

BEHAVIOR CHANGE IN LIVESTOCK ANIMALS INTO THE INSTITUTIONAL WASTE COMPOSTING ORGANIC FERTILIZER

(Case Study in Bulukumba Regency, Indonesia)

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Abstract— the Studies to see behavior change have been carried out through a psychological approach with individual intervention, limited research that looks at behavioral changes from a sociological perspective in the form of local institutions that surround it. This study will look at changes in the behavior of individuals in utilizing beef cattle waste into organic fertilizer to become a collective behavior in a local institution. How farmers' behavior changes in the local institutional perspective that surrounds them with a sociological approach rather than behavioral changes caused by individual interventions with psychological approaches. Research uses a qualitative approach with a case study method. Cases examined in depth are cases of community initiative groups. Data collection technique used was observation involved and in-depth interviews. Data is processed by stages; (1) data coding, (2) data classification, (3) data interpretation, (4) data presentation. Changes of collective behavior in group members is a change in internalization behavior, namely changes in behavior based on the ability of the group leader to provide examples and motivation to its members. In addition, group management is able to provide benefits to group members through increasing cattle business productivity managed by group members and obtaining additional income from the management of cattle waste processing business into compost.

Index Terms —Behaviour, Institution, Waste treatment.

1. INTRODUCTION

Many researches about behavior change are done through a psychological approach. One of the concerns in behavior change with the approach of social psychology is [1] with his theory of Theory of Planned Behavior (TPB) and continues to grow until now. Departing from social psychology studies, which were born from professors in the field of social psychology, this theory has penetrated many fields of study, such as agriculture including [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13]. The purpose of their research is generally to see the factors underlying the occurrence of a behavior, based on the elements of TPB theory, the prediction of future behavior is carried out. Research in other fields such as educational psychology includes [14], [15], [16], [17] this study focused on the TPB study to design a training / education model and used to evaluate the results of training / education in terms of behavior change. In addition, several studies merely tested the truth of the TPB theory.

Those studies, researchers generally only used TPB as a theoretical basis, as a framework and or verify the theory in different settings and in different places, then state that the theory was true.

Studies to see behavior change have been carried out through a psychological approach with individual intervention, limited research that looks at behavioral changes from a sociological perspective in the form of local institutions that

surround it. This study will look at changes in the behavior of individuals in utilizing beef cattle waste into organic fertilizer to become a collective behavior in a local institution. How the behavior of farmers changes in the local institutional perspective that surrounds them with a sociological approach rather than behavioral changes caused by individual interventions with psychological approaches.

The beef cattle business activities carried out by the community in South Sulawesi have tried to use their livestock waste as raw material for making compost through an organic fertilizer processing unit provided by the government. The Organic Fertilizer Processing Unit (UPPO) is budgeted annually by the central government through the Ministry of Agriculture. In the 2011 budget year, the Ministry of Agriculture allocated a budget of 950 units for UPPO and was implemented at 4 Directorate General, namely Director General of Food Crops (501 units), Director General of Horticulture (70 units), Director General of Plantation (111 units) and Director General of Livestock (268 units). The UPPO is spread throughout the provinces in Indonesia and South Sulawesi, obtaining 63 units [18].

One of the districts that focused on developing utilization of beef cattle waste as organic fertilizer is Bulukumba Regency. With a variety of organic-based agricultural development programs implemented in order to increase the production of organic fertilizers. As a concrete step that has been taken by the government of Bulukumba Regency through the Food Crop Service, namely by developing 10 Organic

Fertilizer Processing Units (UPPO) in its area which are spreaded throughout the sub-districts in Bulukumba Regency. As a guarantee of the continuity of processing of organic fertilizers where guidance continues to be made, especially guarantees of the production market where all production will be absorbed by the government and channeled through the Integrated Crop Management Field School (SLPTT) program spread in the Bulukumba Regency. The need for organic fertilizer of this program in 2014 reached 5000 tons, and all were supplied by processing organic fertilizers in Bulukumba district self.

Organic fertilizer processing carried out by organic fertilizer processing units has an impact on the community involved in beef cattle business, which is a change in behavior, which previously the livestock waste has not been used as raw material for organic fertilizer but is currently used as raw material for organic fertilizer. This behavior change is strongly influenced by the organic fertilizer processing unit, where more and more breeders are able to be influenced to use their livestock waste, the more raw materials that can be collected and this has implications for the amount of organic fertilizer that can be produced.

Utilization of livestock waste into organic fertilizer is a long process that is at the beginning only carried out by individuals based on curiosity and the desire to make a change. This processing began in 2004 with a small scale and other people did not want to follow it. But over time, other people felt the benefits of processing organic fertilizer so that the individual's behavior is internalized into a farmer group, the Tibona Farmer Group so that the processing of livestock waste into organic fertilizer becomes a routine activity carried out by the group. This is in accordance with the statement of [19] that an organization can be an institution, it takes quite a long time until the rules and procedures for channeling and obtaining services from the organization are widely recognized as a collective norm and behavior.

Regarding behavior, or a set of behaviors, or establish way of behaving. Patterned behavior is the key to life's order. As according to [20], social institutions are something that always exists in all societies, because it is useful to bring together various needs and social goals that are considered important. If people want to survive, social institutions must exist.

The inability of farmer groups assisted by the government in influencing its members to change their behavior in utilizing beef cattle waste into organic fertilizer because of mistakes made by the government which considers that farmer groups that are given assistance with organic fertilizer processing facilities and infrastructure can run organic fertilizer processing units. The rules made by the government as a fertilizer processing SOP are not able to run by what the group means, that the group has not been able to transform itself from the organization into an institution.

2. METHODOLOGY

This research was conducted in Bulukumba District which is the center of the development of organic fertilizers using feces raw materials in South Sulawesi. The study uses a

qualitative approach with a case study method. Cases examined in depth are cases of community initiative groups. The data collection techniques used is involved observations and in-depth interviews. Involved Observation is carried out in various group activities, namely group meetings, stool collection, compost processing and marketing of production. In-depth interview is conducted with group members, group administrators, group product buyers and users. Data is processed by stages; (1) data coding, (2) data classification, (3) data interpretation, (4) data presentation.

3. RESULT

3.1 *The Role of Group Leaders in Changing Collective Behavior of Group Members.*

The beginning of compost processing was carried out on a small scale because the processing was scattered where one processing was placed in one of the member's house adjacent to several members who had cages. This was done to determine the distance of stool collection, as well as the purpose of processing this compost that has not yet led to commercial purposes. The goal at that time was just to apply the results of a comparative study to Lembah Hijau, namely how to use the livestock waste to become compost organic fertilizer.

The first production is only stored and if there was farmer who wanted to use it, farmer could take for free. Even though farmers were still not enthusiastic about using it even until the sacks damaged the fertilizer had not been utilized by farmers. The farmer at that time did not understand how to process the correct organic fertilizer by using a starter or decomposing bacteria, which he had been doing so far, just waiting for the stool to dry and not smelling then brought to the garden.

The compost processing activities carried out in a move as far as in first year and after the second year it placed in one place. In the new composting process place, there was community was interested in composting helping. The person who first helped in composting was Johannes, this was in accordance with Johannes' statement that

"The person who first helped Mr Rahman for compost was me. At that time the processing was carried out at his house, and his stool collection was still using a cart. That's where I started working with Mr Rahman "

The compost processing activities carried out in Mr Rahman's house lasted for 1 year and from those began to get the first organic fertilizer orders. Something very touching because so far people saw that what was done was a dirty job and produces nothing. The struggle that had been carried out so far to utilize livestock waste into organic fertilizer that is beneficial for plants begun to have value because there had an offer to buy it.

The first request amounted to 10 tons, a considerable amount at that time. The work on collecting stools has doubled, but it was not so difficult because what was done had produced results and once the fertilizer paid, the money was immediately shared. The result of selling this first compost is

income that was full of struggle and unexpected money. This is in accordance with Mr. Rahman's statement that:

"The first order was in 2006 with the amount of 10 tons, and after receiving the money I immediately divided two with Johannes. It was very touching even Johannes had tears in his eyes because he did not think that by processing stools that some people thought was dirty could be a valuable and productive item. "

Initially Johannes helped Mr Rahman in processing this compost because of pity, where Mr. Rahman was a respected person in the village but did work which according to people was of low occupation because it struggled with cattle feces. On the other hand there had no permanent jobs that could produce so that by helping Mr Rahman, at least there was after work activity at the bottom. It turned out that from this activity it could produce money with a decent value at that time. Since then the work of collecting these stools became a routine work where compost processing sites were located in several locations in the area of members of livestock groups. This is in accordance with Johannes' statement that:

"The reason I helped Mr. Rahman was because I was sorry to see Mr. Rahman who was a respected person in this village but did work according to lowly jobs, but after selling the first compost and Mr Rahman giving me money from the sale I was very moved and had tears"

Changes in group members' perceptions of the perception that livestock stool was livestock waste had to be disposed of because it caused odor and dirt around the cage to be a perception that livestock stool was a potential raw material for making organic fertilizers that benefited plants and had economic value, took a long time after seeing directly the process of making fertilizers, utilizing organic fertilizers in plants and fertilizer sales.

In community pilot groups in changing individual behavior into group behavior, several things were applied. Compost was initially managed privately by Mr Rahman, but after the compost could be commercialized, the management was managed in groups.

The hard work carried out by the group to carry out its commitment to the common goal provides the trust and confidence of each of its members. Rules that were made together were run with full responsibility and those who broke it would be given a penalty. Something if you worked hard would produce something useful, both for others and for yourself. This is in accordance with Mr. Rahman's statement that:

"... My principle is that if we work on things we will benefit others and ourselves. The more people we employ and serve for their families, the more fortune that comes from that person's work ..."

From this principle it provided its own motivation to continue to innovate so that every day there were activities worked by group members, because they believed that every activity worked will definitely bring results. This principle was transmitted to members of the group to continue to move by looking at the priority of work. For this reason, group

activities were managed well so that every day there was activities that run in groups.

3.2 The Role of Compost Processing Business in Changing Collective Behavior of Group Members.

The activity of compost processing after being moved to the location of a group of animals measuring 6 x 4 meters, started to be managed in groups where the management was carried out based on job description. Group members were responsible for their respective work as well as the distribution of sales proceeds.

The processing of organic fertilizer in community pilot groups continues to grow with increasing demand each year, of course, followed by an increase in the need for raw materials that had to be collected from beef cattle farmers. Members of the group who felt the economic impact of compost processing were only members who were directly involved in the processing of organic fertilizers while the farmers who collected the feces of their cattle had no direct impact. The benefits that were felt are only environmental impacts because the cow cage was clean so it reduced the smell around the cage. From this it was thought by the community pilot group, so that in the meeting the members discussed how to get members of their livestock feces to get results from compost sales conducted by the group, so that the meeting was concluded that farmers registered as livestock collectors would get free livestock health services and Artificial Insemination from groups. This is in accordance with Mr. Rahman's statement that:

"After we have been able to market this compost, the next idea is how all group members can benefit from compost processing so that at the group's monthly meeting it is discussed about incentives given to farmers collected from their livestock feces into raw materials. From the meeting, it was agreed that the collected animal feces would get livestock health services and Artificial Insemination free of charge from the group. "

From the agreement the group members gave a new assignment to the community pilot group to present livestock health services and Artificial Insemination (IB) in the middle of the group cattle breeding business. Livestock health services and the IB have depended on officers from the Bulukumba District Animal Husbandry Service whose service was often late because the area served for each officer was very extensive so that it had an impact on the low productivity of group members. Therefore, the first thing to do was how the group members participate in training in handling livestock health and training in Artificial Insemination. For this reason, through the Bulukumba District Animal Husbandry Service, they submitted a request to include the Tibona Farmer Group if there was training in livestock health services and Artificial Insemination. This is in accordance with Abd. Rahman that:

"... in order to improve skills in terms of livestock health services, we submitted an application to be included in livestock health training and the IB held by the Bulukumba District Animal Husbandry Service and

the South Sulawesi Provincial Service. One time I learned of a training activity held by the Provincial Service and immediately reported to the District Service to be included but the answer was that the training was limited to participants who could send from the district and there were members who had been proposed to take part in the activity, but I did not leave I asked for Asah to still be proposed even though I paid for myself to be able to participate in the training and finally I was proposed to join in for two people with the cost of participating in training. Then those who participated were me and the secretary father. "

The training produced results where each livestock health problem that occurred in the group members was handled by members assigned under the guidance of a veterinarian from the Bulukumba District Livestock Service Office. Every cases of animal health case that occurred in the pilot community and surrounding areas were reported to the Livestock Service Office to get direction for handling and if a case that could not be handled by itself was brought in, officers from the District Animal Husbandry Service were brought. Equipment and medicines as well as honorarium for health workers were prepared by the group obtained from the sale of compost, each group member who was handled by livestock health was not charged, while farmers outside the group and not feces were charged based on the type of health service provided.

The shortcomings of community pilot groups at that time were the absence of IB officers who were members of the group so that every cow member who had lust could be immediately handled because one of the successes of IB was the timely implementation of IB, because if the officer arrived after the lust period the meal would decrease and things it often occurred because the officers were far away and sometimes delayed the arrival if lust occurred at night. This is in accordance with Mr. Rahman's statement that:

"... before there is IB officers in the group, we experienced many problems if our cattle experienced lust in the afternoon or gave birth at night because usually the officers who were called would come the next day so that the lust had passed or had a cow that failed because of the delay in handling ... "

On the arrival of the guest from Hasanuddin University, Faculty of Animal Husbandry, he expressed his desire to join the IB training and shortly after the incident, an invitation came to attend the training which could include group members who took place at PT. Buli conducted by the Faculty of Animal Husbandry Hasanuddin University. Then two representatives of the group were sent to attend the training to be able to meet the needs of the group, namely the availability of participating Inseminator staff in the community pilot group. This is in accordance with Abd Rahman's statement which states that:

"... to meet the needs of inseminators in the group, we received an offer of training from UNHAS held at PT. Buli and I along with 2 members using group fees"

After completing the training the head of the Tibona group immediately reported to the District Livestock Service Office to be registered as an independent inseminator in his group by showing the training certificate he had obtained. By being registered as an independent inseminator, it is permissible to obtain Artificial Insemination facilities in Bulukumpa District. Cows that were used as learning cows for IB were their own cows so that the risks that were likely to occur could be handled by themselves so as to give confidence to their group members towards the skills they obtained. To change the members' perceptions and so that they wanted to do so requires proof of success because in general they were afraid to accept the risks of any technological changes. This is in accordance with Abd Rahman's statement that:

"... after returning to the training, I immediately reported to the agency to be registered as an independent IB officer to be able to access IB facilities and infrastructure in the sub-district. The first cow I IB is my own cow to show members that what we have learned in the training has been able to apply on our own. It is rather difficult for members to directly believe in any changes but if we are able to prove and show that these changes do not contain risks, but are able to increase productivity then they immediately want to follow what we do. "

The involvement of other elements outside the community pilot groups such as the Livestock Service Office and higher education institutions had been proven to provide a solution to the problems faced by farmers through training to improve farmers' skills to solve their own problems.

After the success of Artificial Insemination carried out on livestock, group members started reporting their cows if they were lust and it was proven that IB officers owned by community pilot groups were able to carry out IB successfully in other group members. Incentives for IB officers were obtained from the number of cows in the IB and if the IB was owned by the group then the payer was a group while for the breeder outside the group charged IDR 50,000 per pregnancy and if assisted birth plus IDR 100,000, so the total per birth was IDR 150,000.

The large value of benefits was felt by members of the Tibona group with ongoing compost processing kept members compliant with the rules run by the group. The benefits that had been felt so far were providing additional income for farmers who had free time to be able to work in compost processing, increasing livestock productivity with free health services and IB from groups, making it easy to clean cages, providing a healthy environment because filming stools were collected, make it easier to access organic fertilizers for using in agriculture and plantations.

Breeders who were not compliant with group rule received sanctions which were shared by each member who was not present at the monthly meeting of members to be fined with a payment of Rp.10,000 for the group cash, members who did not collect the stools that could be accessed by car feces then the cessation of livestock health services and IB was carried out, members who did not follow the technical

rules for borrowing group inventories then be considered for revolving to obtain a loan. The application of sanctions for each violation made this group work well.

Institutional processes that ran well provided a special attraction for other farmers to join as members of the group. Farmers who were interested in becoming a new member would be given the opportunity to participate in a monthly meeting of members for 5 times, after following these conditions it could be decided whether or not to be accepted as a member. The aim was to participate in the meeting for 5 times so that prospective group members understand the actual conditions of the group, what activities were carried out by the group what rights and obligations were obtained if they were members of the group, thus each candidate would have a long time to think to decide to become a member, did not let prospective members only saw the group from the outside. This is in accordance with Mr. Rahman's statement:

"... each prospective new group member will be required to attend a monthly meeting of members for 5 times before being accepted as a member of the group or rejected, the aim is to allow prospective new members to know more about group activities, the rules they run and give a long time to think in deciding to become a member, don't let prospective members only see the group from the outside."

Some cases of new members made this group a means to learn to change the behavior that had been carried out. One of the cases was Mr. Abd Aziz who was a member who later joined the community pilot group. Before joining the group, he had migrated to Malaysia with his family for several years, and worked for a chicken company there. After returning here without carrying anything really confused about what to do. So the first thing to do was to build a small hut in the middle of the garden, then he built a laying chicken farm like what was done in Malaysia. Assuming that there were at least chicken breeds, there were at least days of income for living expenses. But not as planned the conditions here were constrained with feed, here it was difficult to access bran so that the profit sought was even a loss....

From there, Mr Rahman called him to his house because he included his family and was offered an entry into a herd group and the first meeting he attended was a program discussion meeting to build a village. From that program, I started building cow pens and got 2 cows from the group and 1 cow was from Mr. Rahman. Participation with this group gave many blessings from Allah SWT. Every 4 people sell fattening cattle to help finance their families. People who visited their homes also often and often gave input on what should be done and this was what provided many benefits for business development.

After being sent by the group to take part in several training including animal health training and Artificial Insemination (IB) and Alhamdulillah he had permission Letter Performing Artificial Insemination (SIMI). From the skill to do livestock service, it reduced the burden on Mr Rahman, which was increasingly busy where before Mr. Aziz had skilled at doing livestock services, this was done by Mr

Rahman. Initially every time there was a call for livestock services, Mr. Rahman directed him to do the service, and if the members were served by his cow, the members did not pay, but eventually every member or member outside if someone wanted livestock services, contact Aziz directly.

A very large lesson joined in the cattle group, making Mr. Aziz thought of making his own livestock group, under the guidance of Mr Rahman. At the beginning of the group's establishment, confusion about how to manage groups, lead meetings and others. But thanked to the persistence and learning from the previous group, this group had received capital assistance several times.

The first aid that could be obtained was the assistance of forage (HMT), which obtained facilities and infrastructure in the form of tractors, water pumps, copper and grass plantation funds. The next aid was 16 cattle from the provincial government.

Participation in this group was very influential on the changes in the life of the family of Mr. Aziz, where the liveliness of livestock services made the activity could provide income for every service performed.

4. DISCUSSION

Changes in group members' perceptions of the perception that livestock stool is livestock waste must be disposed of because it causes odor and dirt around the cage to be a perception that livestock stool is a potential raw material for making organic fertilizers that benefit plants and has economic value, takes a long time after seeing directly the process of making fertilizers, utilizing organic fertilizers in plants and fertilizer sales. This is consistent with the Thrutp statement that local knowledge is not static. New techniques developed by a community member or developed by outsiders, if beneficial to the local community will be disseminated by word of mouth through imitation or informal education at village meetings, through an inauguration ceremony and then become part of indigenous knowledge. When new experiences have been obtained, other experiences will lose their relevance, due to changes in conditions and needs. The ability of farmers to manage change is also part of the local knowledge system. So, local knowledge is usually seen as an accumulation of collective experience from generation to generation that is dynamic and always changes [21].

The involvement of other elements outside the community pilot groups such as the Livestock Service Office and higher education institutions has been proven to provide a solution to the problems faced by farmers through training to improve farmers' skills to solve their own problems. This is consistent with [21] statement that because of the limitations of technology development by farmers, farmers who are faced rapidly changing conditions cannot be expected to be able to solve all agricultural problems with their own experimental knowledge and communication networks. Outside parties, whether local or foreign scientists or development workers can provide important information and skills needed to broaden the farmer's foundation in reflection and action, for example:

- a) Provide stimulation and encouragement to farmers to

combine the strengths of one another in analyzing problems, prioritize, and develop better technology; b) Provide basic scientific information about phenomena that cannot be observed; c) Provide choices for testing; d) Provide methods for designing trials and comparing results that help farmers draw conclusions that can convince them; e) Providing ways that make it possible to expand farmers' discoveries to farmers and other scientists.

Having obtained knowledge requires time to test the knowledge to convince group members to make decisions to implement the technology. This is consistent with the statement of [21] that outsiders can support farmers in the process of seeking balance by strengthening their ability to assess their situation, develop new technologies, and adjust their farming systems.

Further more, [21] stated that decision making in farmer households includes complex factors, including biophysical characteristics of farming, availability of quality external inputs and socio-economic and cultural processes in the community. Interpretation of household members about these factors can be different from what is felt by outsiders. For example risk management can be highly valued by farmers but low by outsiders so that the technical proposal is not acceptable. To assist farmers in developing their farming business in accordance with the geophysical and local human layout, outsiders must understand how the decision is taken by the farmer's household and what reasons behind it. In addition, during the changes in the ecological, socio-economic and cultural environment, the farming system must also be adjusted. Thus, farmers cover an endless decision-making process, both for the short, medium and long term. The decision making process itself will change from time to time.

The collective behavior of compost processing in groups is a behavior based on the awareness of each group member, because compost processing is considered to increase the productivity of cattle business. While the collective behavior of compost processing in government-assisted groups occurs because they want a positive response from the government, where government-assisted cows function as a binder to be involved in processing organic fertilizers. In particular, Kelman's theory mentions the existence of three social processes that play a role in the process of changing collective behavior, namely willingness, identification, and internalization [22]. Of the three categories of behavior change, changes in collective behavior in community pilot groups include the process of internalization, that is, individuals receive influence and are willing to behave according to that influence because the attitude is in accordance with the value system adopted.

Changes in the behavior of farmers following environmental changes in order to continue to survive, as well as rice farmers in South Sulawesi where changes in perilaku continue to run dynamically starting from the green pre-revolution and during the green revolution. This behavior change occurs in sociological and social ways to increase agricultural productivity. Changes in technical behavior are also carried out in the process of adapting to climate change

where the community will change according to climate conditions, namely in terms of the use of heat-resistant or short-lived seeds and pest control systems that are considered in accordance with the environmental conditions and technology available to maintain production [23], [24].

Community behavior in utilizing livestock waste into compost will be sustainable if it is successful in integrating cattle business with compost processing that is in line with the daily activities of the community. This is in accordance with the findings of [25] that the use of local resources can be sustainable in rural communities if they integrate local knowledge-based values into the activities of resource use.

5. CONCLUSION

The Changes in collective behavior of group members is a change in internalization behavior, namely changes in behavior based on the ability of the group leader to provide examples and motivation to its members. In addition, group management is able to provide benefits to group members through increasing cattle business productivity managed by group members and obtaining additional income from the management of cattle waste processing business into compost.

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