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Research article

Perception on the Watershed Conservation Strategies of Oroquieta City Government Using Attitudinal and Socio-Demographic Determinants

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ABSTRACT

Sustainable resource management highlights the importance of partnership between the local governments and their constituents. Thus, a study conducted among the randomly selected Layawan Watershed residents (n=288) in Oroquieta City, the attitudinal correlates and socio-demographic determinants of their perception of the LGU conservation strategies were investigated. Through face-to-face interviews, they responded to the psychometrically-sound survey instruments and reported very high pro-environmental attitudes. Consistent with the literature, these self-reported, elevated pro-environmental dispositions were seen as a form of positivity bias that matched respondents' self-views with the government-promoted new ecological paradigm. Moreover, these pro-environmental attitudes correlated positively and significantly with awareness of the LGU's environmental drive. Further analysis divulged that incentive, power, experience, and restraint also accounted for environmental dispositions. Male respondents who held more power in decision-making reported greater pro-environmental attitudes. Respondents with greater incentives to protect nature, such as smaller families, land owners, and conjugal partners, also claimed similar higher pro-environmental attitudes and awareness. In areas where pro-environmental attitudes had restraining effects, such as upland areas, these attitudes were lesser. Contrary to common sense, more experience did not lead to a rise in pro-environmental attitudes and awareness. This finding was seen as relating to the refusal of older farmers to part ways with traditional planting methods. The association between attitudes, awareness, and education was murky. There is, therefore, a need to properly incorporate locally relevant environmental conservation in the school curriculum. To make constituents as partners of local governments in sustainable development, one route to explore is via enhancing pro-environmental attitudes.

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INTRODUCTION

Conflicting views about how to best use, manage, and sustain resources pose challenges to sustainable development (Larsen, Wutich, White, et. al., 2011). Given this concern, local government units (LGUs) play a pivotal role in implementing conservation strategies responsive to the needs of their constituents. However, water resource sustainability needs to be pursued as a partnership between government and citizenry. Just like any conservation efforts, water resource management initiatives necessitate the active participation of the locals so that local development and environment conservation can go hand in hand (Ciocănea, Sorescu, Ianoși, &Bagrinovschi, 2016; Gerhardinger, Godoy, & Jones, 2009; Xu, Chen, & Fu, 2006; Hiedanpaa, 2005; Gillingham& Lee, 1999). As much as possible, there must be a match between the government and the people's directionality when it comes to issues of this nature.

Consequently, the people's own views about water and natural resource conservation should be researched to provide baseline data that can be used to harness them as partners in this initiative. This reasoning has been affirmed by social scientists working on human-ecology dynamics. For instance, Adeola (2007) has called for explorations into people's perceptions and attitudes as they relate to judgment-making on environmental matters. Moreover, these perceptions and attitudes can also serve as indirect means of evaluation and can thus enhance the subsequent planning processes (Bennett &Dearden, 2014; Cihar&Stankova, 2006; Priskin, 2003; Daily, 1997).

As a component city of a developing country, Oroquieta City is at the crossroad of the great balancing act of our time, juggling development and environmental sustainability. As an LGU, it has been implementing various conservation strategies and practices: Forest Land Use Plan (Oroquieta City LGU, 2016), Layawan Watershed Management Plan (Oroquieta City LGU, 2018), Barangays' Environment Management Plan (Oroquieta City LGU, 2018), Local Climate Change Action Plan (Oroquieta City LGU, 2015), Coastal Resource Management Plan (Oroquieta City LGU, 2014), and Comprehensive Land Use Plan (Oroquieta City, 2011). These plans provide frameworks on how the natural resources in the said areas should be properly taken care of, amidst continuous use, so that there is enough for everyone.

The Layawan Watershed of Oroquieta City is a major watershed within the Mt. Malindang Mountain Range that is a crucial supplier of water in the provinces of Misamis Occidental, Zamboangadel Sur, and Zamboanga del Norte. Water derived from the Layawan water shed provides for the domestic, agricultural, and commercial needs of thirty-three barangays in Oroquieta City (Bongcayao, et. al., 2015). All the aforementioned measures impinge on people living in the watershed areas. The Land Use Plan, for example, precludes destructive farming in the said watershed. On the other hand, the Layawan Watershed Management Plan arranges protective and conservation mechanisms within this valuable location. The Barangays Environment Management Plan tasks barangays within the mentioned watershed to partake in the initiatives to preserve and protect nature. Finally, the Climate Change Action Plan prepares the watershed areas to be resilient in the midst flooding as an identified hazard in the area in the face of the instabilities in climate. Clearly thus, the Layawan Watershed areas are a ripe venue to assess how people think about these LGU initiatives.

Moreover, in the context of the Layawan Watershed of Oroquieta City, there is a need to know people's perceptions and attitudes about the conservation strategies of the LGU. However, much of the feedback of the residents who must follow the guidelines and rules set forth in the plan, have not been studied systematically. This investigation sought to bridge that gap by looking at the attitudinal correlates and socio-demographic determinants of residents' perception of the Oroquieta City LGU' conservation strategies. Specifically, it intended to: (1) describe their levels of over-all perspective towards conservation strategies and practices as they specifically apply to the Oroquieta City LGU; and (2) correlate their perceptions towards the conservation strategies and practices of the local government unit of Oroquieta City with the mentioned attitudes and perceptions.

MATERIALS AND METHODS

Research Design

This study employed the descriptive-correlation research design using the survey method. It also made use of the quantitative approach. The independent variables were the perceptual and attitudinal self-reports of respondents on measures of perspective towards the conservation and management of Layawan Watershed involving the community and local government.

Sampling Method

Localfarmers and barangay residents living and cultivating a portion of the watershed area were selected as respondents of this study. To ensure equal representation across land locations, a quota (n=96) for every area was set with two randomly picked barangays in each area being included. Thereafter, simple random sampling was utilized to get respondents (n=48) in each of the two villages located in the lowland, the midland, and the upland areas. From these two villages in each land area, the total number of respondents was formed, n=288.

Variables and Measures

All respondents provided their socio-demographic information and answered survey instruments that were validated by experts and subjected to reliability analyses. In this study, its psychometric properties included, the perception of the conservation strategies and practices of the Oroquieta City LGU, which was measured using a 16-item instrument that made respondents reveal whether they experienced the conservation strategies and practices of the Oroquieta City LGU as a service delivered. It made them answer to indicate their agreement or disagreement to statements like “The LGU has a nursery for fruit trees free of charge,” “Riverbanks rehabilitation is initiated by the LGU,” “The LGU has a Forest Land Use Plan,” and the like. The material was also found to have good internal consistency (Cronbach alpha=.97).

RESULTS AND DISCUSSION

Socio-Demographic Profile of Respondents

Of the 288 respondents, males were the majority (56.6%). The rest were females (43.4%). They were evenly distributed in terms of land location with upland, midland, and lowland respondents equally constituting 33.33% of the respondents. In terms of relation to household head, the most frequent respondents were fathers (54.5%), followed by mothers (39.6%), spouses (4.9%), son (1%), and then by daughter, sister, and others who each respectively constituted less than 1% of the respondents. Majority of the respondents were Cebuanao (63.2%). The rest were Subanen (36.5%) and others (.3%).

Meanwhile, in terms of marital status, the majority were married and living with the spouse (72.6%). This status was followed by the widow/widower (12.5%), single or unmarried (10.1%), married but spouse is living elsewhere (3.1%), separated (1%), and those who did not provide marital data (.7%). For primary occupation, majority remained as employees (39.2%), followed by farming (23.6%), copra production (17.4%), charcoal making (6.2%), livestock raising (4.2%), fishing (4.5%), salesman/woman (2.1%), carpentry (1.7%), and mechanics (1%).

Perspective, Familiarity, Concern,
and Perception of Key Watershed Issues

The levels of attitudes on key environmental issues were reported in the table below. These attitudinal measures captured perspectives on the community and environment, conservation beliefs, perceived familiarity with

water resource issues, concerns with outcomes of water resource problems and, perception towards problems and issues in the Layawan Watershed.

Table 1. Respondents' perspective, beliefs, familiarity, concern, agreement, and perception of key issues.

Variables	$\bar{x}$	SD	Descriptions*
Overall perspective towards the community	4.24	.38	Very High
Overall perspective towards the environment	4.26	.38	Very High
Conservation beliefs	4.22	.38	Very High
Perceived familiarity with water resource issues in the community	2.68	.86	Moderate
Concern with consequences of water resource problems	4.52	.49	Very High
Perception towards problems and issues in the Layawan Watershed	3.05	.91	High

*4.21 – 5.0= Very High; 3.41 – 4 .20= High; 2.61 – 3.40= Moderate; 1.81 – 2.60= Low; 1.00 – 1.80 = Very Low

Respondents claimed a very high level of identification and cooperation with the community. They also adduced a very high pro-environmental stance, indicating explicit support for the preservation of nature. In the same vein, their level of conservation beliefs was very high. These respondents divulged very strong support for the protection of natural resources. Their level of concern with the consequences of water resource problem was also very high. Respondents may be expressing a sense of foreboding emanating from threats to the watershed brought about by human deeds. Taken together, these results purported that, as far a generalist perception and attitudes were concerned, respondents' stance on environmental concerns was very high.

In terms of perception of problems and issues in the Layawan watershed, respondents reported a high level of perception. Somewhat, Layawan watershed-specific problems and issues could be described as impinging less strongly on respondents' consciousness than the other generalist environmental concerns. However, their perceived familiarity with water resource issues in the community was only moderate. So, while their pro-environmental attitudes appeared very high, respondents seemed to be equivocal about their knowledge of the current issues the environment faces, particularly as it pertains to water resource.

So, while they registered very high levels of generalist environmental attitudes and perceptions, beliefs that pertained to the Layawan Watershed where they reside were kept still at a high but not very high level to avoid complacency but, at the same time, arrest panic. This cognitive reconstruction takes place within the context of moderate self-reported familiarity with water resource issues in their community that provides room for speculations when the facts are not the respondents' cup of tea.

Perception of the Local Government Unit Of Oroquieta City's Implementation of Conservation Strategies and Practices

The levels of respondents' perception of the conservation strategies and practices of the local government units were reported below. This level of perception indicates the state of awareness of the respondents vis-à-vis LGU initiative.

Table 2. Perception of the conservation strategies and practices of the Oroquieta City LGU.

Ranges	Frequency	Percent	Descriptions	x	$\bar{SD}$	Remark
4.21 – 5.00	84	29.2%	Very High	4.24	.38	Very High
3.41 – 4.20	204	70.8%	High			
2.61 – 3.40	0	0%	Moderate			
1.81 – 2.60	0	0%	Low			
1.00 – 1.80	0	0%	Very Low			

None of the respondents reported very low, low, or moderate perception of the Oroquieta City LGU's conservation strategies and practices. On the other hand, 70.8% of respondents averred that they had a high perception of the said strategies and practices of the said local government unit. Meanwhile, 29.2% claimed that their perception was very high.

Taken together, majority of the respondents could be described as manifesting very high perception of the conservation efforts of the Oroquieta City LGU. Based on this, it can be said that there was a relatively high awareness among respondents of current drives of the Oroquieta City government to advance conservation strategies and practices within the watershed areas.

Socio-demographic Variables Associated with the Perception of the Conservation Strategies and Practices of the Oroquieta City LGU

A number of socio-demographic variables failed to reach statistical significance: relation to household head, $F_{(3,284)}$=1.44, p=.23; ethnicity, $t_{(286)}$=-1.63, p=.10; marital status, $F_{(5,210)}$=1.16, p=.33; primary work, $F_{(8,210)}$=.87, p=.54; secondary work, $F_{(9,210)}$=1.52, p=.14; relationship to owner, $F_{(7,210)}$=.30, p=.95; location of the farm, $F_{(2,210)}$=.93, p=.39; acquisition, $F_{(5,210)}$=.98, p=.43; and primary plants, $F_{(8,279)}$=1.52, p=.19 The socio-demographic variables significantly association with the perception of the conservation strategies and practices of the Oroquieta City LGU were discussed below.

Sex. A t-test of independent samples was employed to know if males and females differed in terms of their perception of the conservation strategies and practices of the Oroquieta City LGU. Results showed that a significant difference existed, $t_{(256)}$=2.85, p=.01. Males (M=4.29, SD=.40) were significantly more likely than females (M=4.17, SD=.34) to place a high regard to the conservation practices of the Oroquieta City LGU. In other words, males were significantly more likely to report being impacted by such strategies and practices than their female counterparts.

Location of the Land. A One-Way F-test was performed to ascertain if a significant difference in perception of the conservation strategies and practices of the Oroquieta City LGU could be found across land location. Results divulged the presence of a significant difference, $F_{(2,285)}$=37.36, p=.000. Post hoc analysis using the Bonferroni procedure showed that the significant difference could be located across all levels of land location. Lowland respondents (M=4.47, SD=.48) were significantly more likely than upland respondents (M=4.20, SD=.27) and midland respondents (M=4.05, SD=.20) to have a higher regard for the Oroquieta City LGU's conservation and strategies and practices. In the same vein, upland respondents' perception were significantly higher than that of midland respondents. In other words, perception is stronger among lowland respondents, followed by upland respondents, and last by midland respondents.

Education. This variable was tested if it accounted for significant differences in perception of respondents about the conservation strategies and practices of the Oroquieta City LGU. Using F-test, it was found that a marginal significant difference existed, $F_{(7,280)}$=2.00, p=.056. Bonferroni-based post hoc analysis divulged that higher education did not immediately translate to better perception. In fact, the significant differences could be found generally at the lower educational strata. Those with some elementary education (*M*=4.39, *SD*=.43) and those with some vocational education (*M*=4.36, *SD*=.44) had significantly greater perception than those with no education (*M*=4.07, *SD*=.29). In the same vein, those with some vocational schoolwork had significantly greater perception than those with elementary education (*M*=4.17, *SD*=.33), suggesting a positive impact of school exposure. Nevertheless, those with somewhat higher education, including elementary and high school (*M*=4.20, *SD*=.36), had significantly lesser perception compared to those with some elementary education, contradicting the previous point.

Number of Family Members. A Pearson Product Moment R correlation coefficient was obtained to find out if respondents' number of family members accounted for their perception of the conservation practices and strategies of the Oroquieta City LGU. Results showed a significant relationship that was inversely proportional, r= -.32, p=.000. Findings suggest that as number of family members increased, the perception of the mentioned strategies and practices decreased. Conversely, as the number of family members decreased, respondents' perception of the conservation practices and strategies of the Oroquieta City LGU increased. It appears then that smaller families felt the conservation efforts of the Oroquieta City LGU more strongly than large families.

Experience. Respondents' length of exposure to farming was investigated as determinant of perception of the conservation strategies and practices of the Oroquieta City LGU via One-Way F-test. Results demonstrated a significant difference, $F_{(5,282)}$=6.33, p=.000. Post hoc analysis using the Tukey procedure showed that respondents with one to three years of farming (*M*=4.55, *SD*=.49) were significantly more likely than those with four to six years of farming (*M*=4.26, *SD*=.39), ten and more years of farming (*M*=4.17, *SD*=.31), and no experience farming (*M*=4.15, *SD*=.34) to view as palpable the impact of Oroquieta City LGU's conservation strategies and practices.

Secondary Plants. One-Way ANOVA was performed to know if secondary plants accounted for the difference in perception of the conservation strategies of Oroquieta City LGU. Results showed a significant difference, *F*(5,282)=2.22, p=.052. Post hoc analysis using the Bonferorri procedure located the significant difference to be between planters of vegetables and planters of trees. Those who planted vegetables (*M*=4.07, *SD*=.23) were significantly less likely than those who planted trees (*M*=4.30, *SD*=.23) to perceive the presence of the conservation strategies and practices of the Oroquieta City LGU. In other words, tree planting accounted for greater appreciation of the impact of these LGU initiatives.

Type of Ownership. An independent sample t-test was run to find out if owners and renters differed significantly in their perception of the conservation strategies and practices of the Oroquieta City LGU. Results showed a significant difference, $t_{(286)}$=3.54, p=.000, so that owners (*M*=4.29, *SD*=.39) were significantly more likely than renters (*M*=4.11, *SD*=.31) to perceive the mentioned practices and strategies in a good light. It appears that the efforts of the Oroquieta City LGU in so far as conservation is concerned tend to be felt more by land owners rather than renters.

Types of Fertilizer. The types of fertilizer used were looked into to know if these were a significant determinant of the perception of the conservation strategies and practices of the Oroquieta City LGU. Results from F-test revealed that types of fertilizer did evince significant difference in perception, $F_{(4,283)}$=15.43, p=.000, so that those who used mixed fertilizers (*M*=4.65, *SD*=.46) were significantly more likely than those who used inorganic fertilizers (*M*=4.31, *SD*=.38), organic fertilizers (*M*=4.24, *SD*=.43), no fertilizer (*M*=4.14, *SD*=.27), and other fertilizers (*M*=4.15, *SD*=.35) to perceive the presence of conservation strategies and practices of the Oroquieta City LGU. In the same vein, compared to those who used no fertilizer, users of inorganic fertilizers were significantly likely to report having perceived such strategies and practices. In other words, greater perception was observed in users of mixed fertilizers vis-à-vis all those who tapped other fertilizers schemes and in users of inorganic fertilizers versus those who did farming sans any fertilizer.

Location of the Farms. Through a One-Way F-test, it was found that location of the farm accounted for significant difference in perception of issues and problems in the Layawan Watershed, $F_{(2,284)}$=26.54, p=.000. Post hoc analysis via Bonferonni further showed that those who did not disclose their farms' locations (*M*=3.38, *SD*=.75)

were significantly more likely than those who farms were outside (*M*=3.32, *SD*=.86) and those whose farms were inside (*M*=2.60, *SD*=.87) to perceive the problems and issues in the Layawan Watershed. Moreover, those whose farms were outside the watershed perceived the said concerns more than those whose farms were inside the watershed.

Relationship among the Attitudes and Perceptions of Watershed Conservation Strategies and the Perception of the Conservation Strategies and Practices of the Oroquieta City LGU

The table below shows the relationship among the attitudinal measures as independent variables and the perception of the conservation strategies and practices of the Oroquieta City LGU as dependent variable.

Table 3. Correlation of the Attitudinal Variables and Perception of the Conservation Strategies

Perception and Attitudinal Variables	Perception of the Conservation Strategies and Practices of the Oroquieta City LGU		
	r	p-level	Remarks
Perspective towards the community	.62	.00	Highly Significant
Perspective towards the environment	.71	.00	Highly Significant
Conservation beliefs	.78	.00	Highly Significant
Familiarity with water resource issues in the community	.32	.00	Highly Significant
Concern with consequences of water resource problems	.47	.00	Highly Significant
Agreement with water resource conservation	.74	.00	Highly Significant
Problems and issues in the Layawan Watershed	.30	.00	Highly Significant
Community and government conservation practices	.89	.00	Highly Significant

Pearson R correlation analyses were run to know if there were significant relationships between each perceptual and attitudinal measure and respondents' perception of the conservation strategies and practices of the Oroquieta City LGU. Results showed that all variables were significantly correlated with respondents' perception. All relationships were directly proportional.

As perspective towards the community increased, so did respondents' perception of the conservation strategies and practices of the Oroquieta City LGU. Conversely, decreased perspective towards the community went hand in hand with lower perception of the mentioned strategies and practices. Higher perspective towards the environment meant increase in perception of the Oroquieta City LGU's strategies and practices in conservation. The same is true for familiarity with water resource issues in the community: respondents who reported more familiarity were significantly more likely to perceive the LGU's efforts. In reverse, respondents with lesser familiarity were significantly less like to perceive the LGU's efforts. In the same way, respondents with more concern about water resource problems had higher perception, while less concern translated to lesser perception. Respondents with higher agreement with water resource conservation also demonstrated greater perception of the LGU's conservation strategies and practices. The reverse is true for those with lesser agreement. Meanwhile, those who manifested

greater perception of the problems and issues in the *Layawan*watershed also reported greater perception of the efforts of the Oroquieta City LGU. On the other hand, respondents who claimed greater perception of the community and government's conservation practices in general also reported greater perception of the LGU Oroquieta-specific conservation practices and strategies.

All perceptual and attitudinal variables investigated were positively and significantly correlated with respondents' perception of the conservation strategies and practices of the Oroquieta City LGU. Given that the perception of the LGU's efforts was also very high, this finding suggests that cognitive dispositions played a crucial role in how these residents in the Layawan Watershed made sense of the concerned LGU's initiatives akin to previous studies (e.g., Whitemarsh, 2008; Slimak&Deitz, 2006). Respondents in this study appeared to claim very high pro-environmental attitudes. In the continuum of Dunlap and colleagues (2000), their dispositions, captured by local-sensitive measures, could be described in a global sense as tilting towards the new ecological paradigm. It should be noted, however, that these claims were self-reports. As the literature points out, optimism bias attends lay thinking about the environment (Costa-Font, Mossialos, &Rudisill, 2009). What this research may have put forward is the idea that even at the level of self-perception, optimism or positivity bias persists as laypersons think about themselves and their association with the environment. Having been bombarded by positive imagery of someone who is pro-environment, it jives well for laypeople's maintenance and protection of self-regard that they fit the image of someone who subscribes to the new ecological paradigm.

As pointed out, respondents' self-reports about their dispositions on the measured environment issues-based attitudinal correlates of the LGU conservation drive may be attended by optimism or positivity bias. At the positive level, this biased dispositional framework did translate to better perception of the LGU's efforts. In other words, although biased on their self-views vis-à-vis the environment, the respondents' stance was accompanied by better appreciation and awareness of what the local government has been doing to promote conservation. Since the promotion of conservation must be a linkage between the local government and its constituents (Ciocănea, Sorescu, Ianoși, &Bagrinovschi, 2016; Gerhardinger, Godoy, & Jones, 2009; Xu, Chen, & Fu, 2006; Hiedanpaa, 2005; Gillingham& Lee, 1999), one route that may possibly be explored to enhance awareness of the Oroquieta City LGU's pro-environmental action plan is to nurture the said perceptual and attitudinal correlates among stakeholders. In a way, policy-makers can maximize their constituents' own views and self-labels that they are pro-environment to make partners out of them. There is a psychological principle that operates here: cognitive consistency. By cultivating people's beliefs that they are on the side of the environment, local government can forge easier alliance with them, as compared to those who have poor environmental orientation whose attitudes have to be changed first before they are on deck.

To understand how to strengthen respondents' pro-environmental dispositions, the socio-demographic variables significantly associated with each attitudinal correlate lend insights on how these independent variables could be strengthened. Across almost all the independent variables, males were found to have significantly higher pro-environmental attitudes and beliefs. This finding is inconsistent with the literature showing no or marginal association between environment cognition and the male sex (e.g., Slimak& Dietz, 2006; Sjoberg, 2000; Costa-Font, et. al, 2009; Brann, 2003, etc.). This difference may have been evinced by context. In the research locale, most participants of LGU initiatives on conservation are males. The local government mostly taps males because of the leadership they hold in households. Moreover, males make most of the decisions especially in upland areas.

Another consistency across pro-environmental dispositions measured was their significant and inversely proportional relationship with the number of family members. This finding is seen as a function of the restraining tendency of pro-environmental attitudes. Families with more members experience greater pressure to exploit natural resources. On the other hand, subscription to pro-environmental attitudes places a control on people's wanton treatment of the natural resource. Consequently, families with more members will have lesser incentives to support such framework towards the environment.

Also a consistent finding is the higher pro-environmental attitudes from lowland areas over the midland and the highland. This outcome is seen as indicative of realization among lowland respondents that hazards from environmental destruction are most pronounced in lowland areas since, in the case of floods for example, the massive amount of water from the uplands and the midlands would be expected to trickle down and wreck more

havoc in the lowlands. Given this greater risks, there is higher incentive for lowland people to promote environmental conservation.

Predominantly, results showed that lesser experience in farming was associated with more pro-environmental attitudes. This finding is consistent with the literature showing that familiarity dampens orientation in favor of the environment (Lima & Castro, 2005). In this case, it has been shown that the more familiar a Watershed resident was with farming in the area, the lesser was their judgments in favor of environmental protection. Moreover, this result may also be reflective of the fact that younger farmers are more willing to experiment with technologies and have been the recipient of local government's information drive on the innovative strategies in farming. In the case of older farmers, they have embraced a system that once worked for them. So, environmental familiarity does not necessarily bread backyard contempt. In fact, environmental familiarity breeds too much liking towards a mechanism of farming that it has become too hard for older farmers to let it go.

Relationship to household head, land ownership, relationship to owner, and means of acquisition are economic indicators in relation to capacity to possess lands and exploit resources in the watershed area. Analysis of patterns among significant results indicates that when personal ownership was invested on the property, there was greater pro-environmental attitudes. The literature speaks of the tendency for higher income people to be more pro-environmental because they have the capacity to shoulder the costs of engaging in pro-environmental behaviors. These European and Western findings point to the fact that affluent people can survive without directly doing actions that are destructive to nature (e.g., Jones & Dunlap, 1992; Samdahl & Robertson, 1989; Lubell, Zahran, and Vedlitz, 2007). In the case of the research setting, however, it could not be said that when respondents owned, purchased, was a spouse or was related to the owner, they were already affluent. Thus, findings in this case is better seen as a form of being protective stance towards their personal ownership. After all, it is difficult to obtain, much less nurture, a property in the research context.

Furthermore, there is a general trend showing that employees, among other primary employments, demonstrated higher pro-environmental attitudes. Employees have a high stake in following barangay rules, as their employments require clearances from local and *barangay* governments. Having been trained to navigate in a set-up with vertical authority, employees can easily internalize the pro-environmental attitudes espoused by local government through their respective barangays. Finally, when farms were located inside the watershed, there was generally more positive environmental stance. This finding could be seen as stewardship and incentive. Being directly affected by the impact of environmental destructions in the watershed, respondents with such farms have embraced the obligation of guarding this natural resource. In the process, they have realized that there is greater gain from being good stewards. These gains incentivized them to develop a sense of ownership.

Meanwhile, respondents' perceptions of the LGU conservation initiatives were associated with sex, location of the land, education, experience, secondary plants, ownership, and fertilizer. In terms of sex, the prevalence of perception of the local government's conservation strategies among males maybe linked to the arrangement where farm work remains a largely male-dominated endeavor. Since males are more salient in the field, it is understandable why efforts of the LGU impinge upon them more than their female counterparts. While females do engage in farm work, they tend to take on a supportive role and leave major decision-making on males. As such, familiarity with conservation strategies and practices is more prevalent among these male respondents.

Consistent with the results on pro-environmental attitudes, perceptions of LGU initiatives were greater among lowland respondents. Since the lowland is more accessible, they probably are more easily reached by government initiatives to educate people about the environment. The number of family members was inversely related with perception of LGU efforts. This arrangement may again be a function of incentive. In smaller families, the impact of pro-environmental policies could be felt faster and easier since its gains would be shared among fewer people. Owners were also more perceptive with LGU efforts, because their property would be directly affected, creating a personal stake in on their part on the issue. Less farming experience was also significantly related with being perceptive. Neophyte farmers may be more open to the new methods peddled by the LGU.

Trees, being the most important among the plants in conserving watersheds, evoked better perception of LGU efforts. This case may be explained by the fact that, as part of LGU strategy to encourage tree planting,

planters of trees in the watershed have been given direct incentives for their initiative. In general, the usage organic fertilizer is more laborious during the preparation phase. Thus, those who used mixed fertilizers and thus incorporated the organic fertilizers were more perceptive of the LGU efforts, as this is an expression of more openness to make use of organic fertilizers even if this practice is still cumbersome and anti-profit. Even in the face of an Organic Law, there is still a lot of room for improvement. So, users of mixed fertilizers could be regarded as ahead of their time and therefore they are aware of government initiative to go green.

On the other hand, the impact of education on pro-environmental attitudes as well as on perceptions of the LGU conservation measures appears sketchy. This finding is quite worthy of notice. The Philippine Government has adopted Philippine Agenda 21 patterned after the United Nations policy on the matter. This policy incorporates environmental awareness and sustainable development. It should have been the duty of the education arm of government to incorporate these matters into the curriculum. If the Education Department has done so, then education, as it elevates, should have created an increase in environmental awareness and disposition. The results here say otherwise.

Finally, there is a trend showing that perception towards problems in the Layawan Watershed and familiarity with water resource issues turned out to be insignificant even for socio-demographic characteristics that showed significant association with the other pro-attitudinal measures of the mentioned variables. This arrangement is seen as a gap between global or general pro-environmental attitudes (i.e., perspectives towards the community and the environment, conservation beliefs, and perceived familiarity with water resource issues) and domain-specific attitudes (i.e., perceptions of problems and issues in the Layawan Watershed) investigated here. It is thus clear that these attitudes relate to socio-demographic characteristics and probably with other pro-environmental measures in a nuanced manner.

CONCLUSION AND RECOMMENDATIONS

The study mapped a wide territory of perceptual and attitudinal variables that correlated significantly with perception of LGU conservation strategies and practices. In so doing, it has provided a set of predictors that can be maximized and addressed to increase awareness and participation of stakeholders in the promotion of conservation efforts.

One key theme that emerged from the results is the powerful impact of incentives in encouraging pro-environmental attitudes and awareness of local initiative to conserve nature. Thus, local governments should incentivize those whom they target to be partners in this endeavor. For example, there is lesser incentive for women to possess pro-environmental attitudes and, by correlation, they too lack reinforcement to be perceptive of LGU efforts. Hence, the initiatives aimed at gender equality and women empowerment should not be detached from conservation and sustainable development efforts. This trend is also apparent vis-à-vis ownership. Those who actually have entitlements over the land tend to be more encouraged to pursue conservation and sustainable development. As such, investment in land reform and indigenous people's ancestral domain recognition cannot be separated from these efforts to advance the cause of ecology. Family planning too is crucial. As seen, those with lesser family members are drawn better towards these initiatives than those with large families and therefore are more prone and more in need to abandon protective mechanisms for the natural environment just so they could provide for basic needs.

The sketchy impact of education on pro-environmental attitudes and perceptiveness towards local government initiative in this direction raises a red flag. Educators should be partners of local government and environmental advocates in advancing pro-environmental causes. When increase in education is not significantly associated with better attitudes towards the environment, then it is probable that sustainable development was not incorporated in the curriculum or, if it were, then the delivery of instruction was not effective. Give the gargantuan task of environmental alleviation, government agencies like the Department Education and Commission on Higher Education should team up with Department of Environment and Natural Resources to develop effective curricula suited to the rapid changes and demands in sustainable development education.

Given these demands, government should prioritize environmental protection and sustainable development in it budget allocation. However, as government does so, income-generating mechanisms from the ground should also be encouraged. One initiative in this direction is the Payment for Environmental Services scheme. Under this mechanism, from the payment for use of the environment, a portion is allotted so that it could be utilized for sustainable development projects like incentivizing people from upland areas who experience immediate gratification from anti-nature practices. This arrangement will be wiped out if an alternative is provided. Speaking of alternatives, in general, there must be an approach that provides another route to the economic well-being of those who depend on abuse of natural resources to thrive.

This research looked at pro-environmental attitudes and their relationship with perception of local government initiative to promote the environment in watersheds. Essentially, it found that pro-environmental judgments made respondents more perceptive of local government's initiatives. In other words, those who reported themselves as pro-environment also said that the government's efforts impinged upon them. So, if local governments want to raise awareness about their conservation efforts, they can start by increasing pro-environmental attitudes among its constituents using suggestions stated above, among others.

However, this study was limited to pro-environmental attitudes and awareness of the government's handiwork on the environment. So, if a local government has sparked pro-environmental attitudes among its people, then it can likely evince awareness about the LGU environment campaign. With positive attitudes and awareness, there comes readiness act. However, attitudes and awareness do not immediately predict behavior. It is now recommended that future research should go beyond knowing what constitutes the readiness to act in favor of the environment and look into the territory of what actually creates behavior. From this study, a glimpse of that possible link may be the specificity for attitudes. Specific attitudes are better at predicting specific behaviors.

In this study, a comparison of different socio-demographic and attitudinal determinants of awareness was made. It is probable that what drives us to behave collectively in favor of the nature may not be what makes us different, but those that make us similar. So, future studies may also look at people's collective or shared concept of the environment and its link to attitudes, awareness, and behaviors in relation to sustainable development. Future studies can also validate competing claims among stakeholders of environment using strategies like GIS and soil mapping and other technologies that may apply, which can provide objective data that validate perception.

Attitudes are linked to awareness. When attitudes are self-reported, they may be characterized by bias. This positivity bias can be used so that labels describing the self as pro-environment and as aware of government initiatives could be maximized to make partners out of citizens. Nonetheless, probably because of the bias that comes with subjective judgment, there is a missing link between attitudinal claims and actual behaviors. That question should be explored by future researches. Be that as it may, what is delivered here is the prescription that if local governments want to increase awareness of its pro-environmental drive, they must enhance pro-environmental attitudes. So doing requires patience because it necessitates more knowledge to pinpoint the bridge between environmental thought and action.

In sum, this research found that the local government of Oroquieta City and its constituents have the potential to become partners in sustainable development advancement. This partnership could be forge by, among other things, harnessing the readiness of the populace to act in act pro-environmentally, incentivizing pro-environmental orientation and action especially in areas where alternative to abusing nature is scarce, ensuring that educational curricula are responsive to sustainable development issues, empowering women, and supporting efforts at family planning.

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