

The Potential of Meliponiculture in Forming Community Entrepreneurship Programme

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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v13-i10/19194> DOI:10.6007/IJARBSS/v13-i10/19194

Published Date: 28 October, 2023

Abstract

In economics, a recession is a business cycle contraction when there is a general decline in economic activity. Recessions generally occur when there is a widespread drop in spending (an adverse demand shock). This may be triggered by various events, such as a financial crisis, an external trade shock, an adverse supply shock, the bursting of an economic bubble, or a large-scale anthropogenic or natural disaster (e.g., a pandemic). COVID-19 pandemic has impacted human life worldwide and presents an unprecedented challenge to public health and the world of work. The economic and social disruption caused by COVID-19 is devastating, people are at risk of falling into poverty as they have lost their source of income. The cost of living also rose in tandem with the increased inflation rate in the country.

In April 2022, the number of unemployed persons continued to trend down registering a fall of 3.0% or equivalent to 19.9 thousand persons to 649.3 thousand unemployed persons (March 2022: 669.2 thousand persons). Meanwhile, on a seasonally adjusted terms, the number of unemployed persons went down by 4.1 per cent. Hence, the unemployment rate declined to below 4.0% for the first time to record 3.9% (March 2022: 4.1%) after two years of the COVID-19 pandemic in the country (DOSM, 9 June 2022). Furthermore, Malaysia's inflation has increased 3.4% to 127.4 in June 2022 as against 123.2 in the same month of the preceding year. This situation has increased the number of B40 groups in the country.

In the Household Income and Basic Amenities (HIS/BA) survey of 2016 by Department of Statistics' (DOSM), Malaysians are categorized into three different income groups: Top 20%

(T20), Middle 40% (M40), and Bottom 40% (B40). The names, B40, M40, and T20, represent percentages of the country's population of Bottom 40%, Middle 40%, and Top 20% respectively. Recently, based on the 2019 Household Income and Basic Facilities Survey, the B40, M40 and T20 household groups can be broken down into 10 categories. The B40 can be broken down into B1, B2, B3 and B4; M40 to M1, M2, M3 and M4 while T20 to T1 and T2. Under the category of B40, only B1 is categorized as poor and needy. The B40 group in 2019 comprises about 2.91 million households, the M40 involves 2.91 million households and about 1.46 million households are in the T20 group (HIS Report, 2020).

The 12th Malaysia Plan (2021-2025), allocated of RM1.5 billion will be strengthened to enhance the marketability, well-being and purchasing power of B40 families, through the economic empowerment program of urban communities and the rural well-being development scheme. As Malaysia continues to grow, the B40 households should not miss out on the opportunities that come with national prosperity. Allowing the B40 households to remain in their current socioeconomic status will create social costs for all Malaysians as it reduces the number of skilled workers needed to grow national output, perpetuates urban inequality and limits the growth potential of rural and suburban areas. The Government will implement strategies to raise the income and wealth ownership of the B40 households, address the increasing cost of living and strengthen delivery mechanisms for supporting B40 households.

One of the solutions to overcome this problem is the transformation of the B40 group to an entrepreneur. The Kelulut (stingless bee/meliponinese) honey industry has the potential to become a new source of income for entrepreneurs as it can reap up to RM3.03bil in annual sales if this industry is further developed. In 2020, the total market volume of Kelulut honey stood at RM33.6mil while the market potential stood at RM67.2mil (Focus Malaysia, 1 Mac 2020). The size of the total production of Kelulut honey is still small compared to the market demand. This proves that the Kelulut honey industry in Malaysia has the potential to be a viable source of income to improve socioeconomic status of the entrepreneur. Malaysia's government also has initiated the *National Kelulut Honey Industry Development Plan 2020-2030* that aims to make the Kelulut honey industry a new source of stable and sustainable income since Kelulut farming can generate good income without high capital and advanced skill as a start.

Kelulutpreneur (Kelulut Entrepreneur) project has a high potential as a source of income to Kelulut honey entrepreneurs within B40 groups. The entrepreneur can generate passive income from this project since Kelulut honey has high demand in the market. One log of Kelulut can produce many other logs of Kelulut at a very minimum cost. The lower cost yields passive income for the targeted respondents, thus sustaining their earnings and directly improving their well-being and expected to live up their economic status. Indeed, the productivity of Kelulut is expected to contribute to the economic country's production.

LITERATURE REVIEW

Introduction to Kelulut Farming

A natural commodity called honey is made by stingless bees from the nectar of various plants. In recent years, stingless bee honey has been used as a food supplement for optimum health, beauty maintenance, and culinary enjoyment. Honey has long been used as a nutritional food. Because stingless bee honey contains organic acids, minerals, and other trace elements, it is more acidic and has a greater moisture content (30–40%) than honeybee honey. The amount of moisture in honey is a crucial factor that influences its stability and shelf life.

Kelulut farming is a project that is able to generate passive income to the households, and directly contribution generating income for the community because of High-value yield of honey, bee bread and propolis, and the product can be sold raw or directly without complicated processes. This project can overcome the problem faced in Malaysia such as the flooded with the artificial honey in market, and the threats faced by Tualang bees.(Mohd Zulkifli Mustafa,2022).

This project can be implemented near the house, and only requires low costs for maintenance and it is important for the entrepreneur achieving the higher standard in the process of Kelulut Honey before selling to the customer. This standard of production it is important to make sure quality of Kelulut Honey it's not affected.

Definition of Meliponinese/Meliponiculture

Meliponiculture is the practice of keeping and breeding stingless bees, also known as meliponines, for their honey and other products, as well as for their ecological importance. Meliponiculture is a fast-growing industry nowadays, partly due to the large population of stingless bees which are mostly found in the warm and humid environment of tropical and subtropical regions. Jin Ru Lim, Lee Suan Chua, John Soo (2023). Stingless bees are native to tropical regions and are known for their ability to produce high-quality honey. The practice of meliponiculture involves providing a habitat for the bees, caring for them, and collecting their honey, wax, and other products in a way that is sustainable and respectful to the bees and their environment. It is an important aspect of sustainable agriculture and helps to preserve the genetic diversity and populations of these unique and important insects.

Impacts and Benefits of Kelulut Farming

Environmental Impact

Kelulut farming helps to improve the environmental quality as the Keluluts that produce Kelulut honey play a key role in pollinating native flora by improving the quantity and quality of fruit and seeds in over 70% of flowering plants. Besides honey, the Kelulut farming also produces propolis, pollen and beeswax that are incredibly useful in medical treatment, cosmetics and pharmaceutical products respectively. The environmental quality is also improved as the Kelulut help in upgrading the quality and quantity of seeds in other plants by activating the ecosystem in the colony area.

Therefore, the environment plays a significant part in ensuring that Kelulut Honey is produced in good condition and satisfies the standards of consumer demand. This results in both the quality and quantity of Kelulut Honey (Faridatul Noor, Rode Evanjelin Simatupang, Norwani and Siti Fatimah,2021). An important factor in Malaysia's economic development and environmental preservation is the use of Sustainable contemporary hives. According to traditional methods, the colony was collected by bee log hunting or by felling trees, which disturbs the natural environment. The lack of awareness has prompted the development of a new generation of contemporary hives with sustainable features to protect the ecosystem's natural environment. The development of a sustainable stingless beekeeping sector in Malaysia and one of the methods to boost profits in the stingless beekeeping industry have been made possible in recent years by the use of alternative modern hives.

Socioeconomic Impact

One log of the Kelulut can produce many other logs of Kelulut at a very minimum cost. The cost is only on the new Kelulut hive to transfer other Keluluts as they grow in numbers. The lower cost yields passive income for the targeted respondents, thus sustaining their earnings

and directly improving their well-being and expected to live up their economic status. Indeed, the productivity of Kelulut is expected to contribute to the economic country's production.

However, Soh, Samsuddin & Ismail (2021) found that the majority of stingless beekeepers did not efficiently use their limited resources. To boost earnings, farm managers should be educated on more effective techniques to lower inefficiencies and production costs. The study showed how efficiency could be increased by taking into account things like beekeepers' ages, educational levels, the frequency of agriculture officers visiting farms, their level of experience with stingless beekeeping, and the availability of fruits as sources of food and pollen for stingless bees. Thus, the findings of their study suggested that the Malaysian government and policymakers to help stingless beekeepers boost the financial viability of their farms so that they can be sustainable.

In Malaysia, stingless bee farming is extremely important for both socioeconomic progress and environmental preservation. It provides raw materials for numerous companies, food, medicine, and additional money. According to estimates, the sale of bee products and byproducts can bring in millions of ringgit in revenue each year for the business. It is a significant source of income with a great deal of potential to boost the income of stingless beekeepers in particular (Langkan, Sumin, Damit, Besar & Wasli, 2022). Stingless bees contributed more than MYR4 billion to the national forestry industry in 2017, according to Datuk Anthony Nogeh Gumbek, the Deputy Minister of Agriculture and Agro-based Industry (The Star, 2017).

Health Impact

From the health perspectives, Kelulut farming is expected to influence the health well-being of the community other than having exponential income and environmental impact. According to the Research done by MARDI, Kelulut honey consists of a high amount of minerals twice as much as ordinary honey (superfoods). Barakhbah (2007) claimed that Kelulut honey benefits the consumers in such a way i.e. anti-ageing, enhances immune system etc. and improves memory and reduces anxiety (Arshad, 2020). The communities that participate in this program will enjoy the health benefits as prevention is better than cure. The findings from previous studies proved scientific evidence in accordance to the Divine Claim of Allah Almighty "there cometh forth from their bellies a drink diverse of hues, wherein is healing for mankind Lo! herein is indeed a portent for people who reflect..." (An-Nahl 16:69).

The strongest health benefits of Kelulut honey come from its antibacterial, anti-carcinogen, and anti-oxidant qualities. It has a history of use by indigenous people in traditional medicine to treat rashes, wounds, and fever (MySabah,2022).

Social Entrepreneurship

Today's Kelulut honey farmers can generate a decent income as well as have bright prospects if they are working on this livestock with commitment. In addition, Kelulut honey entrepreneurs who are commercially working on livestock are able to produce high quality and premium-grade honey.

For example, two full-time honey entrepreneurs from Kok Lanis, Kelantan, Rosman Mamat and Nordin Abu Hassan, have been able to produce about 70 – 100 kilograms of Kelulut honey every month. According to them, at first, it was only small-scale livestock for Kelulut. However, due to the high price and demand for premium Kelulut honey due to its various

properties, they are able to generate a lucrative income of up to thousands of ringgits almost every month.

Although there is no basis in Kelulut farming, a graduate of Universiti Sultan Zainal Abidin (UNISZA) Terengganu has proven that he can earn an average income of between RM3,000 and RM8,000 per month through Kelulut farming. Only in the courtyard of his home in Kampung Membatu, Ketereh, Kelantan, Nur Izzatie Zulkifli now has 80 Kelulut logs. He only teaches with experienced Kelulut breeders and obtains information from the internet in an effort to breed Kelulut. However, his Kelulut honey has now obtained the Malaysian Good Agricultural Practices Scheme (MyGAP) certification from the Department of Agriculture. Next, his honey products are also in the process of obtaining the Industrial Responsibility Safe Food Certification (MeSTI) from the Food Safety and Quality Division, Ministry of Health Malaysia (MOH). By obtaining this certification, his Kelulut honey products are marketed at local supermarkets.

In times of economic uncertainty due to the spread of Covid-19 in Malaysia, a group of UiTM Pasir Gudang Campus students managed to open a space to help the B40 group in Kampung Melayu Raya, Pekan Nanas, Pontian, Johor generate additional income through the Kelulut breeding of Bee Freindz enterprises. The company has successfully produced 5 types of products based on Kelulut honey including, natural Kelulut honey, propolis laundry soap, hand propolis soap, face soap, body soap and e-book Kelulut. This e-book provides information and guidance to the community who are interested in honey farming. The products spoken by Bee Freindz have gained recognition in the International Innovation Creation Competition.

Apart from Kelantan and Johor, in Melaka, Kelulut honey farming is actively carried out in an effort to generate income for the local community. Under the polytechnic social responsibility activities, the PSR TVET – PMM Drive Income of the Madrasah Tahfiz Community Income "Madu Kelulut", has successfully produced 10 Kelulut logs and placed in Madrasah Tahfiz Dhiya'il Mursyideen, Merlimau. This is one of the efforts to assist the tahfiz centre in generating income through the Kelulut project. This project has helped the madrasah in accommodating their daily needs.

Therefore, there is no doubt in the effort to generate income for the local community, cooperation from certain parties such as local universities and the Ministry of Agriculture is very important. This is because new studies and findings related to Kelulut honey can not only produce high quality and premium-grade honey but also produce a wide range of health products based on Kelulut honey.

Community Entrepreneurship

The definition proposes that a community is a framework composed of peoples, effects, and actions. Nevertheless, the community development theory proposed by Bhattacharyya (2004) puts community development as a solidarity and community building action, and is integrated into the system. The community displayed by solidarity has a clear social design and collective identities. Also, the community is related to their autonomy of economy and the use of these resources. This reasonable structure proves that the industry, represented by unwavering and organized work, has increased a lot, and the important consideration of the network in terms of outlining and meeting community goals.

From Patrick J. Murphy, 2022 a community is defined in terms of the shared values of its members. It can be very large or relatively small. It can assume geographic, virtual, cultural, demographic and other forms. In any of these forms, communities have boundaries that

distinguish and identify their members. Shared values imply what is right or wrong for a community. They also have the character of strategic expectations and guidance for action when the environment is uncertain. Because of a community's shared values, entrepreneurs tend to define their ventures in terms of "why" and venture performance in terms of "impact." Therefore, it is found that community-based entrepreneurship development programs have the potential to provide local entrepreneurs with the skills and networks necessary to develop their businesses, but the goal of such program should be to facilitate the potential entrepreneurs to scale beyond the micro level, rather than just a mere try to motivate people to become entrepreneurs through training programs or by subsidizing risk (Dixit, 2014). So, such programs must have a long-term vision to grow microenterprises beyond micro level.

DIRECTION OF THE STUDY

This study is carried out entirely using the case study method. The case study approach is particularly useful in engaging a need to obtain an in-depth appreciation of an issue, event or phenomenon of interest, in its natural real-life context. Our aim in writing this piece is to provide insights into when to consider employing this approach and an overview of key methodological considerations in relation to the design, planning, analysis, interpretation and reporting of case studies.

DISCUSSION

Kelulutpreneur Process

This program provides training and educates selected low-income household communities in Lendu, Alor Gajah, using Kelulut farming. The progress and performance of the selected respondents will be monitored and tracked to ensure their well-being is improved.

i. Regular hands-on training to selected 40 communities of B40 on Kelulut farming.

The training is a 5-day training program, aimed to educate the selected B40 communities on how to become successful Kelulut farmers that can generate passive income while preserving the environmental quality. Each participant will receive a set of Kelulut farming tools that comprise of 1 set of Kelulut hive, 1 natural trap, and 1 MAEL honey suction pump. This set is a learning tool and can be used by the participants to farm Kelulut exponentially at their own place.

i. Keep track the quality of the Kelulut honey

Once the series of training programs is done, mentors or facilitators for each participants will track and monitor the performance of the Kelulut farmers monthly. Advice will be given based on the issues and problems that they face during their farming days. In ensuring the quality of the Kelulut honey, the participants can use the HILDA system for 12 months to dehydrate the honey that has been produced. Besides, they also can test the quality and originality of the honey by using KEIFh scale set within 12 months after the training is completed. This scale set is developed by researchers from USM and has been widely used in the market right now. Each batch of honey will receive a certificate that guarantees the originality and quality of the honey. It can be used by the participants as one of the selling points to sell their products.

ii. Trainings related to marketing and entrepreneurship

When the participants are able to farm their own Kelulut, they will be given another series of training to reach the target market and market their products online.

iii. Monitor and give regular advice to the communities to improve their well-being.

Every month, mentors or facilitators are going to monitor and keep track the marketing activities, sales and income received by the participants. The reason is to ensure that this program helps to improve their well-being and assist them to receive passive income, with the conditions that the Kelulut hives are well-maintained and the sources of foods for the Kelulut are in place. If there are any issues or problems arise, we will advise them accordingly.

Summary of these processes is shown in Figure 1 below:

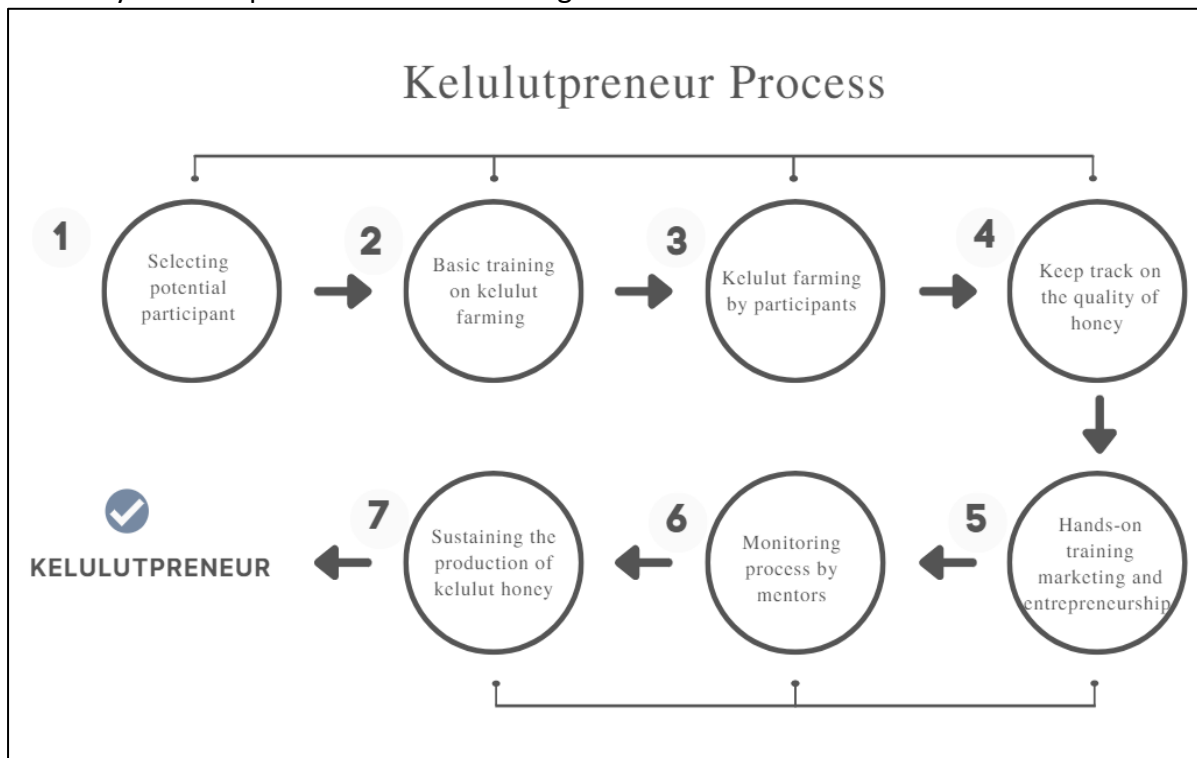


Figure 1: Kelulutpreneur Process

Potential of Kelulutpreneur

Beekeeping or Kelulut farming has the potential to be a lucrative and sustainable agricultural activity. The benefits and potential of Kelulut farming are listed below:

- i. Honey production: Kelulut honey is known for its high medicinal value and unique taste, making it a sought-after product in both local and international markets.
- ii. Pollination services: Kelulut play a crucial role in pollination and can help increase crop yields and improve the quality of fruits and vegetables.
- iii. Livelihoods: Beekeeping can provide livelihood opportunities for rural communities and small-scale farmers, particularly in developing countries.
- iv. Sustainability: Kelulut farming is a sustainable and environmentally friendly activity that helps to conserve and protect wild bee populations and their habitats.
- v. Export potential: The demand for high-quality Kelulut honey and other bee-related products, such as royal jelly and propolis, is growing globally, offering potential export opportunities for Kelulut farmers.

Apart from these benefits and potentials, Kelulut farming be able to increase income for farmers and low income households. Kelulut honey is a high-value product that can fetch premium prices in local and international markets. This provides farmers with an income stream from honey sales, which can be a significant source of revenue for small-scale farmers. Apart from that, Kelulut farming can increase the farmers income from kelulut's value-added products. In addition to honey, other Kelulut-related products, such as bee bread and propolis also have a market demand and can contribute to farmers' income (Astro Awani, 2021). Both product can be sell as it is or can be produced into downstream product such as cosmetics products, health supplements, dietary supplements and wound care products. Table 1 below shows the estimated potential income generation of kelulut honey for households:

Table 1: Potential Income Generation Of Kelulut Honey for Households

Amount of honey produce per month (gram)	Market price per 100gram (RM)	Potential income per month (RM)	Potential income per 10 month (RM)
300g x 3 logs = 900g	RM35	RM35 x 900g = RM315	RM3150

From Table 1 above, it is shown that 1 log/hive of Kelulut can produce an average of 300g honey per month. If each participants in Kelulutpreneur Project receive 3 logs/hives as starter, thus the potential income are RM315.00 per month. This amount is a passive income received by households as an additional to their basic income.

Besides, Kelulut farming also has the potential to create employment opportunities for individuals and communities particularly in rural areas where employment options may be limited. Kelulut farming can contribute to job creation in several aspects:

- i. Small-scale beekeeping: Kelulut farming can be a profitable and low-cost enterprise, making it accessible to small-scale farmers and rural communities. This can provide an income source and create employment opportunities for individuals who may not have access to other forms of livelihoods.
- ii. Value-added products: The production of value-added products, such as Kelulut honey, bee bread, and propolis, can create job opportunities in the processing, packaging, and marketing of these products.
- iii. Supply chain: The Kelulut farming industry also requires support services, such as beekeeping equipment and supplies, transportation, and marketing. The development of a thriving Kelulut industry can create job opportunities in these areas as well.
- iv. Rural development: Kelulut farming has the potential to contribute to rural development by creating income and employment opportunities for rural communities. This can help to improve the overall quality of life in these areas and reduce poverty.

The development of the Kelulut farming industry requires proper planning, management, and investment in training and capacity building for farmers and communities. This will ensure that the industry can sustainably create job opportunities and contribute to the economic development of communities.

CONCLUSION AND RECOMMENDATION

Meliponiculture, also known as beekeeping, has the potential to serve as the basis for a community-based entrepreneurship programme because it can provide numerous benefits

to the local community. By pollinating crops and wildflowers, beekeeping can contribute to the improvement of the local ecosystem. Additionally, the sale of honey, beeswax, and other bee-related products can provide a source of income for the community. The programme can be structured as a cooperative in which members pool their resources and share the benefits, fostering economic growth and social cohesion in the community. In addition, beekeeping can provide education and training, providing participants with valuable environmental and sustainable agriculture-related skills and knowledge. In general, meliponiculture's potential to form a community entrepreneurship programme is substantial and can provide numerous benefits to the local community.

Because of the vital role that bees play in pollination, the Kelulut industry plays a significant part in ensuring the long-term viability of the country's unique biodiversity. In the meantime, the concept of producing high-quality Kelulut honey has the potential to revolutionise the honey industry toward the generation of sustainable income. It may contribute to the improvement of the community's socioeconomic conditions.

The close collaboration between the university, the Ministry of Agriculture, and any other responsible parties has the potential to produce young entrepreneurs who will drive the nation's economic engine in the present day. Moreover, education at the university level extends beyond the four walls of the classroom and ought to have a constructive effect on society outside the university. Students can not only be activated in social responsibility activities to the community through breeding Kelulut honey, but it can also give them exposure to how to generate a decent income after graduation. This situation can be a win-win situation for everyone involved.

As a result, the livestock industry has significant untapped potential for developing community entrepreneurs. There is no question that the Kelulut industry will not only be an additional source of income but will also be the primary source of income that promises a decent income. With ample space and opportunities channelled by several local universities as well as the Ministry of Agriculture, there is no doubt that the Kelulut industry will be a success.

In conclusion, the potential of meliponiculture to serve as the basis for an entrepreneurial initiative within the community is significant and multi-faceted. Beekeeping has the potential to be a source of income, an enhancer of the surrounding environment, a driver of economic growth and social cohesion, and a facilitator of education and training opportunities. Because there is a multitude of advantages to be gained from meliponiculture as an entrepreneurial programme for communities, it is essential to provide support and encouragement for the development of such programmes. Furthermore, Meliponiculture has the potential to play a significant part in the promotion of sustainable development, the improvement of livelihoods, and the preservation of natural environments if it is properly planned, supported, and resourced. Overall, the potential of meliponiculture as a form of community-based business deserves to be investigated and supported.

CONTRIBUTION OF THE STUDY

This is case study research, discussing the examples of successful stories and activities of Kelulut farming among the communities. The development modules of this study can be applied as a local community project that can help the B40 community to increase family income. The after-effects of the covid-19 hit the world causing the economy in Malaysia to grow slowly, the level unemployment rate was high, and the cost of living also increased sharply. This Kelulut farming project can contribute to the generation of income for this

group. The limitations of this study are only in the early stages that discuss the benefits of Kelulut farming. Future, researchers are planning to use analysis of data and surveys from the ongoing Kelulutpreneur community project to the impact of social economy on the households.

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