Multi-Stakeholders' Level of Engagement in Linao Creek Program, Municipality of Barotac Nuevo, Iloilo, Philippines

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Abstract: This descriptive survey aimed to determine the multi-stakeholders' level of engagement in Linao Creek Program as assessed by the 360 randomly selected household residents of Barangay Tabucan, Ilaya Poblacion, Ilaud Poblacion, Tabuc-Suba, Lagubang, Linao, and Cruz, in the Municipality of Barotac Nuevo, Iloilo, Philippines. The respondents were classified according to age, civil status, highest education, and occupation. The data were coded, processed, and statistically analyzed using frequency and percentage, Mean, Standard Deviation, and One-Way ANOVA. The results showed that the multi-stakeholders had "High" level of cognitive, behavioral, emotional and social engagement in Linao Creek Program as assessed by the respondents. The results also showed that there were significant differences in the level of multi-stakeholders' cognitive, behavioral, emotional and social engagement in Linao Creek Program as assessed by the respondents when classified according to age, educational attainment, and occupation. However, no significant difference was noted in the level of multi-stakeholders' cognitive, behavioral, emotional and social engagement in Linao Creek Program as assessed by the respondents when classified according to civil status. Based on the study's findings, the Local Government Unit (LGU) may focus on increasing awareness of the Linao Creek Program to drive greater engagement through various strategies that clearly explain the program's objectives, benefits, and individual roles in ensuring its success.

Keywords: multi-sectoral, engagement, Linao Creek Program, descriptive-survey, Barotac Nuevo, Iloilo, Philippines

Introduction

Rivers perish as a result of diverse issues that pose significant threats to the environment and human health. Various national agencies in the Philippines are assigned the responsibility to allocate, manage, and preserve water resources. Numerous water regulations exist, yet their execution continues to pose challenges (Rola and Tabien, 2001).

Linao Creek in the Municipality of Barotac Nuevo, Iloilo, Philippines runs through Barangays Tabucan, Ilaya Poblacion, Ilaud Poblacion, Tabuc-Suba, Lagubang, Linao, and Cruz. This body of water plays a vital role in the municipality however it has been gradually obstructed because of infrastructures and there are initiatives from the local government to restore and rejuvenate the creek. Numerous infractions have occurred in Linao Creek which has led to the river becoming silted. To transform the river into a tourist hotspot, the Municipal Government of Barotac Nuevo plans to enhance the area for improved aesthetics and organization. Based on the above description, the quick advancement has resulted in social transformations and altered the pace of creek life due to land infrastructure. Consequently, the river is becoming narrower and more enclosed due to small structures being built on it, and it may even vanish because of backfilling that repurposes it for construction or road projects. The situation regarding Linao Creek evidently calls for collective accountability among the community and the government (legislative, executive, and judicial) to address it and devise effective policies aimed at restoring the river's function as a hallmark of the Municipality of Barotac Nuevo.

The involvement of multiple stakeholders in community initiatives examines the active engagement and cooperation of various participants, such as researchers, policymakers, the industry, and civil society. It highlights

the significance of incorporating diverse viewpoints and experiences to guarantee fair involvement and foster a more inclusive atmosphere for collaborative knowledge creation. This initiative seeks to synchronize research and innovation results with the requirements of stakeholders, integrate democratic principles, and encourage transparent and inclusive methods in the advancement of technology. Studies emphasize the significance of inclusion and procedural fairness when engaging marginalized stakeholders. This involves making certain that all pertinent opinions are acknowledged and that the engagement procedure is just and open. Engaging multiple stakeholders can result in more effective solutions, greater public approval of initiatives, and enhanced problem-solving abilities within the community. Nonetheless, studies recognize difficulties, including the insufficient inclusiveness in various multi-stakeholder efforts, the dominance of particular interests, and the necessity for strong systems to guarantee that stakeholder involvement advantages the community. Creating effective strategies for assessing the results of community engagement programs will guarantee a beneficial effect on community health and growth, while promoting the collaborative generation of knowledge, solutions, and value in service ecosystems, where various interacting stakeholders jointly produce shared value.

Based on Bourdieu's Theory of Social Fields, this research aimed to assess the level of engagement of various stakeholders in the Linao Creek Program in the Municipality of Barotac Nuevo, Iloilo, Philippines, as evaluated by the respondents both collectively and categorized by age, civil status, educational background, and occupation. This research also discovered whether significant differences exist in the level of engagement among multi-stakeholders in the Linao Creek Program when respondents are categorized by age, marital status, education level, and profession. Bourdieu's Theory of Social Fields offers enhanced insight into how various social groups view water scarcity. Bourdieu's theory emphasizes that individuals' perspectives and actions are shaped by their habitus, the capital they possess, and their positions within social fields. These elements combine to form unique viewpoints and responses to water scarcity. Bourdieu proposed the concept of Social Fields as relatively autonomous social spaces where specific activities take place, acknowledging the power relations among participants, their relationships, and their interdependence. Bourdieu emphasized that individuals are active social agents capable of transforming social structures, recognizing their capacity to use strategies to adjust or reshape current frameworks. This perspective is crucial for understanding how different community stakeholders perceive and engage with water management approaches (De Luque-Villa, Granda-Rodríguez, Garza-Tatis, and González-Méndez, 2024)

LITERATURE REVIEW

Stakeholders' Engagement in Environmental Projects

Preserving and rehabilitating freshwater ecosystem services amid local and global changes necessitates dynamic research that actively involves stakeholders. Nonetheless, there is an absence of clarity and agreement within the research community concerning where, when, and which stakeholders need to be involved, as well as what type of researcher should undertake the engagement.

In reply, Smyth and associates (2021) examined stakeholder participation across an expanding network of aquatic research sites in North and South America, marked by varied cultural norms, social values, resource management strategies, and ecological conditions. With seven sites in six countries, they found that different engagement levels were linked to the distinct interests of stakeholders, shaped by the historical context and urgency of water resource challenges, as well as the diverse abilities of site teams to effectively engage based on their expertise and available resources.

In the research conducted by Lim, Wong, Elfithri, and Teo (2022) regarding stakeholder engagement in Integrated River Basin Management, a comprehensive bibliometric analysis was effectively performed to uncover the trends, patterns, and research voids in developing stakeholder engagement frameworks within Integrated River Basin Management. Three well-known scientific databases were utilized to quantitatively evaluate the published literature regarding stakeholder engagement. The study aided in offering a clear comprehension and strategies for successful stakeholder engagement, thereby emphasizing the research gap, which reveals the absence of a robust stakeholder engagement framework for Integrated River Basin Management. The analysis showed that a considerable number of publications have been produced regarding the application of Integrated River Basin Management, highlighting the significance of involving stakeholders or their participation. Nonetheless, there is scarce research regarding the

effectiveness of stakeholder engagement in improving water management at the river basin level. The results also noted that engaging stakeholders can act as a means of social learning, and leadership is crucial for the effectiveness of such engagement.

A study by Chun, Sulaiman, and Abu Samah (2012) was carried out to assess local public perception and readiness to engage in a river conservation project for the Temiang River watershed in Peninsular Malaysia, focusing on public involvement in the preservation of a tropical urban river. These findings showed that the voluntary engagement in safeguarding the river is the primary concern. In general, the participants demonstrate a strong readiness to engage in the conservation program. Nevertheless, aspects such as age, education, gender, income, marital status, and place of residence influence their readiness to engage.

Additionally, Okumah, Yeboah, and Amponsah (2020) collected findings from Ghanaian research on the readiness and motivations of stakeholders to assist in sustainable water resource management. Through in-depth interviews and content analysis, their study sought to investigate the motivations and willingness of stakeholders to endorse sustainable water resource management, along with the actions they would take to support it. Findings indicate that stakeholders seem open to backing water protection initiatives because of various motivations. Consequently, decision-makers might need to highlight those incentives when promoting sustainable water resource management practices among the public and/or specific segments of society.

METHODOLOGY

This study employed the descriptive-survey approach to research. It was conducted in the Municipality of Barotac Nuevo, Iloilo, Philippines and utilized 360 out of 3, 591 household residents of Barangays Tabucan, Ilaya Poblacion, Ilaud Poblacion, Tabuc-Suba, Lagubang, Linao, and Cruz. This study utilized the stratified random sampling technique to determine the sample. This study utilized a researcher-made questionnaire validated by panel of experts. Part I was used to determine the respondents' demographic profile such as age, civil status, highest educational attainment, and occupation and Part II, is the questionnaire checklist on the Multistakeholder' extent of cognitive, behavioral, emotional, and social engagement.

The research instrument was administered to 35 household residents of the seven (7) barangays to establish its reliability. For the Extent of Engagement, Cronbach's alpha of 0.968 for Cognitive Engagement; 0.962 for Behavioral Engagement; 0.966 for Behavioral Engagement; and 0.979 for Social Engagement, indicate high reliability, with all items displaying a positive value for item polarity. Forty (40) items for Extent of Engagement were retained in the validated version by panel of experts. In conclusion, the instrument developed is a valid instrument capable of validating the multi-stakeholders' extent of engagement in Linao Creek Program, Iloilo, Philippines.

The accomplished instruments were statistically analyzed and interpreted using Mean, Frequency and Percentage, t-test, and One-Way Analysis of Variance (ANOVA). The item mean was employed with the values being described as follows:

Mean Range	Verbal Interpretation	Remarks / Interpretation
4.50 – 5.00	**Very High Engagement**	Respondents are highly involved and actively participate in activities related to the Linao Creek Program.
3.50 – 4.49	**High Engagement**	Respondents are regularly engaged and participate frequently in program-related activities.
2.50– 3.49	**Moderate Engagement**	Respondents show some level of involvement but may not consistently participate in program activities.
1.50 – 2.49	**Low Engagement**	Respondents have minimal involvement with the program and participate only occasionally or not at all.
1.00 – 1.49	**Very Low Engagement**	Respondents are largely disengaged and have little to no involvement in the Linao Creek Program.

RESULTS AND DISCUSSION

The Level of Engagement in Linao Creek Program as Assessed by the Respondents when taken as a Whole and classified according to Age, Sex, Civil Status and Educational Attainment

General Engagement in Linao Creek Program

Table 1 shows the level of general engagement in Linao Creek Program of the respondents when taken as a whole and classified according to age, sex, civil status and educational attainment. The respondents had "High" level of engagement when taken as whole and when grouped according to age and civil status. Further, results showed that college/Bachelor, high school, and post-graduate had "High" level of engagement. However, elementary graduates had "Low" level of engagement in Linao Creek Program. In terms of occupation, government and private workers had "High" level of engagement. However, self-employed, unemployed, and others had "Moderate" level of engagement in Linao Creek Program.

General Engagement in Linao Creek Program

Table 1 also shows that the respondents had "High" level of cognitive, behavioral, emotional and social engagement in Linao Creek Program when taken as a whole and when grouped according to civil status. As to educational attainment; college or Bachelor, high school, and post-graduate had "High" level of cognitive, behavioral, emotional, and social engagement. However, elementary graduates had "Low" level of cognitive, behavioral, emotional, and social engagement in Linao Creek Program. In terms of occupation; government and private workers had "High" level of cognitive, behavioral, emotional, and social engagement. However, self-employed, unemployed, and others had "Moderate" level of cognitive, behavioral, emotional, and social engagement in Linao Creek Program. Further, the results showed that 40 years old and above had "High" level of cognitive and behavioral engagement. On the other hand, respondents aged below 40 years old had "Moderate" level of cognitive and behavioral engagement in Linao Creek Program. Lastly, regardless of their age groups, the level of emotional and social engagement in Linao Creek Program of the respondents is "High".

Table 1. Level of Engagement in Linao Creek Program as Assessed by the Respondents when taken as a Whole and Classified according to Age, Civil Status, Educational Attainment, and Occupation

Categories	f	M	SD	Remarks
A. General Engagement	360	3.66	1.07	**High Engagement**
Age				
1. 40 years old and above	206	3.78	1.01	**High Engagement**
2. Below 40 years old	154	3.50	1.13	**High Engagement**
Civil Status				
1. Married	227	3.65	1.14	**High Engagement**
2. Single	100	3.68	0.97	**High Engagement**
3. Widowed/Separated/Annulled	33	3.68	0.94	**High Engagement**
Educational Attainment				
College/Bachelors	165	3.73	1.02	**High Engagement**
Elementary	27	2.43	1.40	**Low Engagement**
High School	135	3.69	0.99	**High Engagement**
Post Graduate	33	4.22	0.53	**High Engagement**
Occupation				
Government Employee	87	4.26	0.78	**High Engagement**
Private	21	3.98	0.98	**High Engagement**
Self Employed	95	3.48	1.09	**Moderate Engagement**
Unemployed	117	3.39	1.16	**Moderate Engagement**
Others	40	3.41	0.80	**Moderate Engagement**
B. Cognitive Engagement	360	3.59	1.10	**High Engagement**
C. Behavioral Engagement	360	3.67	1.13	**High Engagement**

D. Emotional Engagement	360	3.68	1.09	**High Engagement**
E. Social Engagement	360	3.71	1.09	**High Engagement**

Scale: 4.50 – 5.00 (Very High Engagement); 3.50 – 4.49 (High Engagement); 2.50 – 3.49 (Moderate Engagement); 1.50 – 2.49 (Low Engagement); 1.00 – 1.49 (Very Low Engagement)

The Significant Differences in the Level of Engagement of the Respondents in Linao Creek Program when Classified according to Age, Sex, Civil Status and Educational Attainment

Table 2 shows the significant differences in the level of engagement of the respondents in Linao Creek Program when classified according to age, sex, civil status and educational attainment

Employing the machine – processed t-test, significant differences were noted in the level of general engagement, cognitive engagement, behavioral engagement, emotional engagement, and social engagement in Linao Creek Program of the respondents when classified according to age ($t = 2.40$, $p<0.0$; $t = 2.18$, $p<0.05$; $t = 2.61$, $p<0.05$; $t = 2.08$, $p<0.05$; $t = 2.46$, $p<0.05$, respectively). Therefore, the null hypothesis was rejected.

Further, when the machine – processed ANOVA was employed, significant differences were also noted in the in the level of general engagement, cognitive engagement, behavioral engagement, emotional engagement, and social engagement in Linao Creek Program of the respondents when classified according to educational attainment [$F(3)=16.21$, $p<0.05$; $F(3)=18.88$, $p<0.05$; $F(3)=13.61$, $p<0.05$; $F(3)=13.06$, $p<0.05$; $F(3)=13.09$, $p<0.05$, respectively] and occupation [$F(3)=15.28$, $p<0.05$; $F(3)=15.41$, $p<0.05$; $F(3)=14.12$, $p<0.05$; $F(3)=14.91$, $p<0.05$; $F(3)=13.23$, $p<0.05$, respectively]. Hence, the hypothesis was rejected. However, no significant difference was noted in the level of general engagement, cognitive engagement, behavioral engagement, emotional engagement, and social engagement in Linao Creek Program of the respondents when classified according to civil status [$F(3)=0.05$, $p>0.05$; $F(3)=0.06$, p?0.05; $F(3)=0.24$, $p>0.05$; $F(3)=0.02$, $p>0.05$; $F(3)=0.06$, $p>0.05$, respectively]. Hence, the hypothesis was accepted.

This result finds support from a study on public participation for the Conservation of a Tropical Urban River of an urbanized Temiang River watershed located in Peninsular Malaysia conducted by Chun, Sulaiman, and Abu Samah (2012). This survey was carried out on 200 randomly selected respondents to evaluate the local public perception and willingness to participate on a river conservation project. The results indicated that the major issue is voluntary involvement in protecting the river. Overall, the respondents show a high willingness to be involved in the conservation program. However, factors of age, educational background, gender, income level, marital status, and residential locations determine the level of their willingness to participate.

Table 2. Significant Differences in the Level of Engagement in Linao Creek Program of the Respondents when classified according to Age, Civil Status, Educational Attainment and Occupation

Differences	df	Statistic	p	Remarks	Decision
General Engagement					
Age	358	2.40	**0.02**	**Significant**	**Reject H_0**
Civil Status	2	0.05	**0.95**	Not Significant	Do not Reject H_0
Educational Attainment	3	16.21	**0.00**	**Significant**	**Reject H_0**
Occupation	4	15.28	**0.00**	**Significant**	**Reject H_0**
Cognitive Engagement					
Age	358	2.18	**0.03**	**Significant**	**Reject H_0**
Civil Status	2	0.06	**0.95**	Not Significant	Do not Reject H_0
Educational Attainment	3	18.88	**0.00**	**Significant**	**Reject H_0**
Occupation	4	15.41	**0.00**	**Significant**	**Reject H_0**
Behavioral Engagement					
Age	358	2.61	**0.01**	**Significant**	**Reject H_0**
Civil Status	2	0.24	**0.79**	Not Significant	Do not Reject H_0
Educational Attainment	3	13.61	**0.00**	**Significant**	**Reject H_0**
Occupation	4	14.12	**0.00**	**Significant**	**Reject H_0**
Emotional Engagement					

Age	358	2.08	**0.04**	**Significant**	**Reject H_0**
Civil Status	2	0.02	**0.98**	Not Significant	Do not Reject H_0
Educational Attainment	3	13.06	**0.00**	**Significant**	**Reject H_0**
Occupation	4	14.91	**0.00**	**Significant**	**Reject H_0**
Social Engagement					
Age	358	2.46	**0.01**	**Significant**	**Reject H_0**
Civil Status	2	0.06	**0.95**	Not Significant	Do not Reject H_0
Educational Attainment	3	13.09	**0.00**	**Significant**	**Reject H_0**
Occupation	4	13.23	**0.00**	**Significant**	**Reject H_0**

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the findings on the study, the following conclusions were drawn:

1. Generally, the respondents are regularly engaged and participate frequently in activities of the Linao Creek Program. However, elementary graduates have minimal involvement with the program and participate only occasionally or not at all. Further, self-employed, unemployed, and others show some level of involvement but may not consistently participate in program activities.
2. The participants are consistently involved and take part often in program activities, demonstrating complete focus, enthusiasm, and comprehension of the program. This indicates that the respondents exhibited a strong emotional bond, empathy, and drive to engage with the program; a significant degree of involvement and a sense of volunteerism, as well as efforts to promote the program. Ultimately, this discovery reflects a strong degree of social engagement, assistance, and participation within the community. In contrast, individuals under 40 years old, including those self-employed, unemployed, and others, exhibit a certain level of attention, interest, and comprehension regarding the program; emotional ties, empathy, and motivation that are moderately strong; engagement, a sense of volunteerism to a logical degree; and lacking consistent social interaction, social support, and community engagement. Elementary graduates exhibit the lowest levels of attention, interest, and understanding regarding the program; emotional connection, empathy, motivation, involvement, sense of volunteerism, social interaction, social support, and community participation which are not truly inclusive.
3. This conclusion suggests that individual characteristics like age, educational background, and occupation play a role in how deeply someone engages with a program like the Linao Creek Program. Older participants might have different levels of engagement compared to younger ones, and individuals with higher educational backgrounds are more likely to engage in cognitive activities than those with less education. Similarly, occupation can impact engagement, as individuals with specific job types might be more likely to engage in certain types of activities. However, civil status does not seem to be a significant predictor of engagement in the program. This means that the level of engagement is not significantly affected by whether someone is married, single, or in another marital status. In essence, the study found that the program's effectiveness in engaging participants is more strongly linked to individual characteristics and background than to marital status.

Recommendations

Based on the foregoing conclusions, the following recommendations were forwarded:

1. If respondents are regularly engaged and participate frequently in Linao Creek Program activities, the LGU may focus on sustaining and enhancing the existing program's positive momentum. This includes reinforcing the success, documenting best practices, and exploring how to expand the program's impact and reach. To improve involvement of elementary graduates, the self-employed, and the unemployed in the Linao Creek program, the LGU should focus on tailored outreach, skill development, and job placement assistance. This includes connecting graduates with livelihood programs, facilitating access to entrepreneurship support for the self-employed, and providing unemployment benefits and job search assistance.
2. If participants are consistently engaged and enthusiastic in program activities, the LGU may focus on

maintaining and strengthening the positive momentum through continued program development, diverse engagement opportunities, and recognizing participant contributions. This includes ongoing capacity building, fostering a culture of community participation, and ensuring resources are available to support ongoing engagement.

3. To address the identified needs of young, under-40 individuals who are self-employed, unemployed, or otherwise, the LGU may prioritize building community engagement and social support. This can be achieved through targeted programs that foster networking, mentorship, and volunteer opportunities, while also ensuring access to essential resources and information. To improve elementary graduates' engagement and inclusion, the LGU should focus on making programs more relatable, interactive, and inclusive. This includes increasing community participation, promoting social interaction and support, and fostering a sense of belonging and volunteerism. Specifically, the LGU could implement tailored interventions, capacity building for stakeholders, and continuous monitoring to assess and improve program effectiveness.
4. For policymakers aiming to optimize the Linao Creek Program's effectiveness, it's crucial to tailor engagement strategies based on individual characteristics rather than solely on factors like civil status. This means understanding how age, educational background, and occupation influence participation levels and then designing activities that cater to these diverse needs.
5. Based on the study's findings, the LGU may focus on increasing awareness of the Linao Creek Program to drive greater engagement. This can be achieved through various strategies such as targeted communication campaigns, community dialogues, and educational initiatives that clearly explain the program's objectives, benefits, and individual roles in ensuring its success.

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