



ENVIRONMENT-BASED CREATIVITY: INNOVATIVE USE OF COCONUT SHELL WASTE

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Abstract:

Coconut shell waste is often considered valueless, despite its potential to be processed into innovative, eco-friendly, and economically valuable products. This study aims to identify the challenges and potential in creatively utilizing coconut shells to support economic and environmental sustainability. The research employs a descriptive qualitative method to explore in-depth the challenges faced by entrepreneurs in managing and marketing coconut shell products. Data were collected through in-depth interviews, observation of the processing stages, and document analysis. The findings reveal that although coconut shells can be transformed into high-value products such as various handicrafts, the lack of government support and low community participation are the main obstacles hindering optimal marketing. This has resulted in limited market access and low product competitiveness at both local and national levels. The study recommends enhancing collaboration between entrepreneurs, the government, and the community through digital marketing training programs, sustainable product promotion, and educational campaigns to raise awareness about the economic and environmental value of coconut shell waste. These strategies are expected to address marketing challenges and support optimal product development.

Keywords: Environment, Waste, Coconut Shell.

INTRODUCTION

The problem of organic waste is still a big challenge in various countries, including Indonesia. One of them is coconut shell waste, which if not treated properly can pollute the environment. Along with the increase in the production of coconut-based products, the amount of coconut shell waste has also increased rapidly, but its use is still very limited.

The coconut plant (*Cocos Nucifera*) from the Palma family (Arecaceae) is a versatile tree that has many benefits, from the roots to the tips of the leaves. Ketut Budaraga (2021). In various countries, coconuts are known as the "tree of life" because almost every part of it can be used for various purposes. Sarmidi Amin (2024) In Indonesia, coconut has a deep philosophical value, reflecting the importance of this plant in daily life. Every part of the coconut tree, such as roots, trunks, leaves, flowers, fruits, and shells, can be processed and utilized according to needs, so it is included in the context of environment-based creativity. Jamilah Nasution (2024).

Coconut trees are known as versatile plants, where almost all parts of the tree, from the roots, trunk, fruit, to the leaves, have various benefits. Maulana Farhan Abdillah(2021). These parts are used both for traditional purposes, such as medicine, and in daily life for cooking materials, firewood, and household furniture. The trunk of the coconut tree can be used as a construction material, furniture, decoration, and

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a variety of other products. Ikhwan Nur Afiq (2021). After the coconut pulp is taken, the remaining waste is in the form of coconut shells or shells and coconut fibers which have great potential to be further utilized.

Coconut shells are waste produced from coconuts, with the characteristics of a hard, brown material with a stroke pattern that adds aesthetic value, and an uneven but strong surface that is resistant to water. According to Bello et al. (2016), coconut shells account for about 15% of the total weight of coconuts, which is equivalent to about 9 million tons of coconut shells wasted annually globally. These coconut shells are affordable, easy to obtain, and renewable. In terms of composition, coconut shells are mostly composed of cellulose, hemicellulose, lignin, and moisture, making them a potential material for a variety of innovative environment-based craft products.

Gunggungan Lor Village, located in Pakuniran District, Probolinggo Regency, is known as a village rich in coconut trees. The abundance of coconut trees makes coconut fruit one of the main commodities that are abundant in the region. The coconut waste that exists today is often considered by the community as useless, dirty, and worthless waste, so it is often left lying in any place or just thrown away. In fact, the careless disposal of coconut waste can have a negative impact on the surrounding environment. This is one of the reasons why the waste problem in Indonesia has not been solved, because the volume of waste produced, including coconut waste which should be used more innovatively, continues to increase. R Mohamad Mulyadin (2021).

In addition to environmental issues, another challenge faced by the community is how to market products processed from coconut shell waste so that they can cover a wider market. As the times develop, technology will also become more sophisticated and advanced. Ana Maritsa (2021). This can make communication and information also very influential on every aspect of the individual. It is undeniable that the development of the internet will also change the order of a person's way of life. This is supported by research that says that the use of the internet as a business medium can also be a business opportunity that is widely used by producers and marketers. Most online sellers use the internet to offer or market their merchandise and services through social media or what is called e-commerce. Not a few also do business online because as an interesting business opportunity with increasingly sophisticated technology, just with a smartphone or computer, it is easier and simpler to be anywhere at any time.

Currently, many companies apply various marketing strategies to market their products, such as the consumer to consumer (C2C) business model, which is a buying and selling activity, both products and services that provide online marketplaces and malls for consumers to make sales and purchase transactions online. Ananta Kumala (2023). Where users can display their products on the site used to attract buyers. One of the marketplaces that is currently very popular and widely used is Shopee. Shopee is a commercial electronics site headquartered in Singapore owned by Sea Limited, which was founded in 2009 by *Forrest Li*. Dhany Yudha (2022). Shopee is developing e-commerce trends, so that online business opportunities are increasingly wide open for business actors, including those engaged in the creative and environmentally friendly industry sector. As one of the

largest marketplaces, Shopee provides various conveniences and benefits for sellers to market their products more widely and effectively.

One of the products that has great potential to be marketed through Shopee is a product made from coconut shells. Coconut shells are waste that can be processed into various products with high selling value, such as handicrafts, and household accessories that are certainly environmentally friendly. By utilizing digital marketing strategies on Shopee, business actors can increase product visibility and excellence, reach more consumers, which ultimately increases profits. Through the use of Shopee Ads features, keyword optimization, and content-based marketing strategies, coconut shell products can be better known and compete in the e-commerce market. FRILYA SHOFINIDA (2022).

Based on previous research conducted by Dyah Yuni Kurniawati with an article entitled "Community Empowerment Through the Utilization of Coconut Shell Waste and BS Batik Fabric as Sustainable-Based Handicraft Products in Keep Village, Sukoharjo". The results of the study show that the use of coconut shell waste as a handicraft product is a form of community empowerment effort while increasing community creativity and increasing the attractiveness of the village itself. Dyah Yuni K (2022).

The same thing is also expected to be realized through the existence of one of the handicraft businesses that utilizes coconut shell waste in Gunggungan Lor Village. This handicraft business aims to educate and inspire the public to see the great potential of coconut shell waste, which has been considered worthless, into a product with high economic value. Emy Setyaningsih (2021). With this initiative, it is hoped that the community will not only be more concerned about waste management, but also be able to create sustainable business opportunities. The existence of this Handicraft Business is also the first step to support the concept of environment-based creativity, where local innovation is able to have a positive impact on the economy and the sustainability of the surrounding environment.

The inculturation activity in Gunggungan Lor Village lasted for three days, where the KKN team conducted socialization with the local community, including one of the small and medium enterprises (MSMEs) engaged in the processing of coconut shell waste. One of the main focuses is the Handicraft Business which specifically utilizes coconut shell waste. This activity aims to discuss and find innovative solutions in managing coconut shell waste which has often been scattered, so that it can be processed into products that have added value and have a positive impact on the environment and the community's economy.

Research on environment-based creativity using innovative coconut shell waste has a high urgency in meeting environmental challenges and sustainable needs for economic development. Coconut shell waste, which is often thrown away or burned, not only pollutes the environment, but also becomes a neglected resource. This urgency drives the importance of research that can develop creative solutions in organic waste treatment. The reason for choosing this research is based on the great potential of coconut shells with strong and versatile material characteristics, making it possible to make a variety of highly valuable products such as handicrafts, decorative lamps, pencil cases, etc. In addition, this approach can open up new economic opportunities for local communities and support the implementation of a

greener circular economy. The study not only contributes to the support of the SDGs (Sustainable Development Goals (SDGs)) with respect to responsible production and consumption, but also provides innovative solutions with the social, economic and ecological effects provided.

The purpose of this study is to analyze the problem of coconut shell waste which is often considered as useless waste and its impact on the surrounding environment. This research also aims to identify opportunities for the use of coconut shell waste into innovative products that have economic value and are environmentally friendly. In addition, this research focuses on efforts to introduce the potential of coconut shell waste as a high-value raw material and build public awareness of the importance of creative and sustainable waste management. This research also aims to encourage community enthusiasm in developing various innovations in the use of coconut shells, both as handicraft products, alternative fuels, and other products that have competitiveness in the market. By improving people's understanding and skills, it is hoped that new business opportunities will be created that not only support the economy but also help reduce the negative impact of waste on the environment.

In addition, this research also aims to identify and analyze the challenges faced by business actors in the management and marketing of processed coconut shell waste products. This research also aims to develop innovative strategies that can support business sustainability, increase product competitiveness in the market, and strengthen contributions to environmental conservation through the creative and economically valuable use of waste.

This research encourages the importance of innovation in utilizing coconut shell waste with the Asset Based Community-driven Development (ABCD) approach. This research was carried out by the KKN team of Zainul Hasan Islamic University (UNZAH) located in Gunggungan Lor Village, with the aim of processing coconut shell waste into products of high economic value and environmentally friendly. Through community empowerment activities, this research aims to reduce scattered coconut shell waste, create creative business opportunities, and support the creation of a cleaner and more sustainable environment.

RESEARCH METHODS

This research was carried out for approximately one month, starting from January 11 to February 9, 2025. Community service and assistance activities are carried out with the ABCD (Asset-Based Community Development) approach. This approach is a critical method that focuses on community development based on the potential and assets owned by the community. Alhamuddin (2020). ABCD strongly emphasizes the importance of community independence and the creation of a sustainable system. This approach focuses on asset management to be further developed, so it is very relevant when applied to the people of Gunggungan Lor Village Fachrul Najamudin (2024). The community is encouraged to play an active role as a driver and decision-maker in development. The stages of ABCD itself include the following Fatikul Himami (2020).

1. Inculturation (Introduction/ Approach)

This stage is the first step in the mentoring process. Acculturation is an important part of building Trust Building with the community. Ainol (2024). At this stage, students have a casual interaction with the community for approximately three days. The approach is carried out intensively through visits to residents' homes or directly involved in community activities, such as working in the garden. The time and location of Accreditation are flexible, so activities can be carried out wherever students are. At this stage, they succeeded in establishing communication with several key figures and religious figures. Among them are Mrs. Sumiati as the Head of Gunggungan Lor Village, Kyai Faqih as the takmir of the Ar-Rohmah Mosque which is the location of PKM, Ustadz Arif Hidayatullah as the chairman of the TPQ where we teach, and Mr. Sanafi as the owner of the house which was used as a KKN post for one month. These figures briefed us on some local wisdom. The meeting discussed various things, ranging from daily activities, topographical conditions of the village, to the potential assets owned by Gunggungan Lor Village, which of course can be maximized to improve the welfare of the community.

In addition, we also took the time to stay in touch with village officials, including the Chairman of RT Krajan Hamlet whose house is located not far from the post. He is very supportive of our activities and is always ready to help, including accompanying during the inculturation process. His assistance has made a great contribution to the smooth running of our activities. The next visit was made to coconut shell waste artisans, who have high creativity in processing the waste into products with selling value. This collaboration with craftsmen is expected to be a means to actively involve them in the KKN student program. The participation of artisans is also expected to be a strategic step in empowering village youth to be more creative in processing waste into innovative products and economic value.

2. Discovery

Discovery is the first step to finding and recognizing existing resources to identify the potential and opportunities available in society. The information collected is then analyzed more deeply to find out the achievements that have been achieved previously or the positive things that have been done before. Nining (2021). This stage is crucial to be able to identify existing assets and explore potential that can be developed. This discovery process lasted for 5 days. The next step, from the various kinds of information collected, the community formulates a dream together and then enters the design stage.

After gaining an understanding of the social and cultural conditions of the people of Gunggungan Lor Village, the next stage is to recognize various resources that can be used to support the coconut shell waste treatment program. One of the main resources owned by this village is the abundance of raw materials, where every day there are many coconut shells that are thrown away without undergoing further processing. The availability of raw materials that are easy to obtain is an added value in the development of coconut shell-based businesses, considering that this material can be renewed and has high economic potential if managed properly.

In addition, Gunggungan Lor Village also has the potential for a workforce that can be developed, especially from groups of housewives, village youth, and small business actors who are interested in processing coconut-based products. Through appropriate training, they can hone their skills in processing coconut shells

into products that have more value. In addition, the existence of a number of local MSMEs that are already involved in handicraft production is also a strategic resource that can be used as a partner in the development of this business. In terms of marketing, advances in digital technology and e-commerce create new opportunities for rural communities to reach a wider market.

Marketplaces such as shopee can be an effective tool to reach buyers in various regions, so that coconut shell-based products from Gunggungan Lor Village can be more comprehensive. Through the mapping of these various assets, a more targeted strategy can be developed to maximize local potential and improve community welfare through environmentally friendly innovations.

3. Design

At this stage, coconut shell artisans begin to formulate strategies, processes, and build collaborations to realize change in their efforts. The result of this stage is the preparation of a mutually agreed work plan, which can be implemented collectively to develop the coconut shell craft industry.

Based on the resources that have been identified at the discovery stage, the next step is to develop a solution that is able to maximize the benefits of coconut shell waste in an innovative and sustainable manner. This design process involves product development, marketing strategies, and approach methods that will be applied in education and community empowerment.

One of the main solutions developed is to create products from coconut shells that have high economic value and are in line with market needs. Various products that have the potential to be developed include handicrafts such as bowls, spoons, glasses, and home decorations, as well as other products such as charcoal briquettes that are used as alternative fuels. The selection of this product is based on the market potential and the ease of the production process, so that people can more quickly master processing techniques and start producing goods that have a high selling value.

In terms of marketing, the strategy focused on using the Shopee e-commerce platform as the main channel in selling products. This strategy is implemented by considering easy accessibility, large market potential, and supporting features such as shopee ads, shopee live, and free shipping programs that can increase product exposure. Not only that, the branding strategy is focused on sustainability and community empowerment as the main selling point of the product. With this approach, consumers are not only interested in the functional aspects of the product, but also in the narrative behind the manufacturing process. In order for this program to be sustainable, a series of training and mentoring will be carried out for the village community, including production techniques, business management, and digital marketing strategies. Through this comprehensive approach, it is hoped that coconut shell-based businesses will be able to develop independently and provide real benefits for the environment and the community's economy.

4. Define

At this stage, coconut shell artisans move together using their assets to achieve the agreed goals. Achievements can be seen from the implementation of the

programs carried out. This implementation process takes about one week. After determining the priority scale, the next step is to choose the asset to be developed. The expected asset is coconut shell waste which is processed into handicraft products of economic value, as well as having a positive impact on the environment. Therefore, the main concern is the collection of coconut shell waste to be processed into products that can increase the economic empowerment of the community.

Once the solution is designed, the next step is to set the goals to be achieved and design a structured and detailed implementation plan. The main goal of this program is to reduce coconut shell waste that is not managed effectively, open up new business opportunities for the community, and improve economic welfare through more productive waste utilization. To achieve these goals, the implementation of the program will be focused on several stages, including:

1. Observation and analysis

Conducting direct observations at the production site to study the coconut shell processing process and find out what challenges are faced when marketing products.

2. E-commerce platform development

Assisting in the creation and access of e-commerce applications as a medium for promotion and marketing of coconut batatok-based products, so that it can reach a wider market.

3. Implementation and optimization

Testing and maximizing the use of e-commerce applications to align with the needs of sellers, including access to promotional features and online transactions.

4. Advanced evaluation and development

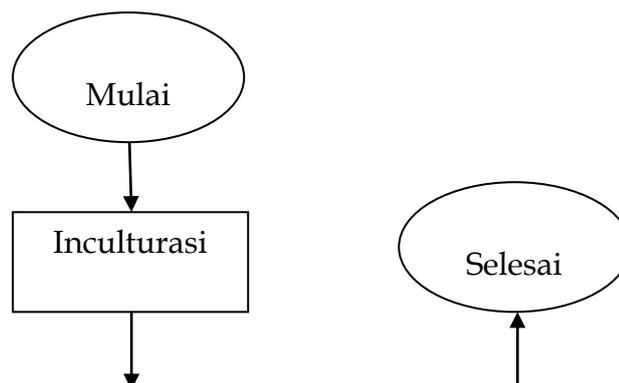
Carry out an evaluation of the effectiveness of e-commerce platforms in increasing sales and product promotion.

Through this approach, it is hoped that this program will not only be temporary, but can also continue to develop and provide long-term benefits for the people of Gunggunngan Lor Village.

5. Reflection (follow-up plan)

This stage is a monitoring and evaluation stage of various steps that have been implemented to assess the success and sustainability of the program. This process takes about 3 days. KKN students focus on coconut shell artisans in Gunggunngan Lor Village. Coconut shell waste is an abundant resource found in the village and has great potential to be developed. The village head and craftsmen agreed to continue and run this program.

a. Flowchart



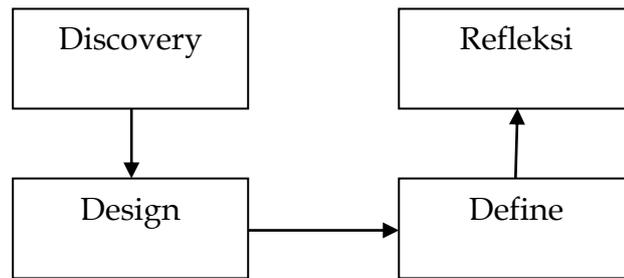


Figure 1. Flowchart

b. Conceptual Framework

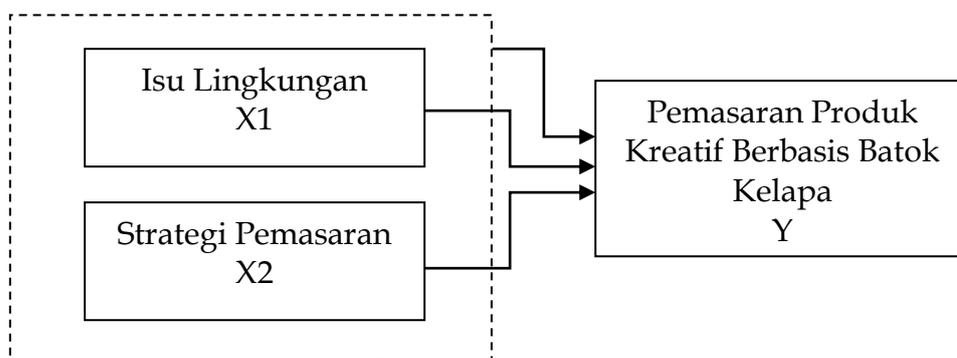


Figure 2. Conceptual Framework

RESULTS AND DISCUSSION

The results of the research obtained through the steps in the ABCD approach are as follows.

Inculturation

The first step that students can take is to carry out the inculturation process. At this stage, the community will better understand the purpose of implementing KKN (Real Work Lecture) and the role that students will play in the program. The presence of new KKN students in the village often arouses curiosity, such as who they are and what the purpose of their arrival is. Therefore, cultural introduction is a crucial element to ensure the success of the implementation of KKN. This process can be started by making a visit and answering various questions that arise among the community.

This inculturation process can be completed in about three days. If the data obtained is considered adequate, then the next step can be forwarded to the Discovery stage. However, in practice, the duration of the three days is often not enough to make an in-depth introduction. Therefore, assistance from the beginning

to the end of the program is still necessary. During the inculturation stage, communication and relationships between the community and students have been well established. This situation certainly makes it easier to carry out student service, because the community has trusted students and jointly carried out the agreed program.

Discovery

The discovery stage has an important goal to identify assets and explore the potential of the village. In this process, the community involved is coconut shell artisans. Their main focus is to set a priority scale so that local products can develop optimally. Through Focus Group Discussion (FGD) activities and interviews, students strive to get in-depth information about the assets of the village of Gunggungan Lor. Interaction with the community opens up many valuable stories and information, including about artisans who have succeeded in turning coconut shell waste into goods that have a selling value. This coconut shell waste is produced from the process of making mung bean porridge. Along with the increase in mung bean pulp production, the amount of coconut shell waste scattered is also increasing, which has the potential to cause environmental problems. In facing this issue, coconut shell artisans use the waste to be used as handicrafts. This not only provides ecological benefits, but also economic benefits, because handicraft products from coconut shells have enough selling value.

Gunggungan Lor Village has a variety of potentials that can be utilized, one of which is the processing of coconut shell waste into handicraft products that are worth selling. So far, coconut shells are often considered waste, but with a touch of creativity, the waste can be turned into various interesting items, such as handicrafts that have economic value. For example, in the processing of avocado seeds, not only the fruit is utilized, but also the seeds, which can be processed into useful products. This is because avocado seeds are easy to find and do not require additional costs. Likewise with coconut shells, their use not only provides economic benefits, but also helps reduce the negative impact of waste around us.

In addition, in terms of marketing, business actors in this village still use traditional methods such as traditional markets and word of mouth in marketing their products. The lack of understanding and utilization of e-commerce such as shopee as a medium for selling and promoting products makes this production house still less famous and glanced at by some people. Therefore, the use of digital marketplaces is a great opportunity to expand market reach and increase competitiveness.

Design

The next stage is the design process, where students and the community are involved working together to map out available assets and identify opportunities that can be optimized. Based on the findings of the previous FGD, coconut shell artisans focus on processing coconut shell waste into handicrafts that are suitable for sale. The first step is to understand the purpose of waste recycling and discuss with craftsmen to learn about the process of making crafts. In addition, community empowerment programs were also initiated with environmental cleanup activities, considering that piles of coconut shell waste are often a source of unpleasant odors.

KKN students and artisans also educate the community not to throw coconut shells carelessly, but to collect them so that they can be processed creatively and have economic value while reducing scattered waste.

In supporting the marketing aspect, students design a strategy for using e-commerce features to market products. These features include:

1. Promotional video creation Displaying the production process and aesthetic value of the product
2. The implementation of SEO in product descriptions Using relevant keywords to increase store visibility on Shopee search pages
3. Pricing and promo strategies Providing options for price and size options to make it easier for buyers to buy products according to their desires and budget. As well as providing discounts according to ongoing events.

Define

Next is the define stage. It is a series of steps designed to support the process of activities and provide an overview of the possible outcomes. This stage is a decisive element in an effort to step in a more advanced direction. During the implementation period, students will carry out joint activities agreed upon with coconut shell artisans and develop creative ideas, namely processing coconut shell waste into handicrafts that have economic value and have economic value and market attractiveness.

The initial program began by providing education to the surrounding community about coconut shell waste and the benefits of its processing to create a cleaner and more comfortable environment. KKN students met with community leaders including the Head of Gungungan Lor Village, the Head of RT/RW and other community representatives. The main speakers for this activity were coconut shell artisans, who already have expertise as a Core Group. On this occasion, various things were discussed, including the importance of using coconut shell waste, efforts to maintain environmental cleanliness, and waste processing technology into handicrafts that are worth selling.



Figure 3. Shell Waste Coconut

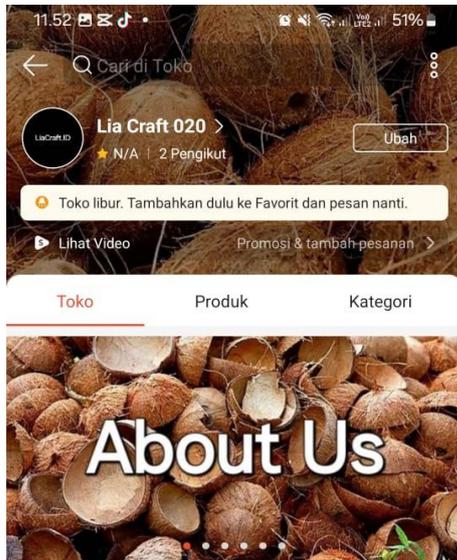


Gambar 4. Hasil Kerajinan Batok Kelapa

The processing of coconut shell waste in Figure 3 was carried out in one of the houses of the villagers of Gungungan Lor. Then sort the best coconut shells and they must be whole. Then prepare the facilities and infrastructure needed, be it glue, sandpaper, peliture paint, drill tools, wood and others. Then make a pattern on the surface of the wood and coconut shells that have been determined and then cut both

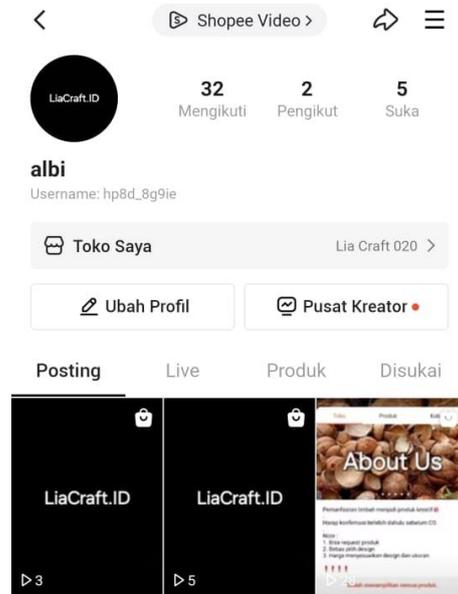
according to the pattern that has been made. Next, the stage of smoothing the surface of coconut shells and wood. Then enter the stage of unifying the coconut shell skeleton that has been made. Then the first drying stage. The last one enters the finishing stage where at this stage the pellet and drying process is carried out 3x.

In this stage, to boost product sales, students create an online store on Shopee for business actors. The store is named LiaCraft.ID.



Pemanfaatan limbah menjadi produk kreatif ✨

Figure 5. Online Store on Shopee



Gambar 6. Shopee Video

Reflection

The processing of coconut shell residues in Gunggungan Lor Village as a basic material for handicrafts provides a variety of meaningful learnings, both in environmental aspects and marketing approaches. In the beginning, coconut shell residues were often considered waste that had no use, so many simply threw them away or burned them without further recycling. This action not only damages the environment but also wastes the great potential that can be generated from these natural materials. Through research and mentoring to the community, awareness has begun to grow that coconut shells are not only useless waste, but also a valuable economic resource that can be processed into various creative and environmentally friendly products.

From an environmental perspective, one of the biggest challenges faced is changing the mindset of residents regarding waste management. Most residents are still used to throwing the remaining coconut shells carelessly, without realizing the impact on village cleanliness and the potential for soil and air pollution. Through education programs and training, people are beginning to understand that coconut shell waste processing not only helps reduce the amount of waste, but can also be an additional income opportunity. This movement is also one of the steps in supporting the concept of environmental sustainability, where the use of resources is carried out efficiently to support nature preservation and improve community welfare.

In the field of economics and marketing, one of the main challenges is ensuring that coconut shell-based products are able to compete in the digital market. Although handicrafts from coconut shells have high visual appeal and are eco-friendly, sales strategies are an important element to increase the selling price. Therefore, the use of a digital marketplace such as Shopee is an effective step to expand market reach. With Shopee, entrepreneurs from Gunggungan Lor Village not only focus on local marketing, but can also reach consumers from various regions to foreign countries. Shopee's various features, such as Shopee Ads, Shopee Live, and the free shipping program, open up wide opportunities for MSMEs to boost sales figures.

However, in its implementation, there are still a number of challenges experienced by entrepreneurs, especially in terms of digital in marketing. Most artisans are still familiar with conventional marketing methods and lack a sense of how to optimize shopee as a means of commerce. Therefore, further education is needed related to digital store management, the use of the right keywords, effective promotion strategies, and interaction with potential buyers using Shopee features. With this increase in skills, it is hoped that coconut shell products will be increasingly known and more competitive in the digital market.

In addition, competition in the realm of e-commerce is also an obstacle in itself. Many coconut shell-based products have been circulating in the marketplace, both from both domestic and international markets. To face this challenge, a differentiation approach is needed so that the products from Gunggungan Lor Village have their own characteristics. This can be done by emphasizing sustainability aspects, product quality, and the story behind the production process that involves empowering local communities. With the storytelling marketing approach technique, customers will be more interested because they will not only buy goods, but also contribute to the environmental conservation movement and economic empowerment of the community.

Overall, this initiative to utilize coconut shell waste shows that with innovation and effective marketing tactics, something that was previously considered waste can be developed into a high-selling value item. This program also proves that creative waste management can be an alternative solution that has a positive impact on the environment while helping to improve people's living standards. For the sustainability of this business, consistent support is needed, both in the form of digital marketing training, strengthening the brand image, and partnerships with various parties so that coconut shell products from Gunggungan Lor Village are increasingly developing and better known in the market in the wider market.

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