

**THE USE OF BAMBOO BASKETS IN THE SUPPLY CHAIN AGRICULTURAL
PRODUCTS PANCASARI BULELENG**

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ABSTRACT

Packaging plays a very important role in supply chains, not only as a product protector during transportation but also as an effective marketing and communication tool. In the midst of increasing awareness of environmental issues, companies around the world are trying to adopt more environmentally friendly and sustainable packaging. To anticipate these problems, it is realized through the implementation of socialization regarding the use of bamboo baskets in agricultural transportation in Buleleng. The purpose of this activity is to optimize the use of sustainable packaging in the supply chain. This socialization activity involves several activities, such as direct socialization to farmers, distribution of brochures, pamphlets, and stickers containing information related to the supply chain with sustainable packaging. The method used in this writing is a field survey method with a descriptive approach. This activity shows that the use of plastic packaging can damage the environment. However, after attending the socialization, there was a change in insight regarding the use of bamboo baskets in the supply chain. Socialization of this procedure also succeeded in creating positive changes in the application of farmer distribution. Hopefully, farmers can implement the use of sustainable packaging in the supply chain from collectors to end consumers.

Keywords: bamboo basket; descriptive; supply chain; socialization; sustainable packaging

INTRODUCTION

In recent years, technological developments and changing consumer preferences have driven significant innovation in packaging design and function. Plastic waste is one of the problems experienced by various countries in the world because it is difficult to decompose, but its presence is increasing every year (Nasional SINTA & Zulfan Hakim, 2019). Amidst the increasing awareness of environmental issues, companies around the world are looking to adopt more environmentally friendly and sustainable packaging. Packaging plays a very important role in modern supply chains, not only as a product protector during transportation but also as an effective marketing and communication tool. A supply chain is an item of activity or a network of cooperative procurement of goods or services that work together and are interrelated with each other to make and distribute goods or services (Maulani et al., 2014).

Distribution is the activity of delivering goods from the main warehouse or unit to the work unit of the goods user (Mulalinda Veronika, 2014). In the process of distributing these goods, packaging becomes important in the safety element of a product to reach consumers. Packaging is a container or wrapper, for food products, packaging has an important role in efforts to maintain food quality and safety and increase product attractiveness (Noviadji Benny Rahmawan, 2014). In order for food to be consumed to those who need it properly and attractively, proper packaging is needed. Packaging in this case is intended to protect fresh food and processed food ingredients from the causes of damage, both physical, chemical, and mechanical (Noviadji Benny Rahmawan, 2014). In this case, the impact of packaging on the

environment is of particular concern to producers so that they try to adopt packaging to be more environmentally friendly and sustainable. In this case, the alternative used is bamboo material. Bamboo is one of the monocotyledonous plants and is included in the grass family Poaceae family (Bambu et al., 2018). Bamboo as an alternative material for raw materials is versatile in this case bamboo is a natural resource that has been used for many years by almost half of the world's population such as food, protection and simple construction, renewable in this case bamboo is a natural resource that can be renewed. Bamboo is also one of the plants that has the ability to grow well and quickly, easy to obtain this is because of its fast growth ability, bamboo will be easy to obtain, especially in the Indonesian region which is supported by its tropical climate, easy to process, then bamboo does not rust, does not damage, as in raw materials from metal (Kasus et al., 2016)

To anticipate this problem, students of the Bali Land Transportation Polytechnic carry out Community Service (PKM) regarding the use of bamboo baskets in the transportation of Buleleng agriculture. PKM itself is an activity that is performed in helping the community to carry out activities without asking for compensation. In this activity, students of Bali Land Transportation Polytechnic conducted socialization on the use of environmentally friendly and sustainable packaging, especially made from bamboo in the transportation of fruits and vegetables in Pancasari Village, Buleleng. This activity was carried out in the form of socialization to farmers directly. This is one form of optimizing the use of sustainable packaging in the supply chain.

METHOD

Community Service activities regarding the socialization of the Utilization of Environmentally Friendly Bamboo Baskets for the Transportation of Fruits and Vegetables were carried out using a qualitative descriptive method. A research method based on descriptive data processing (Hanyfah et al., 2022). With the form of activities, namely socialization with the target of socialization is the paprika farmers in Pancasari village, Buleleng Regency as shown in Figure 1.

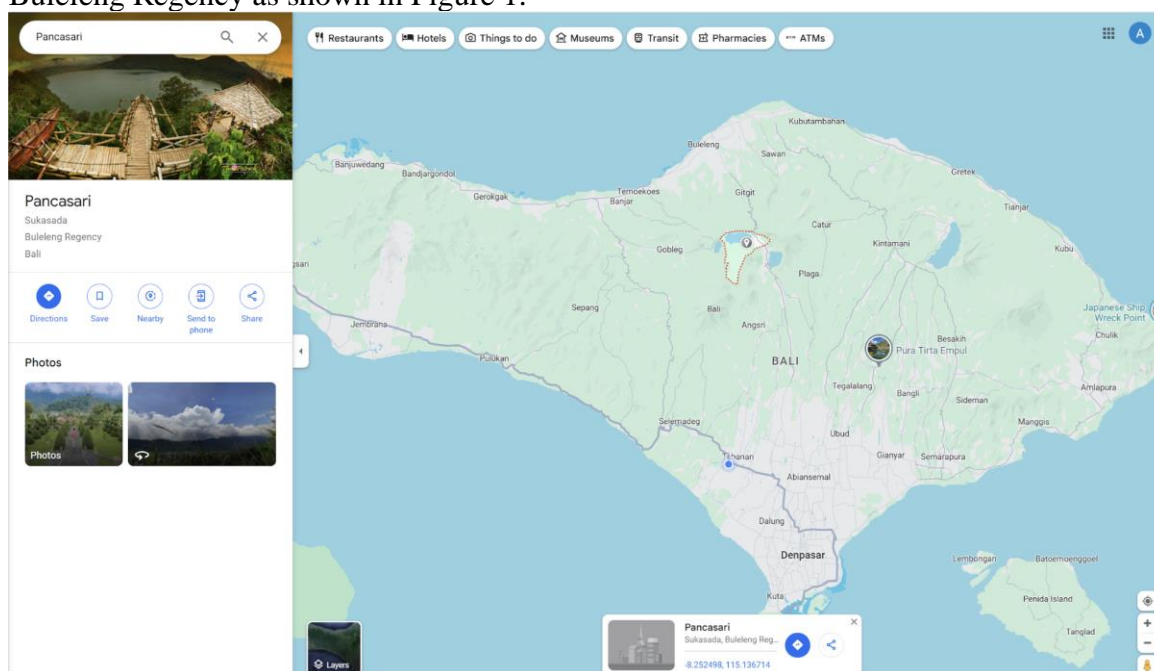


Figure 1. Location of Pancasari Village, Buleleng Regency

The initial step taken in the socialization of the Utilization of Environmentally Friendly Bamboo Baskets for the Transportation of Fruits and Vegetables to farmers in Buleleng is to survey the location where community service activities are carried out. Pancasari Village, Buleleng was chosen as the location of the socialization activities because it meets the requirements of the place of activity, namely there are many paprika farmers, after contacting several farmers and getting permission directly from the farmers concerned, then a location survey was conducted directly to the village of Pancasari, Buleleng. Then the preparation of an activity proposal to the Center for Research and Community Service was carried out. After getting approval, then the preparation of equipment is carried out, the equipment prepared includes:

- 1) Banners;
- 2) Brochures;
- 3) Stickers;
- 4) Leaflets;
- 5) Bamboo basket;
- 6) Bucket;
- 7) and a set of harvesting equipment.

After all the preparations for the activity were completed. Then on Friday, July 12, 2024, socialization activities were carried out on the use of environmentally friendly bamboo baskets for transporting fruits and vegetables in Pancasari village, Buleleng. The activity began with the delivery of lecturers and the aims and objectives of students conducting socialization activities on the use of environmentally friendly bamboo baskets for transporting crops to farmers, after providing socialization and understanding of the use of bamboo baskets for transporting crops to farmers, then handing over bamboo baskets and a set of harvesting equipment directly to farmers. After the socialization activity was completed, a documentation session was held together with the farmers to evaluate the success of the activity and prepare a report.

RESULTS AND DISCUSSION

The socialization activities carried out in Pancasari Village Buleleng Bali went well, all members involved cooperated and contributed to each other. Paprika farming farmers in Pancasari Village welcomed our socialization warmly and were also cooperative so that from the beginning of the activity to the end. Socialization activities can be carried out according to the objectives and plans, namely the use of bamboo baskets for the transportation of peppers, fruits and vegetables which initially used plastic bags to become environmentally friendly bamboo baskets. Vegetables and fruits are perishable commodities, so to facilitate the transportation process and to reduce the risk of damage, packaging is carried out as an effort to reduce yield losses both in quantity and quality (Warti et al., 2018). The standard used for sorting each quality depends on market demand. Standardization is a provision regarding the quality or condition of commodities and their packaging that is made for smooth trading/marketing. Standardization is basically made by agreement between consumers and producers, can cover certain groups or certain regions / countries / marketing areas (Mutiarawati Tino, 2007). Socialization of the functions of bamboo packaging products and variations of packaging for various purposes (Muslih Mohammad, 2020).

The socialization program on the use of environmentally friendly bamboo baskets in the paprika farm of Pancasari Village, Buleleng Bali has achieved significant success. One of the main supporting factors is the active participation of the farmers in Pancasari Village Buleleng Bali. They showed positive interest and acceptance of the bamboo basket concept.

This is reflected in the increased planned use of bamboo baskets in their daily harvest transportation activities. In addition, the involvement of the farmers in the socialization process also contributed greatly to the success of this program by increasing their understanding of the environmental benefits of bamboo baskets for transporting fruits and vegetables from the farm to the destination. It is believed that in the supply chain process, the use of bamboo baskets has more benefits both environmentally and in terms of efficiency of use. In this case, the previous use of plastic had a negative impact on supply chain activities. Rotting of crops occurs faster due to moisture from the use of plastic packaging which is also bad for environmental sustainability. With the use of bamboo baskets with air circulation, it is believed that it can slow down spoilage to the destination by adjusting the shape according to the needs of farmers.

Supporting Factors

With continuous support from all relevant parties and by continuing to evaluate and make the necessary adjustments, this program has great potential to continue to grow and have a sustainable positive impact in an effort to protect the environment and improve the efficiency of transporting paprika agricultural products in Pancasari Village, Buleleng Bali. Several other supporting factors were obtained for the implementation of community service activities, namely

1. Allocation of funds from the Bali Land Transportation Polytechnic;
2. Facilities and infrastructure to complement the socialization of community service activities.

The facilities used in this community service activity, namely: brochures, pamphlets, stickers on the use of sustainable transport packaging in the supply chain and bamboo baskets and harvesting equipment. A pamphlet on the use of sustainable packaging in transportation from the collector to the final consumer. The writing technique is written in a concise manner, namely the key points in the use of sustainable packaging in the distribution of goods from the collector to the destination.

1. Brochure on sustainable packaging and its benefits for agricultural distribution from collectors to destination.
2. Supply chain stickers with the use of sustainable packaging.
3. Harvest complementary tools that are useful in agricultural activities.

Inhibiting Factors

In the implementation of PKM activities, there are several inhibiting factors faced that make the implementation of socialization a little hampered in achieving the desired target. The implementation of socialization during the location selection period had obstacles because it experienced obstacles from farmers because they were unable to attend but in the same area they had a replacement for other farmers so that the socialization could be continued properly.

Activity Implementation Phase

Openig

By initiating this activity, we invite all participants to jointly build awareness of the importance of using environmentally friendly bamboo baskets in the distribution of fruits and vegetables from farm to destination. The initial step to introduce this concept to the paprika farmers in Pancasari Village, Buleleng Bali by visiting the location for a permit application as shown in figure 2. Through our socialization, we hope to provide a deeper understanding of the environmental benefits of bamboo baskets and how their use can increase efficiency in the

daily transportation process. With the cooperation and active participation of all parties, we believe this program will have a significant positive impact on environmental sustainability and the welfare of the community, especially farmers.



Figure 2: Preparation activities for the location permit application

The activity began with preparations to carry out community service on transportation using environmentally friendly packaging for farmers in the village of Pancasari Buleleng Bali. This begins with the preparation of tools and permits to related parties so that there is good coordination between activity implementers.

Activities Introductions and a first-hand look at the paprika farm

In this case, the lecturers and students showed a friendly attitude by welcoming the farmers warmly and enthusiastically. This illustrates the importance of cooperation in promoting the use of environmentally friendly bamboo baskets on paprika farms as well as providing guidance and support during socialization activities as shown in Figure 3.



Figure 3: Coordination with Students

The results showed active participation from farmers in Pancasari Village, Buleleng Bali who were receptive to the concept of using bamboo baskets. This increased their understanding of the environmental benefits and the potential to improve distribution efficiency from collectors to destination.

Submission of Aims and Objectives

Lecturers and students conveyed their aims and objectives in conducting this socialization activity clearly and straightforwardly to the farmers as shown in Figure 4. The aims and objectives are to raise awareness of the importance of using environmentally friendly bamboo baskets as a sustainable alternative in transporting fruits and vegetables from collectors to their destination. It also aims to support efforts to protect the environment and increase efficiency in distribution activities from farm to consumer. In addition, bamboo plays an important role in sustainable development and climate change mitigation. As an eco-friendly and renewable material, bamboo can be an alternative solution to address global warming and prevent natural disasters such as landslides, floods and erosion.



Figure 4: Students Purpose and Objectives

The result was the success of lecturers and students in increasing the understanding of farmers in Pancasari Village, Buleleng, Bali about the benefits of environmentally friendly bamboo baskets. The socialization activity succeeded in providing the benefits of using bamboo packaging for the transportation of fruits and vegetables in a sustainable period of time, thus having a positive impact on protecting the environment and increasing the efficiency of transportation.

Handover of bamboo baskets and paprika harvesting tools to lecturers and students

The handover of bamboo baskets and paprika harvesting tools by lecturers and students was carried out with enthusiasm and commitment to support the implementation of environmentally friendly practices in Pancasari Village, Buleleng Bali as shown in Figure 5. Lecturers and students provided explanations on how to use and the benefits of bamboo baskets as a more sustainable alternative in the distribution of goods.



Figure 5. Basket handover

The result was positive acceptance from farmers in Pancasari Village, Buleleng, Bali, of the bamboo baskets and paprika harvesting tools delivered by the lecturers and students. This reflects good adoption of environmentally friendly practices as well as improvements in efficiency and effectiveness in the distribution of fruits, vegetables, and agricultural products.

All Participants Documentation

The documentation included photographs of the activities, notes on participants' interactions with lecturers and students, and the provision of baskets and harvesting tools as shown in Figure 6. It also recorded participants' attendance, their role in the demonstration of the use of bamboo baskets and harvesting tools. As well as observations on how they adopt and implement the practices taught in their daily activities on the farm and the systematic journey from the farm to the final destination of the fruit and vegetable harvest. This documentation is important for evaluating the success and impact of the socialization program.



Figure 6: Documentation of all PKM participants

Closing and Acknowledgments

The implementation of Community Service activities (PKM) with the title “USING BAMBOO BINS IN THE BULELENG AGRICULTURAL SUPPLY CHAIN” in Pancasari Village, Buleleng Bali, paprika plantation farmers felt helped by the socialization provided regarding the use of environmentally friendly bamboo baskets. Paprika plantation farmers know the problems that occur as well as the solutions that must be carried out in accordance with the required technical specifications while still considering environmental sustainability. In addition, suggestions for Community Service activities, this activity can be continued with further programs related to the use of bamboo baskets for transporting fruits and vegetables. With further activities, monitoring of the previous activity program can be carried out. As the implementing team, we would like to express our sincere gratitude to all the farmers, lecturers, and students who have participated in this socialization activity as shown in Figure 7. Your presence and enthusiasm means a lot to us. With the cooperation we have built, we are confident that the implementation of bamboo baskets and paprika harvesting tools will have a sustainable positive impact in protecting the environment and increasing efficiency in our paprika plantations. May this collaboration continue for the common good. Thank you for your support and contribution to all.



Figure 7. Closing and Acknowledgments

The Importance of Sustainable Packaging in Agricultural Supply Chains

The use of sustainable packaging in agricultural supply chains is becoming increasingly important in an era of increasing environmental awareness. According to Wikström et al. (2018), sustainable packaging not only reduces environmental impact but can also improve supply chain efficiency. In the context of Pancasari Buleleng, the use of bamboo baskets as an alternative to plastic packaging is a strategic step towards more environmentally friendly agricultural practices.

Advantages of Bamboo Baskets as Sustainable Packaging

Bamboo baskets have several advantages as sustainable packaging. Research by Kumar et al. (2021) showed that bamboo has biodegradable and renewable properties, making it a more environmentally friendly option than plastic. In addition, the use of bamboo baskets also supports the local economy and preserves the traditional wisdom of the Balinese people (Sukaatmadja et al., 2020).

Impact of Socialization on Farmer Behavior Change

The socialization activities carried out have succeeded in increasing farmers' awareness of the importance of using sustainable packaging. This is in line with the findings of Ajzen (2011) which states that education and socialization can influence individual attitudes and behaviors towards environmental issues. Changes in insight that occur in Pancasari Buleleng farmers show the effectiveness of the educational approach in changing conventional agricultural practices to be more sustainable.

Implementation Challenges and Opportunities

Despite increased awareness, the implementation of bamboo basket use in supply chains still faces several challenges. According to Gollnhofner and Schützeneder (2021), the transition towards sustainable practices is often hampered by economic and habitual factors. Therefore, continued support and incentives are needed to ensure the long-term adoption of bamboo basket use in Pancasari Buleleng.

Implications for Agricultural Supply Chain Sustainability

The use of bamboo baskets in the agricultural produce supply chain of Pancasari Buleleng has the potential to have a significant positive impact on environmental and local economic

sustainability. In line with the “circular economy” concept discussed by Geissdoerfer et al. (2017), this practice can reduce plastic waste and encourage more efficient utilization of local resources.

CONCLUSION

The socialization activity entitled “Utilization of Environmentally Friendly Bamboo Baskets for Fruit and Vegetable Transport in Buleleng 2024 Traditional Plantations” successfully increased the awareness and acceptance of paprika farmers in Pancasari Village, Buleleng, towards the use of environmentally friendly packaging. The use of bamboo baskets as an alternative to plastic bags in the agricultural supply chain has been well implemented, with results showing that farmers have welcomed this change and started to apply it in their daily transportation activities. The success of this program was supported by active participation from the farmers, financial and logistical support from Bali Land Transportation Polytechnic, as well as collaborative efforts between students, lecturers, and farmers in socialization. Despite some obstacles, such as challenges in determining the location of the socialization and farmers' participation, this activity still achieved its goals thanks to the good cooperation of all parties involved. With the positive acceptance and better understanding of the benefits of bamboo baskets by farmers, it is hoped that the transportation of paprika and other agricultural products in Buleleng will be more sustainable, reduce negative environmental impacts, and improve farmers' welfare. This activity marks an important first step in adopting sustainable agricultural practices in the region. This socialization activity is expected to serve as an example for other regions to adopt similar practices to support more environmentally friendly and sustainable agriculture.

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