8th International Seminar of Research Month 2023
Volume 2024
http://dx.doi.org/10.11594/nstp.2024.4125

NST Proceedings
OPEN ACCESS

Conference Paper

Sustainable Entrepreneurship: The Potential of Campus Waste in Making Entrepreneurial Products with High Selling Value

Rizka Novembrianto*, Mohamad Mirwan, Dea Febrica Ervina, Mar'atus Sholikhah, Pandu Wicaksono

Faculty of Engineering, Universitas Pembangunan Nasional "Veteran" Jawa Timur, Surabaya 60294, Indonesia

*Corresponding author:
E-mail:
rizka.tl@upnjatim.ac.id

ABSTRACT

UPN "Veteran" Jawa Timur is one of the campuses in East Java. Various types of waste are produced on campus, including organic waste (used rice, used vegetables, tree branches, leaves, etc.) as well as inorganic waste, one of which is medical mask waste. The existence of these wastes will increase along with increasing human growth, in this case, student enrollment on campus. Therefore, waste processing must be carried out to reduce the generation and impacts that will result. One alternative for processing waste is recycling it into products with high selling value. This community service aims to show that the waste produced can be made into products that have high selling value such as soap from used cooking oil, maggots for fish food, local microorganisms, trash cans from used masks, pots from used masks, candles aromatherapy from used cooking oil and tumbler bottles to reduce use plastic bottles and compost. The method used in community service activities carried out at the UPN "Veteran" Jawa Timur campus is to create solutions for managing the waste produced to solve existing problems. The solution is in the form of creating entrepreneurial products as mentioned previously. The result of this community service has been running smoothly and well. The products made have high selling value. This is proven by the entrepreneurial activities that have been carried out showing that these products are in demand by the public.

Keywords: Campus, entrepreneurship, products, waste

Introduction

Environmental pollution is a condition that occurs due to changes in environmental conditions in land, air, and water. These changes are not beneficial for living things. This is caused by the presence of rubbish and waste which is the result of human actions, resulting in the environment not functioning properly. Environmental pollution due to waste is due to an imbalance between the waste and the waste processing. The speed of increasing the amount of waste is relatively fast. Apart from that, the ability of human resources to process waste is classified as inadequate. The increasing accumulation of waste causes environmental pollution such as causing unpleasant odors, dirty views, and becoming a nest for disease. Therefore, further action is needed, namely handling and processing rubbish and waste so that it does not have a negative impact on the environment.

The campus is an environment that also produces waste from the activities carried out within it. The waste produced varies, both organic waste and inorganic waste. Organic waste is usually produced from activities that occur in the canteen environment and the presence of biotic living creatures around campus, such as trees. Meanwhile, inorganic waste is generated from various activities that occur on campus.

UPN "Veteran" Jawa Timur is one of the campuses in East Java. Various types of waste are generated on the campus. One of them results from activities in the campus canteen. This location

How to cite:
Novembrianto, R., Mirwan, M., Ervina, D. F., Sholikhah, M., & Wicaksono, P. (2024). Sustainable entrepreneurship: the potential of campus waste in making entrepreneurial products with high selling value. *8th International Seminar of Research Month 2023*. NST Proceedings. pages 158-164. doi: 10.11594/ nstp.2024.4125

produces organic waste such as stale rice and vegetables as well as waste used cooking oil. Apart from that, there is also inorganic waste, namely plastic waste in the form of single-use drinking bottle packaging. Apart from activities in the canteen, waste on the UPN "Veteran" Jawa Timur campus can also be in the form of medical mask waste. Even though the Covid-19 pandemic has improved, students and lecturers still use masks to protect themselves. This waste will increase along with the number of students studying at the UPN "Veteran" Jawa Timur campus. So proper waste processing is needed to reduce excess waste generation in the future and anticipate the negative impacts it produces.

Many waste processing alternatives can be carried out. One way is by recycling. Recycling is the process of making something used materials become new materials with the purpose prevent actual waste from occurring into something useful, reducing the use of new raw materials, reducing energy use, reducing pollution, damage to land, and greenhouse gas emissions when compared with the process of creating new goods (Rijati et al., 2017). The waste produced at the UPN "Veteran" Jawa Timur campus has different recycling potential. Apart from reducing waste in the environment, recycling can also produce economic benefits from entrepreneurial activities. This entrepreneurship is included in sustainable entrepreneurship because it not only increases the economic value obtained but also pays attention to environmental aspects to become better.

Waste/garbage-based entrepreneurship can produce various products that have high selling value. These products include solid bath soap from used cooking oil (Lubis & Mulyati, 2019), aromatherapy candles from used cooking oil (Inayati & Dhanti, 2021), pots from mask waste (Novianti et al., 2022), as well as MOL (Local Micro Organisms) organic liquid fertilizer from rice waste and vegetable waste (Rainiyati et al., 2019). Apart from creating new products, entrepreneurship through the use of existing products can play a role in reducing waste, such as reducing the use of single-use plastic waste through the use of tumbler bottles (Sudiarawan et al., 2022) and degrading organic waste for maggot cultivation (Rukmini, 2020). The cultivated maggots can later be processed and sold to produce economic benefits and can be used by the community as fish feed. (Fauzi & Sari, 2018).

From the waste produced at the UPN "Veteran" Jawa Timur campus, several products can be produced that have sales value as mentioned in the previous example. So this community service activity is carried out to show that the waste produced can be made into products that have high selling value such as soap from used cooking oil, maggots for fish food, local microorganisms, trash cans from used masks, pots from used masks, candles aromatherapy from used cooking oil and tumbler bottles to reduce use plastic bottles and compost.

Material and Methods

Preparation of termite nest samples

The method used in community service activities carried out at the UPN "Veteran" Jawa Timur campus is to create solutions for managing the waste produced to solve existing problems. The solution is in the form of making entrepreneurial products in the form of soap from used cooking oil, maggots for fish feed, local microorganisms, trash cans from used masks, pots from used masks,aromatherapy candles from used cooking oil, tumbler bottles and compost fertilizer. Then these products will be sold to the public, thereby generating economic benefits.

Rubbish is separated between organic with non organic. Rubbish organic selected pieces with the use hammer mill, furthermore rubbish other from activity canteens (used rice) is made by Local Microorganisms (MOL) as a decomposition medium making compost on the reactor tool processor rubbish organic. Furthermore, mechanism devotion done as follows as follows:

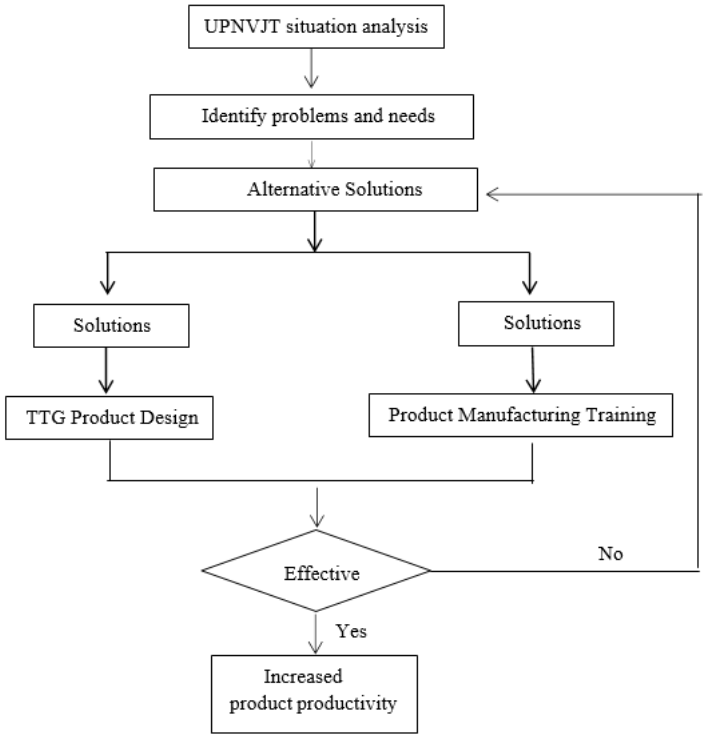

Figure 1. Diagram method implementation devotion to public

Results and Discussion

Making products from campus waste

1. Soap made from used cooking oil
   a) Screening Process
      1) Providing the main ingredient of used cooking oil
      2) Soak used cooking oil with charcoal
         The ratio of used cooking oil to charcoal is 2:1, soaked for 24 hours.
      3) Strain the used cooking oil
         Filtering is done twice, using a coarse filter and a fine filter.
      4) Measure the volume of used cooking oil according to the provisions
   b) Neutralization Process
      1) Make a NaOH solution by dissolving it in water with the appropriate variable size.
      2) used cooking oil is put into a NaOH solution with a ratio of used cooking oil ac-cordingto the variables.
      3) Add fragrance to the solution
      4) Homogenize the NaOH, used cooking oil, and fragrance by stirring the solution for thespecified variables.
   c) Soap Making Process
      1) The thickened soap solution is put into a soap mold
      2) Leave it and wait until the soap becomes solid or hardens.
2. Maggot for fish feed
   a) BSF fly farm
   b) Eggs hatch into larvae
   c) Transfer of larvae to biopond and care
   d) Larval Feeding

e) Increased larval productivity without odor
f) BSF Maggot Harvest

3. Local microorganisms
   a) Leftover rice is mushroomed with dry banana leaves for 7 days (banana leaves function tohelp speed up the molding process)
   b) Separate the banana leaves from the moldy rice
   c) The moldy rice was weighed at 100 grams and 200 grams
   d) The rice is put into bottles using 4 treatment variables:
      1) The first variable is 100 grams of moldy rice that has been put into a bottle and 20 grams of sugar is added. Then, dissolve it in 600 ml of water, then add 700 ml of water used for washing rice, and add 1 gram of salt.
      2) The second variable is 100 grams of moldy rice that has been put into a bottle and 30 grams of sugar is added. Then, dissolve it in 600 ml of water, then add 700 ml of water used for washing rice, and add 1 gram of salt.
      3) The third variable is 200 grams of moldy rice that has been put into a bottle and 20 grams of sugar is added. Then, dissolve it in 600 ml of water, then add 700 ml of water used for washing rice, and add 1 gram of salt.
      4) The fourth variable is 200 grams of moldy rice that has been put into a bottle and 30 grams of sugar is added. Then, dissolve it in 600 ml of water, then add 700 ml of water used for washing rice, and add 1 gram of salt.
   e) Close the bottle tightly, where the bottle is designed with an additional hose on the lid. The hose is connected to another bottle filled with water which functions as an indicator for gas bubbles coming out of the bottle containing moldy rice
   f) Leave it and wait until gas forms in the bottle containing water for ± 21 days
4. Flower pots and trash cans made from used masks
   a) Mask waste is sorted first
   b) Mask waste that has been sorted and is suitable for recycling will then be cleaned usingwashing and disinfectant
   c) Dry the clean used mask waste in the sun
   d) Dissolve and stick used masks using glue on used pots that are no longer used as flower potmolds
   e) Color the flower pots and trash cans using colored paint
5. Candle aromatherapy from used cooking oil

   The steps for making aromatherapy candles from used cooking oil according to Sundoro et al. (2020) are as follows :
   a) Put water in a tray containing a basin containing used cooking oil (tim) then heat it (donot heat the oil directly over a fire because it will damage the used cooking oil.
   b) Gradually add the stearin and stir until evenly mixed
   c) Add crayons according to the desired color
   d) Drain
   e) Add aromatherapy (if the oil is cold)
   f) Prepare a shot glass, put a lawe wick/mattress thread tied to a toothpick placed crosswiseon the shot glass
   g) Put into a shot glass as needed
   h) Do the same for different colors
   i) Leave it for approximately 15 minutes
6. Compost.
   a) Collection of leaf and twig waste
   b) Separation of organic waste (food waste/leaves) from plastic waste

c) Preparation of a large container for making compost
d) Put enough soil into a container that has been filled with organic waste
e) Flush the surface of the soil using sufficient water
f) Put organic waste mixed with charcoal, husks (optional) and agricultural lime into thecontainer
g) Make sure the waste is stored evenly and set the thickness of the waste to be equivalent tothe thickness of the soil
h) Watering with water mixed with EM4 and MOL (from stale rice)
i) Put the soil back into the container and the soil acts as a cover for the waste
j) Close the container tightly and leave for about three weeks

Entrepreneurial opportunities

Viewed from an economic perspective, the products that have been made can generate quite high income because the costs used are not too large and the production results can be goods that have economic value. The following are marketing strategies carried out in waste-based entrepreneurial activities at the UPN "Veteran" Jawa Timur campus:

1. Choosing the right packaging. The choice of packaging pays attention to the following things:
   a) Not toxic (poisonous) either directly or indirectly;
   b) Easy and safe to remove product contents;
   c) Can protect products from spills, evaporation, dirt, dust and microorganisms.
   d) The price is cheap
   e) Resistant to cracks, friction and changes in temperature/weather

   The packaging of the products that have been made is shown in the Figure 2:

(a.1)

(a.2)

(b)

(c)

(d) (e)

(f) (g)

(h)

Figure 2. Entrepreneurial products (a.1) and (a.2) soap from used cooking oil; (b) maggot forfish feed ; (c) local microorganisms (d) trash can from used masks and (e) potfrom face mask used; (f) candle aroma therapy from oil waste cooking (g) bottle tumbler (h) fertilizer compost

2. Pricing

   Low price strategies and high price strategies can be effective in different situations.Low prices, for example, generally lead to greater sales volumes, high prices can also attract consumers because they signal that the product is of very high quality (Tjiptono, 1995). In this case, the price chosen for selling products from UPN "Veteran" Jawa Timur campus waste is an economical price but still indicates that the product being sold is of high quality.

3. Promotion product

   Promotional activities are activities used by companies to disseminate information to be distributed and aimed at consumers. (Wardani & Aris, 2019). In this case, the products made will be promoted through various social media. This is because cyberspace is not onlyable to connect people with devices but also people with other people throughout the world (Lestari, & Saifuddin, 2020).

4. Product sale

   Currently, the development of information technology is very complex and has many impacts on human life, including internet business, namely E-Commerce which saves time and does not require large capital to promote products. One of them is the Tokopedia website whichsells goods and services so that anyone can do business and compete at low costs. This website provides business opportunities and sells various products at more affordable prices

than general stores (Lupi & Nurdin, 2016). Products from UPN "Veteran" Jawa Timur wastesold on Tokopedia are in demand by the public. This is proven by the occurrence of buying and selling transactions on Tokopedia.

Conclusion

Community Service Activities with the title " Sustainable Entrepreneurship: The Potential of Campus Waste in Making Entrepreneurial Products with High Selling Value", has been carried out smoothly and well. The products made have high selling value. This is proven by the entrepreneurial activities that have been carried out showing that these products are in demand by the public. The entrepreneurial activities carried out are included in sustainable entrepreneurship because they not onlyincrease the economic value obtained but also pay attention to environmental aspects to become better.

Acknowledgment

We as the service team would like to thank the UPN "Veteran" Jawa Timur campus, especially the parties involved, namely lecturers, students, campus cleaners, and canteen residents for carrying out this service activity.

References

Fauzi, R. U. A., & Sari, E. R. N. (2018). Analisis usaha budidaya maggot sebagai alternatif pakanlele. *Industria: Jurnal Teknologi dan Manajemen Agroindustri*, *7*(1), 39-46.

Inayati, N. I., & Dhanti, K. R. (2021). Pemanfaatan minyak jelantah sebagai bahan dasar pembuatan lilin aromaterapi sebagai alternatif tambahan penghasilan pada anggota Aisyiyah Desa Kebanggan Kec Sumbang. *Budimas: Jurnal Pengabdian Masyarakat*, *3*(1), 160-166.

Lestari, P., & Saifuddin, M. (2020). Implementasi strategi promosi produk dalam proses keputusan pembelian melalui digital marketing saat pandemi covid'19. *Jurnal Manajemen Dan Inovasi (MANOVA)*, *3*(2), 23-31.

Lubis, J., & Mulyati, M. (2019). Pemanfaatan minyak jelantah jadi sabun padat. *Jurnal Metris*, *20*(02),116-120.

Lupi, F. R., & Nurdin, N. (2016). Analisis strategi pemasaran dan penjualan e-commerce pada Tokopedia. Com. *Jurnal Elektronik Sistem Informasi dan Komputer*, *2*(1), 20-29.

Novianti, T., Rudi, R., & Astuti, R. (2022). Pemanfaatan limbah masker menjadi produk komersil berbahan semen putih oleh ibu-ibu PKK RW 11 Pamulang Timur Tangerang Selatan. *J-Abdi: Jurnal Pengabdian kepada Masyarakat*, *2*(7), 5693-5700.

Rainiyati, R., Riduan, A., Zulkarnain, Z., Eliyanti, E., & Heraningsih, S. F. (2019). Pemanfaatan sampah rumah tangga menjadi beberapa jenis pupuk cair MOL (Mikro Organisme Lokal) di desa Pudak Kecamatan Kumpeh Ulu Kabupaten Muara Jambi. *Jurnal Pengabdian Pada Masyarakat*, *4*(4), 555-562.

Rijati, S., Intan, T., & Subekti, M. (2017). Sosialisasi daur ulang sampah sebagai upaya pengembangan eko-budaya di lingkungan Desa Sayang Jatinangor Kabupaten Sumedang. *JATI EMAS (Jurnal Aplikasi Teknik dan Pengabdian Masyarakat)*, *1*(2), 29-34.

Rukmini, P. (2020, December). Pengolahan sampah organik untuk budidaya maggot black soldier fly (BSF). In *Seminar Nasional Pengabdian Kepada Masyarakat UNDIP 2020,* 1(1), 1-5.

Sudiarawan, K. A., Martana, P. A. H., Dewi, T. I. D. W. P., Utami, P. D. Y., Dwipayana, I. K. W., & Putra, I. K. W. (2022). Pengurangan pemakaian sampah plastik sekali pakai bagi generasi muda melalui program bring your tumbler goes to school. *Buletin Udayana Mengabdi, 21*(01), 53-59.

Sundoro, T., Kusuma, E., & Auwalani, F. (2020). Pemanfaatan minyak jelantah dalam pembuatan lilin warna-warni. *Jurnal Pengabdian Masyarakat Ipteks*, *6*(2), 127-136

Tjiptono, F. (1995). *Strategi pemasaran*. Andi Offset

Wardani, Aris, T. (2019). Manajemen pemasaran. Yogyakarta: CV. Budi Utama.