significant | Do not reject Ho |
| 3. Practice R's | 4.444 | 2 | 0.108 | Not Significant | Do not reject Ho |
| 4. People in your barangay dispose and segregate properly their waste | 0.666 | 2 | 0.717 | Not Significant | Do not reject Ho |
| 5. Recycle your plastic bottles, car tires, and other items are still useable | 2.736 | 2 | 0.255 | Not Significant | Do not reject Ho |
| 6. Protect the seas by not spilling crude oil | - | - | - | Not Significant | Do not reject Ho |
| 7. Engage in cyanide/dynamite fishing | - | - | - | Not Significant | Do not reject Ho |
| 8. Participate in clean-up drive | 0.637 | 2 | 0.727 | Not Significant | Do not reject Ho |

**Significant level=0.05**

The result of the test on Table 3.D on respondents when grouped by educational attainment, the result of the Chi-square revealed that there is no significant difference in the level of practices (p>0.05) these indicator (a) do you practice proper waste disposal (b) do you practice segregation in your household (c) do you practice 3R’s of your waste (d) do people in your Barangay dispose and segregate properly their waste (e) do you recycle your plastic bottles, car tires and other item that are still useable (f) do you protect the seas by not spilling crude oil (g) do you engage in cyanide/ dynamite fishing (h) do you participate in clean-up drive.

On the other hand, the result showed that there is a significant difference in recycling plastic bottles, car tires and other item that are still useable (X2 =10.451, p<0.05).

**Table 3.D. Stakeholders Participation on the Perceived Marine Pollution Control Measures by Educational Attainment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicator** | **Chi-Sqaure** | **df** | **Asymp. Sig** | **Interpretation** | **Decision** |
| 1. Practice proper waste disposal | 0.675 | 2 | 0.714 | Not Significant | Do not reject Ho |
| 2. Practice segregation in your household | 0.429 | 2 | 0.807 | Not Significant | Do not reject Ho |
| 3. Practice R's | 8.081 | 2 | 0.018 | Not Significant | Do not reject Ho |
| 4. People in your barangay dispose and segregate properly their waste | 0.748 | 2 | 0.688 | Not Significant | Do not reject Ho |
| 5. Recycle your plastic bottles, car tires, and other items are still useable | 10.451 | 2 | 0.005 | Significant | Reject Ho |
| 6. Protect the seas by not spilling crude oil | - | - | - | Not Significant | Do not reject Ho |
| 7. Engage in cyanide/dynamite | - | - | - | Not Significant | Do not reject Ho |
| 8. Participate in clean-up drive | 1.205 | 2 | 0.548 | Not Significant | Do not reject Ho |

**Significant level=0.05**

**Part III. Comments and Participation of Concerned Agencies**

In Tables 4 to 5, the respondents of Barangay Villa Baybay, Calumpang, and Calaparan answered the questions on what are the participation of the lead agencies such as BFAR, DENR, LGU-CENRO Iloilo City, PCG, and PPA marine pollution control measures and what programs that can be further developed by the said agencies.

The results on the survey of the respondents in table 4 answered in common themes such in clean up-drive, security and safety, job offer, planting trees, waste management, health and sanitation, trainings, and duties.

Respondent number 4, 7, 13, 14, 15, 19, 22, 32, 41, 43, 49, and 56, answered in common that the participation of the lead agencies on marine pollution control measures is to make their Barangay clean by doing clean-up drives.

Respondents 1, 3, 10, 11, 12, 16, 18, 24, 25, 29, 31, 34, 35, 36, and 40 answered in common, that the participation of the lead agencies on marine pollution control measures is to make their Barangay secure and safe.

Respondents 8 and 9 answered in common that, the participation of the lead agencies on marine pollution control measures is by providing them a job.

Respondents 21 answered that, the participation of the lead agencies on marine pollution control measures is by helping them plant the trees.

Respondents 2, 20, 23, 30, 39, 50, 51, 52, 60, 61, 64, 67, and 68 answered in common that the participation of the lead agencies on marine pollution control measures in their Barangay is to maintain the proper management.

Respondents 37, 42, 46, 47, 53, and 54 answered in common that the participation of the lead agencies on marine pollution control measures is to give them a good health and sanitation to avoid illness.

Respondents 45, 48, 57, 62, and 69 answered in common that the participation of the lead agencies on marine pollution control measures is to give them the training on how to control marine pollution.

Respondents 5, 26, 27, 38, 55, and 65 answered in common that the participation of the lead agencies on marine pollution control measures is by doing the duties of the lead agencies on how to help the people of the Barangay regarding their needs to control marine pollution.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4. What do you think are the participation of the lead agencies on the marine pollution control measures?** | | | | | | | |
| **Themes** | | | | | | | |
| **clean-up** | **security and safety** | **job offer** | **planting trees** | **waste management** | **health and sanitation** | **trainings** | **duties** |
| 4, 7, 13, 14, 15 | 1, 3, 10, 11, 12, 16, | 8,9 | 21 | 2, 20, 23, 30, 39, 50, | 37, 42, 46, 47, 53, 54 | 45, 48, 57, 62, 69 | 5, 26, 27 |
| 19, 22, 32, 41, | 18, 24, 25, 29, 31, 34 |  |  | 51, 52, 60, 61, 64, 67 |  |  | 38, 55, 65 |
| 43, 49, 56 | 35, 36, 40 |  |  | 68 |  |  |  |

For the respondent numbers 12, 20, 24, 28, 30, 32, 34, 43 and 56 their common answered in the program that can be further developed or wanted to control marine pollution is to make their Barangay clean also the cleanliness of the ocean by doing clean-up.

Respondents 3, 4, 6, 19, 27, 31, 40, 42 and 52 answered in common that the program that can be further developed or wanted to marine pollution is to make their Barangay secure and safe to avoid them from sickness and also to improve the peace and order in their Barangay

Respondent 18 answered that the program that can be further developed or wanted to marine pollution by providing them a job for life to be easier if ever calamities will occur due to marine pollution.

Respondents 7, 8, 9, 17, 46, 47, 50, 51, 54, 55, 60 and 62 answered in common that the program that can be further developed or wanted to marine pollution in their Barangay is to maintain the proper waste management because the improper segregation of the waste in their Barangay has a big impact that can cause pollution in marine life especially they are living on the coastal areas.

Respondents 2, 10, 14, 23, 38, 48, 49, 52, 57 and 65 answered in common that the program that can be further developed or wanted to marine pollution is to give proper training to prevent marine pollution and also give them knowledge and educate them to be able for them to minimize the improper waste segregation that can cause marine pollution.

Respondents 21, 22, 43, 53 and 61 answered in common that the program that can be further developed or wanted to control marine pollution is by doing the duties of the lead agencies on how to help the people of the Barangay regarding their needs to control marine pollution like providing budget for the rehabilitation of the drainage, procuring proper fishing equipments, implementing projects to protect marine life.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 5. What do you think are the programs that can be further developed or wanted to marine pollution?** | | | | | |
| **Themes** | | | | | |
| **clean-up** | **security and safety** | **job offer** | **waste management** | **trainings and educating** | **duties** |
| 12, 20, 24, 28 | 3, 4, 6, 19, 27, 31, | 18 | 7, 8, 9, 17, 46, 47 | 2, 10, 14, 23, 38, 48, | 21, 22, |
| 30, 32, 34, | 40, 42, 52, |  | 50, 51, 54, 55, 60, | 49, 52, 57, 65 | 45, 53 |
| 43, 56 |  |  | 62 |  | 61 |

In this part we gathered our data from our lead agencies on what benefits their offices offer to control marine pollution and programs that they can further develop/ create to control marine pollution.

For the activities, the lead agencies are conducting coastal clean-up quarterly to minimize pollution in marine life. They also conducting mangrove planting.

The Bureau of Fisheries and Aquatic Resources implements the Malinis at Masaganang Karagatan Program. The Malinis at at Masaganang Karagatan (MMK) focuses on promoting fisheries protection and conservation, center on the significance of sustainability managing our fisheries and aquatic resources, and promotes stakeholders engagement to the cause of resources protection and conservation. One of the criteria of the program is "clean, coastal waters without any garbage or industrial influence flowing to the sea" wherein coastal municipalities/ cities are evaluated for the presence of garbage and influents which are contributory to marine pollution. Moreover, the projects of the LGUs towards waste management are included in the evaluation. The program Malinis at Masaganang Karagatan mainstream to the consciousness of the stakeholders on the management and conservation of marine resources and coastal habitats. The Bureau also conducts orientation on responsible fishing among fisher folk to include proper disposal of fishing nets and gears. Good aquaculture practices are also advocated among operations which includes proper disposal of waste and waste water from aqua-culture facilities (fishponds, culture tanks).

DENR benefits from the activities undertaken to control marine pollution may include the conservation and protection of the coastal and marine habitats and biodiversity resources contained in the said habitat through partnership with other agencies DENR can also save resources which can be used for other projects and activities related to environment management.

For the question number two on what programs that the agencies can further develop or create to control marine pollution, The lead agencies public awareness, education and cooperation of the people.

In addition, DENR supports continuous dissemination and communication among fishermen and coastal community resource management and protecting in order to protect the coastal area. The close coordination and collaboration of DENR and partner agencies which has the mandate to control marine pollution band enhance the activities of the bureau will ease the implementation of program and activities for the protection of coastal areas.

DENR leads the annual international clean-up covering Arevalo, Iloilo. This is what is being upgraded through the close partnership of Iloilo City Government to include all coastal barangays of Iloilo City. Also the students, starting with the NSTP of Iloilo community College, were trained to use the official form of international coastal clean-up to capture the signs component of the clean-up activity and for the students to assist the community in the success of clean-up activities. The monitoring of water quality being conducted by the management bureau should be regularly conducted and the results should be discussed in the concerned Barangay level for them to be aware of the status of water in their respective areas. Continued heightened awareness and enjoying the participation of the communities especially in solid and liquid waste management that should be done. DENR also pushes the adoption of International Convention on Prevention of Pollution from ships into a national law.

It also implements the Septage Management Ordinance # 2017-127 for domestic waste water, drafting of "No discharge permit, no business permit ordinance" for commercial waste water. They also conduct sanitation survey on restaurant along coastal area with DENR-EMB. The promotion of low cost water treatment facility and cancelling down of commercial establishments on coastal Barangay will help control marine pollution.

**FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

**Summary of the Study**

This study was conducted in order to determine the perceived participating activities undertaken as marine pollution control measures of coastal residents of Villa Baybay, Calaparan, Calumpang and when grouped according to age, sex, civil status, and educational attainment. Specifically, it sought to identify the perceived participating activities undertaken as marine pollution control measures of coastal residents of Villa Baybay, Calaparan, and Calumpang according to age, sex, civil status and educational attainment; and measure the significant difference in the perceived participating activities undertaken as marine pollution control measures of coastal residents of Villa Baybay, Calaparan, Calumpang and when grouped according to age, sex, civil status, and educational attainment. This study made use of descriptive- quantitative as research design. The sample size was seventy (70) and was identified using the random sampling.

**Summary of Findings**

From the different data gathered, the following are the major findings:

1. **When taken as a whole**, the respondents were likely to participate in the activities undertaken to prevent marine pollution. They practice proper waste disposal and segregation in their household to control pollution in their place. They also practice segregation of garbage properly, and the 3R’s namely reuse, reduce and recycle. They do not engage in cyanide/ dynamite fishing that can affect marine ecosystem. It is because of the provisions about protecting the sea, their proper waste disposal and the implementation of waste segregation in Barangay, that they become aware in preserving their coastal community.
2. **In terms of sex**, both male and female respondents were participating in the activities undertaken on marine pollution control measures. They practice proper waste disposal and segregation to control pollution in their place, with the segregation of garbage properly, practicing the 3R’s namely reuse, reduce and recycle. By classifying them in age, each age bracket were participating in the activities undertaken on marine pollution control measures. Moreover, in terms of civil status and educational attainment the data pointed out that the respondents were participating in the activities undertaken on marine pollution control measures.
3. **Test of Significant Difference on the Awareness.** There is a significant difference when it comes in educational attainment in recycling of plastic bottles, car tires and other item that are still usable, but there is no significant difference in the perceived control measure of respondents in terms of sex, age, and civil status on a) do you practice proper waste disposal? b) do you practice segregation in your household? c) Do you practice the 3R’s: (a) Reuse (b) Reduce (c) Recycle of your waste? d) Do people in your Barangay dispose and segregate properly their waste? e) Do you recycle your plastic bottles, car tires, and other item that are still useable? f) Do you protect the seas by not spilling crude oil? g) Do you engage in cyanide/ dynamite fishing? h) Do you participate in clean-up drive?

**Conclusions**

Majority of the households of Villa Baybay, Calaparan and Calumpang, in Iloilo City are very active in participating in activities undertaken to control pollution in marine and coastal areas particularly that unclean environment due to inappropriate disposal of wastes is a primary cause of marine pollution. They implement proper segregation of garbage and practice of 3R’s of solid waste management namely reuse, reduce and recycle. Also they do not engage in cyanide/ dynamite fishing that can really affect marine pollution for this purpose when taken as a whole and when grouped by sex, age, civil status and educational attainment.

**Recommendation**

Based on the findings and conclusions of the study, the following are hereby recommended.

To the **Barangay Officials of Brgy. Villa Baybay and Calumpangof Iloilo City**, that the barangay should continue and sustain their activities to control pollution in marine and coastal areas because it yielded good results.

To the **City Government of Iloilo City**, that the findings of the study will be considered in their planning to further enhance the solid waste management program of other barangays of Iloilo City.

To the **Residents of Brgy. Villa Baybay and Calumpangof Iloilo, t**hat they have to sustain their practices to further strengthen the ability of the residents to maintain solid waste management in the barangay.

To the **Future Researchers,** that a similar study will be conducted but should involve all barangays in Iloilo City.

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**AWARENESS AND UTILIZATION OF INFOTRAC AND BRITANNICA ACADEMIC ONLINE AMONG STUDENTS OF ST. THERESE – MTC COLLEGES**

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**Abstract**

This descriptive survey study assessed on the awareness and utilization of Infotrac and Britannica Academic Online among Students of St. Therese – MTC Colleges. Findings include the following: (1) The students were highly aware of the Infotrac and Britannica Academic Online when grouped as a whole. When grouped according to gender, both female and male students were highly aware of the Infotrac and Britannica Academic Online in the library. As to site, students from the three sites were highly aware where in La Fiesta got the highest mean score, followed by Magdalo then Tigbauan. When they were grouped according to year level, majority of the students in all levels from fourth year to first year were highly aware of the Infotrac and Britannica Academic. As to degree program, students taking up HRS, CLS, and were extremely aware while the rest of the programs were highly aware. (2) The students often utilized the Infotrac and Britannica Academic Online when taken as a whole. When they were grouped according to gender, it was found out that the female students always utilized the Infotrac and Britannica Academic Online compare to the male students who often utilized them. As to site, students from La Fiesta always utilized them, whereas students from Magdalo and Tigbauan sites often utilized the Infotrac and Britannica Academic Online. When grouped according to year level, the third year students were found out that they always utilized the Infotrac and Britannica Academic Online while the second year, first year and fourth students often utilized. Moreover, when they were grouped according to degree program, students taking up HRS, HCS, ASBS, BSMar-E and BSHM always utilized the Infotrac and Britannica Academic Online. BS Criminology students got the lowest mean of utilization. (3) Students’ differences on the awareness of Infotrac and Britannica Academic online do not differ when grouped according to year level, so the null hypothesis is not rejected. (4) When the respondents were grouped according to site, (5) students’ awareness of the Infotrac differ significantly, therefore the null hypothesis is rejected. On the other hand, students’ awareness of Britannica Academic online do not differ significantly when grouped by site, so the null hypothesis is not rejected. (6) t-test for independent sample result shows that in terms of Infotrac awareness, the t-value showed that there is a significant differences in the students’ awareness when grouped by gender, so the null hypothesis is rejected. In terms of Britannica Academic Online, there is a significant difference in the awareness of students when grouped according to gender, therefore the null hypothesis is rejected. (7) When the respondents were grouped by gender, students’ utilization of Infotrac and Britannica Academic Online differ significantly, therefore the null hypothesis is rejected. (8) Students’ relationship between awareness and utilization of Infotrac and Britannica Academic online using Pearson r correlation revealed that there is a significant correlation between them. The relationship was found to be positively very high. This result implied that when the awareness in Infotrac and Britannica Academic online increases then their utilization also increases or vice-versa.

The following are the conclusions: Recommendations were the following: (1) The librarians from the different academic sites should exert more effort to encourage students to always utilized the Infotrac and Britannica Academic Online. The Library Orientation is the best venue to do this. The librarians should conduct a per section orientation/formal instruction to fully introduce the Infotrac and Britannica Academic Online. It is also a way to promote the use of online resources available in our library for their studies especially in their research. (2) Faculty members are encourage to give advanced research studies and library research works to students especially the BS Criminology students to increase their utilization of the Infotrac and Britannica Academic Online. (3) The administration should consider to increase the library fee or additional library budget that will help augment the library expenses in providing more beneficial services for the improvement of the learning environment of the millennial learners.

*Keywords: Qualities, Attitudes, Accounting Personnel*

**INTRODUCTION**

**Background of the Study**

Libraries are considered hallowed temples of learning, protected from the ephemeral nature of the digital age. But as the technology advances into every aspect of modern life, libraries are experiencing a shift from being housed strictly in physical spaces and are moving onto the web. This transition is creating an identity crisis for libraries. It also means incredible possibilities for learning outcomes across the globe with digital archives connecting students, teachers, and researchers-enhancing in sharing information. This is the situation faced by libraries nowadays, however, with the presence of Infotrac and Britannica Academic Online, they can somehow combat these changes.

The use of Infotrac and Britannica Academic online in libraries plays an important role in the lives of researchers for it facilitates their search for information. This is to say that Infotrac Custom Journals is beneficial to library customers due to the following: multi-disciplinary, convenient, accessible, updated, “Techie”- adapts to 21st century learning style, user-friendly, easy to navigate, personalized, Google and Microsoft integrated , printable and downloadable.

Infotrac provides what the 21st-century researchers expect as to instant access to complete, up-to-date content. This can put the world’s leading journals and reference sources at your users’ fingertips, with easy-to-use features and unique searching tools enabling discovery. It provides a variety of resources to be shared easily and can be used efficiently in interface.

Britannica’s professional development team understands the challenges and opportunities associated with the student research at the collegiate level. They share their knowledge and practical recommendations to support librarians in guiding students and faculty in accessing all the Britannica Academic Online has to offer. The essentials for conducting thorough research are all in one site. Britannica Academic online delivers fast and easy access to trusted information with balanced global perspectives and insights that users will not find anywhere else. (citation?)

This database provides information about important events, achievements, recognizable persons, world news and use the internet as the main vehicle for people to get information. The tradition of building stuffed with books is less relevant to our modern lives. As a result, libraries are transforming themselves into technological spaces. When looking at the technology use in libraries, patrons are increasingly thinking of libraries as community spaces that allow access to technology as a source of digital literacy for various demographics.

Expanded access through information sharing is likewise done in libraries. Digital libraries provide robust interaction between information and users – democratizing the global dissemination of information. The modern importance of public information is providing access to everyone and equipped with on-line connections to a worldwide network of libraries. With these, library users have chances to harness the new opportunities of the digital age in order to create equal opportunities through better access of information. This is a powerful goal of information sharing which has the power to bolster educational equality across the world. (citation)

On the other hand, the number of e-book users is growing, but not to the extent to replaced print books. While the percentage of adults who are reading e-books is increasing, simultaneously, print book reading is also used to spend time and access to information. This trend is also present in other libraries. Printed books still dominate reading, despite the growth of e-books. The number of e-book users increased, but not to the extent that electronic books have replaced the printed version. The popularity of e-books is rising, but print books remain the foundation of many people’s reading habits. This trend is expected to change as-reader ownership expands, but the love affair with an actual book isn’t expected to vanish completely.

Technological expansion and the changing way of individual’s gaining access to information deeply impacted the structure of libraries, physically as well as conceptually. Despite of the modernization of libraries and their adaption to the digital age, these public spaces still hold a critical role within the community. Libraries are doing well in changing with the needs of local communities, continuing to be the beacons of information sharing, learning, and entertainment even in the amidst tight of fiscal times.

With this, St. Therese - MTC Colleges strives harder to improve its library resources and services by acquiring databases such as Infotrac and Britannica Academic Online. Since, these library resources were acquired in the recent months, the library assessed the students’ awareness and utilization of both the Infotrac and Britannica Academic Online for this Academic Year 2019-2020.

**Statement of the Problem**

This study assessed the awareness and utilization of Infotrac and Britannica Academic Online of the students of St. Therese - MTC Colleges.

Specifically, this study sought answers to the following questions:

1. What is the students’ level of awareness of the Infotrac and Britannica Academic Online when taken as a whole and classified according to degree program, gender, campus/site and year level?
2. To what extent the students are using the Infotrac and Britannica Academic Online when taken as a whole and classified according to degree program, gender, campus/site and year level?
3. Are there significant differences in the students’ awareness of both Infotrac and Britannica Academic Online when they are taken as a whole and classified according to degree program, gender, campus/site and year level?
4. Are there significant differences in the students’ utilization of both the Infotrac and Britannica Academic Online?
5. Is there a significant relationship between students’ awareness and utilization of both the Infotrac and Britannica Academic Online?

**Null Hypotheses**

1. There are no significant differences in the students’ awareness of both Infotrac and Britannica Academic Online when they are taken as a whole and classified according to degree program, gender, campus/site and year level.
2. There are no significant differences in the students’ utilization of both the Infotrac and Britannica Academic Online.
3. There is no significant relationship between students’ awareness and utilization of both the Infotrac and Britannica Academic Online.

**Definition of Terms**

The following are the operational definition of the terms used in the study:

**Awareness.** Having knowledge of something (Merriam- Webster’s Collegiate Dictionary, 2009).

In this study, awareness refers to the student’s knowledge and understanding about the Infotrac and Britannica Academic Online available in the library. This can be categorized as: 5- Extremely Aware, 4- Highly Aware, 3- Aware, 2- Moderately Aware and 1- Not aware.

**Britannica Academic Online.** Delivers fast and easy access to high quality, comprehensive information. It provides a balanced, global perspectives and insights, each article contains an article in history with author information and listed changes **(**britannicalearn.com, 2019).

In this study, Britannica Academic Online refers to the online database acquired by the St. Therese – MTC Colleges Library to provide the students the opportunity to access to information when conducting their own research, they can cite the articles, helping them to deliver essays and theses that are academically rigorous and credible.

# Infotrac. Is a family of [full-text databases](https://en.wikipedia.org/wiki/Full-text_database) of content from academic journals and general magazines, of which the majority are targeted to the [English](https://en.wikipedia.org/wiki/English_language)-speaking North American market (www.gale.com, 2019).

In this study, the term refers to an online database that is multi-disciplinary, convenient to use, known to its accessibility and with updated information, adopts to the 21st century learning style, user-friendly, easy to navigate, can perform personalized outputs and with printable and downloadable information.

**St. Therese – MTC Colleges.** Refers to the location where the study will be conducted.

**Utilization.** The act of using something in an effective way (Cambridge Dictionary, 2019).

In this study, this refers to how the students use the InfoTrac and Britannica Academic Online at St. Therese-MTC Colleges, according to classification as; 5- Always utilized, 4-Often Utilized, 3- Sometimes Utilized, 2- Rarely Utilized and 1- Never Utilized.

**Significance of the Study**

The result of this study will be most beneficial to the following:

**Library Personnel.** The results of the study will help determine strategies to improve full awareness and utilization of the Infotrac and Britannica Academic Online by the students and faculty.

**Students.** The result of the study will be beneficial to the students who availed of these services for it facilitates their research and information needs through InfoTrac and Britannica Academic Online.

**Administration.** The result of this study will be of great help to the school administrators to exercise their role in approving authority of the plans submitted to them. The findings of this study will likewise make the school administrators aware of the strengths and weaknesses of the library services offered by the department.

**Teachers.** The result of this study will give themawareness and encouragement to include Infotrac and Britannica Academic Online in the references of the students in their research works. They should also include in their teaching strategies usage of these online resources to implement full utilization.

**Students.** The result of the study will be beneficial to the students who availed of these services for it facilitates their research and information needs through the use of Infotrac and Britannica Academic Online.

**Future Researchers.** In this study, future researchers will gain valuable insights from the findings of the study. It can be used as a baseline data to replicate this study from different location.

**Scope and Limitation**

This study is focused on the awareness and utilization of Infotrac and Britannica Academic Online of the students of St. Therese- MTC Colleges.

Students enrolled for the first semester AY 2019-2020 of St. Therese MTC Colleges will be the respondents of this study. Researchers - made questionnaire will be given to those students who are currently enrolled in this institution to know their awareness and utilization of both Infotrac and Britannica Academic Online as data gathering tool. The variables of the study include the degree program, gender, site and year level.

**REVIEW OF RELATED LITERATURE**

**Conceptual Literature**

The digitization of information in print media has brought a new concept altogether in all fields of human life that has marked the beginning of “information era”. An electronic resource is defined as a resource which requires computer access or any electronic product that delivers collection of data, be it referring to full text bases, electronic journals, image collections, other multimedia products and numerical, graphical or time based, as a commercially available title that has been published with an aim to being marketed. These may be delivered in CD ROM, tape, via Internet and so on. These are more useful due to inherent capabilities for manipulation and searching in providing information access which is cheaper in acquiring information resources, savings in storage and maintenance etc. that sometimes the electronic form is the only alternative. The development in scientific publishing and the pricing policies of publishers posed new challenges and opportunities for academic libraries in purchasing and managing the serials within their restricted budget. The library and information services of the 21st century are fast changing. With the rapid development of electronic publishing, libraries are not only acquiring reading materials such as printed books and journals but also arranging in providing access to various learning resources in electronic form. The web resources and the use of web as a tool is changing the way users live and learn. While in the early phase, the world wide web was mainly used for push type applications to provide information and resources to users, the development of web 2.0 and the spread of open sources and shared use concept have focused on user generated content and applications for sharing. This led to the rapid development and popularity of electronic resources.

**Infotrac and Britannica Online Description**

The recent trend now is the presence of online data bases in libraries. Digitization of libraries and changes in the library designs has coped up with the needs of the millennial in today’s environment.

Infotrac is a family of [full text databases](https://en.wikipedia.org/wiki/Full_text_database) of content from academic journals and general magazines, of which the majority are targeted to the [English](https://en.wikipedia.org/wiki/English_language)-speaking North American market. It is a typical online proprietary databases, in which various forms of authentication are used to verify affiliation with subscribing [academic](https://en.wikipedia.org/wiki/Academic_library), [public](https://en.wikipedia.org/wiki/Public_library), and [school](https://en.wikipedia.org/wiki/School_library) libraries. Infotrac databases are published by [Gale](https://en.wikipedia.org/wiki/Gale_(publisher)), a part of [Cengage Learning](https://en.wikipedia.org/wiki/Cengage_Learning).

## Infotrac streamlined discovery at the learner’s finger tips. With the tools that make discovery fast and easy, it quickly connect learners to the information they are looking for. It has an extensive coverage across multiple subject areas. Academic OneFile aids learners in finding accurate information and articles with ease, in both PDF and HTML formats.

Infotrac Student Edition is designed for students (12+ years old) and provides access to age appropriate, authoritative digital content for classroom assignments. Learners can research from magazines, journals, newspapers, and reference books covering a wide range of subjects, from science, history, and literature to political science, sports, and environmental studies.

Infotrac’s content features include full-text articles from the world’s leading journals and reference sources; careful editorial curation; a low-to-no embargo rate; and detailed manual indexing. Mobile-responsive design ensures students can access the resources on the devices they use most.

For more than 60 years, Gale, a Cengage company, has partnered with libraries around the world to empower the discovery of knowledge and insights by all people, for all purposes. Knowledge is power, and the act of learning is empowering. Access to knowledge offers learners an opportunity to discover the motivation and inspiration vital to making a positive contribution in not only their own lives, but the rest of the world. That's why Gale provides libraries with original and curated content, as well as the modern research tools that are crucial in connecting libraries to learning, and learners to libraries.

**Britannica Academic Online**

Likewise, Britannica Online such as Britannica School and Britannica Academic are premium online services which offer the most comprehensive array of safe, searchable content across all subject areas from Pre-K-12, college students up to professionals. It has an accurate, current, and comprehensive resources for college level learners, researchers and faculty. It offers alternate pathways to learning, providing classrooms with interactive, visually engaging resources that support collaborative learning styles. It will improve student’s performance, strengthen teacher effectiveness, and maximize the use of technology with Britannica School.

In a study entitled “**Evaluating the Effectiveness on the use of Infotrac and Academic Britannica Online”** by Kenchakkanavar (2014),in his study revealed that digital technology has made it more easy, speedy and comfortable to apply the stored intellect. This collected information through the ages has to be used for further research; betterment and overall development of the society. Electronic resources are easily accessible in remote areas. Electronic resources solve storage problems and control the flood of information. Print sources are being digitized. Electronic information sources are becoming more and more important for the academic community. The advent of technology has made the libraries add new things to its collections. The more prominent among them is the e-resources. This paper presents an overview of these resources, describes few advantages and disadvantages, and gives addresses of few web sites.

In the study of Björk et al. (2009), OA (Open Access) has a significant positive impact on the availability of the scientific journal literature and there is a big difference between scientific disciplines in the uptake. The objective of this study was to make a rigorous assessment ofthe overall share of the peer reviewed article literature, which is available as OA, either published directly or made available as copies in different sorts of repositories. Furthermore, Gul, Shah & Baghwan (2010), revealed in their study that the concept of Open Access emerged during the late 1990s. However, substantial literature is available on open access in a short span of time (Gul, Shah & Baghwan, 2010).There are many Open access resources available in the internet which are very helpful in the teaching and learning process. Open Access resources comprise of Open Access archives, Open Access books, Open Access journals, Open Access search engines etc. A question was asked to know the awareness of Open Access resources among the research scholars. The use of Open Access resources depends on the awareness of Open Access. It also depends on the sources of getting information, tools of accessing and purpose of using it in scholarly activities of researchers.

According to Mayo (2016), in meeting the changing demand in basic education, like the implementation of K to 12, and the necessity to enhance the quality of education in the country, Public Library Online Library System (PHOLS) could speed up accurate performance of library tasks and services. The system provides an accurate generation of library data within minimal time allowing any one with the basic knowledge of computer to play his/her part in providing quality basic education through its heart, the library. Thus, not only to be recognized as comparable to other developing countries in Asia but also proven efficient in providing quality basic education.

On the other hand, Wanajak (2011), in her study revealed that there is a need to supervise students using the internet by the teachers, school staff and administrators. Computer laboratories in schools should be in well supervised areas to ensure that students use the internet appropriately to protect student’s safety (e.g., cyber bullying).The rules for computer and internet use should be established by consensus and democratic student involvement. Reporting any behavioral changes in students related to IA should be the responsibility of teachers; and teachers and parents should work cooperatively together for the benefit of all students regarding safe internet use.

The study of Vania (2015), revealed that implementation of Edmodo in the classroom resulted a positive effect in student cognitive and student motivation. Likewise, a web-based learning in thermal physic can improve student cognitive, it can be noticed by the results of each cognitive level that increase from pre-test to post-test and also the normalized gain shown medium improvement.

Buddenbohm et al. (2016), revealed in their study that open access must be in place to encourage data publication and citation: a proper tool for scholarly acknowledgment. Moreover, they said that citation for data must be publicized as an essential component of science, accelerating and widening scientific research. Normative practice must emphasize on identification, retrieval, attribution of research data, and the possibility of restrictive application procedures.

Moreover, Walmiki and Ramakrishnegowda (2009), examined in their paper the results of a survey conducted to know the collection of e-resources in Karnataka State University Libraries. Attempts have been made to know the internet facilities, procurement of cd-rom databases and online resources, participation in consortium activities and e-resources accessible through such consortium activities in the university libraries. The paper traced the barriers in collection of e-resources in the university libraries. The university libraries under the study have insufficient number of internet nodes, low bandwidth, poor collection of cd-rom databases and online resources. The scholarly literature accessible under the UGC-Infonet E-Journal Consortium is the only strength of these university libraries, as far as collection of e-resources is concerned.

On the other hand, Jamali, Nicholas, and Huntington (2005), presented the conclusions of several studies that used log analysis to study the use and users of electronic journals. It focused on the formats preferred by the end users where it was documented that the users prefer PDF rather than HTML format.

Finally, Chisenga (2004), accepted a review on the use of ICTs in ten African Public Library Services. The review found that, though most libraries had internet connectivity, very few were contributing web-based information services to their users. The study however, identifies four barriers to the useful facility of electronic resources in those libraries, namely: lack of considered planning, lack of sufficient or trustworthy financial support, lack of use of internet to supply information services to users and lack of constant preparation for users in new Information and communication technology services.

**Theoretical Framework**

The present study was anchored in an information system theory called **Technology Acceptance model** by Davis (1989). This model showed how users come to accept and use a technology .It suggests that when users are presented with a new technology, a number of factors influence their decision about how and when to use the technology.

**Conceptual Framework**

This study focused on the investigations to ascertain the awareness and utilization among the students of St. Therese - MTC Colleges, during the first semester of Academic year 2019-2020.

Factors considered as the independent variables were degree program, gender, site, and year level to obtain the dependent variable of awareness and utilization of Britannica Academic Online and Infotrac by analyzing and interpreting its level of awareness and extent of utilization among the students as processed variable.

**Research Paradigm**

Degree Program

Gender

Campus/Site

Year Level

Awareness of Infotrac and Britannica Academic Online

Utilization of Infotrac and Britannica Academic Online

**Independent Variables**

**Dependent Variables**

***Figure 1. A schematic diagram showing the relationship of variables.***

**METHODOLOGY**

**Nature of Research Design**

This study used the descriptive survey method. This study was conducted to determine the awareness and utilization of Infotrac and Britannica Academic Online among students of St. Therese – MTC Colleges.

**Respondents of the Study**

The respondents of the study were the 908 students of St. Therese – MTC Colleges who were currently enrolled for the first semester of Academic Year 2019 – 2020. Of the 908 students, three hundred ninety-two (392), were from Magdalo, two hundred ninety – four (294), were from Tigbauan and two hundred sixty-two (262), were from La Fiesta.

**Table 1. Profile of the Respondents**

|  |  |  |
| --- | --- | --- |
| **Categories** | **Number of Enrollees** | **Percentage (%)** |
| A.    Entire Group | 908 |  |
| B.     Degree Program |  |  |
| BS MT | 369 | 40.64 |
| BS Mar- E | 186 | 20.48 |
| BS Criminology | 50 | 5.51 |
| BS HRM | 36 | 3.96 |
| BSHM | 195 | 21.48 |
| BSTM | 15 | 1.65 |
| ASBS | 16 | 1.76 |
| AHRS | 11 | 1.21 |
| CLS | 12 | 1.32 |
| HCS | 18 | 1.98 |
| C.     Site |  |  |
| La Fiesta | 262 | 28.85 |
| Magdalo | 352 | 38.77 |
| Tigbauan | 294 | 32.38 |

**Research Instruments**

The research instrument used in this study was the researcher-made questionnaire and a checklist.

The researchers used the English Language as medium of communication. The instrument was divided into three (3) parts. The first part was the profile of the respondents while the second part were the items in the questionnaire proper (A) Awareness of Infotrac and Britannica Academic Online which consists of nine (9) statements answerable by Extremely Aware, Highly Aware, Aware, Moderately Aware, and Not aware. (B) Extent of utilization of the Infotrac and Britannica Academic Online which consists of seven (7) statements answerable by Always Utilized, Often utilized, Sometimes utilized, Rarely utilized and Never utilized. (C) and the third was an open-ended question about the difficulties they encountered in using both the Infotrac and Britannica Academic Online.

**Validity of the Questionnaire**

According to Cristobal (2017) validity refers to the quality of the instrument of being functional only within its specific purpose. This is to ensure the credibility of the findings, and the correctness and accuracy of data.

This study used the researcher-made questionnaire. This was presented to the Research Office for suggestions and corrections. The said questionnaire was validated by the experts and the panelists. Suggestions, corrections and comments made by the experts and the validators were all noted and included in the revision of the questionnaire.

**Reliability of the Questionnaire**

Test reliability refers to the consistency of the scores obtained, how consistent they are from each individual from one administration of the instrument to another and from one set of items to another. The Cronbach’s Alpha is considered the best method for measuring test reliability. According to Cristobal (2017) reliable instrument can also be used to verify the credibility of the subject of the latter yield the same results in several tests.

The final copy of the questionnaire was pre-tested to those students who were not respondents of the study. The result of the reliability test showed a Cronbach’s Alpha value of 0.983 indicating that the questionnaire was highly reliable and could be used in the study.

**Data Gathering Procedure**

The questionnaire was presented to the research and development office for comments/suggestions. Items which are found vague were deleted as per advised by the Research and Development Office for improvement.

Before the actual data collection, the researchers got permission from the Director of Libraries to conduct the test in the library. After the approval, the researchers distributed the questionnaire to those students who were randomly chosen as respondents of the study. Instructions were given to them before they answer the questionnaire. They were given thirty minutes to read and fully understand the questionnaire before the actual gathering of data. Likewise, the researchers had to explain the purpose of the study.

The researchers administered the instruments to ensure 100% retrieval. The accomplished instrument was checked to ensure that all items were answered accordingly.

For computation purposes, each response was given an equivalent score as follows:

For Awareness of Infotrac and Britannica Academic

**Response Score**

Extremely Aware 5

Highly Aware 4

Aware 3

Moderately Aware 2

Not Aware 1

For Utilization of Infotrac and Britannica Academic

**Response Score**

Always Utilized 5

Often Utilized 4

Sometimes Utilized 3

Rarely Utilized 2

Never Utilized 1

The scale used in interpreting the data are the following:

**For Awareness of Infotrac and Britannica Academic**

**Scale Description**

4.21 - 5.00 Extremely Aware

3.41 - 4.20 Highly Aware

2.61 - 3.40 Aware

1.81 - 2.60 Moderately Aware

1.00 - 1.80 Not Aware

**For Extent of Utilization of Infotrac and Britannica Academic**

**Scale Description**

4.21 - 5.00 Always Utilized

3.41 - 4.20 Often Utilized

2.61 - 3.40 Sometimes Utilized

1.81 - 2.60 Rarely Utilized

1.00 - 1.80 Never Utilized

**Statistical Tools**

The following statistical tools were used in the study:

**Mean. This was** used to determine the respondents’ profile as well as the level of awareness and extent of utilization of Infotrac and Britannica Academic Online.

**Frequency**. Used to determine the number of respondents belonging to categories included in the independent variables of the study.

**Percentage (%). This was** used to express the proportion of the population responding to the particular item.

**t- test** or F-Test Was used to determine if there is a significant differences between the means of the two groups. If the probability associated with the F statistics is less than 0.05 or less than we can assert that there is a significant difference between the means (de Guzman, 2017).

**One-way Analysis of Variance (ANOVA)** was used to determine the significant differences among three or more groups.

**The Pearson product moment correlation coefficient** (sometimes referred to as the PPC or Pearson r) is a linear correlation coefficient, denoted by r, measures the strength and (refers to positive or negative) linear relationship between two variables.

**RESULTS AND DISCUSSION**

This chapter presents the findings of the investigation. The study attempted to assess the awareness and utilization of both the Infotrac and Britannica Academic Online among students of St. Therese-MTC Colleges. The data were gathered through a researcher – made questionnaire.

This chapter also presents the descriptive and the inferential data and their respective analysis.

This study tried to answer the following questions.

1. What is the students’ level of awareness of the Infotrac and Britannica Academic Online when taken as a whole and classified according to degree program, gender, site and year level?
2. To what extent the students are using Infotrac and Britannica Academic Online when taken as a whole and classified according to degree program, gender, site and year level?
3. Are there significant differences in the students’ awareness of both Infotrac and Britannica Academic Online when they are taken as a whole and classified according to degree program, gender, site and year level?
4. Are there significant differences in the students’ utilization of both the Infotrac and Britannica Academic Online?
5. Is there a significant relationship between students’ awareness and utilization of both the Infotrac and Britannica Academic Online?

**Table 2. Students’ Awareness of Infotrac and Britannica Academic Online When Taken as a Whole According to Gender, Site, Year Level and Degree Program**

|  |  |  |
| --- | --- | --- |
| **Category** | **Mean** | **Description** |
| **As a Whole** | **4.07** | **Highly Aware** |
| **Gender**  Male  Female | 4.04  4.19 | Highly Aware  Highly Aware |
| **Site** La Fiesta  Magdalo  Tigbauan | 4.17  4.07  3.99 | Highly Aware  Highly Aware  Highly Aware |
| **Year Level** First Year  Second Year  Third Year  Fourth Year | 4.01  4.13  4.13  3.99 | Highly Aware  Highly Aware  Highly Aware  Highly Aware |
| **Degree Program** HRS  HCS  CLS  BSMar –E  BSHM  BSTM  BSHRM  ASBS  BSMT  BS Criminology | 4.59  4.26  4.28  4.20  4.17  4.08  4.11  4.08  3.95  3.86 | Extremely aware  Extremely Aware  Extremely Aware  Highly Aware  Highly Aware  Highly Aware  Highly Aware  Highly Aware  Highly Aware  Highly Aware |

Legend: 4.21 - 5.00 -Extremely Aware; 3.41 - 4.20 -Highly Aware; 2.61 - 3.40-Aware;

1.81 - 2.60-Moderately Aware; 1.00 - 1.80-Not Aware

Table 2 showed that when grouped as a whole, the students were highly aware that the library has Infotrac and Britannica Academic Online with a mean score of 4.07. When grouped according to gender, both the female (4.19) and the male students (4.04) were highly aware of the Infotrac and Britannica Academic online in the library. In terms of site, students from all sites were highly aware of the availability of Infotrac and Britannica Academic online with La Fiesta as the highest with a mean score of 4.17, Magdalo(4.07) and Tigbauan (3.99). When the respondents were grouped according to year level, majority of the students in all levels such as second year (4.13), third year (4.13), first year l (4.01) and fourth year levels (3.99) were highly aware of the availability of the infotrac and Academic Britannica Online. On the other hand, when the respondents were grouped according to degree program, students enrolled in HRS (4.59), CLS (4.28), HCS (4.26) were extremely aware. However, students from the other programs were highly aware of the Infotrac and Britannica Academic Online.

**Table 3. Students’ Utilization of Infotrac and Britannica Academic Online When Taken as a Whole According to Gender, Site, Year Level and Degree Program**

|  |  |  |
| --- | --- | --- |
| **Category** | **Mean** | **Description** |
| **As a Whole** | **4.19** | **Often Utilized** |
| **Gender**  Male  Female | 4.12  4.25 | Often Utilized  Always utilized |
| **Site**  La Fiesta  Magdalo  Tigbauan | 4.22  4.16  4.06 | Always utilized  Often Utilized  Often Utilized |
| **Year Level**  First Year  Second Year  Third Year  Fourth Year | 4.10  4.17  4.21  4.04 | Often Utilized  Often Utilized  Always Utilized  Often Utilized |
| **Degree Program**  BSHRM  CLS  BSHM  BSTM  HCS  BSMar –E  BSMT  ASBS  BS Criminology  HRS | 4.17  4.14  4.21  4.18  4.45  4.25  4.05  4.28  3.94  4.54 | Often Utilized  often Utilized  Always Utilized  Often Utilized  Always Utilized  Always Utilized  Often Utilized  Always Utilized  Often utilized  Always Utilized |

Legend:

4.21 - 5.00 Always Utilized

3.41 - 4.20 Often Utilized

2.61 - 3.40 Sometimes Utilized

1.81 - 2.60 Rarely Utilized

1.00 - 1.80 Never Utilized

Table 3 showed that when taken as a whole, the students often utilized the Infotrac and Britannica Academic Online in their research works with a mean score of 4.19. When they were grouped according to gender, it was found out that female students (4.25) always utilized the Infotrac and Britannica Academic online, compare to the male students (4.12) who often utilized them during their research works. This only shows that female students were more diligent and resourceful in doing their research. When grouped according to site, the data showed that students from La Fiesta site (4.22) always utilized the Infotrac and Britannica Academic online, whereas, students from Magdalo (4.16) and Tigbauan sites (4.06) often utilized them. When grouped according to year level, it was found out that the third year students (4.21) always utilized the Infotrac and Britannica Academic online in their research, while second year (4.17), first year (4.10) and fourth year (4.04) students often utilized them in doing their research works. Moreover, when the students were grouped according to degree program, HRS (4.54), HCS (4.45), ASBS (4.28), BS Mar-E (4.25) and BSHM students (4.21) always utilized the Infotrac and Britannica Academic online in their research. However, the data also pointed out that BS Criminology students (3.94) got the lowest utilization.

**Table 4.A. ANOVA Results of Students’ Differences on the Awareness of Infotrac and Britannica Academic Online when grouped According to Year Level**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** | **Description** |
| Infotrac Awareness  Between Groups  Within Groups  Total | 1.927  533.054  534.981 | 3  904  907 | 0.642  0.590 | 1.089 | 0.353 | Not Significant |
| Britannica Academic  Online Awareness  Between Groups  Within Groups  Total | 5.253  633.962  639.214 | 3  904  907 | 1.751  0.701 | 2.497 | 0.059 | Not Significant |

**Significant Value = 0.05**

As shown in Table 4.A. ANOVA result showed that the awareness of the students regarding Infotrac and Britannica Academic online do not differ significantly when grouped according to year level, F=1.089; sig 0.353 > p-value of 0.05; F=2.497; sig.059 > p-value of 0.05, thus, the null hypothesis is not rejected.

**Table 4.B ANOVA Results of Students’ Differences on the Awareness of Infotrac and Britannica Academic Online when grouped According to Site**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Sum of Squares** | **Df** | **Mean Square** | **F** | **Sig.** | **Description** |
| Infotrac Awareness  Between Groups  Within Groups  Total | 4.401  530.580  534.981 | 2  905  907 | 2.200  0.586 | 3.753 | 0.024\* | Significant |
| Britannica Academic  Online Awareness  Between Groups  Within Groups  Total | 4.026  635.188  639.214 | 2  905  907 | 2.013  0.671 | 2.868 | 0.057 | Not Significant |

**Significant Value = 0.05**

When the respondents were grouped by site, ANOVA result in Table 4.B showed that the awareness of the students regarding the Infotrac differ significantly when grouped according to site,

F= 3.753; sig= 0.024 < p-value of 0.05, thus, the null hypothesis is rejected. On the other hand, students’ awareness of Britannica Academic online, do not differ significantly when grouped according to site, F=2.868; sig 0.057 > p-value of 0.05, therefore, the null hypothesis is not rejected

**Table 4.C. T-Test Results of the Students’ Awareness of Infotrac and Britannica Academic Online When Grouped according to Gender**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **T** | **Df** | **Sig. (2-tailed)** | **Decision** | **Description** |
| Infotrac Awareness | -2.574 | 906 | 0.010 | Reject Ho | Significant |
| Britannica Academic Online Awareness | -2.043 | 906 | 0.041 | Reject Ho | Significant |

**Significant Value = 0.05**

t-test for independent sample result shows that in terms of Infotrac awareness, the t-value showed that there is a significant differences in the awareness of students of the Infotrac in the library according to gender t=-2.574, df=906; sig (2-tailed)=0.010, which is lower than the p-value of 0.05. Thus the null hypothesis is rejected. It is significant because the students find the Infotrac easy and convenient to use. Also it is downloadable and can be printed.

In terms of Britannica Academic Online, there is a significant differences in the awareness of students when grouped according to gender with t-value =2.043, df=906; sig (2-tailed)=0 .041, which is lower than the p-value of 0.05, therefore the null hypothesis is rejected. The students find it significant because Britannica Academic online is convenient to use. Although it is an encyclopedia, it also includes video clips and it has journals and periodicals to offer.

**Table 5. T-Test Results of the Students’ Utilization of Infotrac and Britannica Academic Online When Grouped according to Gender**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **T** | **Df** | **Sig. (2-tailed)** | **Decision** | **Description** |
| Utilization of  Infotrac and Britannica Academic Online | -2.088 | 906 | 0.037 | Reject Ho | Significant |

The utilization of Infotrac and Academic Britannica Online, differ significantly when grouped according to gender, with t-value of -2.088, df=41, sig (2-tailed)= 0.037 < p-value of 0.05.Therefore, the null hypothesis rejected.

**Table 6. Relationship between Students’ Awareness and Utilization of Infotrac and Britannica Academic Online**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **R** | **Sig.**  **p-value** | **Reason** | **Description** |
| Awareness and Utilization of both Infotrac and Britannica Academic Online | 0.829 | 0.000\*\* | Reject Ho | Significant |

**\*\* Significant @ 0.01 level (2-tailed)**

Table 6 above showed the relationship of students’ awareness and utilization of Infotrac and Britannica Academic Online, using Pearson r correlation. The data revealed that there is a significant correlation between students’ awareness and utilization of the Infotrac and Britannica Academic Online (r=0.829, sig. (2-tailed)= 0.000), which implied that when the awareness of the students in Infotrac and Britannica Academic online increases then their utilization also increases or vice versa.

There is a very high correlation (0.829), because the students find both Infotrac and Britannica Academic online easy and convenient to use and it is user friendly, date gleaned from the students. According to them the topics they want search is also downloadable and can be printed immediately.

**FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

This chapter presents the summary of findings, conclusions and recommendations.

**Findings of the Study**

1. The students were highly aware of the Infotrac and Britannica Academic Online when grouped as a whole. When grouped according to gender, both female and male students were highly aware of the Infotrac and Britannica Academic Online in the library. As to site, students from the three sites were highly aware where in La Fiesta got the highest mean score, followed by Magdalo then Tigbauan. When they were grouped according to year level, majority of the students in all levels from fourth year to first year were highly aware of the Infotrac and Britannica Academic. As to degree program, students taking up HRS, CLS, and were extremely aware while the rest of the programs were highly aware.
2. The students often utilized the Infotrac and Britannica Academic Online when taken as a whole. When they were grouped according to gender, it was found out that the female students always utilized the Infotrac and Britannica Academic Online compare to the male students who often utilized them. As to site, students from La Fiesta always utilized them, whereas students from Magdalo and Tigbauan sites often utilized the Infotrac and Britannica Academic Online. When grouped according to year level, the third year students were found out that they always utilized the Infotrac and Britannica Academic Online while the second year, first year and fourth students often utilized. Moreover, when they were grouped according to degree program, students taking up HRS, HCS, ASBS, BSMar-E and BSHM always utilized the Infotrac and Britannica Academic Online. BS Criminology students got the lowest mean of utilization.
3. Students’ differences on the awareness of Infotrac and Britannica Academic online do not differ when grouped according to year level, so the null hypothesis is not rejected.
4. When the respondents were grouped according to site,
5. Students’ awareness of the infotrac differ significantly, therefore the null hypothesis is rejected. On the other hand, students’ awareness of Britannica Academic online does not differ significantly when grouped by site, so the null hypothesis is not rejected.
6. t-test for independent sample result shows that in terms of Infotrac awareness, the t-value showed that there is a significant differences in the students’ awareness when grouped by gender, so the null hypothesis is rejected. In terms of Britannica Academic Online, there is a significant difference in the awareness of students when grouped according to gender, therefore the null hypothesis is rejected.
7. When the respondents were grouped by gender, students’ utilization of Infotrac and Britannica Academic Online differ significantly, therefore the null hypothesis is rejected.
8. Students’ relationship between awareness and utilization of Infotrac and Britannica Academic online using Pearson r correlation revealed that there is a significant correlation between them. The relationship was found to be positively very high. This result implied that when the awareness in Infotrac and Britannica Academic online increases then their utilization also increases or vice-versa.

**Conclusions**

In view of the findings, the following conclusions were drawn:

1. When grouped according to year level, ANOVA result showed that students’ awareness of the Infotrac and Britannica Academic online do not differ significantly, therefore the null hypothesis is not rejected.
2. When the respondents were grouped by site, ANOVA result showed that there is a significant difference in the awareness of students on the Infotrac, thus the null hypothesis is rejected. However, students’ awareness of the Britannica Academic online do not differ significantly when grouped by site, therefore the null hypothesis is not rejected.
3. There is a significant difference in the level of awareness of students in Infotrac and Britannica Academic Online.
4. Students’ utilization of Infotrac and Britannica Academic online differ significantly when grouped according to gender, thus the null hypothesis is rejected.
5. There is a very high positive relationship between students’ awareness and utilization of both the Infotrac and Britannica Academic online, which implied that when the awareness of the students of Infotrac and Britannica Academic online increases their utilization also increases and vice versa.

**Recommendations**

1. The librarians from the different academic sites should exert more effort to encourage students to utilized the Infotrac and Britannica Academic Online. The Library Orientation is the best venue to do this. The librarians should conduct a per section orientation/formal instruction to fully introduce the Infotrac and Britannica Academic Online. It is also a way to promote the use of online resources available in our library for their studies especially in their research.
2. Faculty members are encouraged to give advanced research studies and library research works to students especially the BS Criminology students to increase their utilization of the Infotrac and Britannica Academic Online.
3. The administration should consider to increase the library fee or additional library budget that will help augment the library expenses in providing more beneficial services for the improvement of the learning environment of the millennial learners.

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**DIFFICULTIES OF CLS GRADUATES OF ST. THERESE MTC COLLEGES TO GET EMPLOYED**

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**Abstract**

This study was limited only to the students of St. Therese MTC Colleges La Fiesta Site as respondents on the Difficulties of CLS Graduate of St. Therese MTC Colleges to Get Employed. The researchers conducted this study to get information about the difficulties the graduates encountered during employment.

Moreover, the study made use of qualitative research and used purposive sampling. The participants were 45 students of St. Therese MTC Colleges La Fiesta Site who are considered key informants who have valuable information regarding the Difficulties of CLS Graduate of St. Therese MTC Colleges to Get Employed.

The result of the study revealed that most of the respondents believed that the causes of their difficulties to get employed are lack of Financial support, lack of Self-confidence and No Backer. The selected students from St. Therese MTC Colleges were still hoping to improve the difficulties they encountered to have a stable and productive job.

Recommendations included are for the students to learn to balance their academic performance and their co-curricular activities. For the teachers, to remind their students to maintain academic excellent, while to the guidance counselors, to design a counseling program to assist the student to be successful in their career after graduation. Lastly, to the school administrations, they should assist the students to find employment opportunities.

**INTRODUCTION**

**Background of the Study**

No matter how good you are at your job, at some point in your career, you are likely to experience at least one sort of work-place difficulty. It could be bullying, work-related stress, redundancy, being fired, or any manner of negative situations that may happen. Everyone reacts differently to these circumstances. For example, someone who has been making others redundant for years, and has seen everything that is involved, may just ‘fall apart’ when it finally happens to them.

When you are in the middle of the situation, it can often help to talk to someone who not only understands the situation you are in, but can relate to the work that you do, and can help you with strategies, that will not only assist you in rebuilding yourself, but put your career back on track, too.

Cruiseline is a company that operates cruise ships and markets cruises on oceans or rivers to the public. Cruiselines are distinct from passenger lines which are primarily concerned with transportation of their passengers. Cruiselines have a dual character: they are partly in the transportation business, and partly in the leisure or entertainment business; a duality that carries down into the ships themselves, which have both a crew headed by the ship's captain, and hospitality staff headed by the equivalent of a hotel manager. Among cruise lines, some are direct descendants of the traditional passenger lines, while others were founded from the 1960s specifically for cruising. The business has been extremely volatile; the ships are massive capital expenditures with very high operating costs, and a slight dip in bookings can easily put a company out of business. Cruiselines frequently sell, renovate, or simply rename their ships just to keep up with travel trends. A wave of failures and consolidations in the 1990s has led to many companies to be bought by much larger holding companies and to operate as "brands" within larger corporations, much as a large automobile company holding several makes of cars. Brands exist partly because of repeat customer loyalty, and also to offer different levels of quality and service. For instance, Carnival Corporation &PLC owns both Carnival Cruise Line, whose former image was vessels that had a reputation as "party ships" for younger travellers, but have become large, modern, yet still profitable, and Holland America Line, whose ships cultivate an image of classic elegance.

**Statement of the Problem**

This study aimed to determine the difficulties of CLS Graduates of St. Therese MTC-Colleges, La Fiesta Site to Get Employed.

Specifically, it attempted to answer the following questions to better understand the problem.

1. What is the profile of the respondents in terms of age, year graduated, sex, co-curricular activities affiliation and academic performance?
2. What are the difficulties encountered by CLS graduates of St. Therese-MTC Colleges, La Fiesta Site as a whole and in terms of academic performance and co-curricular activities?
3. Is there a significant difference on the difficulties encountered by CLS graduates of St. Therese-MTC Colleges, La Fiesta Site in terms of academic performance and co-curricular activities?

**Null Hypothesis**

There is no significant difference in the difficulties encountered by CLS graduates of St. Therese-MTC Colleges, La Fiesta Site in terms of academic performance and co-curricular activities.

**Definition of Terms**

For clarification, the essential terms used in this study were defined conceptually and operationally.

**Difficulties.** The fact of not being easy to do or understand (Cambridge Dictionary, 2020)**.**

In this study, difficulties refer to the reasons why CLS graduates cannot get employed immediately.

**Employment.** An agreement between an employer and as employee (Cambridge Dictionary, 2020)**.**

In this study, employment refers to someone who has a work that being paid off.

**Graduate.** A person who has successfully completed a degree at a university or college and has received a certificate that shows this (Cambridge Dictionary, 2020)**.**

In this study, graduate of CLS is the one who is ready to be employed.

**Significance of the Study**

This study is beneficial to the following:

**Students and Graduates of CLS courses.** Conducting this study is relevant because it might help in employment of graduates in the future. The students and graduates will know what are the reasons why there are so many unemployed graduates.

**School.** The school will identify strategies on how to develop or improve the students on the maritime courses.

**Future researchers.** This study can become a good reference to help them on their future researches.

**Scope and Limitation of the Study**

This study is limited to the difficulties experienced by the STMTCC CLS graduates in getting employment. These graduates are graduates of St. Therese MTC Colleges La Fiesta Site S.Y. 2014-2016. The respondents of the study were identified using the purposive sampling and the sample size was 45 graduates. The study was conducted from November 2018 to March 2019.

**REVIEW OF RELATED LITERATURE**

**Conceptual Literature**

St. Therese-MTC Colleges combined their forces in 1996 to make them a better and stronger school. It adopted the name St. Therese-MTC Colleges, composed of three sites, namely: La Fiesta, Tigbauan, and Magdalo.

St. Therese - MTC Colleges offers a higher education or courses in collegiate level in Iloilo City, Philippines, which commonly called the Maritime School. St. Therese – MTC colleges used to be St. Therese College – La Fiesta and Maritime Training Center (MTC) which merged to become St. Therese – MTC Colleges.

St. Therese-MTC Colleges conducts an outcomes-based education, training, assessment and research with local, national and international standards integrating the core values of the college.

St. Therese-MTC Colleges shall manage risks by evaluating all possible incidents that affect the College in order to prevent the occurrence or negative impact to the institution and its stakeholders and interested parties.

St. Therese-MTC Colleges is an institution accredited by TESDA that offers Technical and Vocational Education and Training Programs (TVET) under the Technical Education and Skills Development Authority (TESDA) and the Commission on Higher Education (CHED).

**Related Foreign Studies**

In this study by Mushtaq and Khan (2012**) “Factors Affecting Students’ Academic Performance”,** they disclosed thatmany practical studies are carried out to investigate factors affecting college students’ performance. The focus of this research is that student performance in intermediate examination is linked with students’ outline consisted of his approach towards communication, learning facilities, proper guidance and family stress. The research is based on student profile developed on the bases of information and data collected through assessment from students of a group of private colleges.

This study is related to our study because it aimed to determine the factors affecting students’ academic performance.

The study of Baking et al., (2015) **“Employability and productivity of graduates: an Exploratory analysis of program strengths and Weaknesses”,** reveled thatthe purpose of the study was to assess the employability and productivity of the graduates across programs in aid of policy formulation and curricular enhancement. The study asked 630 randomly selected respondents from the College of Education, Engineering, and Architecture to respond to a questionnaire that sought information on the employability and productivity of the graduates. The findings revealed that the graduates of Don Honorio Ventura Technological State University are highly employable, and that a great majority of them have jobs aligned with their pre-service preparations. The graduates were found to be highly productive in terms of their perceived readiness on the requirements of their jobs. In terms of their performance in licensure examination, education, civil engineering, and electronics and communication engineering graduates performed much higher than the national passing rates; but not for the electrical and mechanical engineering and architecture graduates. Some operational strategies and control mechanisms are deemed exigent to further improve the productivity of the graduates.

This study is related to our study since it assessed the employability and productivity of the graduates.

Another study by Dimalaluan et al., (2017) “**Problems and Difficulties Encountered and Training Needs of College Students: Basis for Improving Guidance and Counseling Services”**, found out that finishing college education nowadays is very challenging. These challenges come in the form of problems and difficulties that students need to overcome in order for them to finish college. Identifying these problems provides information on improving the student guidance and counseling services of the school. It helps students handle the challenges of academic life, thus giving them a better chance to survive and finish College. This study was conducted for the purpose of determining the problems and difficulties encountered by college students. This study was conducted at WPU-Quezon Campus, and a total of 300 students - enrolled during the first semester of SY 2015-2016 - were considered as respondents of the study. Descriptive statistics was employed in describing the data gathered, such as frequency counts, averages, rankings, and percentages. The data revealed that most of the problems encountered were personal related problems such as: time management, unexplainable fear of failure in exams, lack of self-confidence, poor study habits, nervousness, and lack of self-control. It was also noted that the majority of students did not seek guidance and counseling from the school counselor, instead, they tried to solve their own problems. This study recommended that the student guidance and counseling services of the school should provide intervention activities, such as seminars, training, workshops, retreat and symposia, which will empower students in handling their problems.

This study is related to our study because it aimed to determine the problems and difficulties encountered by college students.

Another study by De Castro (2017) **“Tracer Study of Hotel and Restaurant Management Graduates of One State College in the Philippines from 2014-2016”**, showed that descriptive quantitative design was used in this study. This study found that majority of graduates were successfully employed locally and internationally, but only few are working internationally because of extreme qualification and ample requirements. Majority acquired their first job in less than three months. Ironically, the graduates still had a struggle or difficulty in finding a job because of few job vacancies or lack of position or item. Most of them are working in hotels and fast food stores. Most of them also have their jobs relevant to their field of expertise and are regular employees. Majority of them received a gross monthly salary of 5,000 to less than 10,000 which may not be practically enough, especially for those who have family dependents and other special responsibilities. The place whether local or international, position, and type of company are factors that affect type of salary that the employee receives. Those who work internationally receive more than those who work locally or in the Philippines. All of the skills (i.e. entrepreneurship skills, knowledge and technical skills, management and critical thinking skills, oral and written communication skills, human relation skills, problem-solving skills, and information technology skills) are believed to have been useful, helpful and relevant to their current employment.

This study is related to our study because it aimed to determine the employability of the graduates of Bachelors of Science in Hotel and Restaurant Management of one State College in the Philippines.

Another study by Milan (2010) **“Oversupply of Unemployable Graduates”,** found out that the country’s education system continues to turn out college graduates whose training and skills are not attuned to the needs of the labor market both at home and abroad. This is the lament of human resources and labor recruitment officials who decry the continuing popularity of glamorous and white-collar courses that produce diplomas but not well-paying jobs. The criticism had been voiced many times in the past by business leaders and politicians but both government and the private sectors have failed to institute meaningful and concrete measures to correct the mismatch between skills and jobs. The issue gains added urgency in view of the government’s inability to provide jobs and its continued dependence on the overseas job market. The problem is that Philippine education is not well-suited to the requirements of the global economy as well.

“Many overseas employment opportunities abound in sub-specialties of various occupations but the Philippine educational system is either ill-equipped and/or unprepared to offer corresponding courses to the demand but rather do a ‘one course fits all’ mentality,” says recruitment consultant Emmanuel Geslani.

This, he says, has led to “a disastrous oversupply of unemployable graduates.”

“In-demand careers like respiratory therapists, cardio technicians, laboratory, ct-scan, are often passed over in favor of more high-profile careers like nurses, says Geslani.

This is related to our study since it relayed to us that the educational system continuously oversupplying unemployed graduates.

**Related Foreign Studies**

In this study by Womujuni (2007) **“The Challenges International Students Face in Adjusting to their New Status as Graduate Students: An Exploratory Case”,** revealed that on the last several years, the number of international students attending colleges and universities in the United States had increased substantially. While considerable time, effort, and university resources are often devoted to the recruitment of international students, It is unclear how well institutions are meeting the needs of these students. This growing number of international students requires foreign exchange professionals and university administrators to better understand the reasons why international students pursue higher education in the United States and the challenges they face. This exploratory case study examined the challenges international graduate students encountered in adjusting to their new status as graduate students. Six research questions framed this study: What difficulties do international students face in their first year in the graduate school? What adjustments do they need to make in their first year in the graduate school? What challenges do continuing international graduate students face? In what ways are perspectives of continuing international graduate students similar to perspectives of beginning international graduate students? What university support or resources do international graduate students say are helpful? What PSU support resources are needed, but missing? The relevant literature addresses academic, social, psychological, cultural, financial, and housing adjustment challenges. The data for this research were collected by interviewing and surveying international graduate students at PSU. Data were analyzed using standard methods of qualitative data analysis. Consistent with the results from other research, this study revealed the following adjustment challenges: unsatisfactory accommodation; inadequate financial resources; lack of culturally specific programs that are intentional, flexible and accessible; unfamiliarity with the new educational system; limited English proficiency; undeveloped infrastructure for on-going orientation; insufficient health services information; and unavailability of international student mentoring programs. The findings of this study have the potential to inform both researchers and practitioners as institution’s attempt to create sufficient international student support services.

This study is related to our study because it was about the challenges of international students adjusting to their status as graduates.

Another study by Jun (2011) **“Factors Affecting Employment and Unemployment for Fresh Graduates in China”,** disclosed that the factors such as college reputation, major, and gender, which affect job search prospects of graduates from Shandong Province in China, were studied. A duration model including parametric, semi-parametric, and nonparametric approaches were used and yielded several important findings. First, graduates find jobs faster if they come from the research universities. The study shows that economics and management, and engineering graduates find jobs more easily. Other major graduates have no significant difference although they are not more likely to find jobs than the former. Moreover, there is no remarkable gap between female and male graduates.

This is related to our study because it aimed to determine the factors affecting employment and unemployment of fresh graduates.

Another study by Abdullah and Mahfoodh (2016) **“Academic Reading Difficulties Encountered by International Graduate Students in a Malaysian University”,** showed that the target population included all graduate students from Yemen, an Arab country, studying at UniversitiSains Malaysia. Data were collected using questionnaires, focus group interviews, and journal writing. While quantitative data were analyzed using SPSS, qualitative data were analyzed through content analysis. The results showed that most of the academic reading difficulties faced by international graduate students were five: taking brief and relevant notes, using their own words in note taking, working out with meaning of difficult words, identifying supporting ideas/examples, and managing their time for completion of reading academic materials. To overcome academic reading difficulties, international graduate students used strategies such as enrolling in some intensive English language courses, attending workshops organized in the University, attending colloquiums organized in their schools, getting help from other graduate students, and reading books on English for academic purposes.

This study is related to our study since it examined how international graduate students in a Malaysian public university perceived and overcome academic reading difficulties.

Another study by Titrek et al., (2016) **“The Socio-cultural, Financial and Education Problems of International Postgraduate Students in Turkey”.** Qualitative research method was used in this research and standardized and tightly structured interview form was used to address questions as a data collection tool in the study. During the interview, objectively investigators helped the participants because they were not good at speaking Turkish. The study sample included 20 postgraduate international students from several departments at the institutes of natural and applied sciences and social sciences of Sakarya University, 2015 - 2016 academic year voluntarily. Maximum range sample technique was used in identifying the study group. In the analytical part of the study, descriptive analysis technique that is one of the qualitative research techniques was used to facilitate the thematic classification of data and get a detailed description of condition. The result of the study determined that international students were not living at desired level economically and homesickness. Also other serious problems at the beginning of the process. Participants did not have many difficulties about harboring. In the title of human relations, international students stated that Turkish people and Turkey close themselves; also they did not have problems about it generally about racism. They could not communicate face to face often. Instead they used telephones, internet etc. devices to communication. Participants expressed that they did not have problems about the Turkish food generally, moreover they found close to Turkish foods. While in the case of clothing, it was determined that there was no problem about clothing, everyone could wear traditional clothes that what they wanted easily. Also they did not suffer from their clothing style. About the traditional statement, their closeness to Turkish culture came into prominence. It was identified that participants could easily perform situations that include their traditions. It was not confirmed that they got into trouble about their religious belief. Under the education topic, difficulty of learning language was emphasized, so they expressed even if just a smidgen their challenges about both lectures and daily life. They said that they took support from their faculty members and classmates to overcome this hardship.

This study is related to our studysince it aimed to analyze and investigate the predicaments that were categorized by the investigators according to education and life conditions of postgraduate international students.

Another study by Ruiz and Budiman (2018) **“Number of Foreign College Students Staying and Working in U.S. After Graduation Surges”.** Between 2004 and 2016, nearly 1.5 million foreign graduates of U.S. colleges and universities obtained authorization to remain and work in the U.S. through the federal government’s Optional Practical Training program (OPT). More than half (53%) of the foreign graduates approved for employment of those who specialized in science, technology, engineering and mathematics (STEM) fields, according to a Pew Research Center analysis of U.S. Immigration and Customs Enforcement (ICE) data received through a Freedom of Information Act. Many foreign STEM graduates enrolled with OPT after executive actions in 2008 and 2016 initially doubled (29 months), then later tripled (36 months), the maximum length of employment for foreign students with STEM degrees. The number of foreign STEM graduates participating in OPT grew by 400% since the first employment extension was introduced in 2008. OPT is one mechanism by which the U.S. can compete with other countries for top talent. It is less well-known than the H-1B visa program – which enables U.S. companies to hire highly skilled foreign workers and is the nation’s largest temporary employment visa program – yet OPT approvals actually outnumbered initial H-1B visa approvals in recent years. In addition, OPT’s eligible population has been on the rise: Between 2008 and 2016, new college enrollments among foreign students on F-1 visas grew 104%.

This study is related to our study because it determined the number of students staying and working in the U.S. after their graduation surged.

**Theoretical Framework**

[**Expectancy Theory**](http://en.wikipedia.org/wiki/Expectancy_theory) proposes that people will choose how to behave depending on the outcomes they expect as a result of their behavior. In other words, we decide what to do based on what outcome we expect to be. At work, it might be that we work for longer hours because we expect a pay rise. However, Expectancy Theory also suggests that the process by which we decide our behaviors is also influenced by how likely we perceive those rewards to be. In this instance, workers may be more likely to work harder if they had been promised a pay rise (and thus perceived that outcome as very likely) than if they had only assumed they might get one (and perceived the outcome as possible but not likely)

Expectancy Theory is based on three elements:

1. Expectancy – the belief that your effort will result in your desired goal. This is based on your past experience, your self-confidence and how difficult you think the goal is to achieve.
2. Instrumentality – the belief that you will receive a reward if you meet performance expectations.
3. Valence – the value you place on the reward.

Therefore, according to Expectancy Theory, people are most motivated if they believe that they will receive a desired reward if they hit an achievable target. They are least motivated if they do not want the reward or they do not believe that their efforts will be rewarded. The key here is to set achievable goals for your employees and reward them. Rewards do not have to come in the form of pay rises, bonuses or all-expenses paid nights out.

Praise, opportunities to progress and “employee of the month” style of rewards can all go a long way in motivating the employees.

**Conceptual Framework**

This study is conducted in order to determine the Difficulties of CLS Graduates of St. Therese MTC Colleges, La Fiesta Site to get employed. The Independent variables are the graduates of CLS, grades, and co-curricular activities. While the Dependent variables are the Difficulties of CLS Graduates of St. Therese MTC Colleges, La Fiesta Site to get employed and performance of graduates in terms of grades, and co-curricular activities.

**Research Paradigm**

Dependent

Variable

Process

Variables

Independent

Variable

-Reasons why graduates of St. Therese MTC Colleges La Fiesta Site cannot be employed immediately.

-Performance of graduates in terms of grades, and co-curricular activities when taken as a whole.

-Significant difference on the reasons why graduates of St. Therese MTC Colleges La Fiesta Site cannot be employed immediately.

Sex

Age

Year Graduated

Co-curricular Activities membership

- Determining what are the reasons why graduates of St. Therese MTC Colleges La Fiesta Site cannot be employed immediately.

- Determining the academic performance of graduates in terms of grades, and co-curricular activities when taken as a whole.

- Determining if there is a significant difference in the reasons why graduates of St. Therese MTC Colleges La Fiesta Site cannot be employed immediately.

- Determining if there is a significant difference on the performance of the graduates in terms of grades, and co-curricular activities.

**Figure 1. Shows the relationship between the Independent Variables, Process Variables and Dependent Variables.**

**Chapter III**

**Methodology**

**Nature of Research Design**

In this study, the researchers used the descriptive design. Descriptive type of study find answers to the questions who, what, when, and how. This type of research depicts the participants or respondents in an accurate way. Descriptive research design is appropriate in determining the employment of the CLS graduates of St. Therese MTC Colleges, La Fiesta Site if they are working in line with their specialized field.

**Respondents of the Study**

The respondents for this study were 45 graduates of ST-MTCC La Fiesta Site from batch 2014 up to batch 2016. Most respondents of the study were found at different types of industry because of stiff competition of employment opportunities. Some of the respondents experienced the job mismatch wherein they were not employed in line with their respective field for which they were trained.

The respondents of the study graduates at STMTCC, La Fiesta Site from Batch 2014 up to 2016, and especially respondents who are willing to participate in the study. Researchers selected them as the respondents of this study because the researchers only intended to include the graduates of STMTCC, La Fiesta Site from batch 2014 up to 2016. This research was not applicable to those who are not graduates of the school and it is designed for the graduates in order for the researchers to determine their employment status and length of unemployment. It also aimed to find out if the graduates are experiencing the job-major-mismatch to determine if they are working in line with their specialized field.

**Sampling Techniques**

The purpose of choosing a good sample design method is for the researchers to obtain the samples from the selected respondents consisting of 45 graduates of ST-MTCC, La Fiesta, Batch 2014 up to batch 2016. Purposive sampling type of non-probability which is commonly used when it is difficult to identify members of the desired population (Saunders 2015), this sampling design was applied in the study since the researchers aimed to find out the employment status of the graduates and if the graduates are working in line within their specialized fields.

**Research Instrument**

The study entitled “Difficulties of CLS Graduates of St. Therese MTC Colleges to Get Employed”, was intended only for the graduates of STMTCC La Fiesta Site, Batch 2014-2016. In conducting this study, the researchers were required to conduct a survey among identified respondents through the researcher-made questionnaire.

**Validity of Research Instrument**

A copy of the questionnaire was given to the Research Adviser for corrections. It was checked and clarified by the researchers regarding what questions will be included for the final survey and it was submitted to the 3 experts to help validator compose the research instrument. Afterwards, the validators were given time to check and analyze the questionnaire, and after checking, corrections and new suggestions that need to be taken out by the researchers. All comments, corrections and recommendations were incorporated in the final copy of the questionnaire and the copies of the corrected questionnaire were submitted to the three experts for content validity using the Eight-point criteria by Good and Scates. After all the items were checked, the questionnaire was considered valid. All comments, corrections, and recommendations were incorporated in the questionnaire.

**Reliability of the Research Instrument**

To make sure that there is consistency on the reliability of our study, the research instrument was pre-tested to the graduates of St. Therese MTC Colleges La fiesta Site. Those people did not join the pre-test survey as they were not included in the final list of respondents. The questionnaire was subjected to reliability testing using the Cronbach Alpha Coefficient and the result should be 0.70 and higher for the instrument to be reliable.

**Data Gathering Procedure**

First, the researchers filled out the Application to Conduct Research and submitted to the research instructor and for the signature of the RDD/RDC and the President. Next, the researchers sent a letter to the identified validators to be asked for permission to check and validate the survey form to be deployed in the study together with an Eight-point criteria by Good and Scates and a copy of the questionnaire. After the survey form/research instrument was finalized, it was signed and validated by the expert. This study entitled “Difficulties of CLS Graduates of St. Therese MTC Colleges to Get Employed” which is a Quanti-Quali research following the scientific method in gathering data.

**Statistical Tools Used**

The analysis and the interpretations of the different data that were gathered in this study was divided into two parts: the descriptive and the inferential analysis.

In the descriptive analysis of the different data gathered, these different statistical tools were used:

**Frequency Count.** This was used by the researchers to present the data gathered in a systematic format to establish the clear idea of the data.

**Percentage.** This was used by the researchers to determine the percentage of the total from a series of numbers.

**Chi Square Test.** This statistical tool was used to determine if there is significant difference between or among the variables used in the study, or to establish association between two or more variables.

**Chapter IV**

**Presentation, Analysis and Interpretation of Data**

The data gathered from the questionnaires by the researchers were tallied, tabulated and presented in this part of the study.

This study aimed to determine the difficulties of CLS Graduates of St. Therese MTC Colleges, La Fiesta Site, to get employed.

**S**pecifically, it sought to answer the following questions to better understand the problem.

1. What is the profile of the respondents in terms of age, year graduated, sex, co-curricular activities affiliation and academic performance?
2. What are the difficulties encountered by CLS graduates of St. Therese MTC Colleges La Fiesta Site b as a whole and in terms of academic performance and co-curricular activities?
3. Is there a significant difference in the difficulties encountered by CLS graduates of St. Therese MTC Colleges La Fiesta Site in terms of academic performance and co-curricular activities?

**1. Profile of Respondents**

The different data involving the profile of the respondents are presented in Table 1. The data in the table, revealed that 42% (N=19) of the respondents are aging 26-27 years old, 38% (N=17) are aging 24-25 years old, while 20% (N=9) of them are aging 28-29 years old. . In case of sex, 53% (N=24) of the respondents was female, while 47% (N=21) of them were male. In terms of year graduated, 42% (N=19) graduated last 2016, 38% (N=17) in 2015, whereas, 20% (N=9) graduated in 2014. With regards to affiliation to co-curricular activities, 56% (N=25) were club members, 38% (N=17) were affiliated to a dance group, 29% ( N=13) were athletes. However, it was noted that 22% (N=10) of them were not active members of any organization. Furthermore, in terms of academic performance, 73% (N=33) of the participants had a good academic performance, 22% got a fair academic performance, while 5% of them registered a very good academic performance.

**Table 1.Profile of Respondents**

|  |  |  |
| --- | --- | --- |
| Profile | Frequency | Percent |
| A. Whole | 45 | 100% |
| B. Age |  |  |
| B.1 24 – 25 Years Old | 17 | 38% |
| B.2 26 – 27 Years Old | 19 | 42% |
| B.3 28 – 29 Years Old | 9 | 20% |
| C. Sex |  |  |
| C.1 Male | 21 | 47% |
| C.2 Female | 24 | 53% |
| D. Year Graduated |  |  |
| D.1 Batch 2014 | 9 | 20% |
| D.2 Batch 2015 | 17 | 38% |
| D.3 Batch 2016 | 19 | 42% |
| E. Co-curricular Activities Affiliation |  |  |
| E.1 Athlete | 13 | 29% |
| E.2 Club | 25 | 56% |
| E.3 Dancer | 17 | 38% |
| E.4 Skills Competition | 5 | 11% |
| E.5 Outreach Program | 5 | 11% |
| E.6 Not Active | 10 | 22% |
| F. Academic Performance |  |  |
| F.1 80-84 ( Fair) | 10 | 22% |
| F.2 85-89 (Good) | 33 | 73% |
| F.3 90-94 (Very Good) | 2 | 5% |

**2. Difficulties Encountered by CLS Graduates of St. Therese MTC Colleges La Fiesta Site as a Whole and in terms of Grades and Co-curricular Activities**

Table 2 presents the different data regarding difficulties of CLS graduates of St. Therese MTC Colleges, La Fiesta site, as a whole.

The different data indicated that 9% to 64% of the participants of the CLS graduates experienced the difficulties listed in this study. Among these participants, 64% experienced financial support difficulties, followed by 38% who had experienced lack of self-confidence, then lack of backer was experienced by 27% of the participants.

On the other hand, majority or 36% to 91% of the graduates indicated that they have never experienced the difficulties listed in this study. A closer look of the data revealed that 91% of them did not experience short validity of training certificate as difficulties, followed by 89% who said that they never experienced medical problems, lack of experience and strong competition as difficulties in landing a job, and 84% who said that they never experienced communication barrier as difficulty in attaining a job.

**Table 2. Difficulties Encountered by CLS graduates of St. Therese MTC Colleges La Fiesta Site When taken as a Whole**

|  |  |  |
| --- | --- | --- |
| Difficulties | Frequency | Percent |
| Medical Problem |  |  |
| Not Experienced | 40 | 89% |
| Experienced | 5 | 11% |
| Financial Support |  |  |
| Not Experienced | 16 | 36% |
| Experienced | 29 | 64% |
| No Backer |  |  |
| Not Experienced | 33 | 73% |
| Experienced | 12 | 27% |
| Lack of Experience |  |  |
| Not Experienced | 40 | 89% |
| Experienced | 5 | 11% |
| Short Validity of Training Certificate |  |  |
| Not Experienced | 41 | 91% |
| Experienced | 4 | 9% |
| No Available Company to apply |  |  |
| Not Experienced | 37 | 82% |
| Experienced | 8 | 18% |
| low Grades |  |  |
| Not Experienced | 35 | 78% |
| Experienced | 10 | 22% |
| Communication Barrier |  |  |
| Not Experienced | 38 | 84% |
| Experienced | 7 | 16% |
| Strong Competition |  |  |
| Not Experienced | 40 | 89% |
| Experienced | 5 | 11% |
| Lack of Trainings |  |  |
| Not Experienced | 37 | 82% |
| Experienced | 8 | 18% |
| Lack of Self Confidence |  |  |
| Not Experienced | 28 | 62% |
| Experienced | 17 | 38% |
| Multiple Rejection |  |  |
| Not Experienced | 41 | 91% |
| Experienced | 4 | 9% |
| Others |  |  |
| Not Experienced | 39 | 87% |
| Experienced | 6 | 13% |

In terms of difficulties encountered by STMTCC CLS graduates in landing a job when grouped by academic performance, the data highlighted that those who had experienced financial support as difficulty, six (6) of them got a good academic performance and four (4) of them got a fair academic performance. In terms of difficulties of having low grades, ten (10) of them got a fair academic performance. Further, in terms of lack of self-confidence as difficulty of landing a job, thirteen (13) got a good academic performance.

On the other hand, those who did not experience these difficulties, the data pointed out that those who did not experience having low grades as difficulty, 33 of them got a good academic performance. For not experiencing short validity of training certificate as difficulty, 32 of them got a good academic performance, while for those graduates who did not experience the difficulties listed here, 30 of them got a good academic performance.

**Table 3. Difficulties Encountered by CLS Graduates of St. Therese MTC Colleges**

**La Fiesta Site When grouped by Academic Performance**

|  |  |  |  |
| --- | --- | --- | --- |
| Difficulties | Fair Academic Performance  (80 – 84) | Good Academic Performance  (85 – 89) | Very Good Academic Performance  (90 – 94) |
| Medical Problem |  |  |  |
| Not Experienced | 9 | 29 | 2 |
| Experienced | 1 | 4 | 0 |
| Financial Support |  |  |  |
| Not Experienced | 4 | 10 | 2 |
| Experienced | 6 | 23 | 0 |
| No Backer |  |  |  |
| Not Experienced | 7 | 24 | 2 |
| Experienced | 3 | 9 | 0 |
| Lack of Experience |  |  |  |
| Not Experienced | 9 | 29 | 2 |
| Experienced | 1 | 4 | 0 |
| Short Validity of Training Certificate |  |  |  |
| Not Experienced | 7 | 32 | 2 |
| Experienced | 3 | 1 | 0 |
| No Available Company to apply |  |  |  |
| Not Experienced | 9 | 26 | 2 |
| Experienced | 1 | 7 | 0 |
| Low Grades |  |  |  |
| Not Experienced | 0 | 33 | 2 |
| Experienced | 10 | 0 | 0 |
| Communication Barrier |  |  |  |
| Not Experienced | 9 | 28 | 1 |
| Experienced | 1 | 5 | 1 |
| Strong Competition |  |  |  |
| Not Experienced | 9 | 29 | 2 |
| Experienced | 1 | 4 | 0 |
| Lack of Trainings |  |  |  |
| Not Experienced | 8 | 27 | 2 |
| Experienced | 2 | 6 | 0 |
| Lack of Self-Confidence |  |  |  |
| Not Experienced | 8 | 20 | 0 |
| Experienced | 2 | 13 | 2 |
| Multiple Rejection |  |  |  |
| Not Experienced | 10 | 29 | 2 |
| Experienced | 0 | 4 | 0 |
| Others |  |  |  |
| Not Experienced | 9 | 30 | 0 |
| Experienced | 1 | 3 | 2 |

Finally, for STMTCC CLS graduates, when they are grouped by co-curricular activities membership, the data showed that majority of them are not member of any school co-curricular activities. Whereas, for those who are members of any co-curricular activities, the data pointed out that for financial support difficulty which is the number 1 difficulty experienced by the participants, 14 of them are club members, 12 of them are dancers and 10 of them are athletes. For having experienced lack of self-confidence, the data disclosed that 11 of them are club members, 8 of them are dancers and 4 of them are athletes

**Table 4. Difficulties Encountered by CLS graduates of St. Therese MTC Colleges La Fiesta Site When grouped by Co-Curricular Activities Membership**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Difficulties | Athlete | | Club | | Dancer | | Skills Competition | | Outreach Program | | Not Active | |
|  | Not a Member | Member | Not a Member | Member | Not a Member | Member | Not a Member | Member | Not a Member | Member | Not a Member | Member |
| Medical Problem |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 27 | 13 | 19 | 21 | 24 | 16 | 35 | 5 | 35 | 5 | 31 | 9 |
| Experienced | 5 | 0 | 1 | 4 | 4 | 1 | 5 | 0 | 5 | 0 | 4 | 1 |
| Financial Support |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 13 | 3 | 5 | 11 | 11 | 5 | 16 | 0 | 16 | 0 | 14 | 2 |
| Experienced | 19 | 10 | 15 | 14 | 17 | 12 | 24 | 5 | 24 | 5 | 21 | 8 |
| No Backer |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 28 | 5 | 12 | 21 | 21 | 12 | 29 | 4 | 29 | 4 | 25 | 8 |
| Experienced | 4 | 8 | 8 | 4 | 7 | 5 | 11 | 1 | 11 | 1 | 10 | 2 |
| Lack of Experience |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 28 | 12 | 17 | 23 | 27 | 13 | 35 | 5 | 35 | 5 | 31 | 9 |
| Experienced | 4 | 1 | 3 | 2 | 1 | 4 | 5 | 0 | 5 | 0 | 4 | 1 |
| Short Validity of Training Certificate |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 29 | 12 | 19 | 22 | 27 | 14 | 37 | 4 | 37 | 4 | 31 | 10 |
| Experienced | 3 | 1 | 1 | 3 | 1 | 3 | 3 | 1 | 3 | 1 | 4 | 0 |
| No Available Company to apply |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 27 | 10 | 17 | 20 | 22 | 15 | 33 | 4 | 33 | 4 | 30 | 7 |
| Experienced | 5 | 3 | 3 | 5 | 6 | 2 | 7 | 1 | 7 | 1 | 5 | 3 |
| low Grades |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 26 | 9 | 12 | 23 | 21 | 14 | 32 | 3 | 32 | 3 | 29 | 6 |
| Experienced | 6 | 4 | 8 | 2 | 7 | 3 | 8 | 2 | 8 | 2 | 6 | 4 |
| Communication Barrier |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 27 | 11 | 17 | 21 | 25 | 13 | 34 | 4 | 34 | 4 | 29 | 9 |
| Experienced | 5 | 2 | 3 | 4 | 3 | 4 | 6 | 1 | 6 | 1 | 6 | 1 |
| Strong Competition |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 29 | 11 | 17 | 23 | 24 | 16 | 36 | 4 | 36 | 4 | 32 | 8 |
| Experienced | 3 | 2 | 3 | 2 | 4 | 1 | 4 | 1 | 4 | 1 | 3 | 2 |
| Lack of Trainings |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 27 | 10 | 16 | 21 | 24 | 13 | 33 | 4 | 32 | 5 | 30 | 7 |
| Experienced | 5 | 3 | 4 | 4 | 4 | 4 | 7 | 1 | 8 | 0 | 5 | 3 |
| Lack of Self-Confidence |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 19 | 9 | 14 | 14 | 19 | 9 | 25 | 3 | 24 | 4 | 21 | 7 |
| Experienced | 13 | 4 | 6 | 11 | 9 | 8 | 15 | 2 | 16 | 1 | 14 | 3 |
| Multiple Rejection |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 30 | 11 | 18 | 23 | 25 | 16 | 36 | 5 | 37 | 4 | 31 | 10 |
| Experienced | 2 | 2 | 2 | 2 | 3 | 1 | 4 | 0 | 3 | 1 | 4 | 0 |
| Others |  |  |  |  |  |  |  |  |  |  |  |  |
| Not Experienced | 28 | 11 | 18 | 21 | 23 | 16 | 36 | 3 | 36 | 3 | 29 | 10 |
| Experienced | 4 | 2 | 2 | 4 | 5 | 1 | 4 | 2 | 4 | 2 | 6 | 0 |

**3. Test of Significant difference in the difficulties encountered by CLS graduates of St. Therese MTC Colleges La Fiesta Site in terms of grades and co-curricular activities When Grouped By Grades**

The different results of testing the significant difference in the difficulties encountered by CLS graduates of St. Therese MTC Colleges, La Fiesta Site, in terms of grades and co-curricular activities difficulties when grouped by academic performance are presented in Tables 5 and 6 using the Chi-square. The Chi-square is a test of significant difference and association.

In Table 5, the result showed that there were significant difference in the difficulties namely Financial Support (X2= 7.097, p=.029, p<0.05), low Grades (X2= 45.000, p=.000, p<0.05), Lack of self Confidence (X2= 4.675, p=.037, p<0.05) and Multiple Rejection (X2= 13.610, p=.001, p<0.05). These results implied that financial support, low grades, lack of self confidence and multiple rejections as difficulties for employment are associated with the graduates’ employment. On the other hand, the difficulties for employment such as medical problem, no backer, lack of experience, short validity of training certificate, no available company to apply, communication barrier, strong competition, lack of trainings and other reasons (p>0.05) did not have any significant difference or not associated with the STMTCC CLS graduates’ difficulty in getting employment.

**Table 5. Results of Test of Significant difference in the Difficulties Encountered by CLS Graduates of St. Therese MTC Colleges La Fiesta Site in terms of Academic Performance by Grades**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Difficulties | X2 Value | df | Sig Value | Interpretation | Decision |
|  |  |  |  |  |  |
| **Medical Problem** | .297 | 2 | .862 | NS | Do not Reject Ho |
| **Financial Support** | 7.097 | 2 | .029 | S | Reject Ho |
| **No Backer** | .790 | 2 | .674 | NS | Do not Reject Ho |
| **Lack of Experience** | .297 | 2 | .862 | NS | Do not Reject Ho |
| Short Validity of Training Certificate | 4.109 | 2 | .128 | NS | Do not Reject Ho |
| **No Available Company to apply** | 1.113 | 2 | .573 | NS | Do not Reject Ho |
| low Grades | 45.000 | 2 | .000 | NS | Do not Reject Ho |
| **Communication Barrier** | 2.045 | 2 | .360 | NS | Do not Reject Ho |
| **Strong Competition** | .297 | 2 | .862 | NS | Do not Reject Ho |
| **Lack of Trainings** | .470 | 2 | .791 | NS | Do not Reject Ho |
| Lack of self Confidence | 4.675 | 2 | .037 | S | Reject Ho |
| Multiple Rejection | 13.610 | 2 | .001 | S | Reject Ho |
| **Others** | 1.596 | 2 | .450 | NS | Do not Reject Ho |

P=0.05 NS= Not Significant

S= Significant

When the respondents are grouped by membership in co-curricular activities, the result of the test revealed that there are significant difference in the difficulty, that of no backer with respondents which are athletes(X2= 11.37, p=.001, p<0.05) and difficulty of having low grades with respondents who are members of a club(X2= 6.58, p=.010, p<0.05). These findings implied that the difficulties of having no backer and having low grades are associated with having low grades and being club members.

Whereas, difficulties such as medical problem, financial support, lack of experience, short validity of training certificate, no available company to apply, communication barrier, strong competition, lack of trainings, lack of self-confidence, multiple rejection and other reasons did not have any significant difference or not associated with the membership of any co-curricular activities.

**Table 6. Results of Test of Significant difference in the Difficulties Encountered by CLS Graduates of St. Therese MTC Colleges La Fiesta Site in terms of Co-Curricular Activities by Membership**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Difficulties** | **Athlete** | | **Club** | | **Dancer** | | **Skills Competition** | | **Outreach Program** | | **Not Active** | |
|  | **X2** | **Sig Value** | **X2** | **Sig Value** | **X2** | **Sig Value** | **X2** | **Sig Value** | **X2** | **Sig Value** | **X2** | **Sig Value** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Medical Problem | 2.29 | .131 | 1.36 | .243 | .76 | .384 | .70 | .402 | .70 | .402 | .02 | .899 |
| Financial Support | 1.24 | .265 | 1.75 | .186 | .450 | .502 | 3.10 | .078 | 3.10 | .078 | 1.36 | .244 |
| No Backer | **11.37** | **.001** | 3.27 | .070 | .105 | .746 | .128 | .721 | .128 | .721 | .292 | .589 |
| Lack of Experience | .216 | .642 | .551 | .458 | 4.27 | .069 | .703 | .402 | .703 | .402 | .016 | .899 |
| Short Validity of Training Certificate | .032 | .857 | .672 | .412 | 2.59 | .108 | .857 | .354 | .857 | .354 | 1.25 | .263 |
| No Available Company to apply | .351 | .553 | .190 | .663 | .676 | .411 | .019 | .890 | .019 | .890 | 1.31 | .252 |
| low Grades | .773 | .379 | 6.58 | .010 | .331 | .565 | 1.029 | .310 | 1.029 | .310 | 2.351 | .125 |
| Communication Barrier | .000 | .984 | .008 | .927 | 1.322 | .250 | .085 | .771 | .085 | .771 | .302 | .583 |
| Strong Competition | .338 | .561 | .551 | .458 | .756 | .384 | .450 | .502 | .450 | .502 | 1.029 | .310 |
| Lack of Trainings | .351 | .553 | .122 | .727 | .618 | .432 | .019 | .890 | 1.216 | .270 | 1.314 | .252 |
| Lack of Self-Confidence | .382 | .537 | .926 | .336 | 1.001 | .317 | .012 | .913 | .756 | .384 | .331 | .565 |
| Multiple Rejection | .952 | .329 | .055 | .815 | .305 | .581 | .549 | .459 | .857 | .354 | 1.254 | .263 |
| Others | .067 | .796 | .346 | .556 | 1.313 | .252 | 3.462 | .063 | 3.462 | .063 | 1.978 | .160 |

P=0.05

**Chapter V**

**Summary, Conclusions, and Recommendations**

**Summary of the Study**

This study aimed to determine the difficulties of CLS Graduates of St. Therese MTC Colleges, La Fiesta Site, to Get Employed. Specifically, it aimed to:

1. Determine the profile of the respondents in terms of age, year graduated, sex, co-curricular activities affiliation and academic performance. 2. Identify the difficulties encountered by CLS graduates of St. Therese-MTC Colleges, La Fiesta Site as a whole and in terms of academic performance and co-curricular activities. 3. Test if there is a significant difference in the difficulties encountered by CLS graduates of St. Therese-MTC Colleges, La Fiesta Site, in terms of academic performance and co-curricular activities.

Furthermore, the research design used was the descriptive survey method and there were 45 graduates of ST-MTCC, La Fiesta, with Batch 2014 to Batch 2016 who were identified using the purposive sampling.

**Findings of the Study**

From the different data gathered analyzed and interpreted, the following are the major findings.

1. Most of the respondents are aging 16-27 years old, female, graduated last 2016, affiliated as club members of the school and having a good academic performance.

2. As a whole, the data indicated that 9% to 64% of the participants or the CLS graduates experienced the difficulties listed in this study. Among these participants, 64% experienced financial support difficulty, followed by 38% who had experienced lack of self-confidence, then lack of backer was experienced by 27% of the participants.

3. In terms of difficulties encountered by STMTCC CLS graduates in landing a job when grouped by academic performance, it pointed out that those who had experienced a financial support as difficulty was having good academic performance and majority of them got a fair academic performance. On the other hand, in terms of difficulty of having a low grade would caused of having no job was found to have fair academic performance, while for lack of self-confidence as difficulty of landing a job, it seems that a lot of them got a good academic performance.

4. When grouped by co-curricular activities membership, the data showed that majority of them are not members of any school co-curricular activities. Whereas, for those who are members of any co-curricular activities, the data revealed that for financial support difficulty experienced by the participants, most of them are club members, followed by dancers and athletes. For having experienced lack of self-confidence, the data disclosed that mostly of them were club members, then dancers and athletes.

5. The result showed that there were significant difference in the difficulties namely Financial Support, low Grades, Lack of self Confidence and Multiple Rejection. These results implied that financial support, low grades, and lack of self confidence and multiple rejection as difficulty for employment are associated with the graduates’ employment. Whereas, the rest of the reasons such as medical problem, no backer, lack of experience, short validity of training certificate, no available company to apply, communication barrier, strong competition, lack of trainings and other reasons do not have any significant difference or not associated with the STMTCC CLS graduates’ difficulty in getting employment.

6. The test revealed that there are significant differences in the difficulty that no backer with respondents who are athletes and difficulty of having low grades with respondents who are members of a club. These findings implied that the difficulty of having no backer and having low grade are associated with having low grades and being a club member. Whereas, difficulties such as medical problem, financial support, lack of experience, short validity of training certificate, no available company to apply, communication barrier, strong competition, lack of trainings, lack of self-confidence, multiple rejection and other reasons do not have any significant difference or not associated with the membership of any co-curricular activities.

**Conclusions**

The following are the conclusions drawn based on the different major findings.

1. Most of the STMTCC CLS graduates are aging 6-27 years old, female, graduated last 2016, affiliated as club members of the school and having a good academic performance.

2. Nine to sixty-four percent of the STMTCC CLS graduates experienced the difficulties in getting employed due to lack of financial support difficulties, lack of self-confidence, absence backer. Whereas, graduates with fair academic performance, club members, dancers and athletes experienced lack of financial support, low grades and lack of self-confidence as difficulties for not being employed.

3. There were significant difference in the difficulties namely financial support, low grades, lack of self confidenceand multiple rejections. These results implied that financial support, low grades, and lack of self confidence and multiple rejections as difficulties for employment are associated with the graduates’ employment. Whereas, the rest of the reasons. On the other hand, there are significant difference in the difficulty that no backer with respondents who are athletes, and difficulty of having low grades with respondents who are members of a club. These findings implied that the difficulties experienced for not being employed is having no backer and having low grades and being a club member.

**Recommendations**

The following are the recommendations for this study.

1. To the Students, they should learn to balance their academic performance and co-curricular activities.
2. To the teachers, they should always remind their students to maintain their academic excellence for it is one of the reasons for not being employed after they graduate.
3. To the guidance counselors, a counseling program should be formulated to assist them in their academic performance while indulging themselves to co-curricular activities.
4. To the school administrators, membership to co-curricular activities may be a plus factor for employment but the students should maintain their academic performance. Further, the school should create financial intervention program for their graduates to help them in their employment.
5. To the Future researchers, to utilize the findings of the study especially when they embark on determining the factors affecting unemployment of the graduates.

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