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Sustainable Tourism in ProbinSyudad: The Effectiveness and Challenges of the Water Lily Livelihood Program in Taguig City

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Abstract. This study examined workers' perceptions of the effectiveness and challenges of Taguig City's Water Lily Livelihood Program. A descriptive quantitative survey was completed by 150 available workers from a program population of 200. The 28-item questionnaire assessed social, economic, environmental, and cultural outcomes, alongside perceived risks and challenges. Mean ratings were favorable for social effectiveness (M = 3.58), economic effectiveness (M = 3.35), environmental effectiveness (M = 3.59), and cultural conservation (M = 3.55). Limited access to harvesting machinery was the highest-rated challenge (M = 3.37). The reported comparisons by sex found no statistically significant differences in the measured dimensions. Age and marital status are summarized descriptively. The findings describe workers' perceptions rather than measured changes in income, environmental conditions, or tourism activity. They suggest priorities for equipment access, skills development, community participation, and feedback mechanisms.

Keywords: livelihood program effectiveness; perceived challenges; sustainable tourism; Taguig City; Water Lily Livelihood Program

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Introduction

Taguig City combines an urban setting with communities whose livelihoods are linked to local aquatic resources. Its Water Lily Livelihood Program uses harvested plants to produce handicrafts and other products, connecting livelihood opportunities with environmental management. This study examines how participating workers perceive the program's contributions and challenges.

This study assessed workers' perceptions of the program's social, economic, environmental, and cultural effectiveness; identified perceived risks and challenges; described the respondents' demographic characteristics; and examined differences in ratings by sex. The findings can inform program improvement, product development, and local tourism planning. Because the study measured perceptions at one point in time, it cannot establish whether the program caused changes in household income, employment, environmental quality, or tourism activity.

Materials and Methods

Research Design

The study used a descriptive quantitative survey design to document workers' perceptions of the livelihood program. Descriptive research examines the characteristics of a population or phenomenon (Siedlecki, 2020). Frequencies and percentages summarize demographic characteristics, while means and standard deviations summarize ratings. One-way analysis of variance was used to compare ratings by sex. Age categories of 25-30 and 26-30 years were combined into a single 25-30-year group. Marital-status nonresponses were classified as missing, not as a substantive status category; valid percentages use the 143 nonmissing responses. Age and marital status are reported descriptively because the available aggregate statistics do not permit recomputation of the group comparisons after these corrections.

Respondents

The program population comprised 200 workers in Taguig City. Of these, 150 available workers completed the survey, equivalent to 75% of the stated population. The findings therefore describe the participating workers; the availability-based recruitment procedure limits generalization to nonparticipants.

Research Instrument

The survey materials included a consent letter, a demographic profile, and a modified 28-item questionnaire. Demographic questions covered age, sex, and marital status. The questionnaire contained five social-effectiveness items, five economic-effectiveness items, six environmental-effectiveness items, five cultural-conservation items, and seven risks-and-challenges items. Item and dimension ratings are summarized using means and standard deviations.

Five tourism professionals reviewed the modified questionnaire and provided feedback on its content.

Procedure

The researchers obtained permission from the management of the Taguig Water Lily Livelihood Center before approaching workers. Workers were asked for their consent to participate. Questionnaires were distributed with management's assistance, collected after completion, and checked before the responses were forwarded for statistical analysis.

Results and Discussion

Respondent Profile

Table 1

Age of Respondents

Age group	*f*	%
Below 25 years old	14	9.3
25-30 years old	24	16.0
31-35 years old	21	14.0
36-40 years old	22	14.7
41-45 years old	27	18.0
46-50 years old	11	7.3
Above 50 years old	31	20.7
Total	150	100.0

Note. N = 150. Percentages may not total 100 because of rounding.

The largest age group was above 50 years (31 workers, 20.7%). The combined 25-30-year group comprised 24 workers (16.0%). The largest group represented a plurality rather than a majority of the sample.

Table 2

Sex of Respondents

Sex	*f*	%
Male	47	31.3
Female	103	68.7
Total	150	100.0

Note. N = 150. Percentages may not total 100 because of rounding.

Women accounted for 103 of the 150 respondents (68.7%), while 47 respondents were men (31.3%).

Table 3

Marital Status of Respondents

Marital status	*f*	Valid %
Single	27	18.9
Married	85	59.4
Widowed	19	13.3
Separated	12	8.4
Valid total	143	100.0
Missing / no answer	7	-
Total sample	150	-

Note. Valid percentages use 143 nonmissing responses. Seven nonresponses (4.7% of N = 150) are missing values and are excluded from the valid-percentage denominator.

Among the 143 respondents who reported their marital status, 85 were married (59.4%). Seven of the 150 respondents (4.7%) did not report their marital status and were treated as missing for this variable.

Perceived Program Effectiveness

Table 4

Perceived Social Effectiveness

Item	*M*	*SD*
1.1 I am aware that the water lily livelihood program aligns with the community's goal of creating employment opportunities.	3.88	0.365
1.2 The unemployment rate in the community decreased when the livelihood program started.	3.43	0.536
1.3 The program offers the local community training and seminars related to the project.	3.61	0.665
1.4 The program improves the social status of local residents and contributes to their progress.	3.66	0.554
1.5 Community income increased when the program started.	3.34	0.674
Dimension mean	3.58	0.349

Note. M = mean rating; SD = standard deviation. Ratings represent respondents' perceptions.

Social effectiveness had a mean of 3.58 (SD = 0.349). Awareness that the program aligned with community employment goals received the highest item mean (M = 3.88). These ratings indicate favorable perceptions of the program's social contribution; they do not independently establish changes in employment or community income.

Table 5

Perceived Economic Effectiveness

Item	*M*	*SD*
2.1 My monthly income from the program enables me to provide enough food for my family.	3.45	0.609
2.2 Additional responsibilities in the program, such as making costumes for shows or pageants, provide additional pay.	3.42	0.522
2.3 My family benefits from the livelihood program.	3.59	0.603
2.4 The livelihood program increases our household earnings.	3.31	0.625
2.5 We receive monthly training or seminars to improve our skills and the program.	2.99	0.827
Dimension mean	3.35	0.412

Note. M = mean rating; SD = standard deviation. Ratings represent respondents' perceptions.

Economic effectiveness had a mean of 3.35 (SD = 0.412). Perceived family benefit received the highest item mean (M = 3.59). Monthly training and seminars received the lowest rating (M = 2.99), suggesting an area for program improvement.

Table 6

Perceived Environmental Effectiveness

Item	*M*	*SD*
3.1 I am aware that water lilies can provide shelter and food for aquatic and nonaquatic animals.	3.61	0.541
3.2 I am aware of the disadvantages of water lilies, such as flooding and obstruction of boating.	3.57	0.535
3.3 Water lilies have negative environmental impacts, such as climate change.	3.58	0.571
3.4 The program contributes to environmental improvement.	3.56	0.618
3.5 The program and its workers comply with environmental standards.	3.55	0.630
3.6 The livelihood program has beneficial environmental effects, such as flood prevention.	3.64	0.559
Dimension mean	3.59	0.397

Note. M = mean rating; SD = standard deviation. Ratings represent respondents' perceptions.

Environmental effectiveness had a mean of 3.59 (SD = 0.397). The item on beneficial environmental effects, including flood prevention, received the highest mean (M = 3.64). These ratings reflect workers' perceptions, including their beliefs about adverse environmental effects. Direct environmental measurements would be needed to assess changes in flooding, water quality, or aquatic habitats.

Contribution to Cultural Conservation

Table 7

Perceived Contribution to Cultural Conservation

Item	*M*	*SD*
1. The Water Lily Livelihood Program promotes culture and conservation of the Taguig River.	3.69	0.520
2. The program encourages participation in Taguig's culture, for example, through tourists' participation in making products.	3.64	0.521
3. The program demonstrates respect and appreciation for the community's cultural traditions and practices.	3.52	0.588
4. The program helps preserve and celebrate the community's cultural heritage and diversity.	3.47	0.599
5. The program incorporates the community's cultural values and beliefs into its activities and initiatives.	3.44	0.719
Dimension mean	3.55	0.423

Note. M = mean rating; SD = standard deviation. Ratings represent respondents' perceptions.

Cultural conservation received a mean of 3.55 (SD = 0.423). The highest-rated statement concerned the program's contribution to culture and conservation of the Taguig River (M = 3.69). The item on visitor participation in making products also received a favorable rating (M = 3.64), indicating a perceived connection between livelihood activities and cultural tourism.

Perceived Risks and Challenges

Table 8

Perceived Risks and Challenges

Item	*M*	*SD*
1. Occasional shortages of water lilies.	3.33	0.629
2. Poor quality of finished products.	2.83	0.880
3. High prices of finished products.	2.93	0.795
4. Temporary work stoppages during the COVID-19 outbreak.	3.26	0.680
5. Limited accessibility of livelihood products.	3.07	0.748
6. Limited access to machinery for harvesting water lilies.	3.37	0.700
7. Typhoons and floods.	3.35	0.685
Dimension mean	3.16	0.421

Note. M = mean rating; SD = standard deviation. Ratings represent respondents' perceptions.

Risks and challenges had an overall mean of 3.16 (SD = 0.421). Limited access to machinery for harvesting water lilies was the highest-rated challenge (M = 3.37), followed by typhoons and floods (M = 3.35) and occasional shortages of raw material (M = 3.33). These responses identify equipment access and supply resilience as priorities for program planning.

Differences in Ratings by Sex

Table 9

Differences in Ratings by Sex

Outcome	Source	SS	*df*	MS	*F*	*p*
Social effectiveness	Between	0.130	1	0.130	1.069	.303
	Within	17.992	148	0.122		
	Total	18.122	149			
Economic effectiveness	Between	0.403	1	0.403	2.395	.124
	Within	24.910	148	0.168		
	Total	25.313	149			
Environmental effectiveness	Between	0.001	1	0.001	0.007	.934
	Within	23.429	148	0.158		
	Total	23.430	149			
Cultural conservation	Between	0.266	1	0.266	1.493	.224
	Within	26.346	148	0.178		
	Total	26.612	149			
Risks and challenges	Between	0.204	1	0.204	1.149	.286
	Within	26.257	148	0.177		
	Total	26.461	149			
Overall effectiveness	Between	0.216	1	0.216	2.322	.130
	Within	13.785	148	0.093		
	Total	14.001	149			

Note. SS = sum of squares; MS = mean square. Values are the reported analysis-of-variance results.

No statistically significant differences by sex were reported for the four effectiveness dimensions, risks and challenges, or the overall effectiveness score (all $p > .05$). These tests do not establish that the groups are equivalent; they indicate that the analyses did not reject the corresponding null hypotheses at $\alpha = .05$.

Conclusion

Participating workers generally rated the Water Lily Livelihood Program favorably across its social, economic, environmental, and cultural dimensions. The clearest reported constraints concerned harvesting machinery, weather-related disruption, and raw-material supply. These findings support practical attention to equipment access, worker training, and continuity of production, while remaining limited to the perceptions of the surveyed workers.

Program managers may strengthen participation through regular feedback, coordination with community partners, and training in weaving, enterprise management, marketing, and financial literacy. Training frequency and content should respond to workers' expressed needs and available resources.

Future evaluation should document objective outcomes such as income, production, market access, and environmental conditions. The availability-based sample and cross-sectional design limit generalization and causal interpretation. Age and marital-status findings are descriptive; the available aggregate data do not support revised inferential comparisons using the corrected age categories and nonmissing marital-status responses.

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