



The Preservation of Intergenerational Herbal Knowledge in Thailand

IQPISSP-1

The Preservation of Intergenerational Herbal Knowledge in Thailand

An Interactive Qualifying Project/ Social Science Project Proposal submitted to the faculty of WORCESTER POLYTECHNIC INSTITUTE in partial fulfillment of the requirements for the Degree of Bachelor of Science/Arts

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An Education for Climate Change and Socio-Economics Project for CHULALONGKORN UNIVERSITY

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Date:

29 February 2024

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Glossary of Abbreviations

| Term | Abbreviation |
|--|---------------------------------|
| Worcester Polytechnic Institute | W.P.I. |
| Bachelor of Science in Applied Chemistry | B.S.A.C. |
| The Baan Noan Rang Burapha Learning Center | The center/ The learning center |
| Thailand Food and Drug Administration | TFDA |
| Good Manufacturing Practice | GMP |
| Corporate Social Responsibility | CSR |

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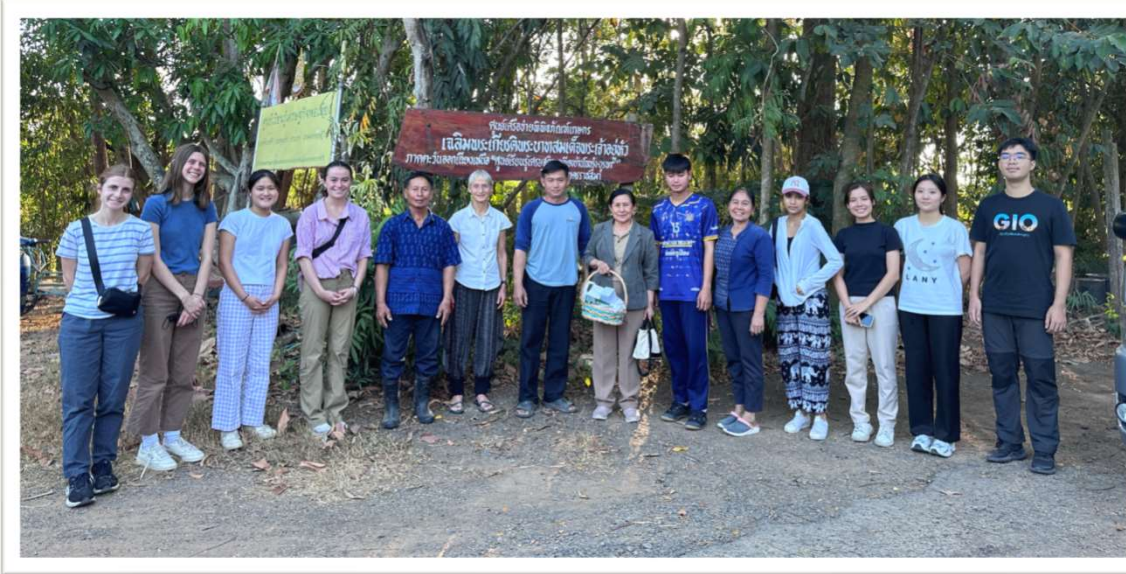




Abstract

Thailand's agricultural communities, including the Baan Noan Rang Burapha Learning Center, face a lack of young adult interest in herbal knowledge. To address this, the team worked to preserve herbal wisdom at the center through promotional and certification methods. The team designed new herbal oil packaging to appeal to young adults, created a TikTok account to spread herbal knowledge, and submitted grant applications to fund facility updates that would ultimately lead to center certifications and increase appeal to young adults.

Acknowledgements



We would like to thank our sponsor, the Baan Noan Rang Burapha Learning Center, for their hospitality and enthusiasm.

We would also like to acknowledge Professor Dr. Ulrike Brisson, Professor Kim Hollan, and Professor Dr. Supawan for their guidance and support throughout this project.

Additionally, we would like to thank the senior researcher at InnoHerb for their guidance in shaping our project direction, as well as Assistant Professor Kwanrat Suanpong at Chulalongkorn University, for providing marketing wisdom.

Lastly, we would like to acknowledge each of our interview and survey participants for their participation and contribution to this project.



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"Fostering Self-Reliance : Empowering Community for a Sustainable Tomorrow"

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| Methods | | |
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| Investigated funding options to further develop the learning center in order to gain GMP certification | B.S.A.C. | W.P.I. |
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| Findings summary | W.P.I. | All |
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Executive Summary

Introduction & Background

The Baan Noan Rang Burapha Learning Center is located in northeastern Thailand and has an extensive past in herbal knowledge. It caters to underprivileged groups, providing instruction on herb, spice, and plant cultivation. The center has low levels of young adult engagement and aims to increase engagement to preserve herbal knowledge. To achieve the center's goal, *the goal of this project was to increase young adult interest and engagement in herbal products for the purpose of sustaining the wisdom and knowledge of the learning center.*

To carry out this goal, the team established and implemented four main objectives:

1. Identified the current situation at the Center
2. Created a promotional plan to spread herbal knowledge
3. Explored certification options to increase the viability of the learning center for young adults
4. Investigated funding options to further develop the learning center in order to gain GMP Certification

Interviews, surveys, and online research were conducted to obtain data to develop deliverables. The team developed a plan to engage young adults through an updated packaging design, the creation of a social media account, grant applications on the behalf of the center, and a certification plan to increase center viability.



Thai agricultural communities

Framework of the philosophy of sufficiency economy:

The sufficiency economy philosophy is a way of thinking that serves to guide Thai people in every aspect of life by prioritizing dialectical thinking over a black and white approach (Piboolsravut, 2004). When correctly applied, Thai communities can 'walk the middle path' and become stronger and more successful.

The Baan Noan Rang Burapha Learning Center history and purpose:

The center provides training on herbs and aims to spread herbal knowledge while upholding the principles of the sufficiency economy. The center holds workshops and attends festivals and has successfully developed and marketed several products (including oils and balms). The center aims to preserve knowledge between generations and increase the engagement of young adults.

The center's herbal oil:

Herbal products are widespread in Thailand. The unique herbal oil the center manufactures contains 23 types of herbs. It is packaged in glass and plastic bottles with stick-on labels and is sold at events and festivals.

Executive Summary

Young adult generational trends

Economic trends:

As a result of the economic appeal of cities and a negative perception of agriculture, Thailand is facing rapid urbanization (Vasoonrara et al, 2011). Young people are drawn to the economic appeal of cities because they prioritize salary when pursuing a career and have academic ambitions (Sukhansa et al, 2022).

Promotional trends:

Branding and packaging are critical to market success. In Thailand, naturalism, decoration, and balance are popular in product design (Andrews & Siengthai, 2009). Product certifications are also important to consumers. Young adults have been noted to engage more with catchy promotion methods and “eye candy” (Fletcher, 2023). They often engage with brands and companies via online platforms, especially TikTok, Instagram, and YouTube (Fletcher, 2023). TikTok specifically has been noted as a dominant social media platform for promoting to young adults in Thailand (Statista, 2023).

Herbal market

Thai herbal market trends:

Since the beginning of the Covid-19 pandemic, the Thai herbal market has rapidly expanded as Thai young adults have become increasingly interested in herbal products and natural health remedies. Thai consumers have shifted their interest toward finding natural and organic health products and away from synthetic ones (Wresearch, n.d.).



Thai FDA standards for herbs:

Herbal products require a certification of standardization (Admin-Law, 2019). In 2019, the Thai Food Drug and Administration (TFDA) released the Herbal Product Act, which regulates the development and sale of herbal products to ensure they are safe (Food and Drug Administration, n.d.). Within TFDA regulation, there is a sub-unit called the Good Manufacturing Practice (GMP) certification that is needed to obtain TFDA approval. This certification is given to products that are manufactured in a clean and safe environment. As long as the production building has a specific amount of rooms and room types and is sufficiently large and clean, then it is awarded GMP certification.



Background summary:

The Baan Noan Rang Burapha Learning Center operates under the principles of the sufficiency economy, specializes in herbal agriculture, produces and sells herbal oils and balms, and lacks engagement from younger generations. Younger generations of Thai people are moving towards urban areas and away from agriculture, value aesthetic packaging and certified products, and are engaged by social media. The center is concerned about preserving its herbal knowledge because of the lack of interest from the younger generation. Thus, this project aimed to address the center's goal of preserving local knowledge by engaging the younger generation both in and outside of the learning center.

Executive Summary

Methodology

The goal of this project was to help the Baan Noan Rang Burapha Learning Center increase young adult interest and engagement in herbal products to sustain the center's wisdom and knowledge. To meet the outlined objectives, the team conducted interviews, surveys, and online research. Informed consent was obtained from all interviewees. For the purposes of this project, young adults were defined as Thai people between 18 and 25 years old.



Figure I Beautiful Pattern



Figure II Simple Design



Figure III Cute & Aesthetic

Objective 1: Identified the current situation at the Baan Noan Rang Burapha Learning Center

To identify the current situation at the learning center, the team conducted interviews with the center leaders, young adult members of the center, a community local, the leader of a neighboring learning center, and a senior researcher at an herbal processing company. The team also observed an agricultural festival in which the center participated.

The center's leaders were interviewed to understand the center's current operations and needs. The other interviews were used to understand a variety of perspectives on the center and ideas to increase young adult engagement. Additionally, the team attended the Modern Agricultural Festival at Suranaree University of Technology to observe the center's current operations. An interview with a Senior Researcher at InnoHerb was conducted to discuss certification and funding avenues for the center. All interview questions can be found in *Appendix A: A1-A7*. All interview results were compiled into a table listed in *Supplemental Materials: 8.1*.

Objective 2: Created a promotional plan to spread herbal knowledge

To promote the center to Thai young adults and increase their interest in herbal cultivation, updated packaging was created for the center's herbal oil and a social media platform was created. To understand marketing strategies, a marketing professor at Chulalongkorn University was interviewed. To update the packaging, two surveys were conducted on and around the Chulalongkorn University campus. The first survey focused on young adult preferences in packaging, product promotion, and herbal products. The survey questions can be found in *Appendix A: A8*. The survey was analyzed using pie charts and bar charts and the results were utilized to generate three packaging prototypes: one with a beautiful/bold pattern (Figure I), one simple black and white design (Figure II), and one cute/aesthetic style (Figure III). The prototype designs were compiled in a second survey alongside the questions in *Appendix A: A9*.

The second survey was performed to gauge the relative popularity of the proposed packaging styles among young adults and was analyzed using pie charts and bar charts. The most popular prototype was selected as the final design. To further validate the final prototype's appeal to younger generations, a market testing questionnaire was conducted around Chulalongkorn University and Samyan Mitrtown. Survey questions can be found in *Appendix A: A10*.

Executive Summary

Objective 3: Explored certification options to increase the viability of the learning center for young adults

To increase young adult engagement with the center in order to preserve herbal knowledge, certification options were investigated to increase the center's viability as a career path. This research was primarily conducted using the TFDA website, specifically areas regarding the Good Manufacturing Practice (GMP) certification.

Objective 4: Investigated funding options to further develop the learning center in order to gain GMP certification

To investigate funding options for the development of the center, both online databases and information from the center leaders was used, covering topics such as application requirements, how the funding could be used, and timelines for each funding application. The proposal guidelines and previously funded projects of each opportunity were also investigated. Cost analysis was conducted using online sources as well as information provided by the Chulalongkorn University marketing professor.

Findings

The results of the enacted methodology were reviewed in order to generate deliverables for the sponsor. The key themes of the findings are as listed: attractive packaging increases Thai young adult willingness to buy a product, utilizing social media can increase young adult interest in herbal knowledge, certifications may attract young adults to the center, and updating the center's facilities can lead to Good Manufacturing Practice (GMP) certifications when the necessary funding is achieved.

Objective 1: Identified the current situation

Key finding: The center is facing a lack of young adult engagement

The center has low levels of young adult engagement. At the time of the interview, the leader of the center discussed that young adults were not interested in participating at the learning center due to a lack of interest in herbal agriculture (S. Champamun, personal communication, January 15, 2024).

Key finding: The center currently informally sells herbal products

As stated by the center leader, the center currently informally sells their herbal products both locally and at festivals (S. Champamun, personal communication, January 15-16, 2024).

Key finding: The center does not have an active social media presence

The center does not have an active social media presence. Young adults in the community stated that increased online presence from the center could help address this issue (Supplemental Materials: 8.1).

Key finding: The center currently does not have the funding or technology to gain certifications

According to a Senior Researcher at InnoHerb, the center's current facilities

are not updated enough to obtain any certifications (Supplemental Materials: 8.1).

Does appealing packaging on a product make you want to purchase it more?

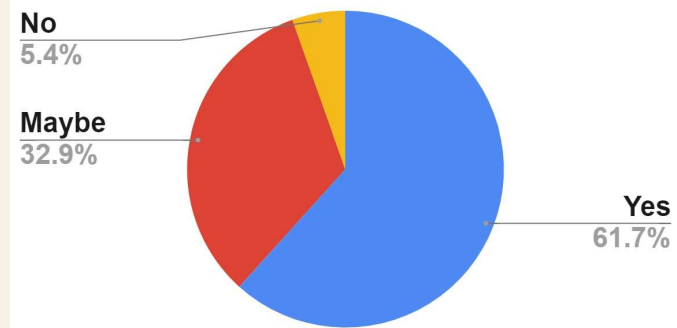


Figure IV Appealing Packaging Survey Results

Executive Summary

Objective 2: Promotional plan

Key finding: Attractive packaging increases Thai young adult willingness to buy a product

A marketing professor at Chulalongkorn University stated that updating the packaging on herbal products would be an effective method of engaging young adults and connecting them to the learning center as packaging could gradually increase young adult engagement interest over time.

Additionally, as found through Survey 1, the majority of young adults are drawn to buy products with more attractive packaging (Figure IV). This indicates that packaging would be an effective means to increase young adult sales and get people talking about the product.

According to the interview with a Chulalongkorn University marketing professor, using a QR code to connect the customer may be a viable method of increasing young adult attraction to a product as it is a form of storytelling. As a result of market testing with 100 young adults around Samyan Mitrtown and Chulalongkorn University regarding their opinions on the proposed packaging prototype, it was found that the new redesigned product has the potential to enter the younger adult market if it is released in the near future in a comparable atmosphere and condition to where the market was tested.

Key finding: Increased sales increase QR code scans

Young adults who purchase the product were found to be likely to scan the QR code (Figure V) and thus access additional information about the center. Therefore, QR codes can be considered a viable method of providing young adults with additional information.



Figure V QR Code

Key finding: Young adults prefer simple designs on products, roller bottle style oil products, and value informative labels

In terms of packaging features, it was shown that when buying an herbal product, the information on the label is crucially important to young adults (Figure VI). Additionally, it was noted that having the exact ingredients in products on the label is very important to young adults and that QR codes would be a great tool to provide additional information on products.

Further representation of young adult preferences on packaging features are seen below. Young adults prefer roller bottles for oil-based products and designs that feature beautiful patterns, are aesthetic and cute, or are simple/black and white.

It was found that young adults prefer the simple black and white prototype. The survey questions additionally revealed the herbal product purchasing habits of young adults, most notably that 94.5% of young adults use herbal products, and within this group 70% use herbal products only as needed. This provides confirmation that there is a market for the sale of herbal products to young adults. These survey results are graphically depicted in *Supplemental Materials 8.2* and *8.3*.

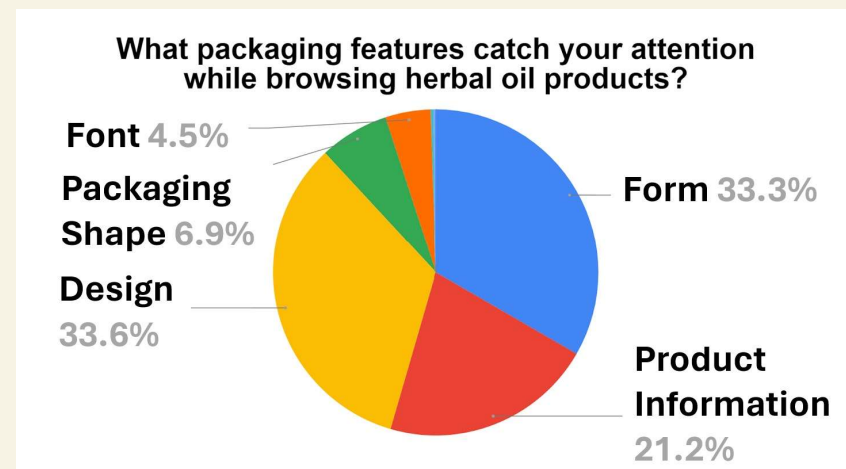


Figure VI Eye-Catching Packaging Features Survey Results

Executive Summary

Key finding: Young adults prefer simple designs on products, roller bottle style oil products, and value informative label (cont.)

When the simple black and white design was proposed to the sponsor, they stated that they preferred green colors to highlight the connection to nature and herbs more. This redesign was not an issue because when analyzing the survey results, it was stated the reasoning behind this popular design was due to the minimalistic design. A new design (Figure VII) was created utilizing this minimalistic design in order to meet both sponsor and young adult preferences.



Figure VII Final Prototype



Figure VIII TikTok Account

Key finding: Social media is a valuable avenue to reach a young adult audience

In an interview with the leader of the Learning Center, he stated that they believe that utilizing social media can increase young adult interest and further engagement moving forward. Through interviewing local young adults, local community members, and a neighboring community center, it was found that improving the social media presence would help increase young adult interest.

Both young adults interviewed stated that they believed social media would be an effective method of advertising the center and its products and increasing young adult interest and engagement.

Key finding: Utilizing TikTok can increase young adult interest in herbal knowledge

TikTok was found to be a popular social media app amongst the younger generation. According to the 2023 TikTok Thailand data statistics (Figure IX), the majority age demographic was between the ages of 19 to 25 (Statista, 2023).

The team has created a TikTok account for the Baan Noan Rang Burapha Learning Center (Figure VIII). In terms of the learning center's statistics (Figure X), the account has reached over 2000 views in just a week, along with over 25 new profile visits. As the sponsor continues to post and the account becomes more established, the team anticipates that this engagement will increase.

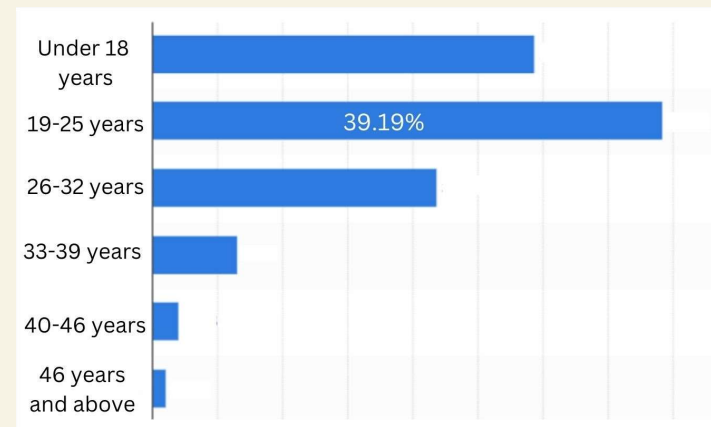


Figure IX 2023 Thailand Demographics



Figure X TikTok Statistics

Executive Summary

Objective 3: Certification

Key finding: Certifications will attract young adults to the center

Increasing the viability of the center through gaining certifications was identified as a key beneficial method of increasing interest among the younger generation. The center leaders stated that they felt gaining certifications would help entice young adults by making the center seem more reliable and interesting. Interviews with young adults involved with the community center further supported this idea as it would make agriculture seem like a more viable career option and would make the center's workshops seem more credible.

Key finding: GMP approval is the most feasible form of certification for the center

Methods of gaining certifications were discussed during the InnoHerb interview. According to the interviewee, the most feasible certification is the Good Manufacturing Practice (GMP) approval, rather than total TFDA approval. Following this recommendation, the checklist guidelines for GMP approval can be found in *Supplemental Materials: 8.4*.

Key finding: Updating the center's facilities can lead to GMP certification

In order to comply with the regulations and acquire GMP approval, the Learning Center must update the facilities where they currently make their herbal products. The size of the facility does not matter as long as it can safely fit all of the required rooms (CGMP, 2023). A proposal detailing how funds can be used to update the center's facilities has been created based on GMP guidelines and is found in *Appendix E: E3* and the registration form can be found in *Appendix E: E4*.

Objective 4: Funding Proposal

Key finding: Grants can allow the center to gain GMP approval

Through both interviewing the Senior Researcher at InnoHerb as well as through digital analysis, it was determined by the team that securing funding is necessary in order for the Center to gain GMP approval. After conducting a brief cost-analysis, the team estimated that the center would need a total grant of 1,350,000 baht to construct a GMP certified facility in 150 days (Pharmacy PSU, 2019). As estimated by the Chulalongkorn professor interviewed, grants could provide an estimated 1.5-3 million baht. Since this is much higher than the estimated costs of facility upgrades, the team considers grants to be a feasible method of gaining GMP approval for the learning center. Furthermore, the excess funds can be used to upgrade the center's other facilities to make them more attractive towards future visitors.

Key finding: King Power Thai Power, SCG Foundation, and ThaiBev are viable funding corporations

Through online analysis into potential grants for the learning center, three NGOs were determined to be feasible as outlined below. These three were determined based on considerations of timeline, budget, and audience of grants. These are King Power Thai Power, SCG Foundation, and Thai Beverage. Each of these three companies have corporate social responsibility grants that focus on supporting local communities, such as the learning center.



(TFDA Official Logo, n.d.)



(GMP Official Logo, n.d.)

Executive Summary

Findings summary

Based on the team's research, it is clear that both promotional materials targeted towards young adults and increased certification and funding for the center will increase young adult engagement with the center to preserve the center's herbal knowledge. Targeted promotional methods include the creation of an updated packaging design and an increased social media presence plan. The GMP certification will provide the center with a method of increasing their credibility thus engaging young adults in the center and ultimately the center's herbal wisdom. This certification can be obtained by applying for and using grants to update the center's facilities.



Recommendations & conclusion

The Baan Noan Rang Burapha Learning Center is a community organization dedicated to upholding the principles of the sufficiency economy and spreading herbal wisdom. As the Thai herbal industry is facing a decline in young adult engagement due to rapid urbanization and a lack of interest in the field, herbal knowledge is at risk of being lost. With this goal in mind, the team addressed the following areas to improve in order increase young adult engagement in herbal knowledge and preserve the center's wisdom: a promotional plan involving a packaging redesign and increased social media presence, funding applications to further develop the center's facilities, and a plan to help the center receive Good Manufacturing Practice certification.

The team conducted multiple interviews and surveys with locals in the area and experts in the field. Through this research, it was found that attractive packaging increases Thai young adult willingness to buy a product, that young adults are likely to scan QR codes, and that utilizing TikTok can increase young adult interest in herbal knowledge. Additionally, the team found that obtaining funding to update the center's facilities can help the center receive the GMP certification and attract young adults to the center by increasing its credibility.

With the identified objectives and key findings in mind, the team created four deliverables that were identified to most effectively increase young adult interest in herbal wisdom and thus preserve the center's knowledge. These deliverables are a redesigned herbal oil packaging, a TikTok account with a guide on how to use TikTok, a plan outlining how to update the center's facilities to gain GMP approval, and a submitted grant proposal in order to gain necessary funding for these updates.

By utilizing these findings to meet the stated objectives, the Learning Center will engage a new, younger audience to preserve their knowledge and sustain the sufficiency economy principles.

Introduction & Background



Introduction

In the heart of Thailand, residents in impoverished areas cater to a unique way of life centered around the ideologies of the sufficiency economy, a concept developed by the late King Bhumibol Adulyadej. In this setting, the sufficiency economy is more than an economic concept; it is a way of life consisting of simplicity, sustainability, and the everlasting nature of Thai resilience while fostering the promotion of self-reliance, moderation, and perseverance.

Farmers in Thai rural areas use this philosophy to expand their knowledge on their environment. In many cases, this knowledge is about herbs in general. The relationship between local life and herbs in rural Thailand is strongly rooted in tradition and a profound connection to nature. Herbs are more than just plants in these communities; they are guardians of health, keepers of cultural wisdom, and symbols of persistence. Herbal treatment knowledge is passed down through generations, and community members frequently rely on the therapeutic capabilities of native plants because access to modern medicine can be difficult in these villages due to their remote locations. Herb gardens serve as open-air pharmacies, providing a natural alternative to modern medicine. Oftentimes, communities rely on herbs to generate their livelihoods.

The village of Baan Noan Rang Burapha is located in northeastern Thailand (Figure 1) and is a community with an extensive past in herbal knowledge. However, like many others, the village suffers a number of challenges related to health, finances, maintaining cultural traditions, sustainable development, and urbanization.

Understanding the issues faced by the residents of the Baan Noan Rang Burapha is essential to creating targeted solutions that address their specific needs.

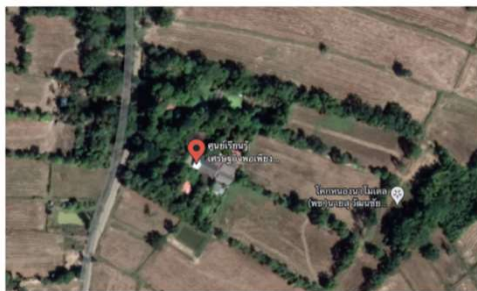


Figure 1 Map of the Learning Center

Community-based learning centers in Thailand educate locals and foster self-sufficiency. Ideally, these centers will economically empower local communities and educate community members. However, in recent years, Thai young adults have been moving to cities and moving away from local communities and agriculture. This has led to diminishing interest in these centers among young adults. This poses a challenge to the Baan Noan Rang Burapha Learning Center. To address the center's concerns regarding low levels of young adult engagement and to help them reach their goal of preserving their herbal wisdom in the community, the team established a goal of the Baan Noan Rang Burapha Learning Center increase young adult interest and engagement in herbal products for the purpose of sustaining the wisdom and knowledge of the learning center's leaders.

To carry out this goal, the team established and implemented four main objectives:

- 1. Identified the current situation at the Baan Noan Rang Burapha Learning Center**
- 2. Created a promotional plan to spread herbal knowledge**
- 3. Explored certification options to increase the viability of the learning center for young adults**
- 4. Investigated funding options to further develop the learning center in order to gain GMP Certification**

When pursuing these objectives, the team placed a focus on finding solutions to the challenges the center faces and also on developing an understanding of the learning center's values, struggles, and relationships with the surrounding villages. The team conducted interviews, surveys, and online research to obtain data, develop deliverables, and increase young adult engagement for the center. The team addressed the needs of the learning center with a sustainable plan to engage and establish a stronger relationship with young adults over an extended period of time.

Background

Thai agricultural communities

Agricultural communities across Thailand are focused on the principles of the sufficiency economy (Piboolsravut, 2004).

Framework of the philosophy of sufficiency economy

The sufficiency economy philosophy is a way of thinking that serves to guide Thai people in shaping their lives to prioritize walking the “middle path” (Piboolsravut, 2004). For Thailand, this commonly applies to agricultural and economic practices, and is especially relevant on a community level. Overall, this philosophy can be used as a guide to help Thai people make decisions in every aspect of life. The framework of the sufficiency economy is split into three key pillars: moderation, reasonableness, and self-immunity as seen in Figure 2 (Mongsawad, 2010).

The pillar of moderation, which is the practice of avoiding overindulgence by taking only what you need, guides people to avoid extremes in all aspects of life. The second pillar of reasonableness advises people to rely on their knowledge and capabilities for self-awareness when making decisions. To be reasonable is to consider all impacts when making a decision, both personal impacts and the impacts on others (Mongsawad, 2010). The third pillar of self-immunity guides people to protect themselves from harm from outside influences (Mongsawad, 2010). To be self-immune is to be self-reliant; to be able to adapt to changing situations. It is through the simultaneous application of all three of these pillars that one should be able to practice the sufficiency economy, either as an individual or as a community.

These three pillars are applied in two ways. Firstly, these pillars are applied through knowledge. This involves not only the gathering of information, but the fundamental understanding of the meaning of the information (Mongsawad, 2010). Secondly, the three pillars must be applied through morality. Once one sufficiently understands information and the meaning behind it, they must decide how to best put that information to use. According to Mongsawad, this decision should be guided by “integrity, trustworthiness, ethical behavior, honesty, perseverance, and a readiness to work hard” (2010).

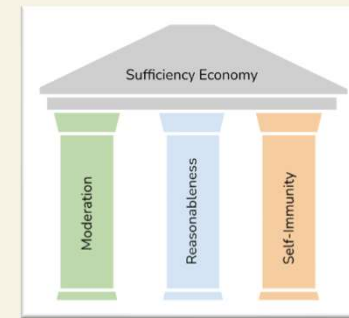


Figure 2 *The Pillars of The Sufficiency Economy*

Through the application of these principles, a person should be able to achieve a harmonious, secure, and sustainable life (Mongsawad, 2010).

By switching to a variety of crops, the farmer may lose immediate income from upfront investment, but they are more protected in the long term. This decision applies to all three pillars of the sufficiency economy, because it is more moderate, based on reason, and provides self-immunity to the farmer.

For community support, agricultural wisdom is often shared between community members, rather than kept for individual use. For example, if one farmer develops a technology for reliably and inexpensively watering crops, they would share that knowledge free of cost in order to support their community. This practice allows the entire community to prosper, instead of solely bringing profit to the individual. Both the knowledge and morality present in this example show how the ideals of the sufficiency economy.

Overall, when the sufficiency economy is correctly applied, Thai communities should be able to successfully ‘walk the middle path’ through life and become a stronger and more successful community.



Background

The Baan Noan Rang Burapha community

As is common in rural Thailand, the members of the Baan Noan Rang Burapha community primarily base their income on the cultivation and selling of agricultural products. The members of the learning center primarily consist of people from 19 villages in the sub-district Talatsai. Other learning centers in and around this region also benefit from the support and assistance provided by the Baan Noan Rang Burapha Learning Center. This is in part due to the geography of the area, which primarily consists of vast expanses of farmland. While the adult members work in agriculture, the children and young adults in the area are primarily students (สถาบันสารสนเทศทรัพยากรน้ำ & K., 2018).

Students in that area have courses that specialize in agricultural practices and herbal knowledge. Most of the community members, both young and old, actively engage and collaborate with the center. As mentioned by Mr. Suwattanachai during an interview on December 13, 2023, the community members are actively involved in the development of their community. Also, they equally dedicate themselves to their roles in voluntary activities and their own agriculture as well as other community-oriented work.

Mr. Suwattanachai shared that to become an expert or a sage within the learning center, individual villagers must undergo training prior to joining, organized by the center's previous sage. This training includes both cultivating their own herbs and having proficiency in herbal plants, as well as having knowledge accumulated from many years of agricultural practices.



Community regional herbs

There are abundant and diverse natural plants in the Baan Noan Rang Burapha community. Among the noteworthy herbal plants found in this region are herbs such as Wan Sao Long (*Alpinia Mutica Roxb*), an herb known for its distinctive and pleasant smell (S. Champamun, personal communication, December 13, 2023).

Other noteworthy plants that enhance the landscape are Wan Phaya Wan (*Curcuma Phrayawan Boonma & Saensouk*), Wan Krachaidam (*Kaempferia parviflora Wall*), Wan Maengmoom (*Curcuma Viridiflora Roxb*) and Wan Hom Daeng (*Eleutherine Bulbosa*).

They bring both their appeal and medical significance with their healing properties – headache and nausea relief. There are also aromatic plants such as Wan Phlai Champoo (*Zingiber Mekhongensis Gagnep*) and Wan Maha Saneh (*Amomum Wandokthong*) that have distinctive fragrances and unique qualities. Because of their pleasant smell, they can also be used in some herbal products to alleviate the strong herbal scent that it usually has. Another herb, Wan Kamin Chan (*Curcuma Longa L*) is also well-known for its practical applications. It holds a prominent place in local cultivation practices and also within the learning center. This is because of both practicality and superstitious reasons regarding the bringing of good fortune and luck. These herbal species are carefully preserved for the local community.

The Baan Noan Rang Burapha Learning Center

At the Baan Noan Rang Burapha Learning Center, these herbs can specifically be found in the herbal cultivation field as seen in Figure 3 below. This herb seed banks is considered a community learning resource where individuals can receive herbal education.



Figure 3 The Cultivation Field of the Learning Center

Background

Learning center history and purpose

The Baan Noan Rang Burapha Learning Center, which, as stated, is an herbal community training center (Figure 4) was established by Chanthi Prathumpha based on the principles of the sufficiency economy. At the time of the center's founding, Prathumpha's primary objective was to instill and generate a new economic philosophy and an innovative agricultural model within his community (K, P., 2018, December 18). With this goal in mind, the learning center evolved into a non-formal community training center which started with seven members on a voluntary basis and now consists of 20 expert members and 200 members who are from the local community.



Figure 4 *The Baan Noan Rang Burapha Learning Center*

When the learning center and community management began, with their own water source, there was no need to venture outside the community for livelihoods (กรมอนามัย, 2014) (S. Champamun, personal communication, December 13, 2023). However, to encourage a conscious awareness of sufficiency economy principles within all members of the community, it was necessary for all to maintain household accounts to track income and expenses. This led to strategically and thoughtfully planting crops, ensuring the cultivation of everything needed for the independent operation of the center, including meals and herbs for medicinal use.

If there was surplus produce, it was consumed by members of the center, shared with members of the community, or sold. A detailed planting schedule was established on a daily, weekly, monthly, and yearly basis to predict crop outcomes within the community. Water usage was optimized, employing various planting methods and rotating different types of plants. This approach aimed to yield daily produce and yield different produce from their competitors, diverging from conventional farmers who faced market oversaturation and price competition. Detailed planning created a continuous income flow, distinguishing the community from ordinary farmers. The process over time has transformed into wisdom gained through practical learning, embodying a philosophy rooted in real-life experiences rather than formal academic study.

The facility caters specifically to underprivileged and marginalized groups, providing instruction on uncomplicated methods for cultivating herbs, spices, and plants. The learning center was officially registered as a community enterprise to create positive outcomes for economic challenges. Their plant-focused training initiatives are intended for people of various backgrounds and have been highly effective. The resultant payoff has seen the community successfully develop and market several products (including oils and balms derived from cultivated herbs) in their local community and at outreach events in Thailand. The center's current goals are to develop a more sustainable plan, long term, plan for preserving its knowledge and engaging young adults.

The primary focus of Baan Noan Rang Burapha Learning Center is to spread herbal knowledge to the surrounding community while simultaneously upholding the principles of the sufficiency economy. To achieve this goal, the center has previously held workshops as well as attended herbal community center festivals to enhance the efforts of spreading their knowledge while also gaining new insight on other centers around them. Currently, even as the center strives to educate others through the running of workshops, they face a lack of interest from younger generations in carrying on their practices and knowledge. This has worried the founders and community members as they want their efforts to be inter-generational and passed on for years to come.

Background

Learning center history and purpose (cont.)

One of the main reasons the center currently lacks young adult engagement is due to having no funding to assist their activities and upkeep of facilities. Prior to the outbreak of the COVID-19 pandemic, the learning center received financial assistance from the Ministry of Agriculture (S. Champamun, personal communication, December 13, 2023). However, following the pandemic, they no longer receive any support from the Thai government directly as the government had reallocated the funding towards other initiatives. Alternative organizations, such as the Thai Health Promotion Foundation (สสส), have assisted the learning center with funds in the past, but currently, the learning center is not directly supported by them.

BEDO

BEDO (Bio-reliability, Economic/Ecosystem balance, Deliverable, and Openness) is a public organization of economic development from biological foundations that currently supports the learning center. Through collaboration, BEDO and the Baan Noan Rang Burapha Learning Center created the 'herb seed bank' as pictured in Figure 5. This has led workshop visitors and the locals who stop by to explore the varieties of herbal plants and the diversity of herbal plant species.



Figure 5 The Herb Seed Bank Created by BEDO for Learning Center

The center's herbal oil

Throughout Thailand, herbal products such as essential oils and balms are widespread in today's market. As each brand competes for sales, the ingredients and advertising methods are what allow their products to stand out. In terms of herbal products specifically, when people buy herbal products they often focus on the mixture of the herbs in the products and the uses of the product (Pandey et al., 2019). With this in mind, the ingredients of the product must be high quality and unique.

The herbal oil the Baan Noan Rang Burapha Learning Center manufactures contains 23 types of herbs (Figure 6), the combination of which makes the properties of the oil unique. Purely natural and organic extraction methods are utilized. Information regarding the most crucially important characteristics of these 23 herbs can be found in *Appendix D*. The herbal oil is then packaged in glass and plastic bottles with stick on labels, which are then showcased and sold at local events and festivals as seen on January 16, 2024 at the Modern Agricultural Festival at the Suranaree University Technology, an event the team attended.



Figure 6 The Center's Herbal Oil

Background

Within the herbal oil market, the Baan Noan Rang Burapha Learning Center's current oil can be directly compared to other essential oil products. The similarities and differences can be seen in Table 1 (การทำน้ำมันเหลืองหรือน้ำมันนวดสมุนไพร สูตรพื้นฐาน, n.d.). Most crucially noted here is the Baan Noan Rang Burapha herbal oil contains 23 unique herbs at a cheaper price, while competitors have 9-10 herbs at over double the cost. On the downside, the competitor has Good Manufacturing Practice Certification yet the learning center does not. Through this comparison, it is clear that the herbal oil product produced by the sponsor has marketable appeals, but may face market difficulties due to its lack of certification. Improved packaging and obtaining certifications could help increase sales.

Table 1 Comparing Essential Oil Products

| | Essential oils of the Learning Center | Essential oils of Chiangdao Herb |
|-----------------------------------|---------------------------------------|---|
| Ingredients | Contains more than 23 types of herbs | Basic formula consists of 9-10 types of herbs |
| Prices | Cheaper (100 baht) | More expensive (290 baht) |
| Certifications/ Selling Points | Natural & organic | GMP approved and HACCP (Hazard Analysis Critical Control Point) certified |

Center goals

Although the center markets several products, they value knowledge preservation and self-sufficiency over monetary profit. It is clear that the Baan Noan Rang Burapha Learning Center's main goal is to preserve knowledge between generations. As part of this goal, community sustainability was consistently prioritized. The learning center often aims to overcome challenges using their current resources and knowledge. Thus, the team worked with the sponsors when developing deliverables to ensure that we consistently are honoring their founding principles and self-reliance along with the desire to pass on knowledge to future generations.

Young adult generational trends

Economic trends and promotional trends exist among the young adult generation in Thailand.

Economic trends

In recent years, the involvement of younger generations of Thai people in agricultural fields has decreased significantly. It was found that from 2003 to 2013, "farm holders aged less than 45 decreased from 2.6 million in 2003 to 1.4 million in 2013" (Salvago et al, 2019). This is in large part due to the economic appeal of cities and factories overall. Another cause of the decline of agricultural interest in Thai younger generations is a general negative perception of farming. Younger people often consider farming to be a "low status activity" with a reduced potential income compared to other occupations (Salvago et al, 2019). As a result of both economic appeal and negative agricultural economic perception, Thailand has been facing rapid urbanization as masses of rural people move to cities (Vasoonrara et al, 2011). Young people in particular are especially drawn to the economic appeal of cities because Thai young adults have a culture of prioritizing salary as the primary influencing factor when pursuing a career (Sukhansa et al, 2022). Additionally, young people have educational ambitions that often don't align with agricultural work (Sukhansa et al, 2022). Despite their lack of interest in agricultural work, many young adults are interested in agriculture products such as herbal remedies (Wresearch, n.d.).

Background

Promotional trends

Product branding and packaging is a critical factor in leading a product to success and recognition within its market, both in the herbal market and others. In a case study conducted by the Department of Business Administration at ABES Engineering College in India, reactions to and desirability of product packaging was evaluated. This study found that investing in packaging technology increases the competitiveness of the product. Significantly, it was found that creative designs are very attractive. Higher quality packaging materials, such as glass, are more attractive, and labels with informative and brief information are liked best by customers (Pandey et al., 2019). As this study has proven, the design of products is critical to market success. In Thailand specifically, some of the main principles that are popular in product design include naturalism, decoration, and balance (Andrews & Siengthai, 2009). Designs that meet these criteria will be more attractive.

Young adults have been noted to engage more with catchy product promotion methods and “eye candy” than older, static text promotion (Fletcher, 2023). Younger audiences prefer product content that’s not only catchy but includes references to topics these generations care about, such as, social justices, the environment, and the brands’ values (Fletcher, 2023).



A new packaging design will positively impact the sales of the product, as it follows the optimal arousal theory (Shukla, P., Singh. J., & Wang. W, (2022). This theory states that the alertness of the brain can lead to better task performance and cognitive thinking. By designing packaging that caters to the younger generation’s preferences, it stimulates their brains when they look at the product, which then invokes a sense of curiosity within them.

The certification of a brand and its products are also highly important to consumers. Specifically, certification helps convey company values, increase trust in a product, and differentiate a product in the market (NSF, 2023). Lastly, younger generations often engage with brands and companies via online platforms as social media platforms tend to be an effective way to advertise to and engage younger adults, especially TikTok, Instagram, and YouTube (Fletcher, 2023).

TikTok specifically has been noted as a dominant social media platform for promoting to young adults in Thailand. In 2023, the majority of Thailand’s TikTok user demographic was young adults; 39.19% of users were ages 19-25 (Statista, 2023). TikTok is engaging to younger generations because the media it presents has a short time-span. Additionally, TikTok focuses on maximizing the amount of content the user views and interacts with, rather than connecting the users with people they may know. This is different from other popular social media platforms, Instagram, Snapchat, and Facebook, which focus more on digital communication between friends and acquaintances.

Lastly, TikTok generates a lot of current and popular trends for young adults, making it the ideal platform to advertise and gain popularity among this group. The app takes localized content and displays it to a wide audience while catering to every user’s viewing habits, proving its strength in pulling in desired audiences and keeping them entertained and engaged (Luitel, 2024).



Background

Herbal market

The herbal market has been expanding in Thailand in recent years, resulting in new standards and regulations.

Thai herbal market trends

The Thai herbal market and Thai herbal trends in general have been shifting over the last few years with world events and the rise of a new generation. Since the beginning of the Covid-19 pandemic, the herbal market has rapidly expanded as the Thai young adults have become increasingly interested in herbal products and natural health remedies. Thai consumers have shifted their interest toward finding natural and organic health products and away from synthetic ones (Wresearch, n.d.). Thai young adults in particular consume organic products as a conscious choice, sometimes even going out of their way to purchase said products. The main reason for this is because they deem organic products to be “trendy” and “healthy” (Rujichaiyawat, 2016).



(TFDA Official Logo, n.d.)

Thai FDA standards for herbs

Just like other products in the market, herbal products require a certification of standardization to ensure its quality (Admin-Law, 2019). In 2019, the Thai Food Drug and Administration (TFDA) released the Herbal Product Act, which regulates the development and sale of herbal products to help protect the public from potential health risks (Food and Drug Administration, n.d.). This regulation declared that Thai people who want to sell herbal products must register that product and obtain a license to sell it (“Herbal Product Act, B.E 2562, 2019). Obtaining approval varies in difficulty based on the potential risks of the product and the facilities they are produced and manufactured in (Food and Drug Administration, n.d.).



(GMP Official Logo, n.d.)

Specifically, this act defined herbal products by categorizing them into 3 categories: Category A: Medicine according to traditional knowledge – Thai traditional and Chinese traditional knowledge which must follow the recipes provided by TFDA, Category B: Medicine developed from herbs, and Category C: Health supplements (*หน้าแรก*, 2024). Standards for these products vary based on the category for which one is applying. A is the easiest to get approved and C is the hardest. This mainly is due to the fact that Category A only requires one to follow a given recipe, while C requires the product to be tested thoroughly, as well as making sure that the product fits the national standard, as it is a product with claimed benefits (as a health supplement) (*หน้าแรก*, 2024).

Under the TFDA regulation, there is a sub-unit of requirement needed to register beforehand in order to apply for the TFDA. The Good Manufacturing Practice (GMP) certification is given out to products that are manufactured in a clean and safe environment. As long as a production building has a specific amount of rooms and room types, and it is sufficiently large and clean, then the GMP certification is given.

Summary

In summary, this literature review reveals that the Baan Noan Rang Burapha Learning Center operates under the principles of the sufficiency economy, specializes in herbal agriculture, produces and sells herbal oils and balms, and lacks engagement from younger generations. It also shows that younger generations of Thai people are moving towards urban areas and away from agriculture, enjoy aesthetic and certified product packaging, and are engaged through social media platforms. The learning center is concerned about the lower levels of Thai herbal knowledge due to a lack of interest from the younger generation, as well as the potential disappearance of the center itself due to a lack of manpower, intergenerational interest, and funding. Thus, using this knowledge, this project aims to address the Baan Noan Rang Burapha Learning Center’s goal of preserving local knowledge by engaging the younger generation both in and outside of the learning center.

Methods



Methods

The goal of this project was to help the Baan Noan Rang Burapha Learning Center increase young adult interest and engagement in herbal products for the purpose of sustaining the wisdom and knowledge of the learning center’s leaders.

To achieve this goal, the team:

1. **Identified the current situation at the Baan Noan Rang Burapha Learning Center**
2. **Created a promotional plan to spread herbal knowledge**
3. **Explored certification options to increase the viability of the learning center for young adults**
4. **Investigated funding options to further develop the learning center in order to gain GMP certification**

The team accomplished this goal by increasing young adult engagement at the center through:

- A promotional plan that includes both an updated packaging design and the creation of social media platforms.
- A funding plan that proposes relevant grants to the center.
- A certification plan to increase center viability.

To complete the stated objectives, the team conducted a series of interviews, surveys, and online investigation. The interviews were primarily used to understand the needs of the center and context of the project. The surveys were utilized to collect data about young adults' interests concerning packaging and workshops. Online investigation was used to understand the context of the project and gather data on funding. The team obtained informed consent from each interviewee. For the purposes of this project, young adults are defined as all Thai people between 18 and 25 years old. The methods used to achieve the four objectives are summarized in Table 2, and the final deliverable can be found in Appendix E.

Table 2 Methodology Structure

| Objective 1: Identified the current situation at the Baan Noan Rang Burapha Learning Center | |
|--|--|
| Method | Source |
| Interview the center leaders | Center leaders (Mrs. Duangjun and Mr. Suwatthanachai Champamun) |
| Interview younger center members | 18-25 year-old center members |
| Interview locals | People near the center |
| Participate at Modern Agricultural Festival at Suranaree University of Technology | Festival participants |
| Interview the InnoHerb Sr. Researcher | Sr. Researcher of InnoHerb |
| Objective 2: Created a Promotional Plan to Spread Herbal Knowledge | |
| Method | Source |
| Interview marketing expert | Chulalongkorn professor (Asst. Prof. Kwanrat) |
| Survey about packaging preferences | Chulalongkorn University students |
| Survey about packaging design options | Chulalongkorn University students |
| Interview of the Leader of the Baan Saeng Chan Community Learning Center | Center leader (Mr. Vichit) |
| Document analysis on promotional methods | Online database |
| Market testing on packaging prototype | Chulalongkorn University students and Samyan Mitrtown young adults |
| Objective 3: Explored Certification Options to Increase the Viability of the Learning Center for Young Adults | |
| Method | Source |
| Document analysis on certifications | Online database |
| Objective 4: Investigated Funding Options to Further Develop the Learning Center in Order to Gain GMP Certification | |
| Method | Source |
| Digital investigation into funding options | Online database |
| Cost analysis | Government website |

Methods

Identified the current situation at the Baan Noan Rang Burapha Learning Center

The team conducted five interviews and observed an agricultural festival in which the learning center participated in order to identify the current situation at the learning center. The five interviews were with the community center leaders, young adult members of the center, locals in the surrounding area, the leader of a neighboring community center, and a senior researcher at an herbal processing company.

The Baan Noan Rang Burapha community leaders, Mr. Suwatthanachai and Mrs. Duangjun, were interviewed as key representatives of the learning center. The purpose of this 45-minute onsite interview was to understand the current operations and needs of the learning center. The questions are in *Appendix A: A1*.

A young adult member of the learning center was interviewed in order to understand his engagement with the center and his perspective on how young adult engagement could be increased. He was the only young adult member available to interview, but despite this limitation, the information gained was still valuable. The questions the team asked are in *Appendix A: A2* and *Appendix A: A3*.

A local in the area surrounding the learning center was interviewed in order to understand the local perspective on and involvement with the learning center. This local was representative the surrounding community, though only interviewing one person was a limitation as perspectives may vary.



Interviewing this adult provided insight into their areas of interest in the center, the engagement of locals overall, and their perspective on young adult interest and involvement with the center. Questions can be found in *Appendix A: A4*.

In order to better understand the current marketing style of the Baan Noan Rang Burapha Learning Center and understand their herbal product packaging and promotion styles, the team attended and observed the Modern Agricultural Festival at Suranaree University of Technology (Figure 7).



Figure 7 *The Modern Agricultural Festival*

This event hosted learning centers and provided booths where the centers showcased their knowledge. The observations made at the festival were used to understand the interactions the center has with their Thai young adults at outreach events such as festivals.

An interview with the Senior Researcher at InnoHerb was conducted to discuss the center's current certification status. Possible certification and funding avenues based on the center's facilities and technology were also discussed. Questions from this interview are in *Appendix A: A7*.

All interview results were compiled into a table listed in *Supplemental Materials: 8.1*. The table consists of numbers indicating which interview the data is from, the question asked, and the answer provided/comments made after the question was asked. These results were analyzed using thematic coding, where words were qualitatively analyzed to understand the common themes between each interview. This coding is indicated using color coding highlights on the table.

Methods

Created a promotional plan to spread herbal knowledge

The team updated packaging for the center's herbal oil product and created a social media platform in order to promote the center to Thai young adults and increase their interest in herbal cultivation. To update the packaging, a marketing professor was interviewed and two surveys were conducted on and around the Chulalongkorn University campus, located in Bangkok, Thailand.

The team interviewed a Chulalongkorn University professor in the marketing department (Asst. Prof. Kwanrat) to gain insight about promotional strategies to engage young adults and understand the current herbal product market. The questions for this interview are in *Appendix A: A6*.

The first survey focused on young adult preferences in packaging, product promotion, and herbal products. The questions asked in this survey can be found in *Appendix A: A8*. The survey was given to 370 young adults at Chulalongkorn University. The team analyzed the survey using Microsoft Excel software using tools such as pie charts and bar graphs to easily view the data trends. The team utilized the analysis to generate three packaging prototypes for the center's herbal oil. One prototype had a beautiful/bold pattern style (Figure 8), one was a simple black and white style (Figure 9), and one was a cute aesthetic style (Figure 10). All three prototypes were generated with a roller-bottle style as that was the most prominently popular. The images were all put into a second survey along with the questions in *Appendix A: A9*.

This second survey was performed to gauge the popularity and preference of proposed packaging styles within young adult audiences. While the surveys were conducted in an urban environment geographically far from the center, the team considers the data to still be highly applicable because it is representative of a variety of Thai young adults, many of whom live in rural areas and commute. This survey was analyzed using statistical tools. The team generated graphics such as pie charts and bar graphs utilizing Microsoft Excel and the raw data from the surveys. Survey 2 gathered preferences regarding the three prototypes that were generated using data from survey 1. The most popular prototype, as identified by this survey, was provided to the sponsor for feedback and final updates.



Figure 8 Beautiful/Bold Pattern Prototype



Figure 9 Simple Black and White Prototype

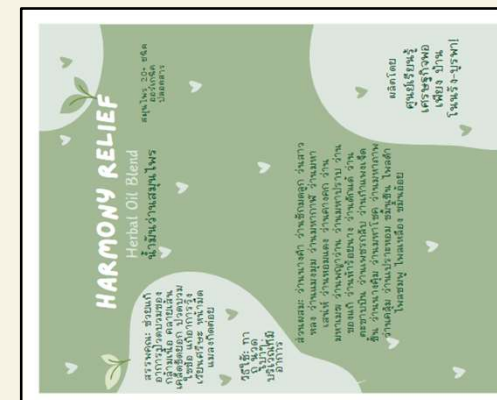


Figure 10 Cute Aesthetic Prototype

Methods

Created a promotional plan to spread herbal knowledge (*cont.*)

In order to understand successful methods of young adult engagement at other community centers, the leader of a neighboring learning center (the Baan Saeng Chan Community Learning Center) was interviewed. This interview discussed how the younger adults in the area contribute to and engage with the learning center and the promotional methods the center uses to engage young adults. Questions can be found in *Appendix A: A5*.

The team conducted document analysis on promotional methods, especially those that appeal to young adults, such as social media. The team researched different social media trends, how to share knowledge using social media, and which social media platforms were the most popular with the younger generation.

The team conducted market testing in to validate the packaging prototype's appeal to younger generations, predict its market success, and predict the success of adding a QR code. The team distributed a questionnaire around Chulalongkorn University and Samyan Mitrtown, a large shopping mall in Bangkok. The questionnaire asked young adults if they would buy the prototype and if they would scan a QR code featured on packaging. Survey questions can be found in *Appendix A: A10*.

Explored certification options to increase the viability of the learning center

The team examined certification options to increase young adult engagement with the center, ultimately leading to the preservation of herbal wisdom. This investigation was conducted through digital research, primarily on the TFDA website, specifically into areas regarding the Good Manufacturing Practice (GMP) certification approval and associated facility updates.

Investigated funding options to further develop the learning center in order to gain GMP certification

To investigate funding options for the further development of the learning center, we used both online databases and information from the center leaders.

Multiple avenues for funding were investigated through digital document analysis. The research covered topics such as requirements to apply for each funding method, how the funding could be used with the learning center, and timelines for each funding application. These funding avenues consisted of Non-Governmental Organizations (NGOs). All of these organizations and groups have a range of guidelines set for how they delegate funds that they give out and also what they allow for their funds to be used on.

To understand what parameters the organization is searching for, document analysis was conducted. Utilizing the data from the website of the corporation that is willing to give each of the grants, the team examined the specific proposal guidelines. To ensure that the company will have a high rate of chances of accepting the proposal, history funded projects of each grants opportunity were investigated. The history funded community by the company was compared to the learning center. This was done in terms of the population scale of the community they

funded, what type of product they established, and whether facility development was financed. Cost analysis of the facility updates was conducted using online sources from the GMP official site as well as information provided from Professor Kwanrat Suanpong. This guided the team to produce estimated costs for the facility updates as well as a rough time frame to complete the improvements. These costs were later included in the submission sent for funding requests.



Findings



Findings

The team analyzed the results from the enacted methodology in order to generate deliverables for the sponsor. The key themes of the findings are as listed: attractive packaging increases Thai young adult willingness to buy a product, utilizing social media can increase young adult interest in herbal knowledge, certifications increase credibility which may attract young adults to the center, and updating the center's facilities can lead to Good Manufacturing Practice (GMP) certifications when the necessary funding is obtained. Based on the findings below, the team was able to make recommendations on increasing young adult interest in the center's herbal knowledge.

Identified the current situation at the Baan Noan Rang Burapha Learning Center

Interviews were conducted to understand the daily operations, purposes, and needs of the Baan Noan Rang Burapha Learning Center.

Key finding: The center is facing a lack of young adult engagement

The team found that the Baan Noan Rang Burapha Learning Center has low levels of young adult engagement. At the time of the interview, the leader of the center discussed that young adults were not interested in participating or working at the learning center due to a generational lack of interest in herbs and agriculture (S. Champamun, personal communication, January 15, 2024). The leaders are thus concerned that their herbal knowledge will not be preserved.



Key finding: The center currently informally sells herbal products

As stated by the center leader, the center currently sells their herbal products (Figure 11) informally in their local community and also at festivals and outreach events throughout Thailand (S. Champamun, personal communication, January 15-16, 2024). Locals often receive both products for personal use and support from the center (*Supplemental Materials: 8.1*).



Figure 11 The Center's Oil Packaging

Key finding: The center does not have an active social media presence

The center does not have an active social media presence, although they do sporadically use a Facebook account (*Supplemental Materials: 8.1*). Young adults in the community stated that the center's lack of young adult interest can be in part attributed to the center's lack of social media presence, and that increased online presence from the center could help address this issue (*Supplemental Materials: 8.1*).

Key finding: The center currently does not have the funding or technology to gain certifications

According to an interview with a Senior Researcher at InnoHerb, the Center's current facilities and technology are not updated enough to obtain any certifications (*Supplemental Materials: 8.1*). The interviewee stated that it is infeasible for the center to obtain Thai FDA approval or other certifications without first making updates to their facilities and manufacturing processes. The center leader further supported this finding, stating that in spite of their attempts to obtain TFDA approval, they had been unsuccessful as their buildings and processes do not meet the necessary standards (S. Champamun, personal communication, January 15, 2024).

Findings

Created a promotional plan to spread herbal knowledge

Based on the current situation at the Baan Noan Rang Burapha Learning Center and a series of key findings regarding promotional methods to engage young adults, the team created a plan to help the center preserve their herbal knowledge amongst the younger generation.

Key finding: Attractive packaging increases Thai young adult willingness to buy a product

Asst. Prof. Kwanrat, a marketing professor at Chulalongkorn University, stated that updating the packaging on herbal products would be an effective method of engaging young adults and connecting them to the learning center as packaging could gradually increase young adult engagement and interest over time (*Supplemental Materials: 8.1*). This interview supported concepts that the team previously identified through background research on packaging and the promotion of herbal products. This further assisted the team in the development of a final deliverable and it established that packaging specific to the target audience and storytelling are essential methods for engaging a new demographic.

The team conducted a survey to further support the idea that attractive packaging designs appeal to young adults and increase sales to their demographic. Through conducting survey 1, the team found that 61.7% of young adults were drawn to buy products with more attractive packaging (Figure 12). Additionally, young adults stated that if they tried an herbal product and it was very effective, 98.4% would recommend it to a friend or at least highly consider recommending it to others.



Therefore, the team concluded that packaging can be considered an effective means to increase young adult sales and get people talking about the product. Further data from survey 1 can be found in *Supplemental Materials: 8.2*.

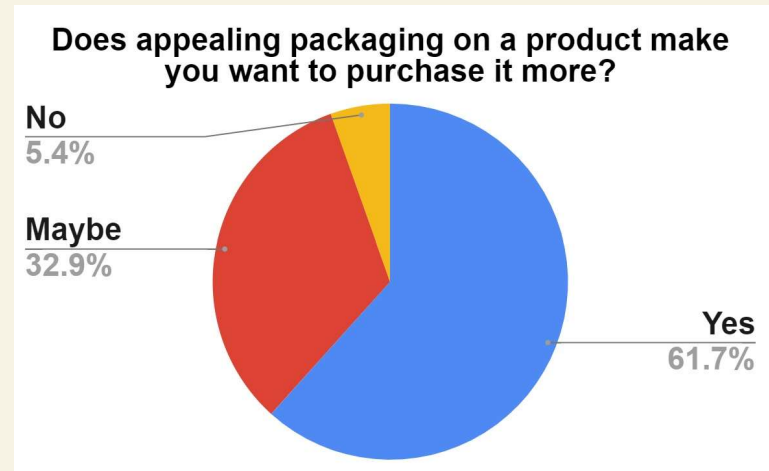


Figure 12 Chart on Appealing Packaging

Key finding: Young adults prefer simple designs on products, roller bottle style oil products, and value informative labels

In terms of packaging features, the team discovered that when buying an herbal product, the information on the label is crucially important to young adults. As found through survey 1, young adults have deemed that including the terms "organic" and "non-GMO" on labels as a factor of moderate to high importance when making purchasing decisions (*Supplemental Materials 8.2*). Additionally, the young adults surveyed stated that having the exact ingredients in products on the label is considered very important (*Supplemental Materials 8.2*).

In terms of packaging design, the team found that young adults value product form, design, and product information the most, as depicted in Figure 9 below. Survey 1 additionally showed that young adults prefer roller bottles for oil-based products and are attracted to designs that feature beautiful patterns, are aesthetic and cute, and are simple and black and white.

Findings

Key finding: Young adults prefer simple designs on products, roller bottle style oil products, and value informative labels (cont.)

The survey with packaging prototypes (Survey 2) (Figure 13) revealed that of the proposed packaging designs for the center’s oil, young adults preferred the simple black and white prototype while the beautiful pattern prototype was the second most popular. These survey questions also revealed the herbal product purchasing habits of young adults, most notably that 94.5% of young adults use herbal products. This provides confirmation to the team that there is a market for the sale of herbal products to young adults. The team notes that a limitation of survey 2 is that it did not address the brand loyalty of young adults or their willingness to try new herbal products. All key results from survey 1 and survey 2 are graphically depicted in *Supplemental Materials: 8.2* and *Supplemental Materials: 8.3* respectively.

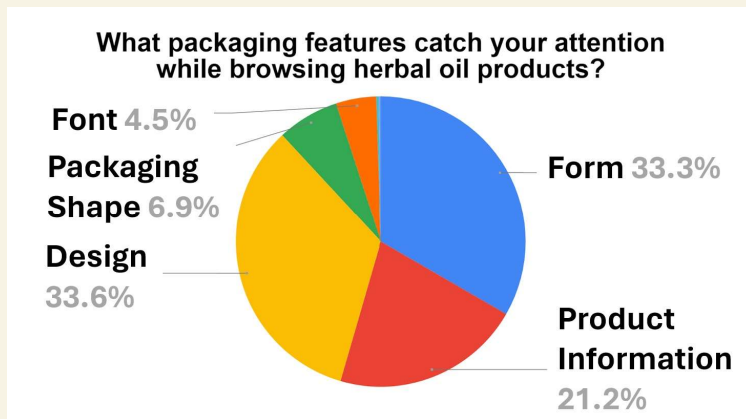


Figure 13 Features Young Adults Pay Attention to on Herbal Oil Packaging

When the team proposed a simple black and white design to the sponsor, they stated that they preferred green colors to emphasize the connection to nature and herbs. Thus, the team updated the design to cater to the sponsor’s preference. The team still considers the redesign to be supported by the survey

responses because young adults stated that the reason the simple black and white design was most preferable was due to the minimalistic features of the design rather than the actual black and white coloring. Since the final design still has the same minimalist features as the design originally voted most popular as well as a green color palette, the team believes that both the sponsor and young adult preferences are achieved. This new design is included in Figures 14 and 15 below.



Figure 14 Favored Prototype with Green Redesign

Following the market testing the team conducted with 100 young adults around Samyan Mitrtown and Chulalongkorn University regarding their opinions on the packaging prototype generated and proposed, the team found that over 68% of young adults would purchase the product with the redesigned package for 100 baht. This demonstrates that the new redesigned product has the potential to enter the younger adult market, especially if the sponsor sells the product in the future in a comparable atmosphere and condition to where the market was tested.



Figure 15 Roller Bottle Prototype

Findings

Key finding: QR codes are an effective method of providing information to young adults

According to the interview with the Chulalongkorn University marketing professor, a QR code can be used as a storytelling method to connect the customer to additional information or storytelling sources, however the design must draw attention to the QR code in order to get users to scan it (*Supplemental Materials: 8.1*).

Key finding: Increased sales increase QR code scans

The team found that young adults who purchase the product were likely to scan the QR code and thus access additional information about the center. In the market testing that the team conducted with young adults around Samyan Mitrtown and Chulalongkorn University, 85.4% of the young adults who would purchase the product stated that they would additionally scan the QR code to access the linked social media platforms in order to gain more information (Figure 16). This suggests QR codes are a viable method of engaging with young adults and have the potential to provide them with additional information.

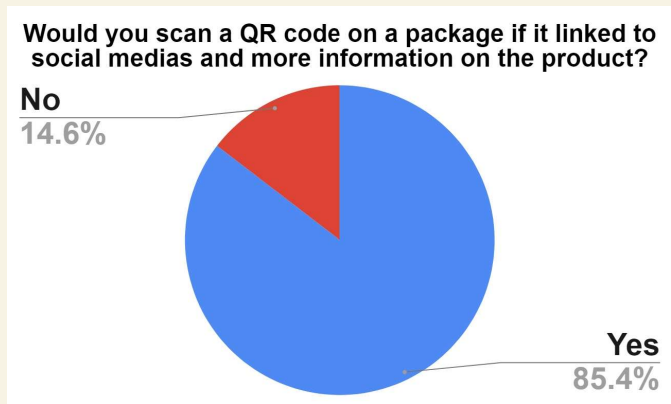


Figure 16 Market Testing: Likelihood of QR Code Scanning

Key finding: Social media is a valuable avenue to reach a young adult audience

Through interviewing local young adults, local community members, and a neighboring community center, the team discovered that

improving the social media presence of the learning center would, in fact, help to increase young adult interest. Both young adults interviewed stated that they believed social media would be an effective method of advertising the center and its products and increasing young adult interest and engagement (*Supplemental Materials 8.1*). A limitation the team encountered while conducting these interviews was that there were only two young adults in the area to interview, so the data yielded may be incomplete.

Key finding: Utilizing TikTok can increase young adult interest in herbal knowledge

Through digital research, the team was able to conclude that TikTok is a popular social media app amongst the younger generation that can feasibly be used to increase young adult interest in herbal knowledge. According to the 2023 TikTok Thailand data statistics in Figure 17, the most active age group of TikTok users was between the ages of 19 to 25 (Statista, 2023). The app works by utilizing AI and machine learning to customize a 'ForYou' page specifically for each individual user based on preferences and the content they most frequently view. This is helpful in targeting young adults who have expressed an interest in herbal wisdom. Additionally, the app displays global and localized content which can be used to connect with locals specifically.

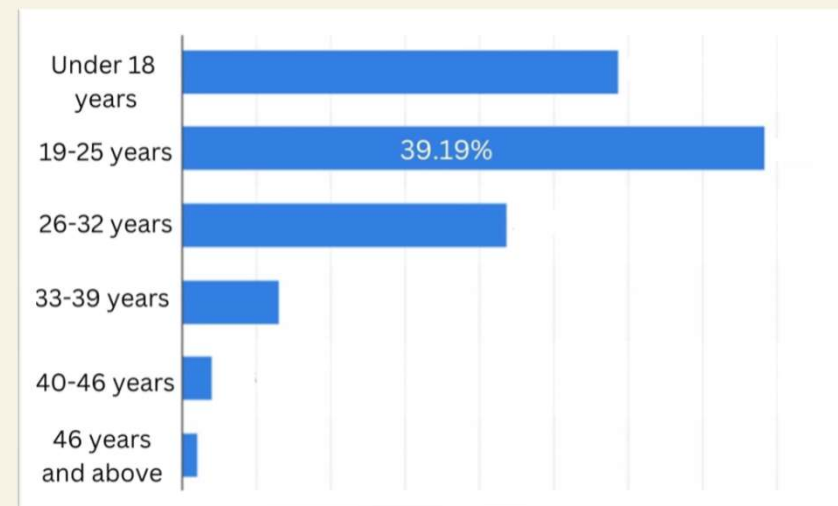


Figure 17 TikTok Age Demographic

Findings

Overall, the team concludes that a TikTok is a viable method of connecting with young adults and sharing herbal wisdom, due to the popularity of the app among the younger generation as well as the store of the apps' functionality as outlined above.

Key finding: Utilizing TikTok can increase young adult interest in herbal knowledge (cont.)

With this in mind, the team created a TikTok account for the center. In terms of the learning center's TikTok statistics, the account has reached over 2000 views in just a week, along with over 25 new profile visits. This can be seen in Figure 18. As the sponsor continues to post and the account becomes more established, the team anticipates that this engagement will increase.



Figure 18 TikTok Profile Engagement Statistics

Explored certification options to increase the viability of the learning center for young adults

Several key findings from interviews prompted an investigation of certifications that the Baan Noan Rang Burapha Learning Center could pursue.

Key finding: Certifications will attract young adults to the center

The team identified increasing the viability of the center through gaining certifications as a key beneficial method of increasing interest among the younger generation. The center leaders stated that they felt gaining certifications would help entice young adults by making the center seem more reliable and appealing career path. Interviews with young adults involved with the community center supported this idea that

obtaining government approval at the center would help engage the younger generation with herbal knowledge as it would make agriculture seem like a more viable career option and would make the center's workshops seem more credible (*Supplemental Materials 8.1*). As a result, certifications would be hugely beneficial in engaging young adults at the center.

Key finding: GMP approval is the most feasible form of certification for the center

The team discussed methods of gaining certifications during the InnoHerb interview. According to the interviewee, the most promising certification is the GMP approval, which is a type of certification awarded by the TFDA. The interviewee deemed that total TFDA approval to be infeasible due to the center lacking updated facilities, updated technology, extraneous funds, and measurable oil formulas and this certification requires an elaborate process over an expansive timeframe. However, the interviewee did mention that updating just the facilities so that the center can receive GMP approval is achievable. The checklist guidelines for GMP approval are in *Supplemental Materials: 8.4*.

Key finding: Updating the center's facilities can lead to GMP certification

The Baan Noan Rang Burapha Learning Center must update the facilities where they currently make their herbal products in order to comply with the regulations and acquire GMP approval. The requirements for the facility are shown in *Appendix E: E4* and involve numerous facility features including but not limited to sealed doors for a production area to make products in, designated clean equipment areas, and also storage for each individual part of the product ranging from herbs to bottles and labels (กองผลิตภัณฑ์สมุนไพร, n.d.).

The size of the facility does not matter as long as it can safely fit all of the required rooms (CGMP, 2023). A proposal detailing how funds can be used to update the center's facilities has been created based on GMP guidelines and is found in *Supplemental Materials 8.3* and the registration form is located in *Supplemental Materials: 8.4*.

Findings

Investigated funding options to further develop the learning center in order to gain GMP certification

Interviews yielded findings that lead to the exploration of funding opportunities. These funding opportunities can help update the Baan Noan Rang Burapha Learning Center so that it can obtain certifications.

Key finding: Grants can allow the center to gain GMP approval

As previously discussed, gaining GMP approval for the center can help engage young adults in the area to be more interested in the learning center. However, the team determined that securing funding is necessary to update the center and receive certifications through interviewing the Senior Researcher at InnoHerb as well as digital analysis. Specifically, the Senior Researcher at InnoHerb stated that with increased budget and time, it is feasible for the center to gain GMP approval through updating their facilities (*Supplemental Materials 8.1*). The team estimated that the center would need a total grant of 1,350,000 baht to construct a GMP certified facility in 150 days after conducting a brief cost-analysis utilizing documents from the Thai government regarding costs for building a factory per square meter (Pharmacy PSU, 2019). As estimated by the Chulalongkorn professor interviewed, grants could provide an estimated 1.5-3 million baht. The team considers grants to be a feasible method of gaining GMP approval for the learning center since this is much higher than the estimated costs of facility upgrades.

Key finding: King Power Thai Power, SCG Foundation, and ThaiBev are viable funding corporations

The team determined three organizations to be feasible through online research on potential grants. These organizations are listed below and were determined based on timeline, budget, and the populations to whom the company gives money.

1. **King Power Thai Power:** They help local communities and products get into the bigger market and provide aid through grant funding. They have many CSR (corporate social responsibility) projects that help local communities with their products via different means such as promotion, modernization, and providing new ideas (โครงการ พลังคนไทย พลังชุมชนไทย – *KingPowerThaiPower*, n.d.).
2. **SCG Foundation (Siam Cement Public Company Limited):** They focus and support community projects and have gone to underprivileged areas to provide financial aid to children, helping them to learn and grow. They have provided funding mainly for building construction and have donated funding and building materials to schools. They have built a total of 25 school buildings, 2 hospitals, and 2 rain tanks (*Sustainable Development*, n.d.).
3. **Thai Beverage:** They assist people with a wide range of CSR programs and have given out funding for schools, as well as providing teaching and sporting equipment. With the cooperation of 2 hospitals, they volunteered as a mobile medical unit, providing health and medical equipment checkups in a wide area (*ThaiBev Sustainability 2020*, n.d.).



(King Power Official Logo, n.d.)



(SCG Official Logo, n.d.)



(ThaiBev Official Logo, n.d.)

Findings summary

Based on the teams' research, it is clear that both promotional materials targeted towards young adults and increased certification and funding for the center can increase young adult engagement in herbal wisdom to preserve the center's knowledge. Targeted promotional methods include the creation of an updated packaging design and an increased social media presence plan. The GMP certification will provide the center with a method of increasing their credibility thus engaging young adults in the center and ultimately the center's herbal wisdom. This certification can be obtained by applying for and using grants to update the center's facilities.

Recommendations & Conclusions



Recommendations & Conclusions

Recommendations & conclusion

The Baan Noan Rang Burapha Learning Center is a community organization dedicated to upholding the principles of the sufficiency economy and spreading herbal wisdom. As the Thai agricultural industry is facing a decline in young adult engagement due to rapid urbanization and a lack of interest in the field, herbal knowledge is at risk of being lost. With this goal in mind, the team identified and addressed the following areas to improve in order to increase young adult engagement in herbal knowledge and preserve the center's wisdom: a promotional plan involving a packaging redesign and increased social media presence, funding applications to further develop the center's facilities, and a plan to help the center receive Good Manufacturing Practice certification.

The team conducted multiple interviews and surveys with locals in the area and experts in the field. Through this research, the team found that attractive packaging increases Thai young adult willingness to buy a product, that young adults are likely to scan QR codes, and that utilizing TikTok can increase young adult interest in herbal knowledge. Additionally, the team found that obtaining funding to update the center's facilities can help the center receive the GMP certification and attract young adults to the center by increasing its credibility. With the identified objectives and key findings in mind, the team created four deliverables that were identified to most effectively increase young adult interest in herbal wisdom and thus preserve the center's knowledge.

These deliverables are a redesigned herbal oil packaging, a TikTok account with a guide on how to use TikTok, a plan outlining how to update the center's facilities to gain GMP approval, and a submitted grant proposal in order to gain necessary funding for these updates. By utilizing these findings to meet the stated objectives, the Baan Noan Rang Burapha Learning Center should be able to engage a new, younger audience to preserve their knowledge and sustain the sufficiency economy principles.

Areas for future research

Based on the limited timeline and scope of the project, it is recommended by the team for the following areas and limitations to be investigated to continue thorough research for the preservation of the knowledge at the Baan Noan Rang Burapha Learning Center:

- Further developed market testing comparing a variety of herbal oil products with ranged packaging and prices.
- Does TikTok actually help to engage people with the center? Is there correlation with people seeing videos and engaging with workshops, purchasing the oil, or following up on more information through Facebook or YouTube?
- Do TikTok viewers look at the learning center content for the included trends or to gain more herbal knowledge/ learn about the center?



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Appendix



Appendix A

A1 Questions for Leaders of Baan Noan Rang Burapha Learning Center

A1.1 Understand the Purpose of the Learning Center (Financial Profit, Knowledge Transfer, etc.).

- What is the history of the learning center?
- When was the center founded?
- What types of work/activities does the learning center generally perform?
- In addition to Father Chan, are there other people who provide knowledge to the learning center?
- Are there any government agencies from whom you get support? - What is taught in the learning center?

A1.2 Young Adult Participation

- What is the average age of the young adults that participate in the center?
- Are there any workshops/programs that are geared towards the younger generation?
- What are the programs that are the most popular among the younger generation?

A1.3 Young Adult Product Promotion

- What current methods of promoting do you use to attract young adults?
- Do you have flyers, a newsletter, social media, etc.?
- Do you host any promotional events to attract young adults?

A1.4 Knowledge Transfer

- How has knowledge been transferred in the past between past leaders of the center?
- Is any knowledge written down or recorded?
- What does a successor of the community center need to know (what types of topics)?

A2 Questions for 18-25 Year Olds That Are Related to a Founder of the Baan Noan Rang Burapha Learning Center

- How do you feel about being part of a family that has contributed to establishing the learning center?
- As a member of the founding family, what ideas do you have for making the learning center more appealing and engaging for other kids your age?
- How has your parent's work in the learning center affected your life or perspectives on herbal products?

A3 Questions for 18-25 Year Olds That Are Involved With the Baan Noan Rang Burapha Learning Center

A3.1 Their Views on the Learning Center

- Do you want to work for/in the learning center?
- Are you interested in inheriting the "local wisdom" of the older generation?
- What parts of the learning center interests you?

A3.2 Opinion on the Learning Center

- In your opinion, how could we make the learning center more interesting for people your age?

A3.3 Experiences With the Learning Center

- Do you use products from the learning center?
- How often do you come to the learning center or participate in the workshops?

Appendix A

A4 Interview Questions for the Locals in the Area

- What is your opinion on the learning center?
- How often do you participate in the learning center's activities?
- How did you find out about the learning center?
- Why do you come to the learning center and how does it affect your life?
- What benefit do you find from participating in the learning center?

A5 Questions for the Leader of Ban Saeng Chan Community Learning Center

A5.1 Understand the Learning Center's Purpose

- Please explain the history of the learning center.
- How long has it been operating for?
- How is the overall work of the learning center? What does it do?
- Are there any government agencies that come to support the center?
- What is taught in the learning center?
- How prominent is the learning center within the community?
- Does the learning center sell any products?

A5.2 Young Adult Participation/Promotion

- How many young adults are involved with the center?
- How often do they participate?
- What is the average age of the young adults that participate in the center?
- How involved is the average young person?
- Are there any workshops/programs that are geared towards the younger generation?
- What are the programs that are the most popular among the younger generation?
- What current methods of product promotion do you use to attract young adults?
- Do you have flyers, a newsletter, social media, etc.?
- Do you host any promotional events to attract young adults?

A5.3 Knowledge Transfer

- How has knowledge been transferred in the past between past leaders of the center?
- Is any knowledge written down or recorded?
- What could a successor of the community center need to know (what types of topics)?

A6 Questions for Marketing Professor at Chulalongkorn University

- What marketing strategies would you recommend to appeal to younger generations in today's society?
- How can we account for changes that occur over time with style and packaging trends?
- How can we appeal to a new audience while also maintaining old customers at the same time?
- If a product is not unique among its competitors, how can it be made to seem appealing without changing its formula?
- Do you think a QR code on a product bottle advertising the community center would gain people's attention?
- Do you have any recommendations as to how to upgrade packaging for a product to modernize it?
- Do you have any knowledge to share about today's herbal product market?

Appendix A

A7 Questions for the Senior Researcher at InnoHerb

- What is InnoHerb's role as a company?
- How do you begin FDA approval for an herbal product?
- What laws and regulations are in place regarding herbal products?
- What roadblocks will one reach when registering a product with the FDA?
- What is the permission process for herbal product approval?
- How could someone gain monetary grants for an herbal product approval plan?
- Is FDA approval feasible for our project at this time?

A8 Survey About Packaging Appeal for Younger Generations

Hello, this is a Chulalongkorn University survey regarding herbal product promotion to young adults for a community learning center. When answering the 18 multiple-choice questions below, please know that all answers are anonymous and this survey is fully voluntary and you may opt out at any time. We appreciate your feedback and thank you for your time!

Are you age 18 or above?

- Yes
- No

How often do you use herbal products?

- As needed
- Never

When choosing herbal products to buy, how much do you focus on the convenience/functionality of the product?

- Often
- Sometimes
- Not often
- Never

How frequently does the inclusion of a certification like 'organic' or 'non-GMO' on herbal product packaging influence your decision to purchase?

- Often
- Sometimes
- Not often
- Never

Does the inclusion of herbal product recipes influence your decision to buy?

- Often
- Sometimes
- Not often
- Never

Appendix A

A8 Survey About Packaging Appeal for Younger Generations (cont.)

How often do you read the product labels on herbal products?

- Often
- Sometimes
- Not often
- Never

If a herbal product you recently bought goes above your expectations, how willing are you to recommend it to your friends/family?

- Very willing
- Sometimes
- Rarely willing
- Never

How willing are you to keep buying a new herbal product that you liked using?

- Very willing
- Sometimes
- Rarely willing
- Never

What would increase your willingness to try herbal products from a brand that you have not heard of before?

- Good reviews
- Certifications
- Professional packaging
- Product Samples
- Other

How likely are you to do research on the manufacturer of a herbal product you enjoy?

- Likely
- Possibly
- Unlikely
- Never

How much does the overall design of herbal product packaging impact your perception of product effectiveness?

- Often
- Sometimes
- Not often
- Never

Appendix B & C

Appendix B: Interview Participation Consent Form Consent Script for Interview

Hello,

We are a group of students from Chulalongkorn University and Worcester Polytechnic Institute completing our Interactive Qualifying Project (IQP). Our team consists of 3rd year undergraduate students: Atirun Burana, Kanyarut Despongpoichit, Chloe Foucault, Paige Grissom, Julia Horrocks, Lydia Ponomorenko, Naraphan Prothongnak, and Phanita Tangsiriwattanakul. Our research project aims to assist the Baan Noan Rang Burapha Learning Center pass down and preserve the local wisdom of the older generation onto the younger generation.

We invite you to participate in a fully voluntary interview regarding our research project as a means to gather vital information related to the learning center and the community's perspective on it. We seek to collect information regarding your relationship with the learning center, as well as their products. We would also like to ask you about parts of the learning center that interest you, as well as ways to improve the learning center. This interview should take around 1 hour of your time. The information that you disclose during this interview will be used to direct further research and otherwise advance our project.

The interview will be recorded digitally upon your consent. Please remember that this interview process is entirely voluntary and you may choose to not participate. Should we ask a question you do not want to answer, you may skip it. You are invited to ask any questions about the interview before it begins, as well as reviewing anything that we quote from your interview before publication. If you have any questions or concerns following the interview, please feel free to contact us at the email listed below.

Best,

IQP Team 1:

Atirun Burana, Kanyarut Despongpoichit, Chloe Foucault, Paige Grissom, Julia Horrocks, Lydia Ponomorenko, Naraphan Prothongnak, Phanita Tangsiriwattanakul

Email: thaiherbalpowders@gmail.com

By stating your full name and your consent verbally to us, we will begin the interview.

Appendix C: Introduction to The Baan Saeng Chan Community Learning Center

While the Baan Noan Rang Burapha Learning Center is one of the most successful learning centers in the area, the business strategies of nearby similar learning centers may prove valuable in sustaining the herbal wisdom of the center and passing it to younger generations. To do this, the Baan Saeng Chan Community Learning Center will be investigated. This center is located 88.3 kilometers away from Noan Rang Burapha Learning Center in Buriram province. This center focuses on natural agriculture, combined agriculture, organic farming, mixed forest farming, earthworm farming, red ant farming, and adjusting the concept for self-reliance in the community. Their works and focuses are similar to that of the Noan Rang Burapha Learning Center, and the heart of both centers' activities is adapted from His Majesty the King's new theory of sufficiency economy and farming. They both use their learning centers in a way that can provide continuous knowledge to farmers. Since both centers operate in similar ways with support from outside sponsors, it is beneficial to understand how this center preserves their knowledge and engages younger members of the community. This will be helpful when determining how the Baan Noan Rang Burapha Learning Center can preserve their knowledge by engaging the younger generation.

Appendix D

Important Herbal Content in the Center's Current Oil

(TGMJAO. (2020). คลังต้นไม้มแห่งการเรียนรู้)

| Thai Name | Scientific Name | Properties | Remarks |
|----------------|---|--|-------------|
| ว่านพญาวาน | Curcuma phrayawan Boonma & Saensouk | <ul style="list-style-type: none">- สามารถใช้ป้องกันและควบคุมอิทธิฤทธิ์ของว่านชนิดอื่นเพื่อไม่ให้สรรพคุณนั้นเสื่อมลง- ใช้แก้พิษเบื่อเมาหรือถูกพิษจากต้นไม้มที่มีพิษ การแก้พิษทำโดยนำหัวว่านมาฝนกับน้ำขาวข้าวแล้วทาหรือนำหัวว่านมาโขลกให้ละเอียดแล้วคั้นเอาแต่น้ำนำน้ำคั้นมาผสมกับสุราดื่มกินแก้พิษ- นอกจากนี้ยังใช้พญาวานเป็นยาครอบจักรวาล ใช้รักษาโรคตา คอ จมูก โรคทางเดินอาหารและโรคผิวหนัง ผดผื่นคัน- ใช้เป็นยาบำรุงหัวใจโดยนำหัวว่านมาฝานบางๆใช้ต้มน้ำสำหรับดื่มกิน | Smells good |
| ว่านมหาปราบ | Kaempferia <u>angustifolia</u> Roscoe. | เชื่อกันว่ากลิ่นหอมของเหง้าจะช่วยให้ดินมีกลิ่นหอมด้วย | Smells good |
| ว่านขอทองแก๊ | Curcuma sp. | ส่วนสรรพคุณทางยาใช้ถอนพิษจากแมลงสัตว์กัดต่อย บำรุงร่างกาย แก้ปวดเมื่อย ช่วยล้างสารตกค้างในอาหาร แก้พิษเบื่อเมา และแก้อาการท้องเสีย | |
| ว่านห้าร้อยนาง | Curcuma sp. | เป็นว่านทางคงกระพันชาตรี ใช้เป็นยาแก้พิษ ยาเบื่อ ยาสัง และอาหารที่มีพิษ โดยนำหัวมาฝนกับน้ำขาวข้าวกิน จะทำให้เอาเจียน | Smells good |
| ว่านดักแด้ | <i>Stahliathus campanulatus</i> Kuntze | แก้พิษสัตว์กัดต่อย ทำให้หนังชา แก้ไขพิษ ไข้กาฬ | |
| ว่านตะขาบบิน | Muehlenbeckia platyclada (F.v.Muell.) Meissn. | ใช้ภายนอกกระจับปวด แก้โรคผิวหนังเจ็บ ผื่นคัน น้ำเหลืองเสีย งูสวัด ฝีตะมอย | |
| ว่านเพชรกลับ | <i>Boesenbergia thorelii</i> (Gagnep.) Loes. | เหง้าตำพอกสมานแผลสด ใช้ดองกับเหล้าขาวดื่มเป็นยาอายุวัฒนะ | Smells good |

Appendix D

Important Herbal Content in the Center's Current Oil (cont.)

(TGMJAO. (2020). คลังต้นไม้มแห่งการเรียนรู้)

| Thai Name | Scientific Name | Properties | Remarks |
|-------------------|---|--|-------------|
| ว่านกำแพงเจ็ดชั้น | <i>Salacia chinensis</i> | พอกทาแผลที่ถูกงูกัด รากใช้รักษาโกโนเรีย โรคข้อรูมาติก และโรคผิวหนัง | Smells good |
| ว่านนางคุ้ม | <i>roiphys amboinensis</i> | เหมาะปลูกเป็นไม้กระถางประดับหน้าบ้าน เชื่อว่าสามารถป้องกันอัคคีภัย หากพทหัวติดตัวพร้อมเสกคาถา จะทำให้คงกระพัน | Smells good |
| ว่านมหาโชค | <i>Eucharis grandiflora</i> Planch. & Linden | เป็นว่านเมตตามหานิยม หากมีไว้จะทำให้ทำมาค้าขึ้น | Smells good |
| ว่านมहाภาพ | <i>Eucrosia bicolor</i> | ช่วยถอนพิษแมลงสัตว์กัดต่อย รักษาแผล ฟี หนอง | |
| ว่านคลุ้ม | <i>Proiphys amboinensis</i> | เชื่อว่าว่านนางคุ้มเป็นว่านที่มีความมงคลทางด้านคุ้มครองป้องกันอันตรายต่าง ๆ ถ้าปลูกไว้ในบ้านจะมีคุณทางป้องกันไฟไหม้ได้ | Smells good |
| ว่านประหอม | <i>Kaempferia galanga</i> L. | แก้หวัดคัดจมูก รับประทานขับลมในลำไส้ แก้เสมหะ เจริญไฟธาตุ แก้ท้องอืด แก้โลหิตซึ่งเจือด้วยลมพิษ บรรเทาอาการไข้ ร้อนในกระหายน้ำ แก้พิษหัด พิษอีสุกอีใส | Smells good |
| ว่านมหาเมฆ | <i>Curcuma aeruginosa</i> | เป็นยาร้อนเล็กน้อย ออกฤทธิ์ต่อตับและม้าม ใช้เป็นยากระจายเลือดลม บำรุงร่างกาย | Smells good |
| ว่านคางคก | <i>Typhonium trilobatum</i> | กัดฝีและกิดหนองดี (สำหรับผู้ป่วยโรคเบาหวาน ผู้ป่วยระหว่างพักฟื้น เป็นอาหารดูดสารพิษ ขจัดไขมันในเลือด และปรองอาหารรักษาสุขภาพ) ปาหัวมาต้มกับน้ำ แก้โรคตับ โรคท้องมาน ยาแก้เสมหะ แก้ไอ | Smells good |
| ว่านหอมแดง | <i>Eleutherine palmifolia</i> (L.) Merr. | มีสรรพคุณขับลมในกระเพาะอาหารและลำไส้ หรือตำผสมกับเหง้าประหอมสุ่มหัวเด็ก แก้หวัดคัดจมูกในเด็ก เป็นยาขับปัสสาวะ ยาระบาย ทำให้อาเจียน แก้บิด และอาการอักเสบของริดสีดวงทวาร น้ำยาที่ได้จากหัวได้ดินใช้ทาบาดแผล แผลงัดกัต่อย บดเป็นผงทาแก้ปวดท้อง | |
| ว่านมหาเสน่ห์ | <i>Curcuma</i> spp. | มีสรรพคุณเด่นทางความเชื่อ เสน่ห์มหานิยมแก่ผู้ปลูก | Smells good |
| ว่านมहाภาพ | <i>Gynura pseudochina</i> (L.) DC. var. <i>hispida</i> Thwaites | โชนกผสมกับสุราพอกดับพิษฝี หรือพอกหัวล้านะลอก ทำให้ถอนพิษแก้ปวดแสบปวดร้อน หัวได้ดินรูดเย็น รับประทานดับพิษภาพ พิษร้อน แก้ไข้พิษ เชื้องซึม รัส่าระสาย แก้พิษอักเสบ | |
| ว่านแมงมุม | <i>Geodorum</i> | ช่วยบรรเทาอาการปวดหลัง ปวดเอว ปวดตามข้อ | |

Appendix D

Important Herbal Content in the Center's Current Oil (cont.)

(TGMJAO. (2020). คลังต้นไม้มแห่งการเรียนรู้)

| Thai Name | Scientific Name | Properties | Remarks |
|----------------|--|---|-------------|
| | <u>recurvum</u> (Roxb.) Alston. | ปวดหัวเข่า ปวดเมื่อยตามร่างกาย แก้พิษแมลงสัตว์กัดต่อย แก้เห็บขา | |
| ว่านสาวหลง | Amomum schmidtii (K.Schum.) Gagnep. | ช่วยแก้อาการผื่นคัน รักษาโรคมิวหนัง หรือนำดอกมาต้มดื่ม แก้อาการท้องเสีย แก้ไอ ขับเสมหะ บรรเทาอาการไข้หวัด | |
| ว่านขมิ้นคูลูก | Curcuma <u>zanthorrhiza</u> | รักษามดลูกอักเสบ ช่วยมดลูกเข้าอู่หลังคลอด รักษาอาการประจำเดือนมาไม่ปกติ ปวดท้องระหว่างมีประจำเดือน ขับน้ำคาวปลา แก้ธาตุพิการอาหารไม่ย่อย แก้ริดสีดวงทวาร ราก แก้ท้องอืดท้องเฟ้อ | Smells good |
| ว่านนางคำ | Curcuma aromatica | ช่วยลดกรดในกระเพาะ ช่วยควบคุมธาตุในร่างกาย ใช้เป็นยาขับลมในลำไส้ช่วยรักษาโรคหนองใน แก้อาการฟกช้ำ ช่วยขับลม เป็นยาสมานแผล แก้อาการปวด | |
| ขมิ้นอ้อย | Curcuma zedoaria | ใช้เป็นยาสุขุม บำรุงตับและม้าม ช่วยกระจายโลหิต แก้เลือดไหลเวียนไม่สะดวก เส้นเลือดอุดตันใช้เป็นยาฟอกเลือด ช่วยแก้โลหิตเป็นพิษใช้เป็นยาแก้โรคความดันโลหิตสูงเป็นยาบำรุงกำลังใช้เป็นยาแก้ไข้รักษาอาการหวัด ครั้นเนื้อครั้นตัวแก้ไอเจียน ขับเสมหะ | Smells good |
| ขมิ้นชัน | Curcuma longa | เป็นสารต้านอนุมูลอิสระที่มีประสิทธิภาพ มีคุณสมบัติต้านการอักเสบ ต้านเชื้อโรค และยังมีส่วนในการต้านมะเร็ง | Smells good |
| ไพลดำ | Zingiber ottensii Valeton | เป็นยาอายุวัฒนะบำรุงร่างกาย รักษาอาการเคล็ดขัดยอก ฟกช้ำ แก้เห็บขา แก้อาการช้ำใน ช่วยสมานแผล สลายลิ่มเลือดที่แข็งตัว ขับประจำเดือน | |
| ไพลชมพู | Thunbergia impatenioides Suwanph. | เป็นยาขับลม บำรุงธาตุช่วยย่อยอาหาร ลดอาการอักเสบ สลายลิ่มเลือด รักษาอาการปวดหน่วงท้องน้อย ช่วยรักษาอาการเคล็ดขัดยอกฟกช้ำ ปวดเมื่อยตามร่างกาย ข้อ และหลัง | |
| ไพลเหลือง | Zingiber cassumunar Roxb. | มีฤทธิ์ในการช่วยต้านเชื้อรา เชื้อจุลินทรีย์ และเชื้อแบคทีเรีย ไพลมีฤทธิ์ช่วยต้านฮีสตามีนในผู้ป่วยเด็กที่เป็นโรคหอบหืด | Smells good |

Appendix E

Plan for the Baan Noan Rang Burapha Learning Center to Engage Young Adults for Long-Term Knowledge Preservation

This plan provides ideas for generating long-term engagement with a younger adult audience to help preserve the Baan Noan Rang Burapha Learning Center's knowledge. We first describe each deliverable and then provide images of such.

E1 Description: Order New Packaging

The Baan Noan Rang Burapha Learning Center is currently looking to update their packaging to appeal to a younger audience. The new packaging will consist of roller-style bottles with a green, minimalistic label that features a QR code to link customers to promotional social media platforms. The Baan Noan Rang Burapha Learning Center already orders roller bottles in bulk, so there is no additional cost associated with using this type of bottle. The center also has a custom label manufacturer, so there would not be any additional cost associated with the change in label design. Due to the fixed manufacturing costs associated with the redesign, the team deems the packaging rebrand to be feasible. The product label is included in Appendix E1 of this document.

E2 Description: Implement Promotional Methods/Social Media

TikTok

TikTok is strongly recommended to increase younger adults' interest and knowledge about herbs. A TikTok account has been created under the username 'baannoanrangburaphalc' and password 'IloveThailand22!', as well as the email account 'noanrangburaphalc@gmail.com' with password 'IloveThailand22'. This account can be utilized to share information and media with young adults directly. Instructions for running a TikTok account including post ideas, a posting schedule, and app navigation can be found in Appendix E2.

QR Code and Linktree

To consolidate the center's social media platforms and make them more easily accessible to customers, a QR code has been generated and attached to the new packaging prototype. This QR code links to a platform called Linktree where the TikTok and Facebook pages can be viewed by customers as well as a YouTube interview conducted by the sponsor to provide additional content on the center and its herbal knowledge. The QR code can be found here:

E3 Description: Funding Generation & Grant Application

To generate funds for further updates to the learning center, the following grants should be applied for: King Powder (COMMUNITY POWER), SCG Foundation, and Thai Beverage.

A drafted proposal for the grant is outlined in Appendix E3. This draft was reviewed and submitted on February 16, 2024. Detailed instructions for how to apply for these grants for each private company are different, these are based on organizational structures of each company. For the King Power Thai Power program, the email with the final funding proposal was sent to contact@kingpower.com, and the paper will be processed in two weeks. So, the sponsor should receive the response around March 1, 2024. For Thai Beverage, the submitting system is similar, the final proposal was sent to info@thaibev.com. However, the proposal could take more than one month to be processed, so the sponsor should receive the response after March 15, 2024. Lastly, a funding proposal submitted to SCG Foundation was submitted via SCG Foundation website (<https://www.scgfoundation.org/contact/>) directly, and the paper will be processed in three weeks after submitted.

Appendix E

E4 Description: Update Facilities to Meet GMP Guidelines

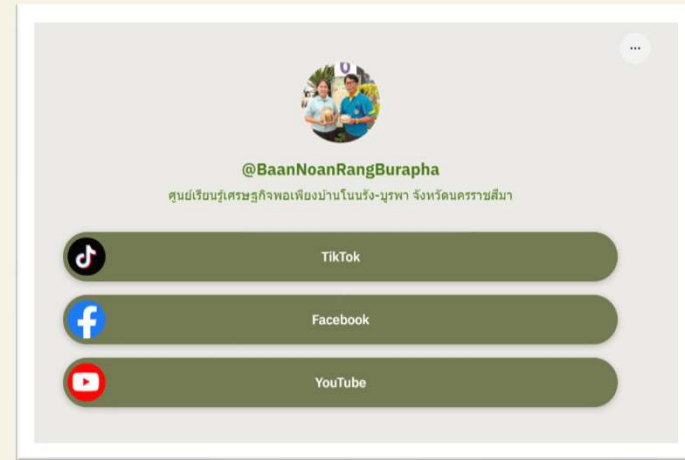
The Baan Noan Rang Burapha Learning Center can expand their audience to younger generations by updating their facilities. Younger generations will be more compelled to not only visit the center, but engage with the center and its practices as well because it will seem more viable and interesting with updated technology. Additionally, these facility updates will lead to easier approval for Good Manufacturing Practice (GMP) certification, if done correctly. The floor plan for the necessary layout is outlined below in section E3 Deliverable. This will be a total of 200 square meters. The timeline for this project is dependent on the approval of grant applications.

E1 Deliverable: Prototype of Label and Label Printout (20 cc dimensions)

Packaging Label



Linktree



Prototype



Appendix E

E2 Deliverable: TikTok Instructions

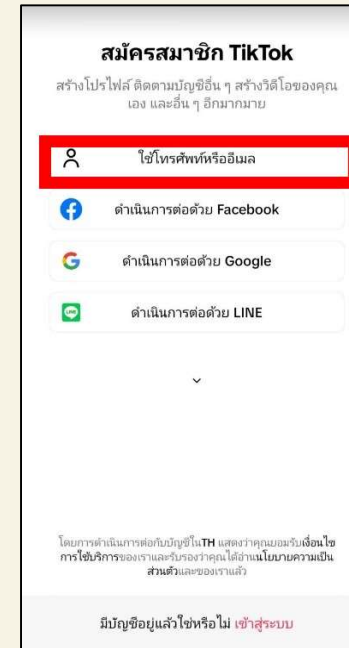
•Download the app and sign up. ดาวน์โหลดแอปและลงทะเบียน
-เข้าแอปพลิเคชัน playstore หรือ appstore จากนั้นค้นหาแอปพลิเคชันชื่อ TikTok
-สำหรับการติดตั้งให้คลิกติดตั้ง(ปุ่มสีเขียว)

•Set up profile. สร้างโปรไฟล์
• Sign up or Sign In. ลงชื่อเข้าใช้
- กดปุ่มสีแดง

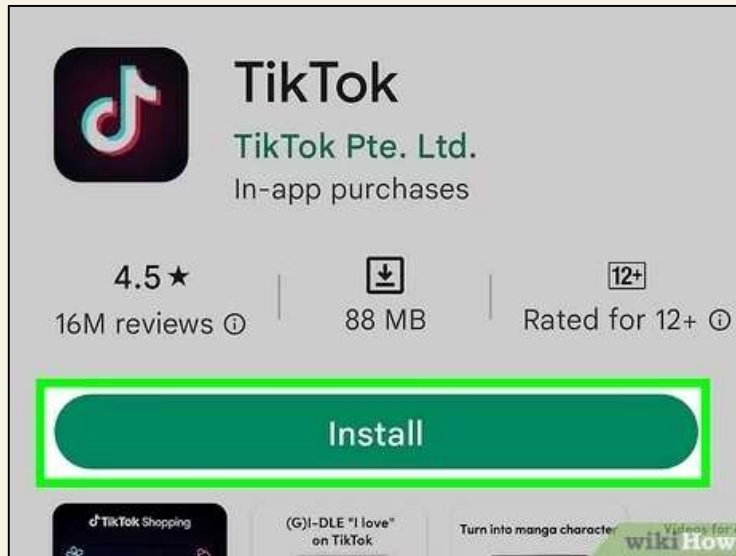
Accessing Your Account:
Email: noanrangburaphalc@gmail.com
Username: baannoanrangburaphalc
Password: IloveThailand22!

•Choose a method to sign up. เลือกวิธีการเข้า
-เลือกใช้โทรศัพท์และอีเมล

Account Creation

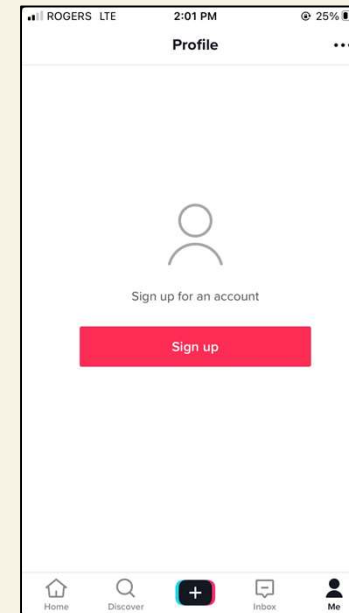


App Installation



Link to TikTok Account

https://www.tiktok.com/@baannoanrangburaphalc?is_from_webapp=1&sender_device=pc



Appendix E

Click to check and view the video **คลิก**
เพื่อตรวจสอบและชมวิดีโอ

-คลิกเพื่อตรวจสอบและชมวิดีโอด้านล่าง

Home หน้าหลัก

•Discover
Create (the plus button) สร้าง
ปุ่มบวก

- คลิกปุ่มบวกเพื่อสร้างโพสต์และเนื้อหาใหม่
- คลิกทางด้านขวาของหน้าจอเพื่อเลือกรูปภาพหรือวิดีโอที่จะโพสต์
- กดปุ่มสีแดงเพื่อเริ่มอัดคลิป
- กดปุ่มสีแดงที่เขียนว่า "ถัดไป"

-คลิกปุ่มสีแดงเพื่อโพสต์

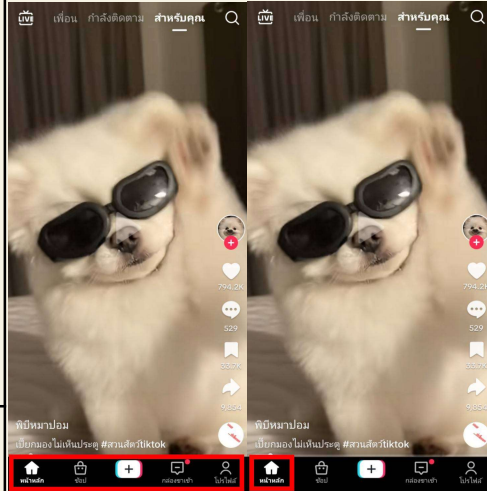
Inbox กล่องขาเข้า
Me โปรไฟล์

Like, comment, share videos you enjoy.

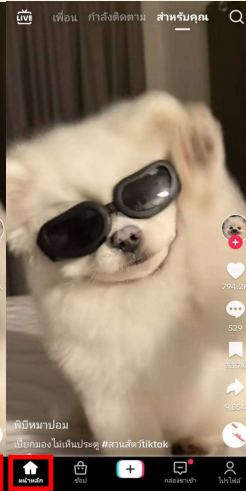
กดไลค์ แสดงความคิดเห็น แชร์วิดีโอที่คุณชอบ

E2 Deliverable: TikTok Instructions (cont.)

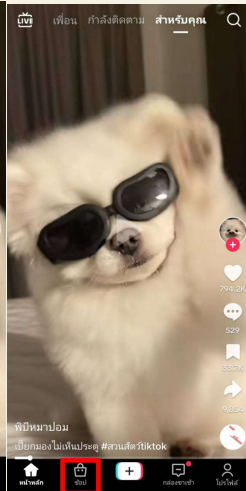
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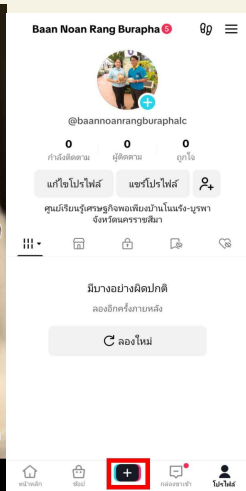
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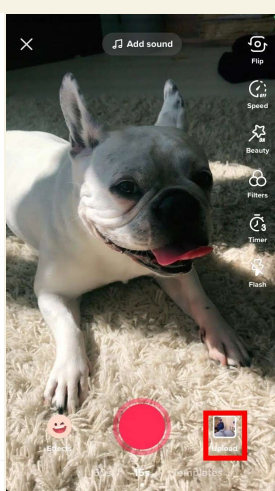
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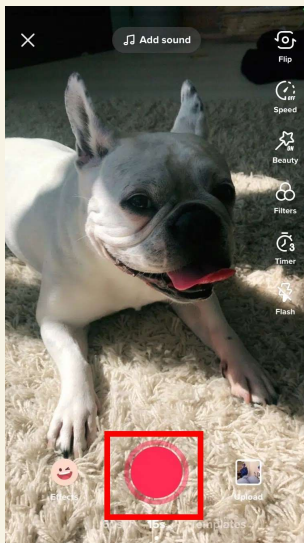
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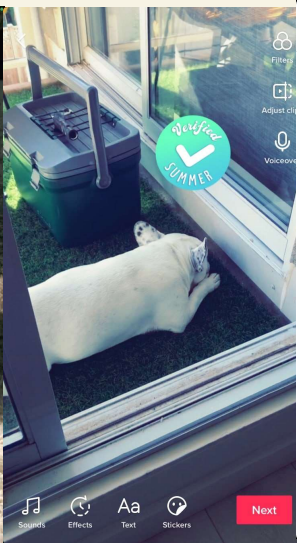
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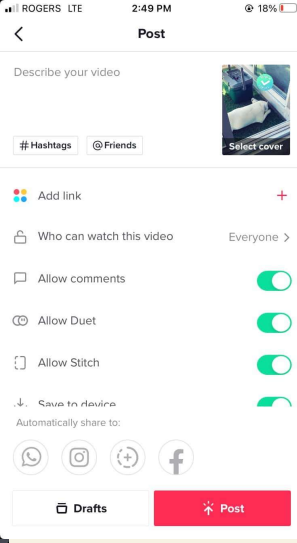
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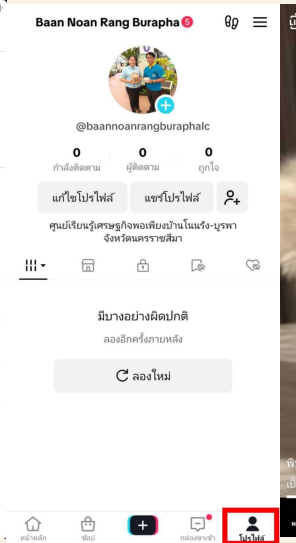
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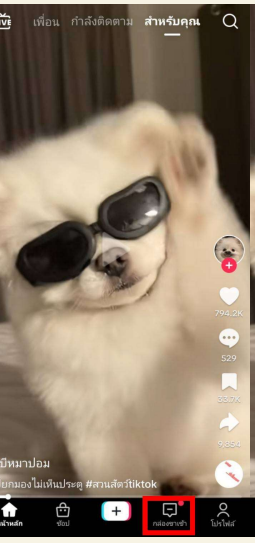
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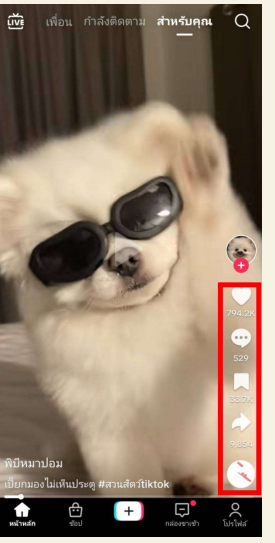
9



10



11



Appendix E

E2 Deliverable: TikTok Instructions

TikTok Calendar

| February | | | | | | | | |
|-------------------------------|-----------------|-----------------|--|-------------------------|---|--|--|---------------------------------------|
| SUN | MON | TUE | WED | THU | FRI | SAT | | |
| | | | | 1 | 2 | 3 | | |
| | | | | | | | | |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | | We film it for them |
| | | | | One day in BaanNoanRang | knowledge 1 | Do you know what are these herbs (BSAC) | | Waiting for the sponsor Old videos |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | | |
| knowledge 2 | whats in my bag | knowledge 3 | when i study VS when I study with herbal oil | knowledge 4 | me without my inhaler VS Me with my inhaler | knowledge 5 | | |
| 18 | 19 | 20 | 21 | 22 | 23 | 24 | | |
| How to make your soil better? | knowledge 6 | Cooking with US | knowledge 7 | pictures from festival | knowledge 8 | Guess what herbs are in this product EP2 | | |
| 25 | 26 | 27 | 28 | 29 | | | | |
| knowledge 10 | knowledge 11 | | | | | | | |

TikTok Post Guide

| VDO | หัวข้อ | EXAMPLE | REMARKS |
|--------------|--|---|---------------------|
| knowledge 1 | herbs and plants in the area | https://vm.tiktok.com/ZT83VfGj9/ | Old videos |
| knowledge 2 | how to make Dragon's blood tea | https://vm.tiktok.com/ZT8vVV8s7/ | from the sponsor |
| knowledge 3 | useful herbs (slideshow) | https://www.tiktok.com/@worldhappy.official?_t=8jfrtq8lgWl&_r=1 | Old videos |
| knowledge 4 | underrated herbs that are super useful | https://vm.tiktok.com/ZT83VuAnj/ | Old videos |
| knowledge 5 | useful herbs (video) | https://www.tiktok.com/@avaree_22?_t=8jfs1RTmc1a&_r=1 | from the sponsor |
| knowledge 6 | planting techniques | https://www.tiktok.com/@giarpowers2023?_t=8jftvaXiyx8&_r=1 | from the sponsor |
| knowledge 7 | herbs in herbal oil | https://vm.tiktok.com/ZT8vqj/ | we film it for them |
| knowledge 8 | how to make mulberry tea | https://vm.tiktok.com/ZT83VteRh/ | from the sponsor |
| knowledge 10 | herbs and plants in the area | https://vm.tiktok.com/ZT83Vr/ | Old videos |
| knowledge 11 | herbs and plants in the area | https://vm.tiktok.com/ZT83VnKKb/ | Old videos |

Appendix E

E3 Deliverable: Proposal to be Sent to Organizations for Funding

แบบเสนอโครงการชนิดโครงการ : การอาสาช่วยเหลือชุมชน (Community Volunteering) ศูนย์การเรียนรู้เศรษฐกิจพอเพียงบ้านโนนรัง-บูรพา

ผู้รับผิดชอบโครงการศูนย์ฝึกอบรมเกษตรผสมผสานบ้านโนนรัง-บูรพา

- ผู้ประสานงาน: นายสุวัฒน์ชัย จำปามูล
- โทร: 098-584-6008

หลักการและเหตุผลศูนย์การเรียนรู้เศรษฐกิจพอเพียงบ้านโนนรัง - บูรพา เป็นศูนย์การเรียนรู้ จังหวัดนครราชสีมา ได้เปิดอบรมทักษะ ให้กับเกษตรกร หน่วยงานภาครัฐ และเอกชนมาตั้งแต่ปี 2546 โดยมีพ่อจันทร์ที่ ประทุมภา ปราชญ์ชาวบ้าน ที่เคยได้รับรางวัลปราชญ์เกษตรของแผ่นดิน สาขาปราชญ์เกษตรเศรษฐกิจพอเพียง ประจำปี 2554 เป็นผู้นำในการดำเนินงาน นอกจากนี้ตลอดหลายปีที่ศูนย์ฝึกอบรมเกษตรผสมผสานบ้านโนนรัง - บูรพา ได้ดำเนินงานมา กลุ่มวัยแรงงานจำนวนมาก ในพื้นที่ของชุมชน เป็นกลุ่มคนด้อยโอกาส อย่างเช่น คนขาดแคลนทุนทรัพย์ คนพิการ คนสูงอายุ คนว่างงาน ซึ่งคนเหล่านี้ แท้จริงแล้วเต็มไปด้วยศักยภาพมากมาย ที่จะสามารถนำมาใช้เพื่อก่อให้เกิดประโยชน์กับตัวเอง และชุมชนรอบข้างได้โครงการเสริมสร้างทักษะฯ ต่าง ๆ ของศูนย์ฝึกบ้านโนนรัง - บูรพาเป็นเหมือนมือที่ยื่นให้กับคนในชุมชน และช่วยดึงศักยภาพของพวกเขาออกมาอย่างเต็มที่ เพราะท้ายที่สุดแล้วศักยภาพเหล่านั้นคือต้นทุนที่แท้จริง ที่จะช่วยสร้างรายได้และสร้างอาชีพให้กับพวกเขา อย่างยั่งยืนด้วยเหตุนี้ เพื่อสนับสนุนอาชีพของคนภายในชุมชน ศูนย์การเรียนรู้เศรษฐกิจพอเพียงบ้านโนนรัง - บูรพา จึงมีความประสงค์จะสร้างสิ่งปลูกสร้างสำหรับเพิ่มพลังการผลิตสินค้าและปลูกพันธุ์พืชสำหรับกระบวนการผลิต ซึ่งจะสามารถเพิ่มอัตราการจ้างงานของคนในชุมชนและเพิ่มพูนทักษะการแปรรูปสินค้าของชาวบ้าน เพื่อเป็นแนวทางให้ชาวบ้าน นำความรู้นั้นไปประกอบอาชีพที่ยั่งยืนต่อไป

วัตถุประสงค์

- จัดตั้งโรงผลิตสินค้าชุมชน ตามมาตรฐานกรมอนามัย
- กระจายรายได้ให้กับคนในชุมชนและเพิ่มทักษะสำหรับนำไปต่อยอดอาชีพที่ยั่งยืน
- เผยแพร่ภูมิปัญญาสมุนไพรท้องถิ่นให้แก่ชาวบ้านในพื้นที่

เป้าหมายในการพัฒนากระจายรายได้ให้ชุมชนบ้านโนนรัง อ.ชุมพวง จังหวัด นครราชสีมา โดยมีวิธีดังต่อไปนี้

1. สร้างงาน เพิ่มรายได้ และแก้ไขปัญหาความจน

1. การสร้างโรงผลิตสินค้าชุมชน จะสร้างโอกาสในการทำงานและเพิ่มรายได้ให้กับชุมชน โดยเฉพาะผู้กลุ่มผู้มีรายได้น้อย ซึ่งเป็นชาวบ้านที่ทำการเกษตรภายในพื้นที่ นอกจากนี้ ยังช่วยเพิ่มฐานะทางเศรษฐกิจของชุมชนอีกด้วย

2. ลดการย้ายถิ่นทำธุรกิจ

1. โรงงานเป็นแหล่งประกอบอาชีพใหม่ สร้างความเข้มแข็งให้กับชุมชน และลดการย้ายถิ่นฐานของชาวบ้านในพื้นที่เพื่อหางาน

3. เผยแพร่ภูมิปัญญาท้องถิ่น

1. การรวมตัวของชาวบ้านเพื่อผลิตสินค้า มีการให้ความรู้เรื่องการประยุกต์ใช้สมุนไพรท้องถิ่น ในชีวิตประจำวัน ซึ่งชาวบ้านสามารถนำภูมิปัญญาท้องถิ่นนั้นไปเผยแพร่ต่อได้ในอนาคต

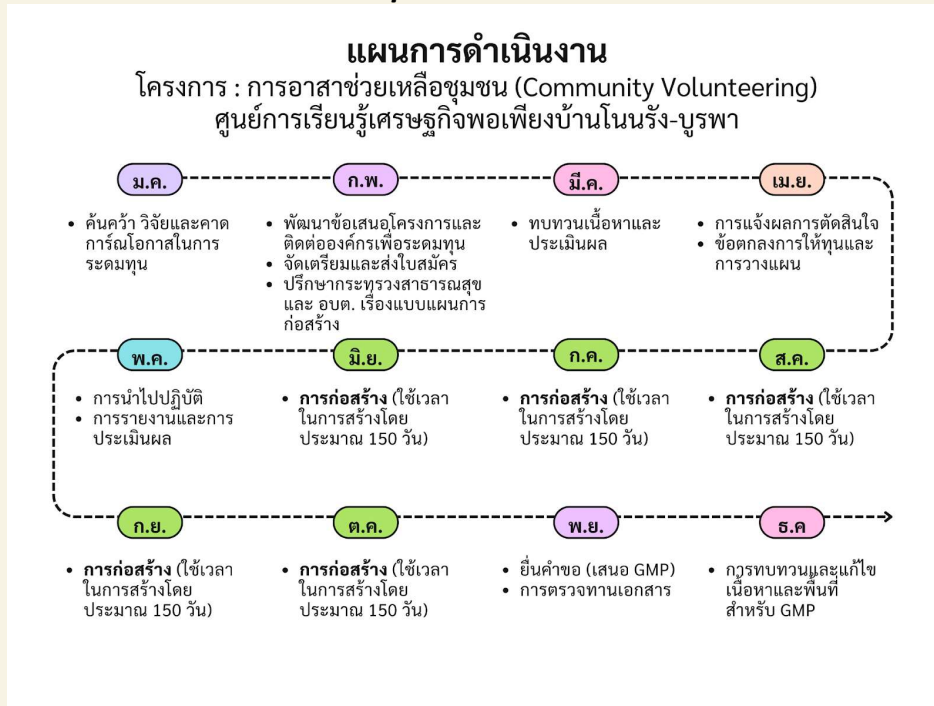
การวัดและประเมินผล

- คนในพื้นที่ มีส่วนร่วมกับศูนย์การเรียนรู้เศรษฐกิจพอเพียงบ้านโนนรัง-บูรพา เพิ่มมากขึ้น
- จัดตั้งโรงผลิตสินค้าชุมชนที่ได้รับมาตรฐานจากกรมอนามัย

สถานที่และระยะเวลาการจัดโครงการการดำเนินการทั้งหมดจะเกิดขึ้นที่ 138 หมู่ 6, ตลาดไพร, อำเภอชุมพวง, นครราชสีมา 30270 โดยใช้ระยะเวลาในการดำเนินการทั้งสิ้น 150 วัน

Appendix E

E4 Deliverable: Funding Requirements & Proposal Proposal Timeline

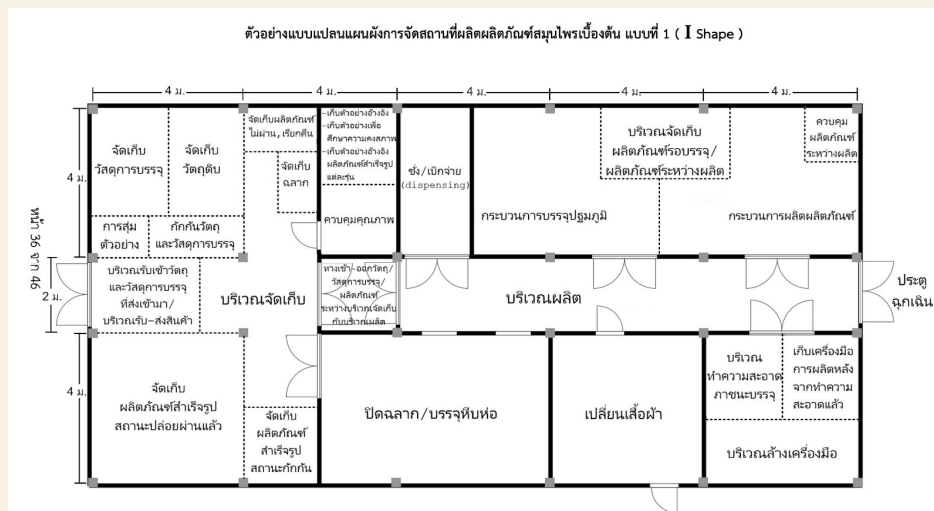


รูปแบบสิ่งก่อสร้าง

รายละเอียดงบประมาณค่าใช้จ่ายสำหรับจัดตั้งโรงผลิตสินค้าชุมชน ตามมาตรฐานกรมอนามัย จำนวนเงินทั้งหมด **1,350,000** บาท โดยเป็นค่าเฉลี่ยจาก 1. งานโครงสร้างทั้งหมด

2. งานก่ออิฐ-ฉาบปูน ภายนอก-ใน
3. งานติดตั้งวัสดุผิวพื้น
4. งานติดตั้งฝ้าเพดาน
5. งานติดตั้งประตู-หน้าต่างพร้อมอุปกรณ์
6. งานระบบสุขาภิบาล แล้วเสร็จ
7. งานระบบไฟฟ้าและติดตั้งอุปกรณ์ใน-นอกอาคาร
8. งานติดตั้งพัดลมดูดอากาศ เครื่องปรับอากาศ งานขนย้ายเครื่องจักรและติดตั้งใหม่
10. งานทดสอบระบบต่างๆ ใช้งานได้สมบูรณ์

Floor Plan



Appendix E

E4 Deliverable: Funding Requirements & Proposal (cont.)

GMP Approval Document

แบบ สมพ. ๑

เลขรับที่.....
 วันที่.....
 (สำหรับเจ้าหน้าที่เป็นผู้กรอก)

**คำขอรับใบอนุญาต
ผลิต นำเข้า หรือขายผลิตภัณฑ์สมุนไพร**

คำขออนุญาต ผลิตผลิตภัณฑ์สมุนไพร
 นำเข้าผลิตภัณฑ์สมุนไพร
 ขายผลิตภัณฑ์สมุนไพร

เขียนที่.....
วันที่.....เดือน.....พ.ศ.

๑. ข้อมูลผู้ขออนุญาต

ข้าพเจ้า (ชื่อบุคคล/นิติบุคคล)

อายุ.....ปี สัญชาติ.....

เลขประจำตัวประชาชน

หรือเลขทะเบียนนิติบุคคล.....

ที่อยู่เลขที่..... หมู่บ้าน/อาคาร.....
 หมู่ที่.....ตรอก/ซอย..... ถนน.....
 ตำบล/แขวง.....อำเภอ/เขต.....
 จังหวัด.....รหัสไปรษณีย์.....โทรสาร.....
 โทรศัพท์.....E-mail.....

กรณีผู้ขออนุญาตเป็นบุคคลต่างตัว ระบุ

บุคคลธรรมดา

หนังสือเดินทางเลขที่.....วันหมดอายุ.....

ใบสำคัญถิ่นที่อยู่เลขที่.....ออกให้ ณ วันที่.....

ใบอนุญาตทำงานเลขที่.....วันหมดอายุ.....

หรือใบอนุญาตประกอบธุรกิจตามบัญชีสาม (๑๔) หรือ (๑๕) ตามกฎหมายว่าด้วยการประกอบธุรกิจของคนต่างตัว เลขที่.....ออกให้ ณ วันที่.....

หรือหนังสือรับรองตามกฎหมายว่าด้วยการประกอบธุรกิจของคนต่างตัวเลขที่..... ออกให้ ณ วันที่.....

นิติบุคคลต่างตัว

ใบอนุญาตประกอบธุรกิจตามบัญชีสาม (๑๔) หรือ (๑๕) ตามกฎหมายว่าด้วยการประกอบธุรกิจของคนต่างตัว เลขที่.....ออกให้ ณ วันที่.....

หรือหนังสือรับรองตามกฎหมายว่าด้วยการประกอบธุรกิจของคนต่างตัวเลขที่..... ออกให้ ณ วันที่.....

๒. ข้อมูลผู้ได้รับมอบหมายหรือแต่งตั้งให้ดำเนินการหรือดำเนินการเกี่ยวกับใบอนุญาต

ชื่อผู้ดำเนินการ.....

อายุ.....ปี สัญชาติ.....เลขประจำตัวประชาชน.....

F-HB3-17 (0 - 07/05/64) หน้า 1/5

-๒-

ที่อยู่ตามทะเบียนบ้าน อยู่เลขที่..... หมู่บ้าน/อาคาร.....
 หมู่ที่.....ตรอก/ซอย..... ถนน.....
 ตำบล/แขวง.....อำเภอ/เขต.....
 จังหวัด.....รหัสไปรษณีย์.....โทรสาร.....
 โทรศัพท์.....E-mail.....

ที่อยู่ที่สามารถติดต่อได้ (ใช้ที่อยู่เดียวกับที่อยู่ตามทะเบียนบ้าน)
 (เฉพาะกรณีที่อยู่ไม่ใช่ที่อยู่เดียวกับทะเบียนบ้าน)
 อยู่เลขที่..... หมู่บ้าน/อาคาร.....
 หมู่ที่.....ตรอก/ซอย..... ถนน.....
 ตำบล/แขวง.....อำเภอ/เขต.....
 จังหวัด.....รหัสไปรษณีย์.....โทรสาร.....
 โทรศัพท์.....E-mail.....

กรณีผู้ได้รับมอบหมายหรือแต่งตั้งให้ดำเนินการหรือดำเนินการเป็นบุคคลต่างตัว ระบุ
 หนังสือเดินทางเลขที่.....วันหมดอายุ.....
 ใบอนุญาตทำงานเลขที่.....วันหมดอายุ.....

๓. ข้อมูลสถานที่ผลิต นำเข้า หรือขายผลิตภัณฑ์สมุนไพร

สถานที่ประกอบธุรกิจชื่อ.....
 เลขที่ส.ประจําบ้าน.....อยู่เลขที่..... หมู่บ้าน/อาคาร.....
 หมู่ที่.....ตรอก/ซอย..... ถนน.....
 ตำบล/แขวง.....อำเภอ/เขต.....
 จังหวัด.....รหัสไปรษณีย์.....โทรสาร.....
 โทรศัพท์.....E-mail.....

เวลาทำการ.....

สถานที่เก็บรักษาผลิตภัณฑ์สมุนไพร (ถ้ามี) ชื่อ.....
 เลขที่ส.ประจําบ้าน.....อยู่เลขที่..... หมู่บ้าน/อาคาร.....
 หมู่ที่.....ตรอก/ซอย..... ถนน.....
 ตำบล/แขวง.....อำเภอ/เขต.....
 จังหวัด.....รหัสไปรษณีย์.....โทรสาร.....
 โทรศัพท์.....E-mail.....

(ถ้ามีมากกว่าหนึ่งแห่งให้แจ้งเพิ่มเติมไว้ท้ายคำขอนี้จนครบ)

๔. ข้อมูลผู้มีหน้าที่ปฏิบัติการในสถานที่ผลิต นำเข้า หรือขายผลิตภัณฑ์สมุนไพร

๔.๑ กรณีผู้ประกอบการวิชาชีพ/ผู้ประกอบการศิลปะ ชื่อ.....
 ใบอนุญาตประกอบวิชาชีพ/โรคศิลปะเลขที่..... หรือ
 กรณีที่ไม่ใช่ผู้ประกอบการวิชาชีพหรือผู้ประกอบการศิลปะ ให้ระบุคุณวุฒิ.....

สาขา.....

๔.๒ ผ่านการอบรมหลักสูตรจากสำนักงานคณะกรรมการอาหารและยา โปรดระบุชื่อหลักสูตร
วันที่อบรม.....

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Appendix E

E4 Deliverable: Funding Requirements & Proposal (cont.)

GMP Approval Document (cont.)

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(ถ้ามีมากกว่าหนึ่งคนให้แจ้งเพิ่มเติมไว้ท้ายคำขอชิงทุน)
เป็นผู้มีหน้าที่ปฏิบัติการตาม มาตรา ๓๑ มาตรา ๓๒ มาตรา ๓๓ แห่ง พ.ร.บ.ผลิตภัณฑ์สมุนไพร พ.ศ. ๒๕๖๒

ข้าพเจ้าขอรับรองว่า ข้าพเจ้า มีคุณสมบัติและไม่มีลักษณะต้องห้ามตามมาตรา ๑๙ แห่ง พ.ร.บ. ผลิตภัณฑ์สมุนไพร พ.ศ. ๒๕๖๒ และได้แนบหลักฐาน ดังต่อไปนี้

(๑) เอกสารแสดงคุณสมบัติของผู้ขออนุญาตตามมาตรา ๑๙ และผู้มีหน้าที่ปฏิบัติการตามที่รัฐมนตรีโดยคำแนะนำของคณะกรรมการประกาศกำหนดตามมาตรา ๖ (๑๓)

(๑.๑) สำเนาใบสำคัญถิ่นที่อยู่ (กรณีบุคคลต่างตัวเป็นผู้ขออนุญาต)

(๑.๒) เอกสารแสดงการเป็นเจ้าของกิจการ

(๑.๓) ใบรับรองของผู้ประกอบวิชาชีพเวชกรรม ซึ่งรับรองว่าผู้ขออนุญาตไม่เป็นโรคตามมาตรา ๑๙ (๘) แห่งพระราชบัญญัติผลิตภัณฑ์สมุนไพร พ.ศ. ๒๕๖๒

(๑.๔) สัญญาระหว่างผู้ขออนุญาตและผู้ประกอบวิชาชีพ ผู้ประกอบโรคศิลปะ หรือผู้ประกอบอาชีพ ซึ่งรับเป็นผู้มีหน้าที่ปฏิบัติการของผู้ขออนุญาต

(๑.๕) สำเนาใบประกอบวิชาชีพ ใบประกอบโรคศิลปะ หรือปริญญาบัตรของผู้ประกอบวิชาชีพ ผู้ประกอบโรคศิลปะ หรือผู้ประกอบอาชีพทุกคน ซึ่งรับเป็นผู้มีหน้าที่ปฏิบัติการของผู้ขออนุญาต หรือสำเนาการผ่านอบรมหลักสูตรจากสำนักงานคณะกรรมการอาหารและยา

(๑.๖) คำรับรองของผู้มีหน้าที่ปฏิบัติการตามแบบ สมพ. ๔

(๒) หนังสือแสดงว่าผู้ขออนุญาตเป็นผู้แทนนิติบุคคลหรือเป็นผู้มีอำนาจทำการแทนนิติบุคคลในกรณีที่นิติบุคคลเป็นผู้ขอรับอนุญาต

(๓) แผนที่ที่ตั้งและที่ตั้งของสถานที่ผลิต นำเข้า หรือขาย และสถานที่เก็บรักษาผลิตภัณฑ์สมุนไพรที่มีลักษณะตามที่รัฐมนตรีโดยคำแนะนำของคณะกรรมการประกาศกำหนดตามมาตรา ๖ (๑๐) และสิ่งปลูกสร้างที่อยู่ในบริเวณใกล้เคียงโดยรอบของสถานที่นั้น

(๔) แผนแปลน แผนผังสิ่งปลูกสร้างภายในบริเวณสถานที่ผลิต นำเข้า หรือขาย และสถานที่เก็บรักษาผลิตภัณฑ์สมุนไพร

(๕) เอกสารแสดงกรรมสิทธิ์หรือสิทธิครอบครองของผู้ขออนุญาตในสถานที่ผลิต นำเข้า หรือขายผลิตภัณฑ์สมุนไพร ในกรณีที่ผู้ขออนุญาตมิได้เป็นเจ้าของสถานที่ดังกล่าว ให้แนบหนังสือแสดงความยินยอมของเจ้าของสถานที่นั้นด้วย

(๖) รายการเกี่ยวกับระบบการกำจัดน้ำเสีย การกำจัดสิ่งปฏิกูลและมูลฝอย ระบบควบคุมอากาศระบบน้ำที่ใช้ในการผลิตเฉพาะกรณีขออนุญาตประกอบกิจการผลิตผลิตภัณฑ์สมุนไพร

(๗) หนังสือให้ความยินยอมตามที่สำนักงานคณะกรรมการอาหารและยากำหนด

(๘) เอกสารหลักฐานอื่น ๆ ที่เกี่ยวข้อง (ถ้ามี)

ลายมือชื่อ.....ผู้ขอรับใบอนุญาต

(.....) ตัวบรรจง

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| รายการ | ผลิต | นำเข้า | ขาย |
|---|------|--------|-----|
| ๒.๑๐ รูปแบบอื่นๆ (โปรดระบุลักษณะ.....) | | | |
| ๒.๑๑ เพื่อการแปรรูปผลิตภัณฑ์เท่านั้น (ระบุรายการยาที่แปรรูป.....) | | | |
| ๒.๑๒ ระบุรายการ | | | |
| ๓. ผลิตภัณฑ์สมุนไพรเพื่อสุขภาพ (ระบุรายการ) | | | |
| ๔. วัตถุประสงค์เพื่อใช้เป็นส่วนผสมในการผลิตผลิตภัณฑ์สมุนไพร (ระบุรายการ) | | | |
| ๔.๑ สารสกัดสมุนไพร | | | |
| ๔.๑.๑ สารสกัดที่เป็นน้ำหรือแอลกอฮอล์ (ระบุรายการ) | | | |
| ๔.๑.๒ สารสกัดที่ซึ่งไม่ใช่น้ำหรือแอลกอฮอล์ (ระบุรายการ) | | | |
| ๔.๒ วัตถุประสงค์เพื่อใช้แบบสเปรย์ทราย (Spray Dry) หรือ พรีชราย (Freeze Dry) | | | |
| ๔.๓ อื่นๆ (ระบุรายการ) | | | |

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Appendix E

E4 Deliverable: Funding Requirements & Proposal (cont.)

GMP Approval Document (cont.)

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| | รายการ | ผลิต | น้ำเข้า | ขาย |
|----|--|------|---------|-----|
| | ๒.๑๐ รูปแบบอื่นๆ (โปรดระบุลักษณะ.....) | | | |
| | ๒.๑๑ เพื่อการแบ่งบรรจุผลิตภัณฑ์เท่านั้น (ระบุรายการยาที่แบ่งบรรจุ.....) | | | |
| | ๒.๑๒ ระบุรายการ | | | |
| ๓. | ผลิตภัณฑ์สมุนไพรเพื่อสุขภาพ (ระบุรายการ) | | | |
| ๔. | วัตถุดิบมุ่งหมายสำหรับใช้เป็นส่วนผสมในการ ผลิตผลิตภัณฑ์สมุนไพร (ระบุรายการ) | | | |
| | ๔.๑ สารสกัดสมุนไพร | | | |
| | ๔.๑.๑ สารสกัดที่เป็นน้ำหรือแอลกอฮอล์ (ระบุรายการ) | | | |
| | ๔.๑.๒ สารสกัดที่ซึ่งไม่ใช่ น้ำหรือแอลกอฮอล์ (ระบุรายการ) | | | |
| | ๔.๒ วัตถุดิบที่ใช้กรรมวิธีแบบสเปรย์ดราย (Spray Dry) หรือ ฟรีซดราย (Freeze Dry) | | | |
| | ๔.๓ อื่นๆ (ระบุรายการ) | | | |

Supplemental Materials



Supplemental Materials

8.1 Interview Questions and Answers with Thematic Coding

1. *Interview: Leader of the Baan Noan Rang Burapha Learning Center*
2. *Interview: Young Adult Related to the Founders of the Baan Noan Rang Burapha Learning Center*
3. *Interview: Young Adult Involved with the Baan Noan Rang Burapha Learning Center*
4. *Interview: Local near the Baan Noan Rang Burapha Learning Center*
5. *Interview: Leader of the Baan Saeng Chan Community Learning Center*
6. *Interview: Marketing Professor at Chulalongkorn University*
7. *Interview: Senior Researcher at InnoHerb*

Thematic Coding of Interviews

Young Adult

Fund

Social Media

Regulation, approval, TFDA

Customer

Thematic Coding Analysis Findings:

Thematic coding revealed the following: learning centers with younger audiences have more funding and larger social media presences, social media and alternative advertising methods are sought after by younger audiences, funds for the center would be best used towards product packaging upgrades, upgrades to the center to attract younger adults (specifically housing for internships for young adults), TFDA approval and government regulatory approval is not feasible at this time for the center based on its current status, structure, and funds.

Supplemental Materials

8.1 Interview Questions and Answers with Thematic Coding (cont.)

| Interview | Question | Answer/Notes Taken During Interview |
|-----------|--|---|
| 1 | What is the history of the learning center? | They originally stayed in the neighborhood, but when they started growing more plants, they moved into the learning center. After some research and excursions, he started adopting the philosophy of the new agricultural theory. He was invited to the Soil Preservation Summit at Khon Kaen as a representative of the center. |
| 1 | When was the center founded? | 1990s |
| 1 | What types of work/activities does the learning center generally perform? | Teach the farmer and newcomers knowledge about self-sufficiency farming system adopt by King Rama 9 |
| 1 | In addition to Father Chan Are there other people who provide knowledge to the learning center? | Mr. Sai and also other teachers in the local community. |
| 1 | Are there any government agencies from whom you get support? - What is taught in the learning center? | They used to get support from the Thai government but after Covid outbreak, the giver cut the support. |
| 1 | What is the average age of the young adults that participate in the center? | The average age of the young adults at the center is 18 and above. |
| 1 | Are there any workshops/programs that are geared towards the younger generation? | Yes, they have workshops for school students and they have other learning programs in school in that area. |
| 1 | What are the programs that are the most popular among the younger generation? | The workshop provides basic knowledge about farming and herbs are mostly popular among the younger generation |
| 1 | What current methods of advertisement do you use to attract young adults? | People mainly know about them through Facebook and some events that they joined. |
| 1 | Do you have flyers, a newsletter, social media, etc.? | Facebook |
| 1 | Do you host any promotional events to attract young adults? | They host several workshops for young adults. |
| 1 | How has knowledge been transferred in the past between past leaders of the center? | The farming and herbal knowledge has been transferred through workshops and practices in the family and people in the community. |
| 1 | Is any knowledge written down or recorded? | They have a book written down explaining about herbs and their farming techniques. |
| 1 | What does a successor of the community center need to know (what types of topics)? | Herbal knowledge |
| 2 | How do you feel about being part of a family that has contributed to establishing the learning center? | He is a younger member of the local community (18), who is very passionate about agriculture. His primary and middle school had classes dedicated to agriculture, but his high school did not. His dream is to become a P.E. |

| | | |
|---|--|---|
| | | teacher, and he is currently trying to get into a sports science program in a university, however he still wishes to do agriculture |
| 2 | As a member of the founding family, what ideas do you have for making the learning center more appealing and engaging for other kids your age? | He says that agriculture is an 8/10 for him (in terms of how much he likes it). His friends are not that interested in agriculture, in fact, he is the only one in his class that showed any interest in it. All his friends want to work in more typical professions, such as becoming doctors or teachers. Some of them are interested in politics. He thinks that social media will help advertise the learning center and bring in more people. |
| 2 | How has your parent's work in the learning center affected your life or perspectives on herbal products? | He also thinks that the best product the learning center has is their vegetable cookies. In his opinion, a good age to start farming is 14-15. He thinks he has inherited about 20-30% of the agricultural knowledge from his father, just by helping him out in the farm. He also thinks that getting TEDA approval will help engage the young adults as it would make it seem like agriculture is something worth doing. |
| 3 | Do you want to work for/in the learning center? | Pok is an 18 year old student in Korat. His love of agriculture comes from both his parents being farmers. He started farming when he was 10. He would love to help. |
| 3 | Are you interested in inheriting the "local wisdom" of the older generation? | There is an agricultural learning center in his school which matches his interest. Most of his friends are interested in politics, only one of them is actually interested in farming. |
| 3 | What parts of the learning center interests you? | He once went to a summit at Nakhon Katchasima as a province representative. He wants to continue studying about herbs, mainly about herbal oils. |
| 3 | In your opinion, how could we make the learning center more interesting for people your age? | He wants to be a traditional medicine practitioner in the future to spread his knowledge on herbs. He hopes that this will make the young adults more interested in herbs and agriculture. He wants social media to play a role in selling herbal products. |
| 3 | Do you use products from the learning center? | He said that the young adults are only interested in the products, not the agricultural process and methods. |
| 3 | How often do you come to the learning center or participate in the workshops? | He visits the learning center on occasion. |
| 4 | What is your opinion on the learning center? | She is one of the members of the local community that had undergone training programs in other learning centers, but thinks that the Nong Rang Burapha center has the best training program as it successfully gives job opportunities and knowledge to the local community. |
| 4 | How often do you participate in the learning center's activities? | About once a month. |
| 4 | How did you find out about the learning center? | Most people in the community know about the community since the owner in the village is also well known in the village as most of the people there grew up together. They see each other as a family even though they are not blood related. |

Supplemental Materials

8.1 Interview Questions and Answers with Thematic Coding (cont.)

| | | |
|---|--|--|
| 4 | Why do you come to the learning center and how does it affect your life? | To learn about farming and raising cattle in a sufficient and sustainable manner. |
| 4 | What benefit do you find from participating in the learning center? | Knowledge about planting and growing crops. It helps her with understanding ways of self sufficiency which help her to apply this knowledge to her farm. |
| 4 | What can the center do to increase young adult involvement? | Increase the amount of technology at the center. |
| 5 | Please explain the history of the learning center. | Received a budget from the Japanese government in 2006 to improve the accommodation buildings after a representative from the learning center contacted them. They are not a community enterprise, so they can afford to hire third-party workers to help maintain the farm; there are only about 5-6 full time members of the learning center. Mr. Pairat, the community representative, learned about herbs and farming methods from his teacher and other communities. This learning center is also in contact with our sponsor, and has worked together on multiple occasions, e.g. the summit at Chum Puang |
| 5 | How long has it been operating for? | Since 2006 |
| 5 | How is the overall work of the learning center? What does it do? | He learnt about the fermentation of organic fertilizer using leaves (prior to this, the leaves were being burnt as a way of disposing of them). Through this program, he also learnt the ways of self-sufficiency as well as the principles of sufficiency economy. |
| 5 | Are there any government agencies that come to support the center? | The funding from Japan came from Mr Pairat's efforts of visiting and learning about agricultural techniques from all over the country. In 2006, a fund of 1,700,000 Baht was given specifically for the improvement of the buildings of the learning center. This funding was given for free with the aim to educate and progress the 34 rai learning center |
| 5 | What is taught in the learning center? | There was also a student from Ratchapat University who came to take the learning program and learn how to raise cattle. One of the calves was sold at around 200,000 Baht. These cows are primarily raised for their dung, which can be used as fertilizer or as earthworm feed. |
| 5 | How prominent is the learning center within the community? | The reason they think the center attracts more young adults than other places is because they promote the activities of the learning center frequently. They also have connections to a "middle-man" organization that allows their products to be sold in more areas. Some people who come to the center for the program also ask to buy their products after seeing them. |
| 5 | Does the learning center sell any products? | The learning center also has about 4-5 experts that teach the programs. Most of the people that want to work here say that it is because of the good quality of resources and databases the learning center has access to, and it is also near the city. These people were previously teachers, so they wished to continue teaching others. When asked about why they did not consider expanding into the herbal market, they said that they do not have enough time, and there are already other places in the area that sell to the larger market. |
| 5 | How many young adults are involved with the center? | There was a traditional Thai medicine student that came to the learning center for the learning program. |

| | | |
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| 5 | How often do they participate? | The young adults visit at least once to twice a month. |
| 5 | What is the average age of the young adults that participate in the center? | Most are university students so most of them are above 18. |
| 5 | How involved is the average young person? | More than 10,000 young people are involved and engaged with this learning center. |
| 5 | Are there any workshops/programs that are geared towards the younger generation? | Yes, the learning program which helps them in gaining working experience, and the other workshops that give basic knowledge about agriculture to the younger generation. |
| 5 | What are the programs that are most popular among the younger generation? | The hands-on learning program where the attendees stay at the center for 5 days and 4 nights. |
| 5 | What current methods of advertisement do you use to attract young adults? | They have a thriving social media presence, as well as frequent booth outings. |
| 5 | Do you have flyers, a newsletter, social media, etc.? | Baan Saeng Chan Learning Center has a Facebook account |
| 5 | Do you host any promotional events to attract young adults? | They host many events such as workshops, and learning program chances for university students. This makes university students and young adults attracted to this learning center. Many university students got a chance to learn and experience farming at Baan Saeng Chan Learning Center. There was also a student from Ratchapat University who came to take the learning program and learn how to raise cattle. There are more than 10,000 students and young adults who work and are involved in this learning center's activities. |
| 5 | How has knowledge been transferred in the past between past leaders of the center? | The ministry of agriculture has given the learning center funding to improve the learning program in the past. The learning center also has boars and chickens, which are raised as food/sold off. Their dung can also be used as fertilizer. They are not a community enterprise and so they view profit as one of their goals. |
| 5 | Is any knowledge written down or recorded? | Yes it is, he has a section on a local magazine called "Hug Buriram". |
| 5 | What could a successor of the community center need to know (what types of topics)? | The daughter of the owner went to work elsewhere. She might come back when she retires. But the owner doesn't have solid plans on this decision. He is also not too worried about her not inheriting the learning center. |
| 6 | What marketing strategies would you recommend to appeal to younger generations in today's society? | Target the new customer → know the product → target the existing customer. Try to find what the current younger generation that uses the product likes about the product. Ask existing customers → marketing concept, existing data from existing customers, let potential new customers try the product and see the response, explain what might be special about the product to these new customers. |
| 6 | How can we account for changes that occur over time with style and packaging trends? | Think about modern packaging and competing products that are in the market. Ask customers which design they prefer and why. |
| 6 | How can we appeal to a new audience while also maintaining old customers at the same time? | <ul style="list-style-type: none"> Ask existing customers if they will use the product if they will still like it with the new packaging Look at existing products that target both younger and older generations for ideas |

Supplemental Materials

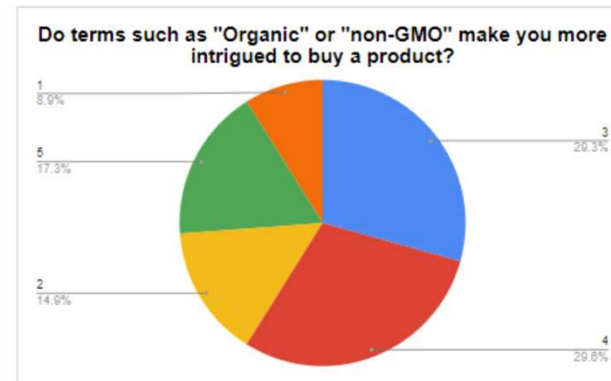
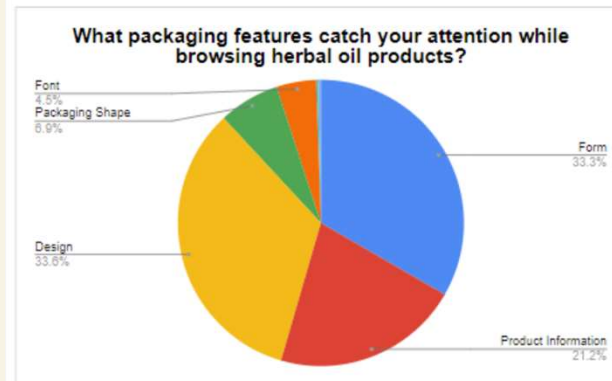
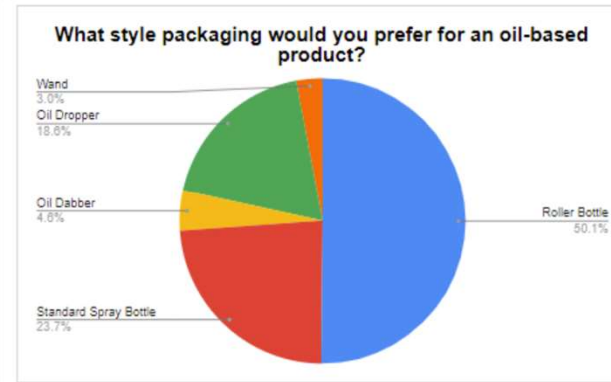
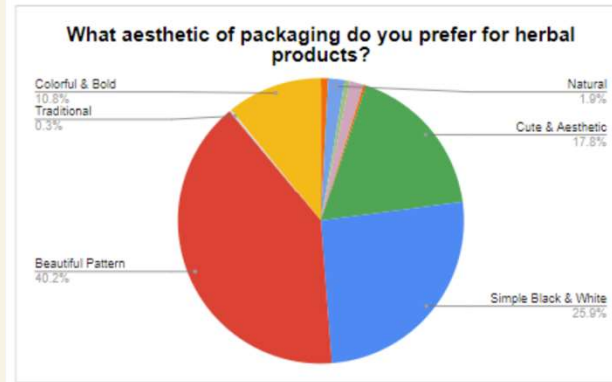
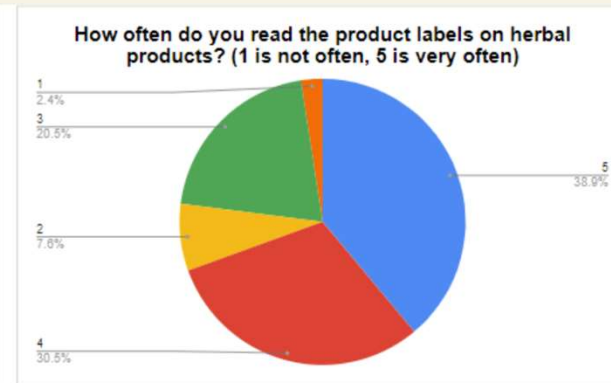
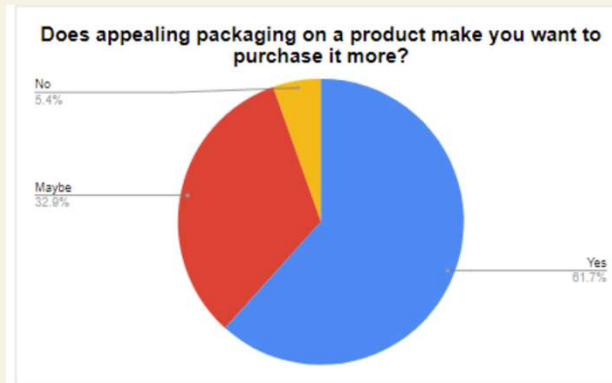
8.1 Interview Questions and Answers with Thematic Coding (cont.)

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|---|--|--|
| 6 | If a product is not unique among its competitors, how can it be made to seem appealing without changing its formula? | Use promotional materials, phrases like "locally grown", information about where the herbs are grown, etc. <ul style="list-style-type: none"> Specify where the product is local to Which herbs are the most effective Add something to make it more effective/unique Terms such as "organic", "non-GMO", "natural" |
| 6 | Do you think a QR code on a product bottle advertising the community center would gain people's attention? | <ul style="list-style-type: none"> Depends on customer habits Maybe use key terms to attract customers, convince them to scan the QR code |
| 6 | How effective is packaging in attracting the younger generation and new customers in general? | <ul style="list-style-type: none"> Depends; has worked in other cases, but isn't the only option In this case, changing packaging is a good idea Use packaging to tell a story Won't see overnight success with new packaging; other factors must be there too Add specificity/cater to audience Compare product to market competitors |
| 6 | How can the packaging help sustain young adult engagement in the center long-term? | <ul style="list-style-type: none"> Packaging can help grow the local community that is using income for the product. Sustaining young adult engagement will require storytelling Unlikely that packaging alone will sustain young adult engagement; can help gradually increase engagement over time with other marketing methods Transfer marketing knowledge to the sponsor so they can sustain progress |
| 6 | How can the price of the packaging balance the risks vs. rewards of increased price? | <ul style="list-style-type: none"> Estimate the cost for one batch of product and then add 10% for labor costs Go back and forth between prices before settling to see what maximizes profit |
| 7 | What is InnoHerb's role as a company? | <ul style="list-style-type: none"> RD convey technology Receive questions from the private sector, consult with a consultant about herbal products. Analyze and test, such as finding active marker |
| 7 | How do you design FDA approval for an herbal product? | Herbs Product is divided into: <ol style="list-style-type: none"> Food supplements Herbal tea Beverages which is in the food law category Cosmetics use the notification form of the NCPO Act 1992/2015. Hazardous substances ex herbicide Narcotic substance ex cannabis Medical equipment Herbal medicine does not need to be registered if it has not been processed. Medicine according to traditional knowledge (Thai traditional medicine) Medicine developed from herbs, changed form Health products, cosmeceuticals: cosmeceutical Structural skin verification is required. |
| 7 | What laws and regulations are in place regarding herbal products? | Act 2019 Category A: Medicine according to previous knowledge Divided into Thai traditional and Chinese traditional, must follow the recipes |

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| | | Category B: Medicine developed from herbs Category C: Health supplements |
| 7 | What roadblocks will one reach when registering a product with the TFDA? | Registration differs in the documents that must be submitted. Some research cannot be registered because it has not passed the TFDA. Ex research provides greater Pharma |
| 7 | What is the permission process for herbal product approval? | Permission process: <ol style="list-style-type: none"> Notify the TFDA Properties must be stated. There is a positive list of chemicals and ingredients that automatically pass this step. Look at the products notified in 2021. Product details Formulas and portions must be stated. If there are any deviations from the original formula, it must be stated. Register Submit relevant documents to check quality, safety, efficiency |
| 7 | How could someone gain funding for an herbal product approval plan? | Funding sources: <ul style="list-style-type: none"> BAAC: Agricultural Bank EGAT: Electricity Generating Authority of Thailand BPT NIA |
| 7 | Is TFDA approval feasible for our project at this time? | Realistically it is not feasible for us within the timeframe and budget constraints we have. The interviewee mentioned that we would need a company to come and assess the learning center prior to anything so it may be difficult to even begin the process... |

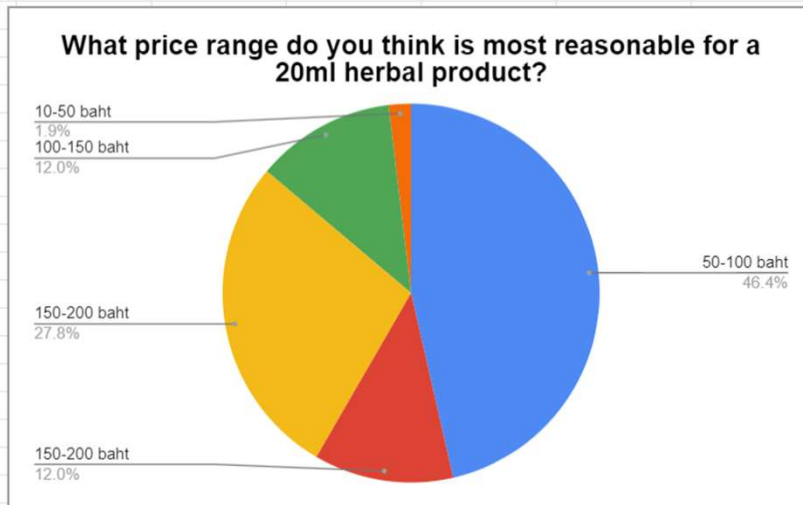
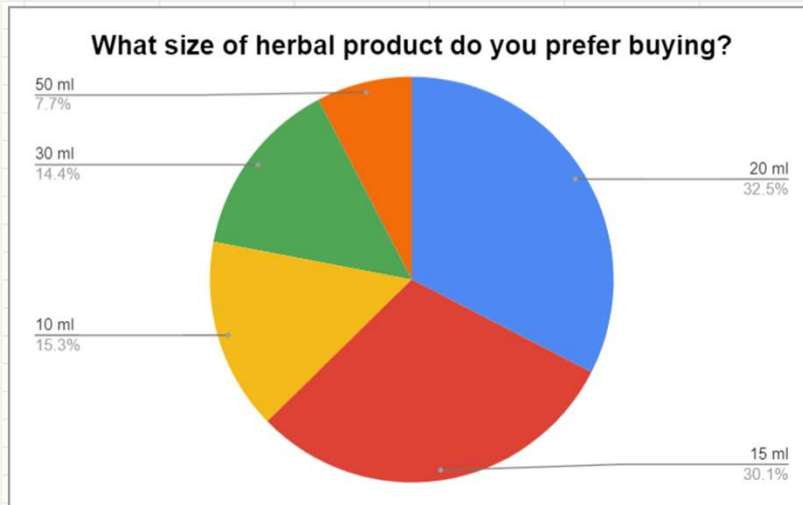
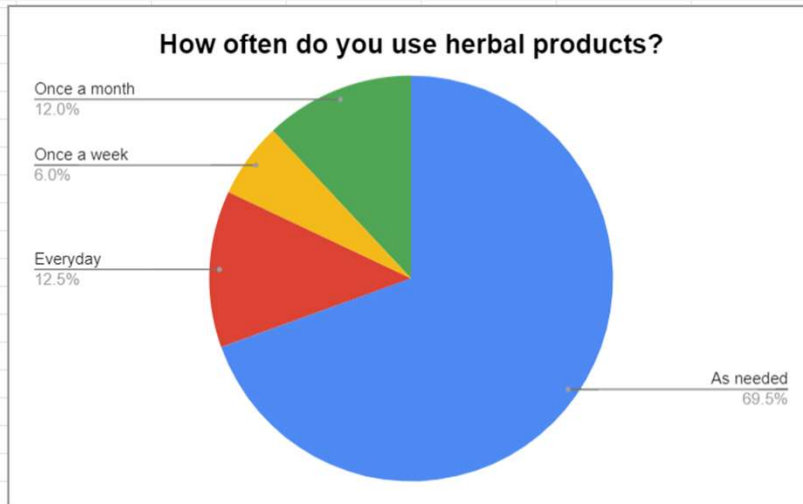
Supplemental Materials

8.2 Survey 1 Charts



Supplemental Materials

8.3 Survey 2 Charts



Supplemental Materials

8.4 GMP Checklist: Approval Documents

| | List of documents to submit a registration request Medicine from herbs (Thai traditional medicine and medicine developed from herbs) | Items to be submitted | |
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| | | Thai traditional herbal products | Medicine developed from herbs |
| | Section 1. General documentation and product information | | |
| 1. | Notification form for the production or importing of herbal products (refer to ๑๕.1) | | |
| 2. | Photographs of herbal products (color photos) | | |
| 3. | Product labels and documentation | | |
| 4. | Approval Certificate | | |
| | 4.1 Certification letter for the recipient certificate of registration for monitoring the safety of herbal products | | |
| | 4.2 Certification of quality control of herbal products, requesting registration of the licensee's herbal products. | | |
| | 4.3 Letter giving consent to collect and disclose personal information for the process of submitting a request for permission according to the Herbal Products Act 2019. | | |
| 5. | Copy of license to produce herbal products that have items allowed in the category of traditional Thai medicine or medicine developed from herbs and medicine forms that are according to the category and form of medicine submitted for application (for example, request for production of traditional Thai medicine category, hard capsule form; therefore in the production license must specify the category of traditional Thai medicine, hard capsule format too) | | |

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|----|--|--|--|
| | Section 2: Documents showing standard quality information of the finished product.Part 2: Documents showing standard quality information of the finished product. Testing topics (Testing parameters) according to product types | | |
| 6. | Certificate of Analysis of the product issued by the laboratory that defines (original) at least 1 production version with the test subject according to the product format. There must be at least the following items: 1. Name and form of herbal product 2. Production date and production time of the herbal product 3. Test date 4. Date of test results report 5. Test topics 6. Test method 7. Benchmark 8. Test results 9. Name and signature of the person certifying the test results. 10. Name and location of the testing laboratory. | | |