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Most Significant Changes Experienced by Organic Agriculture Production Training Beneficiaries in Ifugao, Philippines

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A B S T R A C T

The Most Significant Change (MSC) technique was used to explore the impacts of the Organic Agriculture Production (OAP) Training Program of Ifugao State University in Ifugao, Philippines. Beneficiaries were asked about changes that resulted from their participation in the program. Themes were identified from these changes. Bennett's hierarchy of program outcomes served as basis in determining levels to which collected changes correspond. There were 105 stories in total. These referred to changes economically, socially as well as changes in beneficiaries' knowledge, attitudes, and skills. Results revealed that the OAP Training Program brought about changes at higher levels that were in line with Bennett's hierarchy. The OAP Training Program brought impacts to beneficiaries' economic and social circumstances as well as knowledge, attitudes, and skills.

R E S U M O

A técnica de Mudança Mais Significativa (MSC) foi usada para explorar os impactos do Programa de Treinamento em Produção de Agricultura Orgânica (OAP) da Universidade Estadual de Ifugao em Ifugao, Filipinas. Os beneficiários foram questionados sobre as mudanças resultantes de sua participação no programa. Temas foram identificados a partir dessas mudanças. A hierarquia de resultados do programa de Bennett serviu de base para determinar os níveis aos quais correspondem as mudanças recolhidas. Foram 105 histórias no total. Estas referiam-se a mudanças económicas e sociais, bem como a mudanças nos conhecimentos, atitudes e competências dos beneficiários. Os resultados revelaram que o Programa de Treinamento OAP trouxe mudanças em níveis superiores que estavam alinhados com a hierarquia de Bennett. O Programa de Formação OAP trouxe impactos às circunstâncias económicas e sociais dos beneficiários, bem como aos conhecimentos, atitudes e competências.

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Introduction

Since the beginning of the Green Revolution in the 1970s, agricultural productivity has increased globally. The Green Revolution has been significantly contributing to food security, but was found to have negative impacts to the environment and human health (John and Babu, 2021). Several studies claimed that the negative impacts are partly due to the excessive use of inorganic fertilizers and pesticides (Srivastava, Balhara, and Giri, 2020; Chandran, Unni, and Thomas, 2018; Sharma and Singhvi, 2017). Eventually, among some consumers and farmers, there emerged the recognition of the importance of alternative production systems, such as organic agriculture.

Due to healthier food choices made by consumers and growers, as well as increased concern about the environmental effects of conventional agriculture, organic agriculture has been expanding by roughly 20 percent annually (Nandwani and Nwosisi, 2016).

The Philippines recognized the importance of this practice as seen in the passage of Republic Act 10068 also known as the Organic Agriculture Act, which provides for the growth and advancement of organic agriculture in the country. This was amended in 2020, with Republic Act 11511, which was hailed by organic agriculture organizations all over the world as a major turning point.

As a response to this, in collaboration with both public and private Technical Vocational Institutions (TVIs), the Philippine's Technical Education and Skills Development Authority (TESDA) has been supporting Organic Agriculture Production (OAP) training programs around the nation. Ifugao State University (IFSU) is one of the TESDA's accredited training centers for OAP.

Since 2017, the IFSU produced 220 graduates from the various communities of Ifugao, and nearly 100% obtained their certificates of competency. There were around USD 95,000 in total training grants. It is necessary to evaluate whether this program had an impact on the beneficiaries' lives given the time and resources involved. This is crucial because it may significantly enhance program administration and efficacy, rationalize how public funds are used, and give guidance to decision-makers and funding organizations.

Several impact assessment studies conducted have greatly improved how development interventions are done. All these impact assessment undertakings looked into economic, social, and environmental impacts of their research and development initiatives. Impact on an economic system at a local, national, or international level is referred to as economic impact. The term "social impact" describes an effect on a community's welfare, including its health, living standards, equality, cohesion, and security. Impact on both living and non-living natural systems, such as ecosystems, land, air, and water, is referred to as environmental impact (Randall, et al., 2015; Davis, Jeffrey, and ACIAR, 2008; Malik, 2013).

In terms of the programs of TESDA, the latest impact evaluation study was done in 2021 that focused only on the employment aspect of the training beneficiaries. Results showed that employability of beneficiaries improved over the years (TESDA, 2021). Other aspects for impact such as social and environmental were not covered.

In terms of extension programs of the IFSU, an impact study on community extension programs of the University was conducted by Dugyon (2016). In order to positively influence future operations, the impact assessment sought to learn the accomplishments and difficulties that the extension implementers of IFSU encounter. The outcomes demonstrated that IFSU's extension activities have benefited communities, particularly in improving knowledge and skills, promoting health and wellness, and discouraging mothers and children from engaging in vices. The approach, however, was not specific of any program because it focused on six adopted communities. With the broad approach, other aspects of impact assessment as well as higher levels of impact were not covered. All these spurred the conceptualization of the study.

The study generally aimed to explore the impacts of the OAP Training Program. Specifically, it sought to: 1) identify the most significant changes experienced by farmer beneficiaries of the OAP Training Program; 2) determine the levels of impacts to which the most significant changes correspond; and 3) provide recommendations for improving the OAP Training Program.

Methodology

This study employed the Most Significant Change (MSC) Technique to examine the qualitative indicators of impacts rather than conducting surveys based on previously known quantitative impact indicators (Davies and Dart, 2005). In this method, beneficiaries of the program were asked to share their most significant stories, and panels of selected stakeholders systematically chose the most noteworthy ones.

The MSC technique is a qualitative, interactive method of monitoring and assessing that is predicated on gathering and methodically choosing accounts of stated changes resulting from development projects. Rick Davies created the method in the middle of the 1990s to address the difficulties involved in overseeing and assessing a complicated participatory rural development program in Bangladesh with a wide range of implementation and results. The method has gained significant traction since then, becoming a popular tool for evaluating development interventions. Its participatory approach, which emphasizes the voices of stakeholders, has resonated with practitioners and researchers such as Heck and Sweeney (2012); Limato, et al. (2018); Baú (2016); Corcino and Cagasan (2011); and Cagasan and Velasco (2009). The technique's flexibility and adaptability make it suitable for a wide range of contexts and intervention types.

The study was carried out from May 2022 – December 2022 in Ifugao. Ifugao is a province in the Philippines that is situated in the Cordillera Region and is a part of the northern-central region of the island of Luzon (Figure 1). It is bordered by Mountain Province to the north, Isabela to the east, Nueva Vizcaya to the south, and Benguet to the west (PhilAtlas, n.d.). Ifugao is made up of eleven (11) municipalities. Rugged landscapes, river basins, and vast woods are features of the agriculture-based economy (Dulawan, n.d.). The beneficiaries of the OAP Training Program are from the municipalities of Banaue, Kiangan, Lamut, Lagawe, and Hingyon, which served as the study locations.

Figure 1.

Map of the Study Area

Beneficiaries of the OAP trainings held in Ifugao's several municipalities between 2018 and 2020 comprised the study's respondents. The 220 recipients were stratified randomly by municipality, yielding a sample size of 105. Table 1 shows the distribution of respondents by municipality.

Table 1.

Distribution of respondents by municipality

Municipality	Population Size n=220	Sample Size n=105
Banaue	79	38
Kiangan	42	20
Lamut	80	38
Lagawe	10	5
Hingyon	9	4

As to the socio-demographic profile of the 105 respondents, 53% were within the age range of 21-40 years old, 84% are female, 70% are married, 58% reached college, 68% have less than or equal to 5 household members, 85% are employed, and 80% have USD2,595 and below total annual income.

The stages listed below were used to document the impacts of the OAP Training Program utilizing the MSC technique (Cagasan and Velasco, 2009):

Collection of stories. Stories from the beneficiaries of the program were gathered. A guide was created, pretested, and distributed to the collectors in order to make the process easier. Three questions were included in the guide: 1) How did you get started with the OAP Training Program? 2) What, in your opinion, has changed the most as a result of your participation in the OAP Training Program? 3) Why do you think this change is significant?

In order to enable the story collectors to document the vast variety of changes that the beneficiaries underwent as a result of their participation in the OAP Training Program, the questions were intentionally constructed generic.

Selection of stories. The first level review and selection of collected stories was done by the IFSU-Training and Competency Assessment Center being the training provider. The second level review and selection was done by the TESDA who funded the program.

` *Verification of stories.* Field visits were done to verify some of the most significant change stories that were chosen.

Secondary analysis of stories. The following were the considerations during the secondary analysis of the stories: a. themes of stories collected; b. levels of the program outcomes that were assessed using the Hierarchy of Program Evidence (Table 2) by Claude Bennett and to which the stories' substantial changes correspond; c. the selection criteria for the MSCs stories; and d. other pertinent data pertaining to the program's impacts. This was performed in order to better understand the types of changes that were described in the stories.

Table 2.

Hierarchy of Program Outcomes by Claude Bennett

Level	Description
7	END RESULTS/CHANGES IN CONDITIONS: Changes in economic and social conditions of training beneficiaries
6	ACTION: Changes in practice of training beneficiaries such as adoption of OAP technologies
5	KASA CHANGES: Changes in knowledge, attitudes, skills, and aspirations related to OAP
4	REACTIONS: Changes in the training beneficiaries' views about OAP
3	INVOLVEMENT: Changes in terms of beneficiaries' participation to the OAP Training Program
2	ACTIVITIES: Changes in terms of activities conducted.
1	INPUTS: Changes in terms of resources used whether cash or in-kind

Results

Changes experienced and perceived by OAP training beneficiaries

There were 105 total stories collected. Three domains of change were represented in these stories (Table 3). The first domain of change consisted of 82 stories about changes in economic circumstances of beneficiaries. The second domain of change consisted of 5 stories about changes in social circumstances of beneficiaries. The third domain of change consisted of 18 stories about changes in knowledge, attitude, and skills of beneficiaries.

There were 4 themes with 82 stories under the changes in economic circumstances domain namely additional income, improved livelihood, lessen farm expenses, and food availability. In terms of the theme additional income, one beneficiary said, “Consumers prefer organic than inorganic vegetables.” Others added that there is less worry on their part as they prepare food for the family because of the surety of food safety. In terms of the theme improved livelihood, one said, “I used my NC II as additional document for job application.” Aside from this, some said they sold their produce to consumers. In terms of the theme lessen farm expenses, one said, “There is no need to buy commercial insecticides and commercial fertilizers.” This is true because they can produce their own organic fertilizers, concoctions, and extracts with the available raw materials in the surroundings. In terms of the theme food availability, one said, “I grow vegetable needs of my family instead of buying. That is a lot of savings for us.” It is also interesting to note that some of their produce during the COVID 19 pandemic were shared to neighbors, friends, and front liners.

There were 2 themes with 5 stories under the changes in social circumstances domain namely organization affiliation and involvement. In terms of the theme organizational affiliation, one said, “I was able to join an organic farmers organization and renewed my membership with the local cooperative.” In terms of the theme organizational involvement, one said, “My participation in the organization increased because I have something to share in terms of organic farming.” Their participation in the training program may be attributed to this. One of the program's modules, "Working in a Team Environment," instructed participants on how to specify team roles and responsibilities as well as how to talk about their work as team members.

There was one theme with 18 stories in the changes in knowledge, attitudes, and skills domain namely transfer of knowledge and skills to others. Training beneficiaries claimed to have improved technical knowledge on OAP technologies, formation of positive attitude towards OAP, improved skills on OAP, increased motivation to adopt, change in farm practice, increased cultivated areas on OAP, and change in farm product. They said they were able to share these to their neighbors, children, siblings, and to their organizations.

Table 3.
Domains and themes of the stories collected from OAP training beneficiaries

Domain of Change	Theme	Number of Stories	Percent (%) of Total	Title of Stories
Changes in economic circum-stances	Additional income	30	28.57	Consumers prefer organic than inorganic vegetables
	Improved livelihood	3	2.86	NC II certificate was used to apply for a job abroad
				NC II certificate was used to get a job
	Lessen farm expenses	12	11.43	There is no need to buy commercial insecticides
				There is no need to buy commercial fertilizers
	Food availability	37	35.24	I grow vegetable needs of the family instead of buying
Changes in social cir-cum-stances	Organizational affiliation and involvement	3	2.86	Organizational affiliation
		2	1.90	Organizational involvement
Changes in knowledge, attitude and skills	Improved technical knowledge on OAP technologies; Increased motivation to adopt OAP practices/technologies; Increase in knowledge on OAP technologies; Improved skills in OAP; Development of positive attitude towards OAP; Motivated to adopt OAP technologies; Improved communication skills	18	17.14	Transfer of knowledge and skills to others
				Shared to neighbors
				Shared to children
				Shared to brothers and sisters
				Shared to the organization
	TOTAL	105	100	

Levels of changes and indicators of OAP training program impacts

The themes were grouped based on Bennett's Hierarchy in order to ascertain the levels of impacts to which reported changes relate. Table 4 provides a summary of the findings. Seven levels make up Bennett's Hierarchy, which classifies evidence of change brought on by development interventions such as the OAP Training Program. According to Sutherland and Leech (Sutherland and Leech, 2007), evidence of change corresponding to levels 1 to 3 in Bennett's Hierarchy can provide information about the efficiency of a planned activity or how much effort is required, but not about intended results or effectiveness. It is crucial to measure evidence farther up Bennett's Hierarchy in order to assess the impacts of program activities or the changes that resulted from the program (i.e., levels 5 to 7).

According to Table 4, most beneficiary stories reflect changes that are consistent with higher levels of Bennett's Hierarchy of Program Outcomes (levels 5-7). This shows the effectiveness of the OAP Training Program to beneficiaries.

Table 4:
Levels of program outcomes to which the changes experienced by beneficiaries correspond

Level of Outcomes	Themes of Change	Title of Stories	Number of Stories	Percent (%) of Total
5 KASA Changes	Improved technical knowledge on OAP technologies; Increased motivation to adopt OAP practices/technologies; Increase in knowledge on OAP technologies; Improved skills in OAP; Development of positive attitude towards OAP; Motivated to adopt OAP technologies; Improved communication skills	Transfer of knowledge and skills to others;	18	17.14
		Shared to neighbors;		
		Shared to children;		
		Shared to brothers and sisters;		
		Shared to the organization		
6 Behavioral Changes	Change in farm practice; Increased cultivated areas for OAP; Change in product	Consumers prefer organic than inorganic vegetables; NC II certificate was used to apply for a job abroad; NC II certificate was used to get a job; There is no need to buy commercial insecticides and fertilizers; I grow vegetable needs of the family instead of buying;	82	78.10
7 End Results/ Changes in Conditions of Beneficiaries	Additional income; Improved livelihood; Lessen farm expenses; Food availability; Organizational affiliation and involvement			
		Organizational affiliation and involvement	5	4.76
TOTAL			105	100

Discussion

Three domains of change were represented in the stories of respondents. The first domain consisted of stories about changes in economic circumstances of beneficiaries. This result is similar to a study conducted in Ormoc City Philippines who said that adoption of organic agriculture technologies improved economic conditions of farmers (Corcino and Cagasan, 2011). It is also more profitable and economically viable (Reganold and Wachter, 2016). It could be a means to promote economic growth in rural areas (Marasteanu and Jaenicke, 2019). There are a lot of challenges, however, according to interviews conducted such as lack of financial capacity to expand production, problem on marketing, quality of produce, and organic certification.

The second domain consisted of stories about changes in social circumstances of beneficiaries. This result corroborates with Siardos (2002) when he identified the social impacts of organic agriculture. His study's social implications include its support for community self-reliance, contribution to rural employment, promotion of social interaction, and improvement of housing conditions. However, he noted that there were some uncertainties and challenges, including a lack of knowledge and institutional support, particularly in cases where inspection organizations are not available, the inability of interested communities to mobilize and organize themselves in order to obtain necessary inputs and gain access to markets, and the disregard for farmers' knowledge of regional conditions and customs. D'ORONZIO and Pascarelli (2016) and Torres, et al (2016) argue that organic farming also helps to sustain society. Similar to that, it can address the effects of agriculture on human wellbeing while guaranteeing sustainable development (Ferdous, et al., 2021). One of the respondents said that as a result of her involvement with the organization, she was able to use government services and help for organic farming.

The third domain consisted of stories about changes in knowledge, attitude, and skills of beneficiaries. This is an improvement over the findings of Landicho, et al. (2014), who listed the difficulties in organic agriculture as including the insufficient technical capacity of smallholder farmers. Result is also similar with Corcino and Cagasan (2011) who claimed improved knowledge and skill on organic farming systems of beneficiaries.

Conclusions

The findings of this study demonstrate that the OAP Training Program was successful in achieving its aims and objectives. The collected stories showed that the OAP Training Program has already resulted in a number of changes. These included changes in beneficiaries' economic circumstances, social circumstances, and knowledge, attitudes, and skills. These changes correspond to higher levels of Bennett’s Hierarchy of program outcomes.

The MSC technique was also found to be a useful tool for evaluating the impacts of the program. However, further research is needed to explore the long-term effects of the program and to develop and validate other impact assessment approaches/frameworks for extension and training programs.

The following are recommended for future research: 1) conduct a longitudinal study to track the progress of OAP beneficiaries over time; 2) develop and validate other impact assessment approaches/frameworks for extension and training programs; and 3) explore the use of the MSC technique to evaluate other types of development interventions, such as social protection programs or disaster risk reduction programs.

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