

# Communication Platforms And Compliance With Environmental Protection Regulations Among Fishcage Operators In Taal Volcano Protected Landscape, Batangas, Philippines

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**Abstract:** The study studied the role of communication platforms in the compliance of fishcage operators to the regulations of the Taal Volcano Protected Landscape or TVPL in five selected coastal municipal communities in Batangas. A total of 351 fishcage operators from 18 villages were selected by stratified proportional sampling and surveyed. A total of 13 key informants from the TVPL Executive Committee were purposely chosen for key informant interviews. Data were analyzed using descriptive statistics, while the Chi Square ( $X^2$ ) and Pearson's correlation analysis tested the relationships of the variables. Almost all of the respondents were male (88%); married (84%); between 29-48 years old (65%); high school graduates (58%); residents of their barangays from 21 to 61 years and above (61%); and not members of any Taal Lake-related organization (53%). Majority used interpersonal or group communication platforms such as 1) conversation with group members or their co-organization mates (75%); 2) meetings (71%); 3) face-to-face conversation (69%); 4) conversation with family members (68%); and 5) informal conversation with other residents (59%). Only a few used mass media and the new media platforms, except for television that was watched by almost half (43%) of the respondents. Majority (64%) of the respondents used the communication platforms only as needed. Statistical tests showed a significant relationship between the compliance to the TVPL regulations and the use as well as the frequency of use of the different communication platforms. Compliance was more dependent on the use of interpersonal communication platforms such as face-to-face conversations with family and peers; group communication with colleagues and residents and meetings; and with public communication such as seminars. However, the more frequent use of mass media platforms (magazine, newspaper, radio, television) and new media platforms (texting, calling, and use of Internet) can also enhance the compliance to the TVPL regulations. Results indicate that the use communication platforms that are quite relational with people (interpersonal, group, public) were statistically related with compliance. On the other hand, the frequency of the use of communication platforms that were more impersonal (mass media, new media) were statistically related with compliance. Endeavors to protect and conserve the TVPL can be more effective with interpersonal communication platforms in communicating with the fishcage operators. However, TVPL officials, especially the mayors or municipal officials, can try new media platforms and use these often enough to make a difference.

**Keywords:** environmental communication, national integrated protected areas system, ecotourism, national parks, multimedia, social marketing, communication strategy, multi-stakeholder collaboration, general systems theory

## Introduction

The role of communication in supporting democratic development and in stimulating economic growth is increasingly being recognized in international policy statements. McLoughlin and Scott highlighted that the power of communications lies in the catalytic role of media in influencing governance relationships and processes; in connecting states with society; in facilitating inclusive political systems, giving voice to poor and marginalized groups; and in enabling citizen participation and social accountability [1]. They stressed that the strategic use of political communications tools and methodologies can influence the attitudes, opinions, and behavior of key stakeholders and secure the political will necessary for reforms to be successful on the ground. The power of strategic communication or planned communication is more vitally and widely experienced today in governance, especially at community levels. This is because of the increasing communication systems or platforms that stakeholders could engage in to pursue common development goals. Communication platform is any

communication program or activity, specifically and deliberately designed to achieve particular objectives. It basically focuses on a specific project or concern wherein its main goal is to apply development for the society's welfare. As a platform, it is an elevated structure that serves as venue or arena for information and knowledge sourcing, exchange or sharing, access, and feedback. A communication platform is more than just a structure, a medium, a standard, or a set of policies, but it is an invisible avenue where stakeholders would be able to meet, plan, organize, exchange thoughts, and purposefully discourse about a particular topic which may be in a form of activity or a development endeavor [2]. Communication platforms can be vital components of environmental communication. Environmental communication as the application of communication approaches, principles, strategies and techniques to environmental management and protection. It is the deliberate exchange of environmental information, knowledge, and even wisdom. It also adheres to the principle that the goal of human communication is mutual understanding. Communication should not be regarded merely as supportive to environmental management but as an

integral part of it and it should not be source-oriented or media-centric but allows greater participation of the public and enable and empower the audience to become active sources of information as well [3]. One of the protected areas in the Philippines that is being managed by multi-stakeholders, hence would require a different platform for information exchange and sharing among the project implementers and communities, is the Taal Volcano Protected Landscape (TVPL). The Taal Volcano and Taal Lake are considered places of attraction in the province Batangas that exude a unique and natural scenic beauty. A special feature of the Taal Lake is that "It is an island in a lake, in an island in a lake in an island". It is the deepest lake in the Philippines and third largest in area next to Laguna Lake and Lake Mainit. On July 22, 1967, former President Ferdinand E. Marcos issued Presidential Proclamation No. 235 declaring both areas as the Taal Volcano National Park. In 2010, the area covered 2,583 ha including Pirapiraso Island and Bubuin Island. The area is distributed to Talisay (1,910.581 ha), San Nicolas (1,196.583 ha), and Balete (295, 866 ha). The Taal Volcano National Park became the initial component of the National Integrated Protected Areas System (NIPAS) or RA 7586 on June 1, 1992. On November 19, 1996, the park was declared a protected area by virtue of Presidential Proclamation No. 923, and renamed the Taal Volcano Protected Landscape [4]. The TVPL is located in the Province of Batangas and Tagaytay at N 13 15' to 14 08' latitude and E 120 50' to 121 10' longitude. It embraces 13 municipalities and 2 cities within the province and 1 city within the province of Cavite. The TVPL has a total land area of 65,282.14 ha divided into land area (40, 926.14 ha) and lake area (24, 356 ha) [4]. The TVPL is known for its aquatic and terrestrial biodiversity. It is designated as number 27 among the Key Biodiversity Areas (KBA) for priority protection. The Pansipit River also counts as a candidate for KBA (PAWB, 2007). A 1995 study (Villanueva, 1995) indicated 15 species of migratory fish found in fish landing stations. About four endemic fish thrive in the lake with *Sardinella tawilis* as the most important and the basis of subsistence fishery among the coastal populace. Unfortunately, the *tawilis* catch dropped by about 80 percent in the last decade (TVPL Mgt. Plan, 2009). There are three primary endemic water species and fishes aside from *tawilis* that include *duhol* (sea snake), *Maliputo*, and eight other fish species. The view of the crater lake within the volcano island from Tagaytay City and the lakeshore municipalities has vast ecotourism potentials [4]. As for the terrestrial biodiversity, there are sightings of the Luzon bleeding heart in the area. Since 2005, the community monitoring teams in the TVPL sighted 32 bird species. Some of these species, which are endemic to the country, are the White-eared brown dove, Elegant tit, Philippine tailor bird, Grey-backed tailor bird, Philippine bulbul, and Philippine pygmy [5]. However, some species in the lake are being threatened by extinction because of natural and man-made environment problems. The major issues and concerns in TVPL are the following: unregulated aquaculture industry within Taal Lake; proliferation of illegal aquaculture structure along Pansipit River; construction of permanent structures along the shoreline of Taal Lake; and improper disposal of domestic wastes [4]. With the inter-related problems of the lake, the provincial and local governments are working together with non-government and private organizations as well as concerned groups to save the lake. Several plans had been drafted for

Taal Lake and volcano. Most comprehensive has been the Tagaytay-Taal Integrated Master Plan drafted by the Philippine Presidential Commission on Tagaytay Taal in 1994 covering 20 years. Upon the Commission's abolition in 2000, the Protected Area Management Board of Taal Volcano Protected Landscape composed of town planning officers held a workshop and adopted the Executive Summary of the plan. Among the aspects of the plan was the establishment of the basin as a protected area [6]. In 2011, two non-government organizations (NGOs) published a document entitled: Taal Volcano Protected Landscape Management Plan 2010-2020". They were able to produce this document after 16 consultations throughout the basin and with contributions from the local governments at the provincial, municipal, city, and barangay governments, counterpart contributions from NGO partners, and donated time from experts in protected area management. The resulting document was approved by the Protected Area Management Board (PAMB) Executive Committee on September 18, 2009 and the PAMB en banc on November 26, 2009 [6]. This plan comprises ten major projects, namely: water quality, aquatic living natural resources, terrestrial/watershed component, recreation and cultural resources, disaster preparedness and management, population and socio-economics, research program and knowledge center, policy and institutional strengthening, and zoning [6]. Providing the legal basis for the TVPL is Republic Act 7586 (National Integrated Protected Areas System Act of 1992). The Taal Volcano Protected Landscape is part of the NIPA. The NIPAS Act is a policy of the State to secure for the Filipino people of present and future generations the perpetual existence of all native plants and animals through the establishment of a comprehensive system of integrated protected areas within the classification of national park as provided for in the Constitution. Other supporting laws include: Republic Act No. 8550 (Fisheries Code of 1998); Republic Act 7160 (Local Government Code of 1991); Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000); Republic Act No. 6969 (Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990); and Republic Act No. 9275 (Philippine Clean Water Act of 2004).

### Research Objectives

This study aimed to determine the communication platforms used by the respondents and their knowledge and compliance to TVPL rules. Its specific objectives are to: identify the socio-demographic characteristics of the respondents; identify the communication platforms used by the fishcage operators; determine the respondents' knowledge and compliance on TVPL rules; and determine the significant relationship between the respondents' knowledge and compliance on TVPL rules and their profile variables.

### Methodology

This study employed descriptive research focused on the communication platforms used by the respondents, and their knowledge and compliance to TVPL rules. This was undertaken in the Province of Batangas, along the coastal communities of the TVPL area covering the barangays engaged in fish cage operation. These key barangays were identified based on the records provided by the Office of the Protected Area Superintendent of Taal Volcano Protected Landscape (TVPL) under the Community Environment and

Natural Resources Office (CENRO), Province of Batangas. There were a total of 351 respondents who answered the survey questionnaire, the major instrument of the study. They were identified through stratified proportional sampling. The number of respondents was systematically determined with the help of the records of registered fishcage operators provided by the Office of the Protected Area Superintendent, CENRO – Batangas. The gathered data were analyzed using frequency count, percentage, and chi-square.

## Results and Discussion

### Socio-demographic Characteristics of the Respondents.

Most of the respondents belonged to the bracket age 19 – 38 years old, male, married, and had completed high school education. All of them were fish cage operators and earning Php 5,000.00 and below. 53 percent or 186 respondents were not members of any Taal Lake related organization and they do not occupy position in the barangay or in any enumerated organization. 74 or 21 percent of the respondents were staying in their barangay for 31 to 40 years or 186 or 53 percent were engage in fish cage operation 1 – 10 years. There were few female registered fish cage operators at 41 or 12 percent. They do not really put a hand in fish cage caretaking but they just allowed their names be used for registration purposes. 40 percent of the respondents were high school undergraduates, elementary graduates, and elementary undergraduates; they earn enough or sometimes bigger in the fish cage operation business and because of that, they focused in business-work rather than earning education or a college degree. 33 or 10 percent of the respondents did not reveal their monthly income or how much they earn within a month thinking that the researcher may tell the concerned offices for re-computation of their tax payments and others play safe saying that their income is dependent on the harvest time or period. In their earlier years of engagement to fish cage operation business, they could harvest already the fingerlings they have grown within four months. Presently, they tend to lengthen the number of months of growing the fingerling, usually 7 to 10 months before harvesting. This could be related to gradual effects of climate change manifested through fish kills, and overturns, and continuous water quality degradation. Contributory to these problems are the use of unsustainable feeds, increasing number of residents along coastal areas of the lake, and the unregulated and small scale backyard piggery and poultry wastes that go to tributaries and creeks directly connected to Taal Lake. As most of them were not members or affiliated with various Taal Lake related organizations or associations, this leads them to rely highly on interpersonal communication as their way to know information about fishcages. There were 4 or 1 percent of the respondents who have stayed in the coastal community for less than a year. It is assumed that they may increase their environment concern more especially in protecting the Taal Volcano Protected Landscape through raising their knowledge about Taal Lake as they stay longer in the coastal area. There were also 6 and 1 or 2 and 1 percent of the respondents engaged in fishing and fish cage operation business for 41 to 50 and 51 to 60 years, respectively. Based on historical accounts, it was during 1990s when fish cage operation started to boom, so it means that those respondents have knowledge already about open fishing and developed as time goes by.

### Communication platforms used by the fishcage operators.

It can be seen on the table that the respondents converse with other group of fishcage operators, attend meetings, and converse in face-to-face basis at 262 or 74.64 percent, 250 or 71.23 percent 243 or 69.23 percent respectively

*Table 2. Distribution of Communication Platforms Used by the Respondents*

Communication platforms	F	%	Rank
Interpersonal Communication			
1. Face to Face conversation	243	69.23	3
2. Conversation with family members, peers, etc.	239	68.09	4
3. Conversation with other group of fish cage operators	262	74.64	1
4. Informal conversation with the residents	206	58.69	5
5. Watching demonstration	141	40.17	9
6. Attending meeting	250	71.23	2
7. Attending free training	150	42.74	8
Public Communication			
8. Attending seminar	181	51.57	6
Mass Media			
9. Reading magazines	67	19.09	14
10. Reading newspaper	80	22.79	13
11. Listening to radio	137	39.03	10
12. Watching television	152	43.30	7
New Media			
13. Texting and reading cellular phone message	111	31.62	12
14. Calling through cellular phone or telephone	115	32.76	11
15. Utilizing internet	23	6.55	15

These figures has just proven that the most used communication platforms were in the interpersonal communication platforms group and this could be possible because it does not require much skills or effort to know how to utilize it since this way of communication is done directly by communication participants. The last three communication platforms like reading newspapers and magazines and internet utilization where only 80, 67, and 23 or 22.79 percent, 19.09 percent and 6.55 percent of the respondents respectively had the opportunity to use them. Reading newspaper and magazines may be costly and regular subscription to such reading materials are usually done by business companies, academe, and other institutions that need to be updated from time to time. Another reason could be the insufficient time on reading such materials; the respondents may tend to do other things which they think more pleasurable and advantageous for them. The unavailability of a computer unit and their concentration to fishcage operation leads them to chat with fellows along their neighborhood or converse with others in a face-to-face approach.

## Respondents' K – Knowledge and C – Compliance to TVPL Rules and Regulations

*Table 3. Respondents' Knowledge and Compliance to Zoning*

Zoning	K%	C%
1. Fish cage structure be constructed at the designated zone.	77.21	66.67
2. Traditional way of fishing may be allowed in the Tawilis Reserve Area.	62.11	53.85
3. Traditional way of fishing may be allowed or done in the Pansipit River.	60.97	54.13
4. Fish cage structures be given opportunity to move within a year.	76.07	63.82
5. Structures outside the proper zone will not be allowed after 2 years	68.38	59.26
6. Whoever will give permission over mentioned above will be bear under the law.	71.51	60.11

The table shows the knowledge of the respondents together with their compliance to specific rules on zoning. More than 75 percent of them were knowledgeable on the proper or designated zone of fish cage structure construction. Nearly 75 percent of the respondents know the one-year period opportunity given to them to realign and reconstruct their fish cage structures in proper zones or places, and the responsibility to be taken over or to be faced by an individual who will give permission to violate the mentioned rules. Going in the compliance column of rules and regulations, nearly same of percentages were attained Deeming more into these results, they have knowledge on the rules but a little less were compliant if compared to the percentage of those who know it. This result also shows that more than 30 percent of the respondents do not have knowledge and so are not obedient to the rules; this may not be a good indication because all fishcage operators together with their caretakers should know about it. It is assumed that if they know the information they ought to know, a high percentage of compliant respondents would be achieved. The sense of responsibility would be instilled in their conscience and mind, that the lake should be sustainably utilized and maybe a way to correctly utilize it is knowing and complying on the TVPL rules.

*Table 4. Respondents' Knowledge and Compliance to Fishcages*

Fish Cages	K%	C%
1. Bamboo, wood, PVC and its level are allowed to be used in outlining fishcage structures.	77.78	66.10
2. Correct depth of each module	73.50	65.81
3. Enough number of tilapia in a module for tilapia, milk fish, red tilapia, and maliputo.	74.07	63.25
4. An individual is only allowed to own one module with four holes.	68.38	59.26
5. The four holes in one module ....	76.07	67.24
6. Fish cage structures 100 meters away from the lakeshore ....	78.35	64.10
7. An individual fish cage zone ....	71.23	61.82
8. A tent be made of bamboo and nipa.	79.77	68.09
9. Feed conversion ratio that will not exceed to 1:1.8.	66.10	58.97
10. The yearly amount of exclusive rights in putting up a fish cage structure	67.52	58.69

Most of the respondents have knowledge on the allowed putting of a nipa hut or tent with its appropriate measurement

at 79.77 percent, the designated zone of fishcage structures particularly dealing about distance from the lakeshore in the specific territorial waters of a municipality where they are at 78.35 percent, and the materials that may be used in outlining and making the fishcage structure, circular or rectangular in shape, and the proper disposal of waste materials outside TVPL at 77.78 percent. There was a little lesser percentage of compliance to these specified TVPL rules together with the rest of it enumerated under Fish Cages. In addition to the same result above on zoning rules, Taal Volcano Protected Landscape authorities may think of ways or make a comprehensive plan not only how the TVPL territory would be protected but more of how this information would be disseminated properly and directly to the stakeholders particularly among fishcage operators. In terms of the commercial feeds for aqua-cultured fish they should use, 69.80 percent disclosed that they know that companies that produce and supply commercial feeds for aqua-cultured fish shall secure accreditation from Protected Area Management Board (PAMB). The securing of accreditation from PAMB is important because this management board may have guidelines to follow in regulating the kind and quality of commercial feeds they supply to fish cage operators. It is assumed that these feeds were industry-chemically produced, so moreover, it shall be regulated to avoid or lessen the harmful chemical effects of these feeds to the lake.

*Table 5. Respondents' Knowledge and Compliance to Commercial Feeds for Aqua-cultured Fish, Open Fishing and Granting of Permission to Open Fishing*

Commercial Feeds for Aqua-cultured Fish	K%	C%
1. Secure accreditation from PAMB.	69.80	63.25
<b>For Open Fishing</b>	<b>K%</b>	<b>C%</b>
1. Fish net, trap or others, materials and tools in open fishing	72.93	64.39
2. The boats shall register in the municipality where the fisherman resides	71.51	64.67
<b>Granting of Permission to Open Fishing</b>	<b>K%</b>	<b>C%</b>
1 Registered small-scale fishermen and legitimate Filipinos	76.92	67.52
2. Registered associations and cooperatives of small-scale fishermen	75.78	65.81

In open fishing, 72.93 percent and 71.51 percent of the respondents disclosed that they have knowledge on the permission to open fish provided that they were allowed by PAMB through and in accordance to the municipal or city mayor; and boats with capacity to carry 3 tons or less shall register in the municipality where the fisherman resides before he shall be given the right permit or right to open fish in the waters of TVPL, respectively, and only 64.39 percent and 64.67 percent respectively are complying to it. Once more, this could be due to low information dissemination because there were still more than 25 percent respondents who do not know this, more so, if they do not know something, it's not adjacent to have a bigger compliance what may be expected is a lesser number of compliant. And, in granting permission to open fishing, 76.92 percent and 75.78 percent knowledge and 67.52 percent and 65.81 percent compliance of the respondents, respectively were gained from them. The same pattern of having a higher knowledge of the respondents over their compliance

percentage is observed. It is believed that the present communication platforms specifically the new media platforms should be put to intervention so that in the future, a higher percentage of knowledgeable respondents may be observed. This is presumably going to positively affect the compliance of the respondents they have now something in mind – the knowledge and more importantly the understanding of the importance of these TVPL rules.

**Table 6. Respondents’ Knowledge and Compliance to Violations**

Violations	K%	C%
1. Commercial boats or weighing more than 3 tons	69.52	61.54
2. Fishing at TVPL using “basing” “suro” and “pukot” shall not be allowed.	68.66	63.25
3. Collecting or fishing of endemic and endangered species or lake water resource	70.94	67.81
4. The use of fine fishing net or nets with small holes shall not be allowed.	74.07	64.67
5. Fishing through dynamite, cyanide, and electric fishing shall not be allowed.	80.63	67.81
6. Fishing along areas declared as fish sanctuary shall not be allowed.	73.79	64.96
7. Fishing through using super lights shall not be allowed.	76.35	65.53
8. The use of lake and its resources shall not be allowed without due permission	73.50	63.53
9. Terminating or disregarding the license conditions or permission	75.21	64.10
10. Throwing or dumping of whatever wastes	80.06	68.09
11. Releasing of whatever plant or animal species	74.64	65.53
12. Putting up of structures “salambaw”	69.23	60.97
13. Putting up of nipa or tent structures	67.81	60.68
14. putting up of structure “baklad” shall not be allowed in TVPL.	72.93	62.96

80.06 percent of the respondents disclosed that they are aware of the 10<sup>th</sup> rule under violations and that deals about throwing or dumping of whatever agricultural, industrial, water waste including chemicals used in cyanide fishing, garbage or waste from households, and improper waste disposal like dead fish through simply submerging it in the lake during fish kills shall not be allowed, together with fishing using super lights at 76.35 percent respondents and the termination or when the license conditions were disregarded, then, there will be an equal punishment for that. Improving the utilization of information dissemination via communication platforms could be a way to raise more the knowledge of the respondents. This may be taken in a strategic communication process. It is not realistic that after planning and implementation of a comprehensive plan on effective and efficient information dissemination and communication of important matters in relation to fishcage operation in Taal Lake, and more vital is promoting sustainability and protection of Taal Lake, a hundred percent respondent compliance result will be achieved; it will really take a long period of time before a higher positive result be attained.

**Table 7. Respondents’ Knowledge and Compliance to Administrative Fine/Fee and Confiscated Materials and Tools**

Administrative fine/fee	K%	C%
1. All forms of violations that PAMB has approved in may be in jail and fine is dependent on the weight of violation.	75.78	66.67
Confiscated Materials and Tools	K%	C%
1. All fish and materials and tools, boats confiscated shall be brought to PAMB	71.51	63.25

The 75.78 percent and 71.51 percent respondents disclosed that they are aware of the rule that they will pay fine/damages for violation that they may commit and what will be done if ever their materials and tools in fishing will be confiscated, respectively. Since from the rules on zoning up to this part, has just observed the same pattern of percentage of knowledge and compliance among respondents, and aside from how these results were interpreted in the former tables, the knowledge and compliance of the respondents may be improved if they would have the opportunity to improve it. It may be through organizing non-formal or educational communication programs and initiatives in utilizing correctly and effectively these communication platforms, there is a better way to maintain the sustainability of Taal Lake, useful for the respondents but not putting at-stake the water quality and general environmental condition of the whole TVPL.

**Significant relationship between the respondents’ knowledge and compliance on TVPL rules and their profile variables.**

**Table 8. Significant Relationship on Respondents’ Knowledge and Compliance on TVPL Rules Based in their Profile Variables**

Profile variables	Knowledge			
	p-values	CV	Correlation coefficient	Strength of Relationship
Age				
Civil status	.009	138.77	.36	Moderate
Educational attainment	.009	216.40	.37	Moderate
Occupation	.007	57.66	.41	Moderate
Organization				
Position	.000	137.96	.43	Moderate

Profile variables	Compliance			
	p-values	CV	Correlation coefficient	Strength of Relationship
Age	.03	244.09	.33	Moderate
Civil status				
Educational attainment	.02	210.11	.32	Moderate
Occupation	.007	57.66	.41	Moderate
Organization	.049	21.08	.35	Moderate
Position	.003	104.58	.36	Moderate

Table 8 shows the significant relationship between the respondents' knowledge on TVPL rules when grouped according to their profile variables. Since the p-values of .009, .009, .007, and .000, are all lower than .05 level of significance, then the computed values of 138.77, 216.40, 57.66, and 137.96 are significant. There is significant relationship on their knowledge on TVPL rules and regulations when grouped according to their civil status, educational attainment, occupation, and position. Civil status had significant relationship to the respondents' knowledge on TVPL rules and regulations. This could possibly mean that the greater responsibility a person may have like providing the basic needs of his wife and children, being a married respondent, the higher the initiative and commitment he will have to post because married people could be more concerned on the future of their children and family as a whole. That leads them to make initiatives in knowing the important matters on fish cage operation. It is advantageous to anyone who is knowledgeable about many things because he may weigh and analyze things better and he has something to base on which is his knowledge. The same significant relationship was disclosed between the respondents' educational attainment and knowledge on TVPL rules. This means that the education attained by the respondents is important in engaging to fishcage operation. Education is said to be a key to success and this could be naturally proven by the fact that when you are educated, you may have a better opportunity to enjoy good things in life and in addition is someone's capability to think, analyze, and interpret things better. Significant relationship between the respondents' occupation and knowledge on TVPL rules was also revealed. This could mean that since most of them are focused on fishcage operation as their source of income, they are likewise concerned on knowing latest information. These information and concerns could probably be connected to their occupation development like good harvest towards a higher income. The last variable that gained significant relationship to their knowledge on TVPL rules is the respondents' position in a certain organization. More than half or 54 percent of the respondents were not members of any organization; they were plainly fishcage operators who had their legal registration in the TVPL Office. This could possibly mean that whether you are or not a member of a certain organization, you may have enough knowledge on TVPL rules in fish cage operation. Table 8 also presents the significant relationship on the respondents' compliance on TVPL rules when grouped according to their profile variables. Since the p-values of .03, .02, .007, .049, and .003 are all lower than .05 level of significance, then the computed values of 244.09, 210.11, 57.66, 21.08, and 104.58 are significant. There is significant relationship on their TVPL rules compliance when grouped according to their age, educational attainment, occupation, organization, and position. The age of the respondents could be really a significant variable to their TVPL rules compliance possible because as the respondent ages, he may have acquired the knowledge and basically experience, the advantages and disadvantages when someone would or would not follow the TVPL rules. Educational attainment gained significant relationship on their compliance to TVPL rules because it is a given fact that education is vital in people's life. Most of the respondents finished high school education, it may be better if almost all if not all respondents are college degree graduates. It is assumed that when respondents attained

higher education, they may be more interested to follow and comply with the TVPL rules. Earning a college degree may not be a guarantee to business success, but it is predominantly a factor in making difference for people to critically think and make sound decisions and development of good values in them. In the volcano island barangays of the Municipalities of San Nicolas, Talisay, and Balete, there are public elementary schools but none of them have public high school. This may be a hindrance for elementary graduates to continue the high school level because of the problems like distance from the town proper, and monetary matters. High school education is difficult for the barangay volcano islands stakeholders to finish it, much more expected that they would disregard nor think to earn a college degree. They may have the fullest willingness to become educated, but their major problem is the resources that they may use in earning education. Occupation, membership to organization, and position showed significant relationship to the respondents' compliance to TVPL rules. Even though they are in fishcage operation, most of them are not members of Taal Lake related organization. This could be the reason why they could presumably be less informed on information from certain organizations, but maybe due to interpersonal communication that they utilize, still they get to know the vital information they ought to know even they are not members and they do not occupy organization position. Upon knowing information through conversation, meetings, and face-to-face communication this may have led them to consider compliance to TVPL rules.

### Conclusion

Most of the respondents were 29-38 years old, male, married, high school graduate, focused on fishcage operation, earning Php 5,000 and below, not affiliated to any organization, staying in their place for 31-40 years, and engaged in fishcage operation for 1-10 years. The most used communication platform by the respondents is conversation with other group of fishcage operators at 262 or 74.64 percent; Most of the respondents have knowledge and compliance to TVPL rules evinced by 50 to 60 percent; The respondents' knowledge had significant relationship to TVPL rules according to their civil status, educational attainment, occupation, and position; there was also significant relationship between the respondents' compliance to TVPL rules according to their age, educational attainment, occupation, organization, and position.

### Recommendation

It is generally recommended that sustainable educational communication endeavors for various stakeholders shall be pursued to enhance and continuously protect and conserve the resources and the whole TVPL. The TVPL council shall convene and sit together and revisit the TVPL rules and regulations to see and evaluate its effects and impacts to all stakeholders of TVPL; The TVPL Executive Committee composed of people's organization, non-government organization, provincial government, local government units, academe, and coastal communities shall sustainably conduct the contents of the TVPL management plan to realize the sustainable protection and conservation initiatives; The Batangas State University, through its Extension Services Office shall consider the results of this research in proposing and conducting extension programs, activities, and projects. PAPs that may enhance more the knowledge and

compliance, primarily of the fishcage operators, shall be pushed through so that the objective which is to protect and conserve the resources and the whole TVPL will be sustainably attained. Researches on TVPL shall be submitted and shared to the TVPL Research Council, possibly for presentation and publication, so that new knowledge is disseminated to them and it can be used also as basis or off-shoot in conducting sustainable extension services and corporate social responsibility PAs of concerned stakeholders.

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## Author Profile



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