

**AN INNOVATIVE COMPOSTING OPTIMIZATION THROUGH
THE NEXUS WAY: A MIXED-METHOD APPROACH**

S12-18

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ABSTRACT

This study evaluates the modernization of composting as a strategic technology for agricultural activities done in Brgy. Mojon-Tampoy, San Jose, Batangas by Project CO2N: Compost to Optimize through the Nexus Way; a project under the CAPSTONE Initiatives that features a product called the Layered Decomposer. By utilizing a mixed-method approach with a convergent parallel design, the overall success of the project was evaluated based on product quality and functionality, community impact and effectiveness, and user satisfaction. The descriptive statements provided through focus group discussions were coded and analyzed to reveal a positive feedback on all aspects of the project. The quantifiable statistics from administered survey questionnaires resulted in positive correlations in terms of all established criteria. Conclusively, the assessment garnered highly positive results suggesting that the project is overall successful.

Keywords: Compost, functionality, impact, optimization, overall success, and satisfaction

1. INTRODUCTION

The aspect of sustainability has been one of the main ideal property for many human endeavors to ensure we meet our needs without exhausting the resources for future generations. This is exhibited in the practices of composting. It is the natural process of enriching the soil to promote healthy plant growth by utilizing organic waste (Sarkar, S., Pal, S., and Chanda, S., 2016). The process of organic waste composting can help overcome the rising issue of organic solid waste production, which are usually directly disposed at landfills (Siti Noor Baya, K., Irnis Azura, Z., & Tengku Nuraiti, T.I., 2014). Generally, composting resulted as a strategic technology for the sustainability of agricultural activities that can thus solve critical issues such as the disposal of crop residues and livestock wastes (Pergola, M. 2017). Thus, people have been exerting their efforts to pioneer better methods of composting. One of these innovative methods is through a project developed with the consolidated efforts of class S12-18 for the community of Barangay Mojon-Tampoy, San Jose, Batangas. As part of their CAPSTONE Initiatives (Community-Based Action Project Addressing Strategically-Themed Learning Objectives through Networked Environments), the project entitled: “CO2-N: Compost to Optimize through the Nexus Way”, was formed.

The aforementioned project was designed to deal with the issue of improper biodegradable waste management, while equally improving the common livelihood within the community—agriculture. Thus, the method of composting was utilized as the base for the project. The project, as its name states, aims to solve the said issue by optimizing the method of composting. This was done through the creation of the Layered Decomposer which is the main component of the project. It is an innovative product that produces compost in a more systematic and efficient manner compared to traditional composting methods. By separating multiple batches of compost by layer based on the time they were added, it allows each compost to decompose at the same time at different rates. This allows the earlier compost to be harvested while the later compost batches continuously decompose. By doing so, it alleviates the community issue in a sustainable manner, benefiting the residents in the process.

In order to evaluate the success of the product in fulfilling its purpose, we need to understand what factors will affect the success of the product. As stated by Masarina (2016), to measure the success or failure of a product feature, the goal of the product feature must be determined. Once this is done, specific metrics can be made to measure whether the goal is met or not. As such, to determine the success of the CO2-N Project, five factors will be observed, namely: product functionality, quality, impact, satisfaction, and effectiveness.

Product functionality is a factor that greatly affect how successful a product will be in fulfilling its purpose. An article by McNamara and Kirakowski (2006) defined functionality as a technical issue that refers solely to the product. The usefulness of device features, maintainability, and reliability are some of the issues that could be addressed in such an evaluation. Usefulness deals with the various features of the product and evaluates how these features can be utilized to benefit

the users. Maintainability concerns the amount of maintenance necessary to keep the product in top condition. Reliability refers to the ability of the product to perform its features without fail.

Quality is an important factor in product development and directly affects how users will view the product. In the study of Day and Castleberry (1986), quality relates to performance as to “how well something does what it's supposed to do”. The results from their research had shown that most people tend to describe or define quality of products in terms of construction, durability, and performance. Construction involves the materials used for the construction of the project and how these materials are combined to form the product. Durability refers to the lifespan and endurance of the product under extreme environment and extensive use. Performance describes how the product performs the original purpose it was made for.

A product must also be able to satisfy the users with its utility. As Belin (2002) stated, satisfaction is a psychological state following the purchase of a product or trying a service translated by a temporary feeling, resulting from the difference between the customer expectations and the actual realization. As such, it focuses more on the personal opinions of those who have used the product rather than the statistics of the product usage itself. It involves user experience, which considers the wider relationship between the product and the user in order to investigate the individual's personal experience of using it (McNamara, Kirakowski, 2006). These questions may include how the person felt about the experience, what it meant to them, whether it was important to them, and whether it sat comfortably with their other values and goals.

The effectiveness of the product is another important factor to consider in determining a product's success. According to Goldense (2016), it is the degree to which something is successful in producing the desired result. This will be visible in the output of the product within the community. As the product focuses on the issues of biodegradable waste management and composting optimization, the desired result refers to the decrease in biodegradable waste that are improperly disposed and the efficiency of the systematic method of compost production.

The research was based on three different frameworks, each dealing with certain factors of our research. The first framework was written by Bellwood-Howard (2013), which states that the residents' context determines which issues or factors affect their decision whether to do support and utilized the adopted project. Contexts are specific circumstances such as livestock ownership and agricultural setting. Therefore, based on the specific needs of the community, individuals will decide whether they will adapt and use the new innovative technology. These will affect factors such as the product's functionality, and its social, environmental and agricultural impact which determine the product's sustainability that influences the satisfaction level of the residents. The adaptation of the product utilized the overall success of the project. The second framework is the work of Slootweg, Vanclay, and Schooten's (2012) function evaluation framework for the integration of social and environmental impact assessment. In their evaluation, they argued that though social impact assessment and environmental impact assessment have developed as separate entities, they also

acknowledged the connection between both concepts. Thus, to integrate both concepts, there must be the utilization of function evaluation. This has led to a better understanding of the full extent of human impacts, and the impact pathways that lead from interventions to the experience of impacts. The third framework is a useful logical framework for defining project success from Baccarini (1999), whose theory posits that though project success is the core concept of project management, yet its definition changes based on the clear understanding of their project success objectives. In this case, success is defined by its two proposed components: product success, and product management success. Product deals with the goal and purpose, while project management success deals with outputs and inputs.

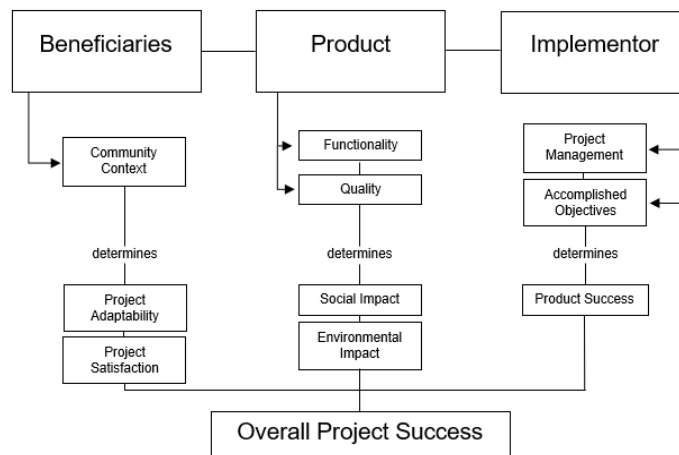


Figure 1. Conceptual Framework Identifying Overall Project Success from Three Main Project Proponents

From the three theories, we can derive one concept. Incorporating these ideas, we can conclude that the success of the project adaptation will depend on three different proponents: the implementers, the beneficiaries and the product. The implementers, the students responsible for the said project, determined their project success based on the number of established objectives that were accomplished through proper project management. The beneficiaries, which refer to the residents of the community, evaluated the success by the adaptability of the project based on their community context. The product, the Layered Decomposer, will determine the project success based on the impact it brings based on its function evaluation. Therefore, in order to achieve project success, the project must be evaluated based on the three mentioned factors.

The purpose of this study was to assess the success of the CO₂-N Project within the locale of Brgy. Mojon-Tampoy. The study identified the views of the residents towards the product's functionality and quality, community impact, and satisfactory level, after the 1st and 2nd month of its implementation; the residents' discernment towards the overall effectiveness of the Layered Decomposer, after the 1st and 2nd month of its implementation; the presence of a significant difference on the effectiveness of the product between the first and second month

of post-implementation; and the residents' perceptions towards the influence of CO2-N Layered Decomposer towards its effectiveness and usefulness towards the community of Brgy. Mojon-Tampoy.

This study has collected information significant for several people. As it examined the viability and effectiveness that the project has accomplished inside the said locale within the scope of five different factors, the data gathered was valuable to student implementers who planned and executed the project. It enabled them to gain proficiency with the qualities and imperfections of their undertaking, along these lines helping them improve this venture as well as any future pertinent activities, thus helping them improve other relevant projects that may be worked on in the future. The overall success of the project will also reflect the lessons that the students have learned from their instructors. Equally, the data may prove to be valuable for teachers and future researchers as an insightful reference material for future innovative projects and studies. Furthermore, in modern society where waste management and food supply are two major problems, a product that has innovation aligned with sustainability is a big factor in shaping agriculture, one that is also a large area of consideration in this project. As such, this study is conducted to attest the development of five major points: functionality, satisfaction level, social impact, environment impact, and sustainability that the product provides within the community and that are likewise focal in their agricultural state.

The study focused on the success of Project CO2-N and its components in Brgy. Mojon-Tampoy, San Jose, Batangas. As such, the study is limited to evaluating the success of the project based on the aforementioned factors. Equally, the respondents were limited only to the residents who have personally utilized and benefitted from the project. Furthermore, as mentioned earlier, the research is restricted to the locale of Brgy. Mojon-Tampoy, San Jose, Batangas, limited to a timeframe of one month after implementation within the community.

2. METHODOLOGY

The study utilized a mixed-method approach with a convergent parallel design in order to grasp an in-depth understanding of the topic. The approach promotes the use of qualitative and quantitative research elements to attain solutions for elaborate questions and problems (*Heyvaert, M et al., 2011*). Convergent parallel design requires researchers to administer the use of quantitative and qualitative elements concurrently in the same phase of the research process, consider appropriate methods equally, and perform independent analysis of both elements, in which results will undergo joint interpretation. This design enables better understanding of the topic through analysis of data through two different method perspectives that provides complementary results, reinforcing the validity of the study. (*Creswell & Pablo-Clark, 2011*). For further validation of the research study, triangulation of the methods will be executed. This design option encourages a direct, comparative approach to both quantitative and qualitative research results. To reach an overall interpretation of the gathered data, the results underwent integration and

re-analysis for identification of the relationships of quantitative and qualitative results.

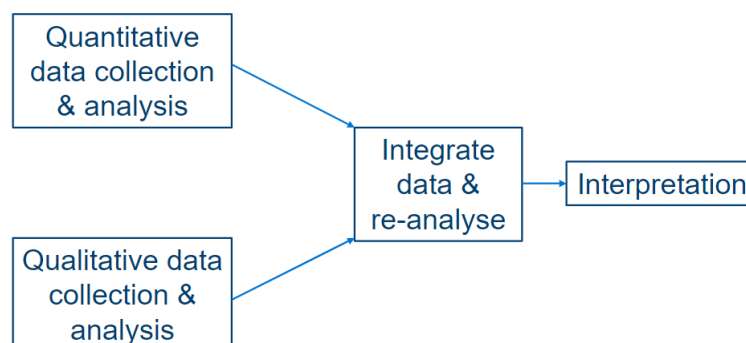


Figure 2. Convergent Parallel Design

The research applied a non-probability, convenience sampling technique. The chosen samples through this design are selected by their availability, proximity, and accessibility from the researchers. Thirty (30) residents of Brgy. Mojon-Tampoy were conveniently selected to participate in the quantitative data gathering through an adopted De La Salle questionnaire. Furthermore, ten (10) out of the thirty previously selected respondents were chosen to be involved in a focus group discussion for qualitative data gathering. This method of sampling design was performed for both pre-test and post-test, to ensure the validity and precision of results. The whole data gathering process was initiated and accomplished in the vicinity of Brgy. Mojon-Tampoy.

To measure the overall success of CO2-N: Layered Decomposer project, the study adapted a standardized questionnaire provided by De La Salle Lipa for the research, which was tweaked and adjusted to suit the research topic and its goal. The questionnaire is a 9-item scale with four subtopics: quality and functionality of the final product or system, impact and effects to the community, level of satisfaction, and the overall success of the project. It is structured with the use of a Likert-scale format with the following measures: 1 – strongly disagree, 2 – disagree, 3 – agree, and 4 – strongly agree. The instrument administered before and after the usage of the Layered Decomposer product follows this corresponding Likert Scale basis: the range of 1.00 – 1.49 for “strongly disagree”; 1.50 – 2.49 for “disagree”; 2.50 – 3.49 for “agree”; and 3.50 – 4.00 for “strongly agree”.

For the quantitative results analysis, each variable was described by the usage of mean frequency statistics for all the responses before and after product usage. To determine relationship significance between data results before and after the usage of the product, the study utilized a dependent sample t-test. Pearson-r correlation was also applied to find significance between the relationship of the mean scores regarding the product factors and the project’s overall success. Relationships in Pearson-r correlations are described and interpreted using the Pearson Product-Moment Correlation Coefficient, shown in Table 1. IBM SPSS software was utilized for these statistical measurements.

r-value	Verbal Interpretation
$r = 1$	Perfect Positive Correlation
$r = 0$	Zero Correlation
$r = -1$	Perfect Negative Correlation
$r = \pm 0.81$ to ± 0.99	Very High Correlation
$r = \pm 0.61$ to ± 0.80	High Correlation
$r = \pm 0.41$ to ± 0.60	Moderately High Correlation
$r = \pm 0.21$ to ± 0.40	Low Correlation
$r = \pm 0.01$ to ± 0.20	Negligible Correlation

Table 1. Pearson Product-Moment Correlation Coefficient

To validate the internal consistency of the questionnaire items, Cronbach's Alpha reliability test was performed. The closer the Cronbach's alpha value is to 1.0, the greater the internal consistency. According to Nunnally and Bernstein's study (1994), alpha values ranging from 0.70 to 0.95 are acceptable. George and Mallery (2003) explored the values and assigned a rule for the reliability coefficients, shown in Table 2.

Cronbach's Alpha	Verbal Interpretation
$\alpha > 0.9$	Excellent
$\alpha > 0.8$	Good
$\alpha > 0.7$	Acceptable
$\alpha > 0.6$	Questionable
$\alpha > 0.5$	Poor
$\alpha > 0.4$	Unacceptable

Table 2. Cronbach's Alpha Rules based on George and Mallery's Study (2003)

Alongside Cronbach's Alpha, the average inter-item correlation was also determined for internal reliability. William (2018) explicated this as a method of measuring general constructs or ideas on items for consistent and appropriate results. Robinson (1991) had suggested that inter-item correlation should equal or exceed 0.30 to construct exemplary validity in the questionnaire items. Furthermore, the ideal range stated for average inter-item correlation is from 0.30 to 0.50, although values surpassing 0.50 are still acceptable if it does not exceed 0.70, which shows that the items are too similar as to be almost repetitive.

The Cronbach's Alpha and mean inter-item correlations values of the questionnaire used for the study is shown in Table 3. Product Quality and Functionality, and Product Satisfaction both displayed alpha values measured in the inequality, $0.8 > \alpha > 0.7$, which implies that both factors have considerable internal reliability and deemed to be acceptable for use. Furthermore, the factor of Product Impact and Effect was computed and given an alpha coefficient in the inequality, $0.9 > \alpha > 0.8$, which is considered as a good value for the test. The average inter-item correlation values exceeded the 0.30 to 0.50 ideal point but is still acceptable for use by not passing the 0.70 value, which is considered not too redundant.

Factors	Cronbach's Alpha	Average Inter-Item Correlation
Product Quality and Functionality	.757	.613
Product Impact and Effect	.835	.651
Product Satisfaction	.786	.552

Table 3. Cronbach's Alpha and Average Inter-Item Correlation Results

For qualitative data gathering, a questionnaire holding 6 key questions was utilized. Questions 1 and 2 tackled the insights of the residents towards the quality and functionality of the Layered Decomposer, its' usefulness and effectiveness when used. Questions 3 and 4 focused towards the product's degree of effect and impact towards the community in their social, economic, and environmental aspects. Question 5 pushes on the satisfactory factor of using the product, and the last question 6 viewed the perception of the residents towards the Layered Decomposer's overall success.

To determine insights of the residents of Brgy. Mojon-Tampoy towards the overall effectiveness and success of the project in their area, data gathering through questionnaires and focus group discussion were conducted by the researchers. The session was facilitated by assigned students, who are specialized in public speaking, data transcription, and documentary. The questionnaires are initially handed to thirty (30) selected respondents for them to answer. Afterwards, ten (10) barangay residents out of the thirty are randomly selected to answer the following key questions in the focus group session, which was audio-recorded for transcription and data coding purposes. Ethical considerations are observed in the research proper. Respondents from the residents are asked for permission through letters of consent, which was given through hard copy and was also read loudly by the session facilitators before the start of the data gathering.

3. RESULTS AND DISCUSSION

The adapted questionnaire utilized in the study measures three aspects for the overall success of the project, namely, product quality and functionality, product impact and effectiveness, and product satisfaction. The subsequent four data tabulations display the acquired results from the respondents' answers.

In the factor of product quality and functionality, every resident who served as respondents during the data gathering had shown a positive response in this specific aspect, as shown in Table 4. Majority of the pre-test responses, which are 80% of the respondents, displays strong acknowledgement (n=24) of the product, an implication that their insights on the product quality and use are with high regard. This can also be said to the 20% of the respondents who agreed fairly, but unlike the majority, they are not fully persuaded on this aspect. For the post-test results, there was an increase of residents that strongly agrees on the product's quality and function, showing that more residents gained better perception of the

product after testing (from N=24 to N=28). No respondent had shown any form of disagreement regarding on the product's quality and function.

Insight	Pre-test		Post-test	
	Frequency	%	Frequency	%
Strongly disagrees on the product having a high quality and functionality	0	0	0	0
Disagrees on the product having a high quality and functionality	0	0	0	0
Agrees on the product having a high quality and functionality	6	20	2	6.67
Strongly agrees on the product having a high quality and functionality	24	80	28	93.33

Table 4. Quality and Functionality of the Final Product or System

For the residents' insights towards the product impact and effect to the Brgy. Mojon-Tampoy community in Table 5, a strong approval of the product stood out (n=18), implying that most of the residents believe that it will provide significant impact to their barangay condition and livelihood. Some residents had also expressed agreement on the possible effect of the product but in a lesser extent and intensity (n=11). Despite the majority's insight, one resident respondent shows a lack of consensus, deeming the product to be not as significant towards providing a good impact to their community. Furthermore, it is noteworthy that in the post-test results, there is large shift of respondents towards strongly agreeing on the product impact (from N=18 to N=27). There is also a lack of disagreement after post-test, signifying that testing the product made the respondents realize its impacts as significant.

Insight	Pre-test		Post-test	
	Frequency	%	Frequency	%
Strongly disagrees on the product having a good impact and effect to the community	0	0	0	0
Disagrees on the product having a good impact and effect to the community	1	3.33	0	0
Agrees on the product having a good impact and effect to the community	11	36.67	3	10
Strongly agrees on the product having a good impact and effect to the community	18	60	27	90

Table 5. Product Impact and Effect to the Community

Contentment levels regarding the product use was identified in Table 6. All respondents have shown positive agreement from the satisfaction they received from having the product, with the majority showing strong appreciation (n=18) towards it and the other minority expressing the same support but to a lesser extent (n=12). There is no unsatisfactory response coming from the residents, with none of them showing discontentment with the product. This is also supported by the increase of high agreement among residents, shown after performing the post-test (from N=18 to N=23).

Insight	Pre-test		Post-test	
	Frequency	%	Frequency	%
Strongly disagrees on the product satisfying the needs of the residents	0	0	0	0
Disagrees on the product satisfying the needs of the residents	0	0	0	0
Agrees on the product satisfying the needs of the residents	12	40	7	23.33
Strongly agrees on the product satisfying the needs of the residents	18	60	23	76.67

Table 6. Level of Satisfaction

Table 7 shows the insight of residents regarding whether the project of CO2-N is successful or not in its implementation in the community. Results states that overall, the residents of Brgy. Mojon-Tampoy concur that the project is a success, with 73.33% of them showing high approbation (n=22) and 26.67% with a fair amount of support (n=8). In the post-test, one of the respondents have shown disagreement on the project's success, but it is evident that most respondents highly believe that the project is successful in providing a significant social impact to the community.

Insight	Pre-test		Post-test	
	Frequency	%	Frequency	%
Strongly disagrees on the project being successful	0	0	0	0
Disagrees on the project being successful	0	0	1	3.33
Agrees on the project being successful	8	26.67	5	16.67
Strongly agrees on the project being successful	22	73.33	24	80

Table 7. Overall Success of the Project

Mean scores for each subscale were calculated for Table 8. Comparing the pre-test and post-test mean results using the paired sample t-test, it shows that there is a significant difference in the pre and post-tests on product impact and effect ($p = 0.006$, $p < 0.05$). Despite the increase on the means on the post-tests of the other subscales, there is no significant difference measured among its pre and post-tests.

Subscale	Test	N	Mean	Std. Deviation	t	p-value
Quality and Functionality of the Final Product	Pretest	30	3.7167	.40860	-1.191	0.243
	Posttest	30	3.8333	.30324		
Product Impact and Effect to the Community	Pretest	30	3.5667	.48857	-2.992	0.006
	Posttest	30	3.8667	.32282		
Level of Satisfaction	Pretest	30	3.5556	.42285	-1.628	0.114
	Posttest	30	3.7111	.40809		
Overall Success of the Product	Pretest	30	3.7333	.44978	-0.328	0.745
	Posttest	30	3.7667	.50401		

Table 8. Mean Score Results

Total mean scores for each subscale were calculated and given interpretation in Table 9. Observing the combined mean results of the pre and post-test results of the subscales, each score qualified for the criteria for “strongly agree”, inferring that the product, in its totality of its aspects, is highly agreed upon by the community residents. Table 6 expounds the mean score results, showing the overall mean of the three main subscales and the overall success. The computation for the overall mean of the independent subscales produced a numerical value of 3.7083, while the overall mean of the overall success scale gave a value of 3.7500, both which interpret to as “strongly agree”. The standard deviation values resulted to low values of 0.25664 and 0.38841, showing that the values are closer to the mean, making it more reliable results.

Subscale	N	Pre-Post Combined Mean	Overall Mean	Std. Deviation	Verbal Interpretation
Quality and Functionality of the Final Product		3.7747			
Product Impact and Effect to the Community	30	3.7167	3.7083	0.25664	Strongly Agree
Level of Satisfaction		3.6334			
Overall Success of the Product	30	3.7500		0.38841	Strongly Agree

Table 9. Total Mean Score of Variables

Pearson-r correlation was applied to find significance between the relationship of the mean scores regarding the overall product factors and the project's overall success, as shown in Table 10. Comparing the results, it was observed that there is a significant difference between the two variables ($p = 0.0000006 = 0.000$, $p < 0.01$), proving that the factors of product quality and functionality, product impact and effect, and product satisfaction have statistical significance in determining the overall success of the project. This is also supported with an R-value of +0.771, which explicates that the two variables in the research has a high positive correlation, which is based on the Pearson-r correlation scale. This implies that, as the aspects of quality, effectiveness, impact, and satisfaction with regards to the project and product increases, the overall success of the project rises.

Variables	Mean	N	Pearson Correlation (r)	Significance (2-tailed) (p)
Quality and Functionality of the Final Product, Product Impact and Effect to the Community, & Level of Satisfaction	3.7083	30	.771	.0000006 = .000
Overall Success of the Product	3.7500			

* P < 0.01, Correlation is significant

Table 10. Pearson-r Correlation of Independent Variables to the Overall Success of the Project

This entire study garnered its results from the data gathered from the focus group discussions done with the residents of the concerned barangay before and after the project was implemented. Select statements from the residents were put into the different phases of coding that generated reliable conclusions. As each of the axial codes were analyzed, the researchers came to a deeper understanding that resulted to the fulfillment of this study's purpose – the assessment of the overall success of Project CO2N: Compost to Optimize through the Nexus Way.

Axial Codes	Selective Codes
Respondents' perspectives on practical use of the product Project environmental effects Advantages of utilizing the product	The product, the Layered Decomposer, produces a positive impact on both the residents and their environment
Rationality behind the primary product material choice Essence of having the modified window of the product	Numerous factors were considered to ensure optimum product quality
Identified issues that hinder project success Possible solutions for identified issues	The newly introduced concept of the project is still in the early stages thus requiring empirical analysis and problem solving

Table 11. Thematic Coding of Results

The first set of axial codes contribute to the assessment of the project's impact based on the premise of the project-based criteria used in the study: Project Impact and Satisfaction, and Project Effectiveness. As said in the article by Berlin (2002), user satisfaction focuses on the personal opinion, actual realization and feeling of those who have used the product, supported by McNamara and Kirakowski's study stating that satisfaction involves user experience, which is further investigated by how the product is a necessity for the beneficiary and how it met their values and goals. In line with this is the effectiveness visible in the output of the product within the community (Goldense, 2016).

As the product focuses on the issues of biodegradable waste management and composting optimization, the desired result refers to the alleviation of the first and fulfillment of the latter, giving positive impact on both the residents and their environment. The data suggests that the project does in fact achieve its objective of improving the state of the residents and their environment through the provision of an environmentally friendly waste disposal alternative. This can be deduced from the positive nature and degree of the responses gathered. Due to this, the

data suggests that the project is highly impactful in terms of all the criterion for an effective project established in this study thus making it effective.

The next set of axial codes focus on the technical aspect of the actual product construction. The data gathered gave insights about how the residents perceive the Layered Decomposer. This effectively assessed the success of Project CO2N in terms of the product-based criteria established in the study – Product Functionality and Quality. The assessment of this aspect identified the beliefs and opinions of the residents regarding the practical use of the Layered Decomposer. The responses covered the insight of the residents about why they believe that the primary materials used in the product is suitable for its purpose. In this factor, the responses indicated a high approval rate of the materials used as most if not all the data gathered states that using fiberglass and galvanized steel is the superior choice over other options. Furthermore, the major components of the product were also assessed. During this process, the importance of the modified window was noted and commended by the residents. The data indicates positive results in the evaluation of the product's quality.

According to the study of Day and Castleberry (1986), the quality of products can be assessed by looking at its construction, durability, and performance. With the respondents supporting the material choice of the product, the construction and durability garnered positive results. Furthermore, the acknowledgement of the residents in terms of the parts of the product and each of its purpose suggests positive performance results. All these responses also contributed to the assessment of the product's functionality. As said in an article by McNamara and Kirakowski (2006), product functionality is defined as a factor that greatly affect how successful a product will be in fulfilling its purpose. This can be interpreted to mean that the residents believe that the Layered Decomposer fulfills its objective as part of its functionality and possesses a high quality in terms of construction, durability and performance. This suggests that the assessment of Project CO2N in terms of the product-based criteria has a highly positive result.

The last set of axial codes contain the supplementary information about the problems identified and the possible solutions to the said problems. The issues themselves serve a purpose in improving the project by isolating the said problems and solving them immediately. The fact that this type of data came up during the focus group discussion suggests that the project is still in its early phases thus needing active empirical observations and immediate problem solving.

The results using the quantitative and qualitative data indicates that the residents' overall view garnered highly positive results in the established criteria in the study: project quality and functionality, project impact and impact, and project satisfaction. The research also displayed a significant, high positive relationship between the product aspects towards the overall success of the project.

4. CONCLUSION AND RECOMMENDATION

Sustainability is important to ensure that we fulfill our necessary resources without compromising the resources for future generations. The study investigated how Project CO2-N contributed to the development of composting and sustainability in the agricultural community of Brgy. Mojon-Tampoy, San Jose, Batangas. And based on the findings of our research, we can conclude that the residents of the community found Project CO2-N to be successful in their community. In terms of project quality and functionality, community impact and effectiveness, and user satisfaction, the residents strongly agreed that the aforementioned project has fulfilled its purpose. The residents have given positive feedback regarding the project and mentioned points of improvement that may be worked on in future years.

From these, it is recommended that Project CO2-N continue to be implemented in the community. This will help sustain the agricultural community's need for compost with organic waste systematically. Equally, the project may also be improved based on the suggestions stated by the residents regarding its use. Furthermore, for future researchers who will use this study as a reference, they may also consider other factors that contribute to the success of their project based on the context of the beneficiaries and objectives of the project to be implemented.

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